BOARD OF ALDERMEN
MONDAY, OCTOBER 5, 2026
PUBLIC HEARING @ 6:00
REGULAR MEETING @ 6:00 P.M.
ALDERMANIC CHAMBERS - 2ND FLOOR - CITY HALL
235 GRAND STREET, WATERBURY, CT 06702

AGENDA

The Regular Meeting will be broadcasted live on the City of Waterbury's Government Access Channel (Comcast Channel 96; Frontier Channel 6096) and the City of Waterbury's You Tube Channel https://youtu.be/SyEs7TPBUJs.

PUBLIC HEARING AT 6:00 P.M.

For the purpose of receiving public input with respect to a proposed new ordinance related to City Boards and Commissions Appointment Structure and Transparency, as submitted by Alderman Rafael Feliciano-Roman.

CALL TO ORDER:

PLEDGE OF ALLEGIANCE:

PRAYER:

ROLL CALL:

OFFICIALLY SCHEDULED PRESENTATION (s):

PUBLIC SPEAKING:

EXECUTIVE SESSION:

APPROVAL OF MINUTES:

Tuesday, September 8, 2026/Public Hearing/Summary Minutes
Monday, September 21, 2026/Public Hearing/Summary Minutes

MAYOR'S REPORT:

RECESS INTO COMMITEES:

NEW BUSINESS*:*

1. **MARK LOMBARDO**
   Deputy Director, PWD

   RE: Requesting approval of a Contract for Multi-Course Golf Management Software between the City of Waterbury and TenFore Golf, Inc.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

2. **JAVIER LOPEZ**
   Fire Chief

   RE: Requesting approval to Accept an Assistance to Firefighters Grant for Fire Officer Training.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

3. ROBERT DOWD
TOM FAVAZZO
Project Manager(s)WDC

RE: Requesting approval of a Project Authorization Letter for the Waterbury Community Health Resource Center.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

4. ROBERT DOWD
TOM FAVAZZO
Project Managers, WDC

RE: Requesting approval of a Construction Contract RFP# 8753 for Chase Building Renovations between the City of Waterbury and KBE Building Corporation.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

5. ROBERT DOWD
Project Manager, WDC

RE: Requesting approval of a Construction Contract for Fire Station #6 Roof Replacement & Window Repairs between the City of Waterbury and Macri Roofing in the amount of **$250,000.**

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

6. FRANK BAKER
Building Official
Department of Inspection

RE: Requesting a **REFUND** from Trinity Solar for the following cancelled permits:

172 Easton Ave.	$1,275.00
172 Easton Ave.	$600.00
Total	**$1,692.50**

REFERRED TO THE FINANCE COMMITTEE

7. LEE FARLEY
Lieutenant
Department of Police Services

RE: Requesting approval to submit an application for grant funding in the amount of **$90,006** under the BJA FY26 Justice Assistance Grant (JAG) Program for the Grant period of 10/01/2025 – 09/30/2029.

REFERRED TO THE FINANCE COMMITTEE

8. FRANK TAVERA
Chief Executive Officer
100 East Main Street
Waterbury, CT 06702

RE: Submittal of 2027 Operating Budget which was approved at the September 22, 2026 Board of Directors Meeting.

RECEIVE AND PLACE ON FILE

9. ROBERT DOWD
TOM FAVAZZO
Project Managers, WDC

RE: Requesting approval of a Construction Contract for the RFP #8801 Waterbury Community Health Resource Center Renovation with J.A. Rosa.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

10. NADINE AMATRUDA
Deputy Chief of Police

RE: Request to set a Public Hearing for Automated Traffic Enforcement Safety Device Plan (ATESD) and Board of Aldermen approval.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

11. RYAN D. BUSHKA
Assistant Project Manager
Engineering Department

RE: Requesting approval of a Construction Contract for Esther Avenue & Crown Street Drainage Improvements Project between the City of Waterbury and Birmingham Construction Company, LLC.

REFERRED TO THE FINANCE COMMITTEE

12. SALVATORE D. PORZIO
Project Manager
Engineering Department

RE: Requesting approval of the Professional Services Agreement for Engineering On-Call Services 2025 Through 2027 between the City of Waterbury, Connecticut and Weston & Sampson Engineers, Inc.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

13. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Submittal of the City of Waterbury Financial Status Report for July and August 2026.

RECEIVE AND PLACE ON FILE

14. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of the following Budget Transfer from the City's **Capital Improvement Fund for** the Fiscal Year ending June 30, 2027 in the amount of **$4,000,000.**

REFERRED TO THE FINANCE COMMITTEE

15. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of the following Budget Transfer from the City's **Capital Improvement Fund for** the Fiscal Year ending June 30, 2027 in the amount of **$1,850,000.**

REFERRED TO THE FINANCE COMMITTEE

16. PAUL K. PERNEREWSKI JR.
Mayor
City of Waterbury

RE: Requesting approval of the following appointment to the Board of Agents:

Democratic Town Committee Appointee

Naida M. Hall (D)
Term of Appointment
July 4, 2026 – July 4, 2032

RECEIVE AND PLACE ON FILE

17. KENNETH CURRAN
Alderman - District 1

JOHN DREWRY
Alderman - District 3

RE: Request for a Public Hearing and Approval of Ordinance Creating a Loneliness and Social Commission.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

STANDING COMMITTEE

CASSIE GORMAN
Tax Collector

RE: Request for refunds for Tax Overpayments in the amount of **$23,378.22.**

REFERRED TO THE FINANCE COMMITTEE

UNFINISHED BUSINESS:

1. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of Granting of a Purchasing and Sale Agreement to sell 36 Welton Street, a vacant .43-acre Parcel in consideration of **$25,000** and an Association Tax Assessment with Laing Capital Partners, LLC. (**Received on Monday, January 05, 2026 and referred to Finance Committee). Public Hearing set for January 20, 2026. (Tabled until 02/09/2026)**

2. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval for cultural district establishment.

A. Puerto Rican Heritage Cultural District
(**Received on Monday, December 15, 2025 and referred to Intergovernmental Committee postponed until Monday December 14, 2026).**

3. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval for updates to City Boards and Commissions.

A. Arts, Culture and Tourism Commissions
(**Received on Monday, December 15, 2025 and referred to Intergovernmental Committee) Referred to Corporation Counsel.**

4 - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval for updates to City Boards and Commissions structure and transparency, including:

B. Transparency of Boards and Commissions
(**Received on Monday, December 15, 2025 and referred to Corporation Counsel and postpone until March 9, 2026.) Public Hearing on October 5, 2026.**

5 - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval to establish a Gentrification Mitigation Zone Ordinance.

A. Gentrification Mitigation Zone Ordinance
(**Received on Monday, December 15, 2025. - Referred to Intergovernmental Committee. Refer to Corporation Counsel and to amend the timetable to postpone consideration until Monday, December 14, 2026.**

6. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval to establish a and create Youth Alderman positions.

B. Youth Alderman Positions

(**Received on Monday, December 15, 2025. - Referred to Intergovernmental Committee). Referred to Corporation Counsel.**

7. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting a Hobart Welton Carriage Shed Historic Recognition Resolution.

(Received on January 05, 2026 and referred to Intergovernmental Committee) Referred to Corporation Counsel).

8. IAN T. BLAKE
Alderman 2nd District

BELINDA WEAVER
Alderwoman 2nd District
(Co-Sponsor)

RE: Submittal of an Ordinance Proposal to include and implement an itemized distribution statement on taxpayers' bills. Taxpayers would benefit from clear, consistent, plain-language information showing how the property tax levy is allocated across major City services.
(Received on February 9, 2026 and referred to the Finance Committee).

9. MICHAEL RINALDI
Alderman, 1st District

KENNY CURRAN
Alderman, 1st District'
Lead Sponsors

MICHAEL DIGIOVANCARLO
SEAN MOSLEY
BELINDA WEAVER
IAN BLAKE
JOHN DREWRY
MICHAEL GROSSO
SANDRA MARTINEZ-MCCARTHY
KELLY ZIMMERMANN
Alderman/Alderwoman

RE: Submittal of Codification of Fire Hydrant Rules and Regulations Resolution. **(Received On May 11, 2026 and referred to Intergovernmental Committee. Referred to Corporation Counsel).**

BRYAN MCENTEE
GEORGE NOUJAIM
JEFF HUNTER
RAFAEL FELICIANO-ROMAN
ADRIAN SANCHEZ

10. RAFAEL FELICIANO-ROMAN
SANDRA MARTINEZ-MCCARTHY
ADRIAN SANCHEZ
KELLY ZIMMERMANN
Alderman/Alderwoman

RE: Requesting a legislative inquiry concerning financial reporting and documentation for certain Capital Projects and Special Program accounts. **(Received on May 11, 2026 and referred to the Intergovernmental Committee and was tabled until October 5, 2026.)**

11. MICHAEL LEBLANC
Director of Finance

RAMON ESPONDA
Superintendent of Water

RE: Requesting approval of 2026 **$25,000,000** Capital Appropriation & Bond Authorization for Water Enterprise System Renewal & Replacement Capital Projects.
(Received on September 08, 2026 and referred to Finance Committee.)

12. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a **$5,000,000** Appropriation and Bond Authorization for

a Matching Grant to the Waterbury Land Bank Authority, Inc.
(Received on August 17, 2026 and referred to the Finance Committee, PH held on September 8, 2026.)

13. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of an Agreement to Convey City owned surplus properties to the Waterbury Land Bank Authority pursuit to the Memorandum of Understanding between the City and Land Bank. The properties to be conveyed are nineteen (19) vacant lots. The property listing is as follows:

- 41 William Street (MBL: 0296-0090-0050)
- 282 Grove Street (MBL: 0253-0064-0142)
- 10 Ward Street (MBL: 0237-0183-0094)
- 322 Orange Street (MBL: 0237-0181-00 46)
- 190 Walnut Street (MBL: 0276-0601-0 149)
- 264 Orange Street (MBL: 0237-0183-0097)
- 270 Orange Street (MB L: 0237-0183-0096)
- 255 Lincoln Street (MBL: 0 l78-0536-0045)
- 1 Willow Court (MBL: 0215-0691-0I 19)
- 572 Baldwin Street (MB L: 0369 -029 8-0491)
- 49 William Street (MBL: 0276-0090-0202)
- 25 Poplar Place (MBL: 0390-0686-0009)
- 115 Bishop Street (MBL: 0236-0173-0046)
- Bishop Street, Lot 461 (MBL: 0236-0173-0461)
- Catherine Avenue, Lot 179 (MBL: 0276-0599-0179)
- 38 Crown Street (MBL: 0217-0717-0124)
- 36 Crown Street (MBL: 0217-0717-0123)
- Pearl Lake Road, Lot 16 (MBL: 0485-0498-0016)
- 28 Bronson Street (MBL: 0236-0173- 00 40)

(Received on September 08, 2026 and referred to the Intergovernmental Committee, and Tabled until September 21, 2026).

14. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Recommendation of filers (s): The filers of this motion recommend that the proposed legislative inquiry be approved and sent to the Law Department for a written opinion/clarification on the following Ordinance:

§ 39.050 Municipal Employment of Elected Officials.
(Received on September 08, 2026, and referred to the Intergovernmental Committee and Corporation Counsel).

15. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

MICHAEL DIGIOVANCARLO
BOA President

RE: Recommendation of filers (s): Send to the Law Department for review Official Filing: That the following Sections of the City Code of Ordinances be amended: written opinion/clarification on the following Ordinance: **§ 38.072 EXECUTION OF CONTRACTS.**
(Received on September 08, 2026, and referred to the Intergovernmental Committee and Corporation Counsel).

16. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of **$3,050,000** FY26 General Fund Surplus Transfer for Capital Improvements and Special Projects. (***Received at September 21, 2026. Tabled until the October 5, 2026***).

REFERRED TO THE FINANCE COMMITTEE

17. RAFAEL FELICANO-ROMAN
SANDRA MARTINEZ-MCCARTHY
ADRIAN SANCHEZ
KELLY ZIMMERMANN
MICHAEL GROSSO

RE: Requesting that a proposed ordinance prohibiting the use of glyphosate-based herbicides on City-owned property, including enforcement, exceptions, and implementation provisions, be referred to the Law Department for review and draft language. ***(Received on May 11, 2026 and referred to the Intergovernmental Committee).***

18. RAFAEL FELICANO-ROMAN
SANDRA MARTINEZ-MCCARTHY
ADRIAN SANCHEZ
KELLY ZIMMERMANN
MICHAEL GROSSO
BRYAN MCENTEE
GEORGE NOUJAIM

RE: Requesting approval of a Proposed Ordinance establishing a formal Centennial Celebrations Commission to coordinate the City's participation in the 250th Anniversary (Semiquincentennial) celebration, and any future major local, state, or national Centennial Celebrations, with structured Memberships, reporting requirements, and Public transparency provisions. Referred for Corporation Counsel review and draft refinement. ***(Received on February 25, 2026 and referred to the Intergovernmental Committee)***.

19. KENNETH J. CURRAN
Board of Aldermen
District 1

JOHN DREWRY
Board of Aldermen
District 3
Co-Sponsor

RE: Submittal of a Loneliness and Social Isolation Commission Resolution.
(Received on March 9, 2026 and referred to Intergovernmental).

20. TARA L. SHAW
Director of Human Resources

RE: Management Pay Plan- Proposed Modifications to Salary Ranges.
(Received on September 21, 2026 and referred to to Intergovernmental Committee). Tabled on September 21, 2026.

ADJOURNMENT:

MJD:dd

BOARD OF ALDERMEN
MONDAY, SEPTEMBER 21, 2026
REGULAR MEETING @ 6:00 PM.
ALDERMANIC CHAMBERS ~ 2ND FLOOR ~ CITY HALL
235 GRAND STREET, WATERBURY, CT 06702

:SUMMARY MINUTES:

The Regular Meeting will be broadcast live on the City of Waterbury's Government Access Channel (Comcast Channel 96; Frontier Channel 6096) and the City of Waterbury's YouTube Channel. https://youtu.be/WjVrV1gCr78

PUBLIC HEARING: @ 6:00 P.M.

For the purpose of receiving public input regarding the proposed 2026 **$25,000,000** Capital Appropriation & Bond Authorization for Water Enterprise System Renewal & Replacement Capital Projects, as submitted by ***Michael LeBlanc, Director of Finance & Ramon Esponda, Superintendent of Water.***

Speaker:

1. ***Paul Kondash, 413 Harpers Ferry Road, Waterbury***

CLOSED AT 6:06 P.M.

✓CALL TO ORDER: @ 6:06 P.M.

✓PLEDGE OF ALLEGIANCE: *OBSERVED*

✓PRAYER: *OBSERVED*

✓ROLL CALL:

(13) PRESENT: Blake, Curran, Drewry, Feliciano-Roman, Grosso, Martinez-McCarthy ***(arrived at 6:25 p.m.)***, McEntee, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann, DiGiovancarlo ***(President)***

(2) ABSENT: Aldermen Hunter and Sanchez

✓PUBLIC SPEAKING:

Speaker(s):

1. ***Tammie Jones, 175 Stonefield Drive, Waterbury.***
2. ***Sharon L. Samoska, 45 Pear Street, Waterbury.***
3. ***Delores Nowell, 180 Cooke Street, Waterbury.***
4. ***Emma Taylor, 178 Cooke, Waterbury.***
5. ***Paul Kondash, 413 Harpers Ferry Road, Waterbury.***
6. ***Francisco Ramos, 92 Stiles Street, Waterbury.***

On a motion of Alderman Feliciano-Roman, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **SUSPEND THE RULES AND TAKE IT UP AS COMMITTEE OF THE WHOLE TO ADD ITEM #18**.

On a motion of Alderman Feliciano-Roman, duly seconded by Alderman Mosley, the Board of Aldermen voted unanimously to **SUSPEND THE RULES AND TAKE IT UP AS COMMITTEE OF THE WHOLE TO ADD ITEM #19.**

On a motion of Alderman Feliciano-Roman, duly seconded by Alderman Drewry, the Board of Aldermen voted by roll call **12 Yea and 1 Nay to SUSPEND THE RULES AND TAKE IT UP AS COMMITTEE OF THE WHOLE TO ADD ITEM #20 AS A RECEIVE AND PLACE ON FILE.**

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Grosso, Martinez-McCarthy, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 12.***
NAYS: *Aldermen McEntee* ***– 1.***

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **RECESS INTO COMMITTEE OF THE WHOLE TO ADDRESS NEW BUSINESS ITEMS #1, 18, 19 AND UNFINISHED BUSINESS ITEM #12.**

RECESS INTO COMMITTEES:

►NEW BUSINESS:

COMMITTEE OF THE WHOLE

1. TARA L. SHAW
Director of Human Resources

RE: Requesting approval of Management Pay Plan – Proposed Modifications to Salary Ranges.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **TABLE** New Business item **#1.**

2. LISA LEBREIRO
Program Manager
Waterbury Lead & Healthy Homes

RE: Requesting approval of Lead and Healthy Homes Professional Services Contract for Waterbury Lead & Healthy Homes between the City of Waterbury and **EAST WATER LLC,** 28 Hill Street, in the amount of **$108,375.00**.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously, meeting the required ***11-vote threshold***, to **APPROVE** New Business Item **#2**.

3. ADAM S. RINKO
Director of Emergency Management
Executive Officer WFD

RE: Requesting approval for Emergency Management Performance Grant (Federal Fiscal Year 2025) Zero Match-Reimbursement.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **APPROVE** New Business item **#3.**

4. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Submittal of Financial Status Report Final Fiscal Year-End 2026.

RECEIVE AND PLACE ON FILE.

5. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Submittal of General Fund Balance Report for FY26-**$35.1** Million Year-End Balance.

RECEIVE AND PLACE ON FILE.

NON-CONSENT

6. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of **$3,050,000** FY26 General Fund Surplus Transfer for Capital Improvements and Special Projects.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Feliciano-Roman, duly seconded by Alderman Blake, the Board of Aldermen voted by roll call **11 Yea, 1 Nay, and 1 Recusal**, meeting the required ***11-vote threshold***, to **TABLE** New Business Item **#6**.

NON-CONSENT

7. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of **$700,000** FY26 Water Pollution Control Enterprise Fund Operating Surplus Transfer to Unallocated Capital.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **8 Yea and 5 Nay** to **APPROVE** New Business Item **#7**.

YEAS: *Aldermen Blake, Curran, Drewry, Mosley, Noujaim, Rinaldi, Weaver and DiGiovancarlo* ***– 8.***
NAYS: *Aldermen Feliciano-Roman, Grosso, Martinez-McCarthy, McEntee and Zimmermann* ***– 5.***

NON-CONSENT

8. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of **$150,000** FY26 Utility Administration Division Operating Surplus Transfer to Water and Water Pollution Control Unallocated Capital Accounts.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **9 Yea and 4 Nay** to **APPROVE** New Business Item **#8**.

YEAS: *Aldermen Blake, Curran, Drewry, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 9.***
NAYS: *Aldermen Feliciano-Roman, Grosso, Martinez-McCarthy and McEntee* ***– 4.***

NON-CONSENT

9. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of **$750,000** FY26 Water Enterprise Fund Operating Surplus Transfer for Emergency Repairs.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **10 Yea and 3 Nay** to **APPROVE** New Business Item **#9**.

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo –* ***10.***
NAYS: *Aldermen Grosso, Martinez-McCarthy and McEntee –* ***3.***

10. SARAH R. GEARY
Manager of Budget
Development and Oversight

RE: Requesting approval of **$44,458.54** FY27 Capital Improvement Fund Transfer for Kennedy High School Pool Repairs.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **APPROVE** New Business Item **#10.**

NON-CONSENT

11. CARRIE A. SWAIN, *Clerk*
Waterbury Board of Education

RE: Requesting approval of Construction Contract (RFP #8873) with Tone Klear Communications LLC-**$74,455.50** for Public Address Systems at Bunker Hill and Tinker Elementary Schools.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **12 Yea and 1 Nay**, meeting the required ***11-vote threshold***, to **APPROVE** New Business Item **#11**.

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Grosso, Martinez-McCarthy, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo –* ***12.***

NAYS: *Alderman McEntee –* ***1.***

12. CARRIE A. SWAIN, *Clerk*
Waterbury Board of Education

RE: Requesting approval of Amendment Three (**3**) to the Professional Services Agreement (RFP #6571) with Catapult Learning, LLC for Waterbury Non-Public Schools (Title I) Tutoring Services.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **APPROVE** New Business Item **#12.**

NON-CONSENT

13. CARRIE A. SWAIN, *Clerk*
Waterbury Board of Education

RE: Requesting approval of Amendment One (**1**) to Construction Contract with Infrastructure Repair Service, LLC (RFP #8599) for John F. Kennedy High School Swimming Pool Slab Repair.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **12 Yea and 1 Nay**, meeting the required ***11-vote threshold***, to **APPROVE** New Business Item **#13**.

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Grosso, Martinez-McCarthy, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 12.***

NAYS: *Alderman McEntee* ***– 1.***

14. CARRIE A. SWAIN, *Clerk*
Waterbury Board of Education

RE: Requesting approval of Memorandum of Understanding with In A Heartbeat, Inc. at No Cost for a Cardiac Safety and Awareness Initiative.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **APPROVE** New Business Item **#14.**

NON-CONSENT

15. CARRIE A. SWAIN, *Clerk*
Waterbury Board of Education

RE: Requesting approval of Construction Contract (ITB #8799) with Millennium Builders, Inc. – **$2,092,700.00** for Elevator Installation Projects at Driggs and Wilson Elementary Schools.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously, meeting the required ***11-vote threshold***, to **APPROVE** New Business Item **#15**.

16. RAMON ESPONDA
Superintendent of Waterbury

RE: Requesting approval of Amendment Three (**3**) to Construction Contract with J.A. Rosa Construction, LLC (ITB #7977) for Waterbury Water System Pump Station Upgrades – Contract Time Extension.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **APPROVE** New Business Item **#16.**

NON-CONSENT

17. ROY E. CAVANAUGH P.E.
City Engineer

RE: Requesting approval of Amendment One (1) to Construction Engineering and Inspection Services Agreement for Waterbury Downtown Traffic Signal Upgrade (State Project No. 151-325) between the City of Waterbury and VN Engineering, Inc.

REFERRED TO THE FINANCE COMMITTEE.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **12 Yea and 1 Nay**, meeting the required ***11-vote threshold***, to **APPROVE** New Business Item **#17**.

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Martinez-McCarthy, McEntee, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 12.***
NAYS: *Alderman Grosso* ***– 1.***

COMMITTEE OF THE WHOLE

18. MICHAEL LEBLANC.
Director of Finance

RE: Requesting approval of Agreement for Provision of a Medicare Part D Fully Insured Employer Group Waiver Plan Prescription Drug Policy with MEDCO & ESI.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **12 Yea and 1 Nay** to **APPROVE** New Business Item **#18**.

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Martinez-McCarthy, McEntee, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 12.***

NAYS: *Alderman Grosso* ***– 1.***

COMMITTEE OF THE WHOLE

19. MICHAEL LEBLANC.
Director of Finance

RE: Requesting approval of Agreement with AMWINS Group Benefits, LLC for Third Party Administration of a Fully Insured Medicare Part D Employer Group Waiver Plan.

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **12 Yea and 1 Nay** to **APPROVE** New Business Item **#19**.

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Martinez-McCarthy, McEntee, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 12.***

NAYS: *Alderman Grosso* ***– 1.***

On a motion of Alderman Feliciano-Roman, duly seconded by Alderman Noujaim, the Board of Aldermen voted unanimously to **RECESS AT 7:15 P.M. FOR 10 MINUTES**.

COMMITTEE OF THE WHOLE

20. MICHAEL DIGIOVANCARLO.
President, Board of Aldermen

RE: Establishment of Youth Alderman Ad-Hoc Committee and Appointment of Members.

RECEIVE AND PLACE ON FILE.

►<u>STANDING COMMITTEE</u>:

CASSIE M. GORMAN
Tax Collector

RE: Request for refunds for Tax Overpayments in the amount of **$<u>19,972.42</u>.**

<u>REFERRED TO THE FINANCE COMMITTEE.</u>

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **<u>AUTHORIZE AND APPROVE</u>** the Director of Finance to make refunds to taxpayers representing overpayment of tax bills in the aforementioned amount.

►<u>UNFINISHED BUSINESS:</u>

1. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a Purchase and Sale Agreement for the sale of 36 Welton Street, a vacant 0.43-acre parcel, for consideration of **$<u>25,000</u>** and an associated tax assessment with Laing Capital Partners, LLC.
(Received on January 05, 2026 and referred to Finance Committee). PH set for January 20, 2026 (Tabled until 02/09/2026).

2. RAFAEL FELICIANO-ROMAN
Board of Aldermen
5th District

RE: Requesting approval for cultural district establishment, bond reporting, and Rolling Mill Playground plan, including:

<u>Puerto Rican Heritage Cultural District</u>
(Received on December 15, 2025 and referred to Intergovernmental Committee postponed until December 14, 2026).

3. RAFAEL FELICIANO-ROMAN
Board of Aldermen
5th District

RE: Requesting approval for updates to City Boards and Commissions structure and transparency, including:

. <u>Arts, Culture and Tourism Commission</u>
(Received on December 15, 2025 and referred to Intergovernmental Committee and referred to Corporation Counsel).

4.RAFAEL FELICIANO-ROMAN
Board of Aldermen
5th District

RE: Requesting approval for updates to City Boards and Commissions structure and transparency, including:

<u>Transparency of Boards and Commissions</u>

(Received on December 15, 2025 and referred to Corporation Counsel and postponed until March 9, 2026, Public was set 9/8/26 for 10/05/2026 for 6 pm.)

5. RAFAEL FELICIANO-ROMAN
Board of Aldermen
5th District

RE: Requesting approval to establish a Gentrification Mitigation Zone Ordinance and create Youth Alderman positions, including:

Gentrification Mitigation Zone Ordinance
(Received on December 15, 2025. - Referred to Intergovernmental Committee. Referred to Corporation Counsel and to amend the timetable to postpone consideration until - December 14, 2026).

6. RAFAEL FELICIANO-ROMAN
Board of Aldermen
5th District

RE: Requesting approval to establish a Gentrification Mitigation Zone Ordinance and create Youth Alderman positions, including:

Youth Alderman Positions
(Received on December 15, 2025. - Referred to Intergovernmental Committee). Referred to Corporation Counsel).

7. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting a Hobart Welton Carriage Shed Historic Recognition Resolution.
(Received on January 05, 2026 and referred to Intergovernmental Committee and Referred to Corporation Counsel).

8. KENNETH J. CURRAN
Board of Aldermen
District 1

JOHN DREWRY
Board of Aldermen
District 3
Co-Sponsor

RE: Submittal of a Loneliness and Social Isolation Commission Resolution.
(Received on March 9, 2026 and referred to Intergovernmental).

9. IAN T. BLAKE
Alderman 2nd District

BELINDA WEAVER
Alderwoman 2nd District
(Co-Sponsor)

RE: Submittal of an Ordinance Proposal to include and implement an itemized distribution statement on taxpayers' bills. Taxpayers would benefit from clear, consistent, plain-language information showing how the property tax levy is allocated across major City services.
(Received on February 9, 2026 and referred to the Finance Committee).

10. MICHAEL RINALDI
Alderman, 1st District

RE: Submittal of Codification of Fire Hydrant Rules and Regulations Resolution.
(Received on May 11, 2026 and referred to

Intergovernmental Committee. Referred to Corporation Counsel).

KENNY CURRAN
Alderman, 1st District'
Lead Sponsors

MICHAEL DIGIOVANCARLO
SEAN MOSLEY
BELINDA WEAVER
IAN BLAKE
JOHN DREWRY
MICHAEL GROSSO
SANDRA MARTINEZ-MCCARTHY
KELLY ZIMMERMANN
BRYAN MCENTEE
GEORGE NOUJAIM
JEFF HUNTER
RAFAEL FELICIANO-ROMAN
ADRIAN SANCHEZ
Alderman/Alderwoman/Co-Sponsors

11. RAFAEL FELICIANO-ROMAN
SANDRA MARTINEZ-MCCARTHY
ADRIAN SANCHEZ
KELLY ZIMMERMANN

RE: Requesting a legislative inquiry concerning financial reporting and documentation for certain Capital Projects and Special Program accounts.
(Received on May 11, 2026 and referred to the Intergovernmental Committee and was Tabled until October 05, 2026.)

COMMITTEE OF THE WHOLE

12. ANGELA R. JULIANI
Corporation Counsel

RE: Requesting approval of a Proposed Ordinance Creating a Loneliness and Social Isolation Commission.
(Received June 22, 2026; referred to the Intergovernmental Committee; Public Hearing set for August 17, 2026.)

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted by roll call **12 Yea and 1 Nay** to **POSTPONE INDEFINITELY** Unfinished Business item **#12.**

YEAS: *Aldermen Blake, Curran, Drewry, Feliciano-Roman, Grosso, Martinez-McCarthy, Mosley, Noujaim, Rinaldi, Weaver, Zimmermann and DiGiovancarlo* ***– 12.***

NAYS: *Alderman McEntee* ***– 1.***

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **RETURN TO THE REGULAR ORDER OF BUSINESS**.

13. MICHAEL LEBLANC
Director of Finance

RAMON ESPONDA
Superintendent of Water

RE: Requesting approval of 2026 **$25,000,000** Capital Appropriation & Bond Authorization for Water Enterprise System Renewal & Replacement Capital Projects.
(Received on September 08, 2026 and referred to Finance Committee.)

14. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a **$5,000,000** Appropriation and Bond Authorization for

a Matching Grant to the Waterbury Land Bank Authority, Inc.
(Received on August 17, 2026 and referred to the Finance Committee, PH held on September 8, 2026.)

15. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of an Agreement to Convey City owned surplus properties to the Waterbury Land Bank Authority pursuant to the Memorandum of Understanding between the City and Land Bank. The properties to be conveyed are nineteen (19) vacant lots. The property listing is as follows:

- 41 William Street (MBL: 0296-0090-0050)
- 282 Grove Street (MBL: 0253-0064-0142)
- 10 Ward Street (MBL: 0237-0183-0094)
- 322 Orange Street (MBL: 0237-0181-00 46)
- 190 Walnut Street (MBL: 0276-0601-0 149)
- 264 Orange Street (MBL: 0237-0183-0097)
- 270 Orange Street (MB L: 0237-0183-0096)
- 255 Lincoln Street (MBL: 0 l78-0536-0045)
- 1 Willow Court (MBL: 0215-0691-0I 19)
- 572 Baldwin Street (MB L: 0369 -029 8-0491)
- 49 William Street (MBL: 0276-0090-0202)
- 25 Poplar Place (MBL: 0390-0686-0009)
- 115 Bishop Street (MBL: 0236-0173-0046)
- Bishop Street, Lot 461 (MBL: 0236-0173-0461)
- Catherine Avenue, Lot 179 (MBL: 0276-0599-0179)
- 38 Crown Street (MBL: 0217-0717-0124)
- 36 Crown Street (MBL: 0217-0717-0123)
- Pearl Lake Road, Lot 16 (MBL: 0485-0498-0016)
- 28 Bronson Street (MBL: 0236-0173- 00 40)

(Received on September 08, 2026 and referred to the Intergovernmental Committee, and Tabled until September 21, 2026.)

16. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Recommendation of filers (s): The filers of this motion recommend that the proposed legislative inquiry be approved and sent to the Law Department for a written opinion/clarification on the following Ordinance:

§ 39.050 Municipal Employment of Elected Officials.
(Received on September 08, 2026, and referred to the Intergovernmental Committee and Corporation Counsel).

17. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

MICHAEL DIGIOVANCARLO
Board of Aldermen, President

RE: Recommendation of filers (s): Send to the Law Department for review Official Filing: That the following Sections of the City Code of Ordinances be amended: written opinion/clarification on the following Ordinance: **§ 38.072 EXECUTION OF CONTRACTS.**

(Received on September 08, 2026, and referred to the Intergovernmental Committee and Corporation Counsel).

: RETURN TO THE REGULAR ORDER OF BUSINESS:

CONSENT CALENDAR:

APPROVED – NEW BUSINESS ITEMS - #3,10,12,14,16.
TABLE – NEW BUSINESS ITEM– #1,6.
POSTPONE INDEFINITELY – UNFINISHED BUSINESS ITEM - #12.
RECEIVED AND PLACED ON FILE ITEMS #4,5,20
STANDING COMMITTEE ITEM – APPROVED

NON-CONSENT CALENDAR:

APPROVED – #2,7,8,9,11,13,15,17.

COMMITTEE OF THE WHOLE:

#18,19 & UFB #12

ON A MOTION OF ALDERWOMAN WEAVER, DULY SECONDED BY ALDERMAN MOSLEY, THE BOARD OF ALDERMEN VOTED UNANIMOUSLY TO APPROVE THE CONSENT CALENDAR AS READ.

: FOR THE GOOD OF THE ORDER:

Alderman Mosley *stated for the record that he recused himself from New Business Item #6, as he serves on the Board of Waterbury Promise. He also requested an update regarding the Naugatuck Valley Council of Governments' traffic study and the various traffic-related concerns previously discussed.*

Alderwoman Zimmermann *made two inquiries. First, she inquired about the status of the Sacred Heart property, including the City's plans for the property and what is currently being done. Second, she announced that the Arts and Tourism Commission is seeking bands to participate in its First Annual* ***Battle of the Bands****, scheduled for* ***Saturday, October 3, 2026, from 12:00 noon to 5:00 P.M****. on the Green. She encouraged residents to mark their calendars and attend the event.*

Alderwoman Martinez-McCarthy *reminded everyone that her family will be hosting a* ***Pasta Dinner Fundraiser*** *on* ***Wednesday, September 23, 2026, from 4:00 P.M. to 8:00 P.M.****, in memory of her daughter,* ***Joanne McCarthy****, who passed away in a car accident. She invited everyone to attend and noted that the dinner will include homemade meatballs and sauce.*

"Quiero recordarles a todos que mi familia tendrá una cena de pasta para recaudar fondos este miércoles, 23 de septiembre de 2026, de 4:00 P.M. a 8:00 P.M., en memoria de mi hija, Joanne McCarthy, quien falleció en un accidente automovilístico. Esta es una recaudación de fondos y tendremos una deliciosa cena de pasta con albóndigas y salsa caseras. Esperamos contar con su presencia."

On a motion of Alderman Mosley, duly seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to **ADJOURN AT 1:15 A.M.**

MJD/ec

BOARD OF ALDERMEN
TUESDAY, SEPTEMBER 08, 2026
PUBLIC HEARING @ 6:00
REGULAR MEETING @ 6:00 P.M.
ALDERMANIC CHAMBERS - 2ND FLOOR - CITY HALL
235 GRAND STREET, WATERBURY, CT 06702

SUMMARY MINUTES

The Regular Meeting will be broadcasted live on the City of Waterbury's Government Access Channel (Comcast Channel 96; Frontier Channel 6096) and the City of Waterbury's You Tube Channel https://youtu.be/YtJYkoX6H70.

PUBLIC HEARING AT 6:00 P.M. to 6:19 P.M.

For the purpose of receiving public input regarding a $5,000,000 Appropriation and Bond Authorization for a Matching Grant to the Waterbury Land Bank Authority, Inc. as submitted by Michael LeBlanc, Director of Finance.

Speaker (s) 1. James C. Smith, 255 Bank Street, Waterbury, CT
2. Fred Luedke, 10A Joshua Town Road, Waterbury, CT
3. Paul Kondash, 413 Harpers Ferry Road, Waterbury, CT

CLOSED AT 6:19 P.M.

CALLED TO ORDER: 6:20 P.M.

PLEDGE OF ALLEGIANCE & PRAYER: Observed

ROLL CALL:

PRESENT:	**Blake**	**Curran**	**Drewry**	**Feliciano-Roman**	
	Hunter	**Martinez-McCarthy**	**McEntee**	**Mosley**	
	Noujaim	**Rinaldi**	**Sanchez**	**Zimmermann**	**(12)**
Absent:	**Grosso**	**Weaver**	**DiGiovancarlo *(President)***		**(3)**

On the Motion of Alderman Feliciano-Roman, Seconded by Alderwoman Martinez McCarthy, the Board of Aldermen voted unanimously to RECESS for 5 minutes.

OFFICIALLY SCHEDULED PRESENTATION (s):

PUBLIC SPEAKING:

Speakers: 1. Allen Leon, 3221 East Main Street, Unit H
2. Tammie Jones, 175 Stonefield Drive, Waterbury, CT
3. Rev. Ollie Grey, 2929 East Main Street, Waterbury, CT
4. Paul Kondash, 413 Harpers Ferry Road, Waterbury, CT
5. Kelly O'Connor, 84 Glenbrook Ave., Waterbury, CT
6. Marianna Codianni, 61 Sharon Road, Waterbury, CT
7. James C. Smith, 255 Bank Street, Waterbury, CT

EXECUTIVE SESSION: 6:55 P.M. – 7:20 P.M.

For the purpose of discussing strategy and negotiations with respect to pending litigation in Superior Court, to which the City is a party, related to a motor vehicle accident which occurred on or about February 16, 2022 on Interstate 84.

On the Motion of Alderman Mosley, Seconded by Alderwoman Weaver, the Board of Aldermen voted unanimously to <u>RETURN TO THE REGULAR ORDER OF BUSINESS</u> at 7:20.

<u>NO VOTES WERE TAKEN DURING EXECUTIVE SESSION</u>

APPROVAL OF MINUTES:
Monday, June 8, 2026/Regular Meeting/Summary Minutes
Monday, August 17, 2026/Regular Meeting/Public Hearing/Summary Minutes

On the Motion of Alderman Hunter, Seconded by Alderman Blake, the Board of Aldermen voted unanimously to <u>APPROVE</u> the aforementioned minutes.

MAYOR'S REPORT: None

RECESS INTO COMMITEES:

NEW BUSINESS*:*

1. **MICHAEL J. DALTON**
   City Clerk

RE: Submittal of **FY2025-2026** Annual Reports for the following departments, to wit:

Police Department
Public Works
Information Technology
Waterbury Public School
Fire Department
Human Resources
Department of Inspection
Tax Collector
Engineering Department
Silas Bronson Library
Health Department
Office of the Corporation Counsel
Department of Finance

<u>RECEIVE AND PLACE ON FILE</u>

2. **JAMES H. GATLING PhD**

RE: Submission of a letter of resignation from The Board of Directors for the Waterbury Land Bank Authority effective immediately.

<u>RECEIVE AND PLACE ON FILE</u>

<u>Non-Consent</u>

3. **MANSI DOSHI**
   Project Manager
   WDC

RE: Requesting approval of the Professional Services Agreement for Architectural and Engineering Design Services for Design For the new construction of Fire Station #5 between the City of Waterbury and Silver Petrucelli in the amount of **<u>$579,077.</u>** **<u>Corrected amount.</u>**

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted unanimously to APPROVE New Business Item #3 with corrected amount.

Non-Consent

4. CARRIE A. SWAIN
Clerk
Waterbury Board of Education

RE: Requesting approval of a Contract with KONE Inc. (RFP 8764), for a three-year period and in the not to exceed amount of **$431,230**, for elevator service, maintenance and repairs at Department of Education Facilities.

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted unanimously to APPROVE New Business Item #4.

Non-Consent

5. PAUL K. PERNEREWSKI, JR.
Mayor
City of Waterbury

RE: Submittal of the following individual to the Fair Rent Commission:

Unrestricted Appointment

Appointee	**Term to be appointed**
Kevin Taylor	6/19/23 – 12/31/2026

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted by a 11 Yea – 1 abstention vote to NOT TO DISAPPROVE - New Business Item #5.

Yeas: Alderman Blake, Curran, Drewry, Feliciano-Roman, Hunter, McEntee, Mosley, Noujaim and Rinaldi, Sanchez and Zimmermann (11)
Abstained: Alderwoman Martinez-McCarthy (1)

Non-Consent

6. LISA LEBREIRO
Program Manager
Health Department

RE: Requesting approval of a Lead and Healthy Homes Professional Services Contract for Waterbury Lead & Healthy Homes between the City of Waterbury and Bruce McEntee of 28 Mitchell Avenue in the amount of **$92,750.00**.

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted with one abstention to APPROVE - New Business Item #6. Alderman Alderman McEntee abstained.

Non-Consent

7. THOMAS F. CROWE JR. P.E.
Civil Engineer II
Engineering Department

RE: Requesting approval of a Construction Contract for Waterville Park Tennis Court Replacements between the City of Waterbury and H.I. Stone & Son, Inc. in the amount of **$472,500.00**

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Blake, the Board of Aldermen voted unanimously to APPROVE - New Business Item #7.

8. MICHAEL LEBLANC
Director of Finance

RAMON ESPONDA
Superintendent of Water

RE: Requesting approval of 2026 - **$25,000,000** Capital Appropriation & Bond Authorization for Water Enterprise System Renewal & Replacement Capital Projects.

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Noujaim, the Board of Aldermen voted unanimously to SET A PUBLIC HEARING ON SEPTEMBER 21, 2026 AT 6:00 P.M. - New Business Item #8.

9. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of an Agreement to Convey City owned surplus properties to the Waterbury Land Bank Authority pursuit to the Memorandum of Understanding between the City and Land Bank. The properties to be conveyed are nineteen (19) vacant lots. The property listing is as follows:

- 41 William Street (MBL: 0296-0090-0050)
- 282 Grove Street (MBL: 0253-0064-0142)
- 10 Ward Street (MBL: 0237-0183-0094)
- 322 Orange Street (MBL: 0237-0181-00 46)
- 190 Walnut Street (MBL: 0276-0601-0 149)
- 264 Orange Street (MBL: 0237-0183-0097)
- 270 Orange Street (MBL: 0237-0183-0096)
- 255 Lincoln Street (MBL: 0178-0536-0045)

•1 Willow Court (MBL: 0215-0691-0I 19)
•572 Baldwin Street (MB L: 0369-029 8-0491)
•49 William Street (MBL: 0276-0090-0202)
•25 Poplar Place (MBL: 0390-0686-0009)
•115 Bishop Street (MBL: 0236-0173-0046)
•Bis hop Street, Lot 461 (MBL: 0236-0173-0461)
•Catherine Avenue, Lot 179 (MBL: 0276-0599-0179)
•38 Crown Street (MBL: 0217-0717-0124)
•36 Crown Street (MBL: 0217-0717-0123)
•Pearl Lake Road, Lot 16 (MBL: 0485-0498-0016)
•28 Bronson Street (MBL: 0236-0173- 00 40)

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Curran, the Board of Aldermen voted unanimously to TABLE UNTIL THE NEXT MEETING ON SEPTEMBER 21, 2026 P.M. - New Business Item #9.

10. LEE FARLEY
Lieutenant
Waterbury Police Department

RE: Requesting approval of the BJA FY26 Enhancing Security Measures for Houses of Worship Grant in the amount of **$149,932.96.**

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted unanimously to APPROVE - New Business Item #10.

Non-Consent

11. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a Revenue Share Agreement for Municipal Virtual Net Metering Offtake between the City and Greenskies Clean Energy LLC for a solar project in Manchester.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Curran, the Board of Aldermen voted by 8 Yea – 4 Nay non-consent roll call vote to APPROVE New Business Item #11.

Yeas: Alderman Blake, Curran, Drewry, Hunter, McEntee, Mosley, Noujaim and Rinaldi (8)
Nays: Alderman Feliciano-Roman, Martinez-McCarthy, Sanchez and Zimmermann (4)

12. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a Revenue Share Agreement for Municipal Virtual Net Metering Offtake between the City and Greenskies Clean Energy for a solar

Project in Woodbury.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Curran, the Board of Aldermen voted by 8 Yea – 4 Nay non-consent roll call vote to APPROVE New Business Item # #12.

Yeas: Alderman Blake, Curran, Drewry, Hunter, McEntee, Mosley, Noujaim and Rinaldi (8)
Nays: Alderman Feliciano-Roman, Martinez-McCarthy, Sanchez and Zimmermann (4)

13. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a Revenue Share Agreement for Municipal Virtual Net Metering Offtake between the City and Greenskies Clean Energy LLC. for a solar project in Portland.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderwoman Curran, the Board of Aldermen voted by 8 Yea – 4 Nay non-consent roll call vote to APPROVE New Business Item #13.

Yeas: Alderman Blake, Curran, Drewry, Hunter, McEntee, Mosley, Noujaim and Rinaldi (8)
Nays: Alderman Feliciano-Roman, Martinez-McCarthy, Sanchez and Zimmermann (4)

14. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Recommendation of filers (s):
The filers of this motion recommend that the proposed legislative inquiry be approved and sent to the Law Department for a written opinion/clarification on the following Ordinance:
§ 39.050 Municipal Employment of Elected Officials.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Curran, the Board of Aldermen voted unanimously to APPROVE & FORWARD TO CORPORATION COUNSEL - New Business Item #14.

15. RAFAEL FELICIANO-ROMAN
Alderman – 5th District

MICHAEL DIGIOVANCARLO
BOA President

RE: Recommendation of filers (s):
Send to the Law Department for review Official Filing: That the following Sections of the City Code of Ordinances Be amended: **§38.072 EXECUTION OF CONTRACTS.**

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Feliciano-Roman, the Board of Aldermen voted unanimously to APPROVE & FORWARD TO THE LAW DEPARTMENT - New Business Item #15.

Non-Consent

16. JOHN GOGGIN
Director of Community Development

RE: Requesting approval of an Agreement between the City of Waterbury and Ambassador Wheelchair Services, Inc., for Senior Shuttle Services

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Curran, the Board of Aldermen voted unanimously to APPROVE New Business Item #16.

Non-Consent

17. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of Second Amendment to Option Agreement for Municipal Virtual Net Metering Offtake between The City and Greenskies Clean Energy, LLC.

REFERRED TO THE INTERGOVERNMENTAL COMMITTEE

On the Motion of Alderman Hunter, Seconded by Alderman Curran, the Board voted by 8 Yea – 4 Nay non-consent roll call vote to APPROVE - New Business Item #17.

Yeas: Alderman Blake, Curran, Drewry, Hunter, McEntee, Mosley, Noujaim and Rinaldi (8)
Nays: Alderman Feliciano-Roman, Martinez-McCarthy, Sanchez and Zimmermann (4)

18. MICHAEL LEBLANC
Director of Finance

RE: Submittal of notification of a Public Hearing on Tuesday, September 8, 2026 at 6:00 P.M. to receive public comments on a proposed **$5,000,000** Appropriation and Bond Authorization for a Matching Grant to capitalize the Waterbury Land Bank Authority.
The Waterbury Land Bank submitted a presentation to provide the Board of Aldermen and the Public with additional supplemental background information on the Waterbury Land Bank Authority, the State Grant and Strategic Priorities for the Capitalization Funding.

RECEIVE AND PLACE ON FILE

Non-Consent

19. MICHAEL LEBLANC — **RE:** Requesting approval of a Contract for Energy Procurement & Contract Management Services with **NORESCO**.
Director of Finance

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted unanimously to APPROVE New Business Item #19.

STANDING COMMITTEE

CASSIE GORMAN — **RE:** Request for refunds for Tax Overpayments in the amount of **$99,063.43 & 17,669.97.**
Tax Collector

REFERRED TO THE FINANCE COMMITTEE

On the Motion of Alderman Rinaldi, Seconded by Alderman Drewry, the Board of Aldermen voted unanimously to APPROVE the aforementioned Refunds in the amount of $99,063.43 & $17,699.97.

Consent Calendar:
NEW BUSINESS ITEMS #1, #2 & #18 RECEIVED AND PLACED ON FILE
ITEM #5 NOT TO DISAPPROVE
ITEM #8, SET A PUBLIC HEARING ON OCTOBER 5, 2026
ITEM# 9 TABLED UNTIL SEPTEMBER 21ST.
ITEMS #10 APPROVED
ITEMS #14 & #15 REFERRED TO CORPORATION COUNSEL
STANDING COMMITTEE – APPROVED
On a motion of Alderman Rinaldi, duly seconded by Alderman Noujaim, the Board of Aldermen
voted unanimously to *Approve*
the Consent Calendar
MINUS ITEMS #3, #4, #5, #6, #11, #12, #13, #15, #16, #17- & #19
Unfinished Item #4 SET A PUBLIC HEARING ON OCTOBER 5, 2026

11 Vote Threshold Items #3, #4, #5, #6, #7, & #19

UNFINISHED BUSINESS:

1. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of Granting of a Purchasing and Sale Agreement to sell 36 Welton Street, a vacant .43-acre Parcel in consideration of **$25,000** and an Association Tax Assessment with Laing Capital Partners, LLC. **(Received on Monday, January 05, 2026 and referred to Finance Committee). Public Hearing set for January 20, 2026. (Tabled until 02/09/2026)**

2. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval for cultural district establishment, bond reporting, and Rolling Mill Playground plan, Including:

A. Puerto Rican Heritage Cultural District
(Received on Monday, December 15, 2025 and referred to Intergovernmental Committee postponed until Monday December 14, 2026).

3. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval for updates to City Boards and Commissions.

A. Arts, Culture and Tourism Commissions
(Received on Monday, December 15, 2025 and referred to Intergovernmental Committee) Referred to Corporation Counsel.

4 - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval for updates to City Boards and Commissions structure and transparency, including:

B. Transparency of Boards and Commissions
(Received on Monday, December 15, 2025 and referred to Corporation Counsel and postpone until March 9, 2026.) Set a Public Hearing on October 5, 2026

5 - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting to approval to establish a Gentrification Mitigation Zone Ordinance and create Youth Alderman positions, including:

A. Gentrification Mitigation Zone Ordinance
(Received on Monday, December 15, 2025. - Referred to Intergovernmental Committee. Refer to Corporation Counsel and to amend the timetable to postpone consideration until Monday, December 14, 2026.

6. - RAFAEL FELICIANO-ROMAN

RE: Requesting to approval to establish a

Alderman – 5th District

Gentrification Mitigation Zone Ordinance and create Youth Alderman positions, including:

B. Youth Alderman Positions

(Received on Monday, December 15, 2025. - Referred to Intergovernmental Committee). Referred to Corporation Counsel.

7. - RAFAEL FELICIANO-ROMAN
Alderman – 5th District

RE: Requesting a Hobart Welton Carriage Shed Historic Recognition Resolution.
(Received on January 05, 2026 and referred to Intergovernmental Committee) Referred to Corporation Counsel).

8. KENNETH J. CURRAN
Alderman, 1st District

JOHN DREWRY
Alderman, 3rd District
Co -Sponsor

RE: Submittal of a Loneliness and Social Isolation Commission Resolution.
(Received on March 9, 2026). (Referred to Intergovernmental).

9. IAN T. BLAKE
Alderman 2nd District

BELINDA WEAVER
Alderwoman 2nd District
(Co-Sponsor)

RE: Submittal of an Ordinance Proposal to include and implement an itemized distribution statement on taxpayers' bills. Taxpayers would benefit from clear, consistent, plain-language information showing how the property tax levy is allocated across major City services.
(Received on February 9, 2026 and referred to the Finance Committee).

10. MICHAEL RINALDI
Alderman, 1st District

KENNY CURRAN
Alderman, 1st District'
Lead Sponsors

MICHAEL DIGIOVANCARLO
SEAN MOSLEY
BELINDA WEAVER
IAN BLAKE
JOHN DREWRY
MICHAEL GROSSO
SANDRA MARTINEZ-MCCARTHY
KELLY ZIMMERMANN
BRYAN MCENTEE
GEORGE NOUJAIM
JEFF HUNTER
RAFAEL FELICIANO-ROMAN
ADRIAN SANCHEZ
Alderman/Alderwoman/Co-Sponsors

RE: Submittal of Codification of Fire Hydrant Rules and Regulations Resolution. **(Received On May 11, 2026 and referred to Intergovernmental Committee. Referred to Corporation Counsel).**

11. RAFAEL FELICIANO-ROMAN
SANDRA MARTINEZ-MCCARTHY
ADRIAN SANCHEZ
KELLY ZIMMERMANN

RE: Requesting a legislative inquiry concerning financial reporting and documentation for certain Capital Projects and Special Program accounts.
(Received on May 11, 2026 and referred to

The Intergovernmental Committee and tabled until October 05, 2026).

12. ANGELA R. JULIANI
Corporation Counsel

RE: Requesting approval of a Proposed Ordinance Creating a Loneliness and Social Isolation Commission. **(Received June 22, 2026, referred to the Intergovernmental Committee, PH set for August 17, 2026).**

13. MICHAEL LEBLANC
Director of Finance

RE: Requesting approval of a **$5,000,000** Appropriation and Bond Authorization for a Matching Grant to the Waterbury Land Bank Authority, Inc. **(Received on August 17, 2026, referred to the Finance Committee, PH set for September 8, 2026).**

For the Good of the Order:

Alderman Feliciano-Roman invited everyone to attend the **Greater Waterbury Puerto Rican Weekend** in celebration of Hispanic Heritage Month. She noted that the three-day event will be held September 17th, 18th, and 19th and will feature a variety of activities. Thursday's events will be held at the Mattatuck Museum, Friday will kick off the Borifest with a jazz band, and Saturday will feature the Puerto Rican Parade, with Tito Puente Jr. as the headliner.

Alderman Blake stated that on Thursday, September 10th, from 5:00 p.m. to 7:00 p.m., Trinity Health and Bridge to Success will host a Community Conversation regarding housing at the Brass Mill Mall.

Alderman Curran asked if anyone was interested in co-sponsoring the **Loneliness and Social Isolation Commission Resolution**.

Alderman Mosley announced that on Saturday, September 12th, the Waterville Reunion will host an event at the Waterville Fire House from 1:00 p.m. to 5:00 p.m.

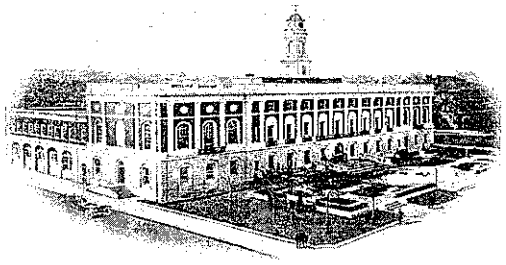
Alderman Mosley also reminded everyone to remember those who lost their lives on September 11th.

An announcement was made regarding a **pasta dinner to be held on September 23, 2026, at the Italian American Club**, in recognition of the 10th anniversary of the passing of Alderwoman Martinez-McCarthy's daughter.

ADJOURNMENT:

On the Motion of Alderman Rinaldi, Seconded by Alderman Hunter, the Board of Aldermen Voted Unanimously to ADJOURN at 9:55 P.M.

MJD:dd



The City of Waterbury

Connecticut

Department of Public Works

TO: Board of Alderman

FROM: Mark Lombardo, Deputy Director, PWD

DATE: September 15, 2026

SUBJECT: **Board of Alderman Approval Request/DPW Executive Summary**- Contract for Multi-Course Golf Management Software between the City of Waterbury and TenFore Golf, Inc, RFP 8865

The Department of Public Works respectfully requests the approval of the above-referenced contract with TenFore Golf, Inc. for the provision of Multi-Course Golf Management Software for Western Hills Golf Course and East Mountain Golf Course.

The total contract amount shall not exceed **$40,338** for the initial three-year term. The City shall have the option to extend the term for two (2) additional 1-year terms, at a cost of $13,446 per year, for a total contract cost not to exceed **$67,230**.

This contract was solicited through the Request for Proposal (RFP #8865) process. Two firms responded: **TenFore Golf, Inc.** and **Concourse Tech, Inc.** A selection committee was formed to evaluate each proposal based on experience, technical expertise, overall value, and value-added services.

Following a comprehensive evaluation, the selection committee unanimously recommended awarding the contract to **TenFore Golf, Inc.**

Under this agreement, TenFore Golf, Inc. will provide a robust, reliable, cloud-based, all-in-one golf management software platform for both municipal golf courses. The system will support the City's operational goals by providing integrated online tee-time reservations, point-of-sale transactions, comprehensive reporting, customer database management, mobile applications, and website services.

I respectfully request that this Honorable Board approve the agreement between the City of Waterbury and TenFore Golf, Inc.. TenFore Golf has an established track record of successfully serving numerous multi-course municipal and daily-fee golf facilities that require advanced software and hardware technology.

Also included for your review are the **Disclosure and Certification of Obligations Affidavit Regarding Outstanding Obligations to the City of Waterbury** submitted by TenFore Golf, Inc., along with a **Tax Clearance Certificate** issued by the Office of Tax Collections.

Attached are five (5) copies of the proposed contract for the Board's review and consideration, as well as one (1) record copy for the City Clerk's Office.

Thank you.

Attachments

cc: Attorney Kristen M. Nelson, Esq., Staff Attorney, Office of the Corporation Counsel

PROFESSIONAL SERVICES AGREEMENT
RFP No. 8865
For
Multi-Course Golf Management Software System

between
The City of Waterbury, Connecticut
and
Tenfore Golf, Inc.

THIS AGREEMENT, effective on the date signed by the Mayor ("Effective Date"), is by and between the CITY OF WATERBURY, (the "City"), located at City Hall, 235 Grand Street, Waterbury, Connecticut 06702 and Tenfore Golf, Inc. (the "Consultant"), a State of Delaware duly registered foreign corporation, with a principal place of business located at 11816 Inwood Road #70497, Dallas, TX 75244 (Jointly referred to as the "Parties" to this Agreement).

WHEREAS, the Consultant submitted a proposal to the City responding to **RFP No. 8865 for a Multi-Course Golf Management Software System**; and

WHEREAS, the City selected the Consultant to perform services regarding **RFP No. 8865**; and

WHEREAS, the City desires to obtain the Consultant's services pursuant to the terms, conditions and provisions set forth in this agreement (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Consultant shall furnish all of the labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. shall comply with any and all applicable Local, State and Federal laws, statutes, ordinances and regulations and with generally accepted professional standards. The Consultant shall make such revisions or modifications to its work, at its own cost and expense, as the City may require in order to be deemed complete. The Scope of Services is as set forth in Section C of RFP No. 8865, as clarified by Addendum #1 and the Consultant's Response. Work requested by the City beyond that Scope of Services shall be addressed by Change Order under Section 25 or by amendment under Section 21.

1.1. The Project consists of and Consultant shall provide implementation of and support for a multi-course golf management software solution for the City's Western Hills Golf Course and East Mountain Golf Course, including but not limited to online tee time reservations, integrated electronic tee sheets, customizable email confirmations of bookings and cancellations, data analytics

reports, remote access, customer relationship management system with automated email marketing tools, acceptance of City Season Pass Photo ID, integrated POS system with complete back-office accounting system compatible with the City's existing credit card processing system(s), and website services to re-design and enhance the current City golf course websites and as set forth and further detailed in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Consultant as having been received, or are otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 Addendum #1, dated July 21, 2026, consisting of 2 pages, attached hereto;
1.1.2 City of Waterbury RFP 8865, consisting of 11 pages, attached hereto;
1.1.3 Consultant's Cost Proposal, dated July 27, 2026, consisting of 7 pages, attached hereto;
1.1.4 Consultant's Response to City RFP 8865, excluding City forms, consisting of 35 pages, attached hereto;
1.1.5 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit, as provided and executed by Consultant, incorporated herein by reference;
1.1.6 Certificates of Insurance, incorporated herein by reference;
1.1.7 Licenses, incorporated herein by reference;
1.1.8 All applicable Federal, State and local statutes, regulations, charter and ordinances, incorporated herein by reference

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Consultant. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 Federal, State and local laws, regulations, charter and ordinances
1.2.2 Any amendments to this contract
1.2.3 Contract
1.2.4 Consultant's Cost Proposal, dated July 27, 2026, consisting of 7 pages
1.2.5 Addendum #1, dated July 21, 2026, consisting of 2 pages
1.2.6 City's RFP No. 8865, consisting of 11 pages
1.2.7 Consultant's Response to RFP 8865, excluding City forms, consisting of 35 pages

2. Consultant Representations Regarding Qualification and Accreditation. The Consultant represents that, to the extent required by law, its employees are licensed to perform the scope of work set forth in this Contract. The Consultant further represents that its employees

have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon these.

2.1. Representations Regarding Personnel. The Consultant represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved by the City in writing. As set forth above, all the services required hereunder shall be performed by the Consultant under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations Regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide to the City a copy of the Consultant's licenses, certifications, registrations, etc.

3. Responsibilities of the Consultant. All data, information, etc. given by the City to the Consultant and/or created by the Consultant shall be treated by the Consultant as proprietary to the City and confidential unless the City agrees in writing to the contrary and shall be used solely for the purposes of providing services under this Contract. The Consultant agrees to forever hold in confidence all files, records, documents and other information which may come into the Contractor's possession during the term of this Contract, except where a disclosure is expressly stated as a requirement of this Contract. Notwithstanding the foregoing, where a Consultant disclosure is required to comply with statute, regulation, or court order, the Consultant shall provide prior advance written notice to the City of the need for such disclosure. The Consultant agrees to properly implement the services required in the manner herein provided.

3.1. Use of City Property. To the extent the Consultant is required to be on City property to render its services hereunder, the Consultant shall have access to such areas of City property as the City and the Consultant agree are necessary for the performance of the Consultant's services under this Contract (the "Site" or the "Premises") and at such times as the City and the Consultant may mutually agree. Consultant shall perform all work in full compliance with Local, State and Federal health and safety regulations. All work hereunder shall be performed in a safe manner. Consultant shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Consultant, City may, but shall not be required to, correct same at Consultant's expense. City shall confirm in writing any oral notice given within five (5) business days thereafter.

3.2. Working Hours. To the extent the Consultant is required to be on City property to render its services hereunder, the Consultant shall coordinate its schedule so that work on the Premises is performed during those hours the City sets forth in a written notice to the Consultant, unless written permission is obtained from the City to work during other times. This condition shall not excuse Consultant from timely performance under the Contract. The work schedule must be agreed upon by the City and the Consultant.

3.3. Cleaning Up. To the extent the Consultant is required to be on City property to render its services hereunder, the Consultant shall at all times keep the Premises free from accumulation of waste materials or rubbish caused by Consultant, its employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Premises "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Consultant.

3.4. Publicity. Consultant agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity, unless the City gives prior written consent to such use of the City's name in each instance.

3.5. Standard of Performance. All workmanship, services, materials or equipment, either at the Premises or intended for it, shall conform in all respects with the requirements of all this Contract, and shall be the best obtainable from the crafts and trades. In all cases, the services, materials, equipment, reports, plans, specifications, deliverables, workmanship, etc. shall be equal to or better than the grade specified, and the best of their kind that is obtainable for the purpose for which they are intended. The standard of care and skill for all services performed by the Consultant shall be that standard of care and skill ordinarily used by other members of the Consultant's profession practicing under the same or similar conditions at the same time and in the same locality. The Consultant's services rendered hereunder shall be rendered completely and by qualified personnel in accordance with standard industry practice.

3.6. Consultant's Employees. The Consultant shall at all times enforce strict discipline and good order among its employees, and shall not employ any unfit person or anyone not skilled in the work assigned.

3.7. Due Diligence Obligation. The Consultant acknowledges its responsibilities to examine and to be thoroughly familiar with the City's proposal document, including, but not limited to the specifications, and any addenda thereto. The Consultant hereby warrants and represents that prior to the submission of its proposal during the proposal process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services or functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items facilities, services or functions are included in this Contract and thereby warrants that:

3.7.1 it conducted or had opportunity to conduct all Due Diligence prior to the submission of its proposal and, accordingly, any additional costs, services or products resulting from the failure of the Consultant to complete Due Diligence prior to submission of its proposal shall be borne by the Consultant. Furthermore the Consultant had the opportunity during the proposal process to ask questions it saw fit and to review the responses from the City;

3.7.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.7.3 it is solely responsible for resolving any issues resulting from the failure to conduct Due Diligence and shall assume any costs that may result during the implementation of the Project, including, but not limited to, adherence to specifications and pricing for the Project.

3.7.4 it was responsible for specifying any changes and disclosing any new costs prior to the submittal of its proposal. Thus, in the event any changes or costs are disclosed by the Consultant, or otherwise required, during the performance of its services, the sole responsibility for any modification, delay and cost of such changes shall reside with the Consultant.

3.7.5 has familiarized itself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, State and Local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work;

3.7.6 has given the City written notice of any conflict, error or discrepancy that the Consultant has discovered in the Proposal Documents; and

3.7.7 agrees that the Proposal Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

3.8. Reporting Requirement. The Consultant shall deliver periodic written reports to the City's Using Agency setting forth **(i)** the issue date of the report, **(ii)** the time period covered by the report, **(iii)** a brief description of the work and services completed by the Consultant and/or delivered by the Consultant during the time period covered by the report, **(iv)** expressed as a percentage of the total work and services required under this Contract, the percentage of the total work represented by the work and services described in subsection iii above, **(v)** expressed as a percentage of this Contract's Section 6 total compensation, the percentage of the total compensation represented by the work and services described in subsection iii above, **(vi)** the

Consultant's declaration as to whether the entirety of the Consultant's work and services required in this Contract will be, or will not be, completed within the Contract's Section 6 total compensation amount, and **(vii)** any and all additional useful and/or relevant information.

NOTE: the Consultant's failure to deliver any report required herein shall be deemed a material breach of this Contract, the City hereby reserving the right to exercise all available legal remedy(ies) to address said breach.

4. Responsibilities of the City. Upon the City's receipt of Consultant's written request, the City will provide the Consultant with all documents, data and other materials the City agrees are necessary and appropriate to the service to be performed by the Consultant hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Consultant for the purpose of carrying out the services under this Contract.

5. Contract Time. The initial contract term shall be for three (3) years, commencing on the date of Mayoral execution ("Initial Term").

5.1. Option Periods. The City shall have the option, in its sole discretion and upon reasonable notice to the Consultant, to extend this agreement pursuant to the same terms and conditions stated herein for two (2) additional (1) year terms.

5.2. Time is and shall be of the essence for all Project milestones, completion date for the Project. The Consultant further agrees that the Work shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Consultant and City, that the Contract Time is reasonable for the completion of the Work. Within thirty (30) days of the Effective Date the parties shall agree in writing on an implementation schedule identifying milestones, City-side dependencies including data delivery, IT coordination and staff availability for training, and the target launch date. Milestone dates shall extend day-for-day for delay caused by the City or its agents.

6. Compensation. The City shall compensate the Consultant for satisfactory provision of all of the goods and services set forth in this Contract as follows in this Section 6.

6.1 Fee Schedule. The fee payable to the Consultant shall not exceed **FORTY THOUSAND THREE HUNDRED THIRTY-EIGHT AND 00/100 DOLLARS ($40,338.00)** for the Initial Term and shall not exceed **THIRTEEN THOUSAND FOUR HUNDRED FORTY-SIX AND 00/100 DOLLARS** for any one year of the Initial Term and be in accordance with the Consultant's proposal dated July 27, 2026 and as follows:

6.1.1. Initial Term.....$40,338.00
6.1.2. Option Period 1.....$13,446.00

6.1.3. Option Period 2.....$13,446.00

6.2. Limitation of Payment. Compensation payable to the Consultant is limited to those fees set forth in Section 6.1. above. Such compensation shall be paid by the City upon review and approval of the Consultant's invoices for payment and review of the work, services, deliverables, etc. required in this Contract and review as may be further required by the Charter and Ordinances of the City. Consultant's invoices shall describe the work, services, reports, plans, specifications, deliverables, etc. rendered and the compensation sought therefore in a form and with detail and clarity acceptable to the City.

6.2.1 The Consultant and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Consultant in an amount equaling the sum or sums of money the Consultant and/or its affiliates is/are, or becomes delinquent or in arrears on, regarding the Consultant's and/or its affiliate's real and personal tax obligations to the City.

6.3. Review of Work. The Consultant shall permit the City to review, at any time, all work performed under the terms of this Contract at any stage of the work. The Consultant shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Consultant's demand for payment. The City shall not certify fees for payment to the Consultant until the City has determines that the Consultant has completed the work in accordance with the requirements of this Contract.

6.4. Proposal Costs. All costs of the Consultant in preparing its proposal for **RFP No. 8865** shall be solely borne by the Consultant and are not included in the compensation to be paid by the City to the Consultant under this Contract or any other Contract.

6.5. Payment for Services, Materials, Employees. The Consultant shall be fully and solely responsible for the suitability, and compliance with the Contract, of all labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. furnished to the City under this Contract. The Consultant shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc., going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final payment is made, the Consultant shall furnish a legal statement to the City that all payments required under this subparagraph have been made.

6.6 Liens. Neither the final payment nor any part of the retained percentage if any,

shall become due until the Consultant, if requested by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and if required, in either case, an affidavit that so far as the Consultant has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Consultant may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Consultant shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

7. Passing of Title and Risk of Loss. Title to each item of equipment, material, reports, plans, specifications, supplies, services, etc. required to be delivered to the City hereunder shall pass to City upon City payment to the Consultant for that item. Consultant and its insurer shall assume the risk of loss or damage up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's negligence.

8. Indemnification.

8.1. The Consultant shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Consultant, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Consultant duties hereunderor (iv) claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

8.2. In any and all claims against the City or any of its boards, agents, employees or officers by the Consultant or any employee of the Consultant, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 8.1, above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Consultant or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

8.3. The Consultant understands and agrees that any insurance required by this Contract, or otherwise provided by the Consultant, shall in no way limit the

responsibility to indemnify, defend, keep and hold harmless the City as provided in this Contract.

8.4. The Consultant expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Consultant, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, agents, employees or officers as provided herein.

8.5. Royalties and Patents. The Consultant shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Consultant's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Consultant shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Consultant and as to any award made thereunder.

8.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Consultant shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Consultant, or its subcontractor, omission or commission.

9. Consultant's Insurance.

9.1. The Consultant shall not commence work under this Contract until all insurance required under this Section 9 has been obtained by the Consultant and such insurance has been approved by the City. The Consultant shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers that are satisfactory to the City, authorized to do business in the State of Connecticut, that have at least an "A" Best's Rating, and are in an A.M. Best financial size category of VIII or higher. The A.M. Best classifications are based on the most current A.M. Best Company ratings or an equivalent City approved rating system.

9.2. At no additional cost to the City, the Consultant shall purchase and maintain the insurance coverages set forth below which shall protect the City from claims which may arise out of or result from the Consultant's obligation under this Contract, whether such obligations are the Consultant's or subcontractor or person or entity directly or indirectly employed by said Consultant or subcontractor, or by any person or entity for whose acts said Consultant or subcontractor may be liable.

9.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as

opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 24 months.

9.4. The following policies with stated limits shall be maintained, in full force and effect, at all times during which the services are to be performed by the Consultant:

9.4.1 General Liability Insurance:
$1,000,000.00 Each Occurrence,
$2,000,000.00 General Aggregate
$2,000,000.00 Products and Completed Operations Aggregate

9.4.2 Automobile Liability Insurance:
$1,000,000.00 Combined Single Limit Each Accident
Any Auto, All Owned and Hired Autos

9.4.3 Workers' Compensation: WC Statutory Limits
Employer Liability (EL)
$1,000,000 EL Each Accident
$1,000,000 EL Disease Each Employee
$1,000,000 EL Disease Policy Limits

9.4.4 Excess/Umbrella Liability Insurance:
$1,000,000.00 Each Occurrence
$1,000,000.00 Aggregate

9.4.5 Cyber/Privacy/Network:
$1,000,000.00 per Loss
$1,000,000.00 Aggregate

9.5. Failure to Maintain Insurance: In the event the Consultant fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Consultant's invoices for the cost of said insurance.

9.6. Cancellation: The City of Waterbury shall receive written notice of cancellation from the Consultant at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

9.7. Certificates of Insurance: The Consultant's General, Automobile and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City of Waterbury as an additional insured and provide a waiver of subrogation on all lines of coverage except Professional Liability. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Consultant's policies shall not be reduced or prorated by the

existence of any other insurance applicable to any loss the additional insured may have suffered. At the time the Consultant executes this Contract, it shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: "**The City of Waterbury is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation. All policies shall include a Waiver of Subrogation except Professional Liability.**" The City's request for proposal number must be shown on the certificate of insurance. The Consultant must supply replacement/renewal certificates at least thirty (30) calendar days prior to the expiration of the policy(ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of not less than thirty (30) calendar days has been mailed to the Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

9.8. No later than thirty (30) calendar days after Consultant receipt, the Consultant shall deliver to the City a copy of the Consultant's insurance policies, endorsements, and riders.

10. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Consultant represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Consultant of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: *EQUAL EMPLOYMENT OPPORTUNITY ACT*; *COPELAND ANTI-KICKBACK ACT,* as supplemented in the Department of Labor Regulations (29 CFR Part 3); *DAVIS-BACON ACT* as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the *HOUSING and COMMUNITY DEVELOPMENT ACT of 1974*, as amended; TITLE 31 and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference and made a part hereof.

10.1. Permits, Laws, and Regulations. Permits and licenses necessary for the delivery and completion of the Consultant's work and services shall be secured in advance and paid by the Consultant. The Consultant shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work and services as specified.

10.2. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Consultant for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Consultant

remains liable, however, for any applicable tax obligations it incurs. Moreover, the Consultant represents that the proposal and pricing contained in this Contract do not include the amount payable for said taxes.

10.3. Labor and Wages. The Consultant and its subcontractors shall conform to the labor laws of the State of Connecticut, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

10.3.1 The Consultant is aware of the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages and other payments or contributions established by the State of Connecticut Labor Commissioner for work on public facilities. The provisions of the Act are incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn .Gen. Statute 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

10.3.2 The Consultant is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

11. Discriminatory Practices. In performing this Contract, the Consultant shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as herein specified. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach

thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all Local, State and Federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

11.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

11.2. Equal Opportunity. In its execution of the performance of this Contract, the Consultant shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Consultant agrees to comply with all Local, State and Federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors.

12. This Section is intentionally left blank.

13. Termination.

13.1. Termination of Contract for Cause. If, through any cause, in part or in full, whether or not the fault of the Consultant, the Consultant shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Consultant shall violate any of the covenants, agreements, or stipulations of this Contract , the City shall thereupon have the right to terminate this Contract by giving written notice to the Consultant of such termination and specifying the effective date thereof, at least five (5) business days before the effective date of such termination.

13.1.1 In the event of such termination, all finished or unfinished documents, data, studies, reports, specifications, deliverables, etc. prepared by the Consultant under this Contract shall, at the option of the City, become the City's property, and the Consultant shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

13.1.2 Notwithstanding the above, the Consultant shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Consultant, and the City may withhold any payments to the Consultant for the purpose of setoff until such time as the exact amount of damages due the City from the Consultant is determined.

13.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Consultant. If this Contract is terminated by the City as provided herein, the

Consultant will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Consultant covered by this Contract, less payments of compensation previously made.

13.3. Termination for Non-Appropriation or Lack of Funding. The Consultant acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Consultant therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty in the event sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized or not made available pursuant to law, or such funding has been reduced pursuant to law.

13.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Consultant.

13.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Consultant for the agreed to level of the products, services and functions to be provided by the Consultant under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) calendar days written notice to the Consultant, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

13.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Consultant for any lost or expected future profits.

13.4. Rights Upon Cancellation or Termination.

13.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Consultant shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the documents, data, studies, reports, specifications, deliverables, etc. provided to, in possession of, and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. With regard to third party products, the Consultant shall transfer all licenses to the City which the Consultant is permitted to transfer in accordance with the applicable third party license. The City shall have no financial obligation to

compensate the Consultant for such terminated documents, data, studies, reports, specifications, deliverables, etc. unless payment is otherwise approved by the City prior to such termination. The Consultant shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this agreement in whole or in part.

13.4.2 Termination for Lack of Funding or Convenience. In the event of termination of this Contract by the City for lack of funding or convenience, the City shall pay the Consultant for all documents, data, studies, reports, specifications, deliverables, etc. (including any holdbacks), installed and delivered to the City as of the Termination Date and the Consultant shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said documents, data, studies, reports, specifications, deliverables, etc. in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Consultant shall be required to exercise commercially reasonable efforts to mitigate damages.

13.4.3 Termination by the Consultant. The Consultant may, by written notice to the City, terminate this Contract if the City materially breaches, provided that the Consultant shall give the City thirty (30) calendar days prior written notice and an opportunity to cure by the end of said thirty (30) day period. In the event of such termination, the Consultant will be compensated by the City for work performed prior to such termination date and the Consultant shall deliver to the City all deliverables as otherwise set forth in this Contract.

13.4.4 Assumption of Subcontracts. In the event of termination of this Contract, the City shall have the right to assume, at its option, any and all subcontracts for products, services and functions provided exclusively under this Contract, and may further pursue completion of the work under this Contract by replacement contract or otherwise as the City may in its sole judgment deem expedient.

13.4.5 Delivery of Documents. In the event of termination of this Contract, **(i)** the Consultant shall promptly deliver to the City, in a manner reasonably specified by the City, all labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Consultant for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

14. Ownership of Instruments of Professional Services. The City acknowledges the Consultant's documents, data, studies, reports, specifications, deliverables, etc. created and to be created pursuant to this Contract, including electronic files, are Instruments of Professional

Services. Nevertheless, the final Instruments of Professional Services, including, but not limited to documents, data, studies, reports, specifications, deliverables, etc. prepared for the City under this Contract shall become the property of the City upon City payment for that Instrument of Professional Services and the City reserves the right to use the Instruments of Professional Services.

14.1. Consultant's Intellectual Property. Notwithstanding Sections 7, 13.4 and 14 above and Section H.2 of RFP No. 8865, the Consultant retains all right, title and interest in and to the TenFore platform, software, mobile applications and documentation, and all pre-existing and independently developed intellectual property, including any configuration, enhancement or feature developed in the course of performing this Contract. The City is granted a non-exclusive, non-transferable license to access and use the platform throughout the Contract Time and any exercised Option Period. The City owns all City data, all City content, and the website design deliverables prepared for the City's golf course websites.

15. Force Majeure. Consultant shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

15.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies.

15.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Consultant shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

16. Subcontracting. The Consultant shall not, without the prior written approval of the City, subcontract, in whole or in part, any of the Consultant's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Consultant and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all Federal, State and Local, laws, regulations and ordinances but such requirement shall not relieve the Consultant from its requirement that all work and services provided or required hereunder shall comply with all Federal, State and Local, laws, regulations and ordinances. Standard commercial cloud service providers used by the Consultant to deliver the hosted platform, including hosting, payment gateway, and email and text message delivery providers, are approved subcontractors for purposes of this Section 16 and are not subject to the additional insured requirement, which such providers do not offer; the Consultant remains fully responsible for their performance under Section 16.1 and shall provide a list of such providers upon City request.

16.1. The Consultant shall be as fully responsible to the City for the acts and

omissions of the Consultant's subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Consultant.

17. Assignability. The Consultant shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Consultant from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City. Notwithstanding the foregoing, the Consultant may assign this Contract to an affiliate, or to a successor by merger, acquisition, or sale of substantially all of its assets, upon written notice to the City.

18. Audit. The City reserves the right to audit the Consultant's books of account in relation to this Contract any time during the period of this Contract or at any time during the twelve month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Consultant shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

19. Risk of Damage and Loss. The Consultant shall be solely responsible for causing the timely repair to and/or replacement of, City property or item(s) intended to become City property hereunder, where the need for repair or replacement was caused by the Consultant, by someone under the care and/or control of the Consultant, by any subcontractor of the Consultant, or by any shipper or delivery service. The Consultant shall be solely responsible for all costs and expenses, including but not limited to shipping, delivery, insurance, etc. associated with the foregoing repair and replacement obligation. Further, the Consultant shall be solely responsible for securing the City's written acceptance of all completed repairs and replacements required hereunder. The City hereby retains sole discretion to determine whether a repair or a replacement is the proper remedy.

20. Hardware. (a) Title to the hardware itemized in the Consultant's Cost Proposal shall pass to the City upon the City's payment of the third annual fee. (b) The Consultant's obligation with respect to such hardware is limited to administering the applicable manufacturer's warranty, and Section 19 shall not apply to loss, theft, misuse, abuse, liquid damage, electrical events, or ordinary wear and tear. Replacement of hardware outside the manufacturer's warranty shall be at the Consultant's then-current price. (c) If the City terminates this Contract under Section 13.2 or Section 13.3 during the Initial Term, the City shall pay the unrecovered portion of the hardware cost identified in the Consultant's Cost Proposal, prorated over the thirty-six (36) month Initial Term.

21. Entire Agreement. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Consultant.

22. Independent Contractor Relationship. The relationship between the City and the Consultant is that of client and independent contractor. No agent, employee, or servant of the Consultant shall be deemed to be an employee, agent or servant of the City. The Consultant shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract. It is the express intention of the parties hereto, and the Consultant hereby agrees and covenants, that it and any and all third party(ies) and subcontractor(s) retained by the Consultant hereunder is/are not and shall not be deemed an employee of the City of Waterbury, but is/are and shall remain an independent contractor relative to the City and that nothing herein shall be interpreted or construed as creating or establishing the relationship of employer-employee between the City of Waterbury and the Consultant or between the City of Waterbury and any third party(ies) or subcontractor(s). Thus, the Consultant hereby covenants that it, its subcontractor(s) and third party(ies) shall not be entitled to the usual characteristics of employment, such as income tax withholding, F.I.C.A. deductions, pension or retirement privileges, Workers Compensation coverage, health benefits, etc. and that the Consultant shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants, representatives, subcontractors and third party(ies).

23. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

24. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

25. Contract Change Orders.

25.1. At the sole discretion of the City, a Change Order may be issued solely by the City to modify an existing party obligation set forth in this Contract where the scope of the Change Order is:

25.1.1 within the scope of the original Contract OR is made pursuant to a provision in the original Contract, AND

25.1.2 the Change Order monetary cost is charged solely against those funds encumbered for and at the time the Contract was originally executed by the City, that is those funds set forth in the original Contract as a not to exceed

payment amount OR within the original Contract's contingency / allowance / reserve amount (if any is stated therein), AND

25.1.3 the Final Completion Date has not been changed.

25.2. Notwithstanding the foregoing subsection A, a Change Order shall not include:

25.2.1 an upward adjustment to a Consultant's payment claim, or

25.2.2 a payment increase under any escalation clause set forth in the original contract, or any Change Order, or any amendment.

25.3. That the work and/or services contemplated are necessary does not, in itself, permit a Change Order. Should the need for a Change Order arise, the request shall be reviewed, and if agreed to, approved by the City's Using Agency and any City designated representative(s). To be binding and enforceable, a Change Order shall thereafter be signed by both the Consultant, any City designated representative(s), and a duly authorized representative of the City's Using Agency prior to the Consultant's delivery of the services, etc. contemplated in said Change Order. All Change Orders are governed by the provisions of this Contract. Any contract change NOT fully complying with this Section 25 shall be effectuated solely by an amendment to this Contract complying with Section 38.073 of the City's "Centralized Procurement System" ordinance.

26. Conflicts or Disputes. This Contract represents the full and complete concurrence between the City and the Consultant and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents. Without regard to the order of precedence, to resolve such conflicts or disputes, the historical documents are **(i)** the City's aforementioned **RFP No. 8865** and **(ii)** the Consultant's proposal responding to the aforementioned **RFP No. 8865.**

26.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

26.2. Presumption. This Contract or any section thereof shall not be construed against any party due to the fact that the Contract or any section thereof was drafted by such party.

27. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Consultant agrees that its waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Consultant shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

28. Binding Agreement. The City and the Consultant each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

29. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

30. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

31. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City's Using Agency or the Consultant, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Consultant: Jonathan Wride
Tenfore Golf, Inc.
11816 Inwood Road #70497
Dallas, TX 75244

City: City of Waterbury
Department of Public Works
526 Huntingdon Ave
Waterbury, CT 06708

With a copy to: Office of the Corporation Counsel
City Hall Building
235 Grand Street, 3rd Floor
Waterbury, CT 06702

32. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the documents, data, studies, reports, specifications, deliverables, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc. whether or not they are expressly stated in this Contract, including but not limited to the following:

32.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a

Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

32.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

32.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Consultant or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

32.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

32.5. Upon a showing that a subcontractor made a kickback to the City, a prime Consultant or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, some value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

32.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 32.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 32.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or

other fees in accordance with their employment relationship.

32.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 32.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

32.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 32.1-32.7.

32.9. The Consultant is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

32.10. The Consultant hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances Passed 8/24/2009". For Chapter 38, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

32.11. The Consultant is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" and the State of Connecticut Legislature's Special Act No. 01-1.

32.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers

and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

32.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains shall have any personal interest, direct or indirect, in this Contract.

32.14. PROHIBITION AGAINST CONTINGENCY FEES. The Consultant hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

32.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Consultant set forth in Section 6 herein is greater than $2,500,000.00, the City is entitled to receive a copy of any and all Consultant records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

(signature page follows)

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Paul K. Pernerewski, Jr., Mayor

Date:_____

WITNESSES:

_____

_____

09/14/2026
Date:

TENFORE GOLF, INC.

By:_____

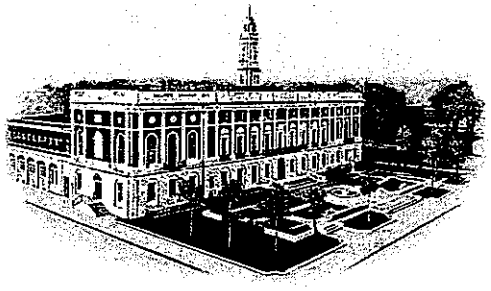
Its: CEO

09/14/2026

ATTACHMENT A

1. Addendum #1, dated July 21, 2026, consisting of 2 pages, attached hereto;
2. City of Waterbury RFP 8865, consisting of 11 pages, attached hereto;
3. Consultant's Cost Proposal, dated July 27, 2026, consisting of 7 pages, attached hereto;
4. Consultant's Response to City RFP 8865, excluding City forms, consisting of 35 pages, attached hereto;
5. Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit, as provided and executed by Consultant, incorporated herein by reference;
6. Certificates of Insurance, incorporated herein by reference;
7. Licenses, incorporated herein by reference;
8. All applicable Federal, State and local statutes, regulations, charter and ordinances, incorporated herein by reference

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #1

July 21, 2026

RFP 8865 Multi-Course Golf Management Software System

Please Be Advised:

1. All Proposers are hereby notified that this Addendum No. 1 shall be part of the Contract Documents for the above referenced **RFP #8865**.
2. This Addendum amends or supplements the RFP Documents. All provisions which are not so amended or supplemented remain in full force and effect.
3. Each Proposer shall be responsible for determining that it has received all Addenda issued and shall acknowledge receipt of all Addenda on the Addendum Acknowledgment Form (see Attachment C). Failure to do so may subject the Proposer to disqualification.

Please refer to the questions and answers below.

Question: What is the expectation with 'automated' messaging? Is this transactional messages or email marketing?
Answer: Both. Automated messages will consist of e-mail confirmation of bookings and cancellations, as well as automated e-mail marketing tools.

Question: What format does the financial exports need to be to import to Lawson Financial? Can they provide an example of the file format they need?
Answer: No import into Lawson; City employees will pull data from the POS system and make a Journal entry into our financial system.

Question: Is the expectation to integrate directly with First Data North Credit Card Processing, or will new Credit Card Processors be taken into consideration?
Answer: City uses First Data North as our Credit card Processor a gateway might be needed if vendor doesn't use First Data.

Question: Clarity on the migration of existing Season Pass Photo IDs - Is it the ID # or the actual customer photo that needs to be migrated?
Answer: Photo's as well as ID's; whole customer database needs to be migrated.

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

Question: Can the City provide the number of POS workstations, payment terminals, receipt printers, and any handheld/mobile devices currently in use or anticipated at each golf course?
Is the City interested in implementing credit card surcharging (where permitted by law and card brand rules) to recover some or all of its credit card processing costs, or does it intend to continue absorbing those fees?
Answer: Between both golf courses- 4 POS workstations, 2 payment terminals, 2 receipt printers. 4 IPADS (City-owned) .

Question: Regarding form Annual Statement of Financial Interests, II. Financial Interest Disclosure (Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City):
Could the City provide guidance on what is meant by "financial interest" for purposes of this disclosure? Specifically, is the term intended to include any ownership interest (such as publicly traded stock), or is it limited to certain roles or ownership thresholds, such as officers, directors, partners, or significant owners?
Answer: In this portion of the Statement, the Proposer should list any City public officials, employees or members of boards or commissions or a member of their immediate family who are a director, officer, owner, limited or general partner, beneficiary of a trust or holder of stock constituting 5% or more of the total outstanding stock of any class or a 5% share of the Proposer's business, OR, holding a position in the Proposer's business of officer, director, trustee, partner, employee, or any position of management.

Question: It may not be feasible for a company to confirm that no public officials, employees, or members of the City's boards or commissions have a financial interest in the company (for example, through ownership of publicly traded shares). Additionally, the form requests a description of "business interests" rather than "financial interests" and provides examples such as "owner" and "director," which appear to refer to specific business relationships rather than all possible financial interests. As such, we would be grateful for clarification on this point.
Answer: The Proposer need only identify those public officials, employees or members of City boards and commissions that have a 5% or more share of the total outstanding stock of any class or 5% or more share of the Proposer's business AND/OR those public officials, employees, or members of City boards and commissions that hold a position in the Proposer's business of officer, director, trustee, partner, employee or a position of management. The term "business interest" on the Statement can be used interchangeably with "financial interest." The financial interest stems either from the aforementioned 5% stock/share interest or alternatively, from a City public official's, employee's, or member of a board or commission's position in the Proposer's company. The Proposer should list what that financial interest is under "Nature of Business Interest".

Thank you.
Maureen McCauley
Assistant Director of Purchasing – City of Waterbury

REQUEST FOR PROPOSAL #8865
BY
THE CITY OF WATERBURY
Department of Public Works
Multi-Course Golf Management Software System

The City of Waterbury, Department of Public Works (hereinafter "City"), is seeking proposals for the implementation of a multi-course golf management software solution.

A. Background and Intent

The City of Waterbury operates two 18-hole City-owned public golf courses in Waterbury, CT: Western Hills Golf Course located at 600 Park Rd., Waterbury, CT 06708, and East Mountain Golf Course, located at 171 E Mountain Rd., Waterbury, CT 06706. The City is seeking a robust and dependable golf management software solution. By replacing the current solution, the City is looking to capitalize on the advanced features assumed available in current state of the art golf management software solutions including an integrated on-line tee time reservation solution and a networked point of sale system.

The City currently has site-to-site Virtual Private Networks over cable internet service linking the two golf courses back to our central datacenter and then to the internet. Proposed solutions should be capable of fully functioning in this environment. Proposers must recommend any needed changes to the existing network infrastructure that would be required to implement and fully operate their golf management software solution.

Solutions which are completely hosted outside the City network are preferred, but not required.

B. Qualifications

Eligible proposers will be those consultants, businesses, and institutions that have the following qualifications:

1. Experience and expertise in regard to providing golf management software solutions or similar services as those outlined in the Scope of Services in this RFP.
2. A proposer with a proven track record in providing these types of or similar services for municipal and privately owned golf courses.
3. Proposer must provide a minimum of three verifiable municipal references.
4. Ability to provide user friendly on-line tee time reservation system available 24 hours per day, 7 days per week.
5. Ability to provide hardware and software support during all normal golf course hours of operation (7 days per week, daylight hours, from March 15-December 15).
6. Ability to provide a comprehensive networked point of sale system.

C. Scope of Services

The following scope of services is provided as a general overview of minimum system requirements which may be expanded and further defined based on successful proposer's response and negotiation.

1. Implementation and support of a multi-course golf management solution that at a minimum provides the following efficient and user-friendly solutions:

a. Ability to support two municipally owned golf courses as individual locations.
b. On-line tee time reservations from golf course website or third-party affiliate site.
c. The City shall have the discretion to limit the number of available tee-times, and the time slots during which said tee-times can be scheduled.
d. Network ready software (multiple computers at facility sharing one tee sheet).
e. Integrated electronic tee sheet.
f. Automated customizable email confirmations of bookings and cancellations
g. Statistics reporting capability to allow City to generate numerous custom reports for budgeting and marketing purposes.
h. Current delay and weather conditions editor.
i. Create multiple administrators with varying access to the system.
j. Remote access to the system by management.
k. Reports to analyze all data.
l. Remote access for creating, running and analyzing reports and data.
m. Customer relationship management system with automated email marketing tools.
n. Enter, maintain and store database of golfer information including:

First and Last Name
Street Address
City, State, Zip Code
Phone Number
Email Address

o. Recognize and accept Season Pass Photo ID currently in use by the City.
p. Integrated POS (point of sale) system with a complete back-office accounting system:
    i. Ability to accept and track all transactions, including but not limited to: Online Tee Reservations, cash, credit or debit card sales, gift certificates, season passes and membership, green fee passes and discount cards or coupons.
    ii. Full sales and account ledger tracking.
    iii. Ability to interface with the City's current financial management system, (Lawson) for electronic exporting of data in a format that can be easily imported into the current financial system.
    iv. The City of Waterbury processes transactions on First Data's North network. The POS provided to the City must be compatible with the FDMS Nashville or North processing platform and it must be EMV certified OR be able to connect with a gateway.
    v. Tolerant of communication problems and must be capable of continuing to collect fees, record sales and generate receipts even if the communications links are down.
    vi.

2. Proposers will be required to:

a. Supply, install and set up all selected hardware and software to provide a fully functional system.
b. Provide on-site training at both golf locations for all golf shop personnel and off-site management.
c. Provide technical support for both hardware and software must be available during normal golf course operational hours.

3. The City may also consider proposals for Website Services. The City currently maintains web pages for each of the two golf courses through the current domain name www.golfwaterbury.com Therefore, Proposers should include details regarding the vendor's capability to provide website services.

a. Solutions available for website development and/or hosting.
b. It would be expected that the selected vendor would work with and through the City's Information Technology Department to re-design and enhance the current websites to provide at a minimum:
    i. Easy access to the on-line tee time reservation system
    ii. Links to the vendor's website
    iii. Integrated email sign up and marketing technology
    iv. Calendar of events
    v. Social media integrations

As part of the description of web services available, the vendor shall clearly identify to the City any advertisements that may appear through the website including pop-ups, sidebars or other such that may exist.

4. Considering the elements requested may be part of "packaged" programs, proposers should detail responses accordingly:

For example:

Package 1: Annual Complete golf course management system (including on-line tee reservation solution and POS)
- Software
- Hardware
- Initial & Supplemental Training
- Maintenance fees

Package 2: Annual Website services
- Software
- Training
- Maintenance fees

Proposers should include alternative pricing scenarios that may include fee credits for allocated rounds of golf, off-site hosting solutions, lease options, etc.

Proposers should also state any savings or consideration available to the City by combining or merging any or all of the above packages.

Any hardware, software or peripherals that need to be considered by the City beyond those included in the above packages must be listed separately with associated costs.

D. Agreement Period

The agreement period for any contract or purchase order resulting from this RFP is anticipated to be three years with two one-year option periods at the discretion of the City.

E. Insurance

The respondent shall provide insurance as set forth in **Attachment D** provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial category as shown in the most current A.M. Best Company ratings.

F. General Information

1. The City is an Equal Opportunity and Affirmative Action employer and does not discriminate in its hiring, employment, or business practices. The City is committed to complying with the Americans with Disabilities Act of 1990 (ADA) and does not discriminate on the basis of disability, in admission to, access to, or operation of its programs, services, or activities.

2. Proposers must complete and sign the items and any forms included in Attachment A. (Contract Compliance Packet).

3. All questions and communications about this request for Proposal and submission requirements must be directed to the City of Waterbury ProcureWare website and must be received **by 2:00 PM on July 17, 2026**. Prospective proposers must limit their contact regarding this RFP to the Purchasing Director or such other person otherwise designated by the Purchasing Director. Responses to questions submitted by the above date or identified at any Information Session to be held in regard to this RFP, **along with any changes or amendments to this RFP**, will be available via the City of Waterbury ProcureWare website **by July 22, 2026, 2:00 PM**. It shall be the responsibility of the proposer to download this information. If you have any procedural questions in this regard, please call the Purchasing Director at (203) 574-6748.

G. Management

Any contract or purchase order resulting from this RFP will be managed by Department of Public Works.

H. Conditions

All those submitting proposals must be willing to adhere to the following conditions and must positively state this in the proposal:

1. All proposals in response to this RFP are to be the sole property of the City. Proposers are encouraged **not** to include in their proposals any information which is proprietary. All materials associated with this procurement process are subject to the terms of state laws defining freedom of information and privacy and all rules, regulations and interpretations resulting from those laws.

2. Any product, whether acceptable or unacceptable, developed under a contract awarded as a result of the RFP is to be the sole property of the City.

3. The timing and sequence of events resulting from this RFP will ultimately be determined by the City.

4. The proposer agrees that the proposal will remain valid for a period of Ninety *(90)* days after the closing date for the submission and may be extended beyond that time by mutual agreement.

5. The City may amend the terms or cancel this RFP any time prior to the execution of a contract or purchase order for these services if the City deems it to be necessary, appropriate or otherwise in the best interests of the City. Failure to acknowledge receipt of amendments, in accordance with the instructions contained in the amendments, may result in a proposal not being considered. At his option, the City's Director of Purchasing may provide all proposers with a limited opportunity to remedy any technical deficiencies identified by the City in their initial review of proposals.

6. The proposer must certify that the personnel identified in its response to this RFP will be the persons actually assigned to the project. Any additions, deletions or changes in personnel from the proposal during the course of the agreement period must be approved by the City, with the exception of personnel who have terminated employment. Replacements for personnel who have terminated employment are subject to approval by the City. At its discretion, the City may require the removal and replacement of any of the proposer's personnel who do not perform adequately, regardless of whether they were previously approved by the City.

7. All subcontractors hired by the proposer awarded a contract or purchase order as a result of this RFP must have prior approval of the City prior to and during the agreement period.

8. Any costs and expenses incurred by proposers in preparing or submitting proposals are the sole responsibility of the proposer.

9. A proposer must be prepared to present evidence of experience, ability, financial standing, and any other information deemed necessary by the City to satisfactorily meet the requirements set forth or implied in the proposal.

10. No additions or changes to the original proposal will be allowed after submittal, except as may be allowed by the City, at its option, in accordance with Section H.5. of this RFP. While changes are not permitted, clarification of proposals may be required by the City at the proposer's sole cost and expense. The final price and scope of services of any contract or purchase order resulting from this RFP may be negotiated with responsible proposers.

11. The proposer may be required to give presentations to the extent necessary to satisfy the City's requirements or needs. In some cases, proposers may have to give presentations or further explanation to any RFP selection committee established by the City.

12. The proposer represents and warrants that the proposal is not made in connection with any other proposer and is in all respects fair and without collusion or fraud. The proposer further represents and warrants that it did not participate in any part of the RFP development process, had no knowledge of the specific contents of the RFP prior to its issuance, and that no agent, representative or employee of the City participated directly in the proposer's proposal preparation.

13. All responses to the RFP must conform to instruction. Failure to include any required signatures, provide the required number of copies, to meet deadlines, answer all questions, follow the requested format, or failure to comply with any other requirements of this RFP may be considered appropriate cause for rejection of the response.

14. The proposer must accept the City's standard agreement language. See Attachment B.

15. Any contract or purchase order resulting from this RFP process will represent the entire agreement between the proposer and the City and will supersede all prior negotiations, representations or agreements, alleged or made, between the parties. The City shall assume no liability for payment of services under the terms of the contract or purchase order until the successful proposer is notified that the contract or purchase order has been accepted and approved by the City. Any contract resulting from this RFP may be amended only by means of a written instrument signed by the proposer and signed by the Mayor.

I. Proposal Requirements & Required Format

One original (clearly identified as such) and Five **(5)** paper copies of the proposal, as well as a copy of the original proposal in pdf format on a CD or flash drive, must be received at the following address no later than **11:00 AM on July 30, 2026. Proposals received after that time shall not be considered.**

Mr. Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street
Room 103
Waterbury, CT 06702

Proposals submitted must be bound, paginated, indexed and numbered consecutively. Proposers shall complete **Attachment C** addressed to Mr. McCaffery, which, in part, includes a statement by the proposer accepting all terms and conditions and requirements contained in the RFP, and which shall be signed by a duly authorized official of the organization submitting the proposal. Proposers shall also, as indicated in Attachment C, identify the name of a contact person, along with their telephone number, email address, if applicable, and address, who can be contacted for the purpose of clarifying the information contained in their response to this RFP. In addition to any other information required in Attachment C, proposers shall provide their firm's authorization and a request to any persons, firm, or corporation to furnish any information requested by the City of Waterbury in verification of the recitals included in its response to this RFP.

Proposals must set forth accurate and complete information for each of the items listed below. At the City's discretion, failure to do so could result in disqualification.

1. Proposer Information: Please provide the following information:

   a. Firm Name
   b. Permanent main office address
   c. Date firm organized.
   d. Legal Form of ownership. If a corporation, indicate where incorporated.
   e. How many years have you been engaged in services you provide under your present name?
   f. Names, titles, reporting relationships, and background and experience of the principal members of your organization, including officers.

2. Experience, Expertise and Capabilities

   a. Philosophy Statement and Business Focus. A statement of the proposer's philosophy and approach in undertaking the services of the nature outlined in the RFP, as well as a description of its primary business focus.

b. Summary of Relevant Experience. A listing of all projects that the proposer has completed within the last three (3) years must be provided, as well as all projects of a similar nature to those included in the Scope of Services in this RFP. The following information shall be provided for each organization listed under this subsection:

- Organization name and the name, title, address and telephone number of a responsible contact person.
- Nature of services provided and dates services started and actually completed. Please indicate, for each assignment, if it was completed within the original contract timeframe and budget. If not, please explain.
- For each project done for a municipality or other government agency, please indicate the gross cost of the agreement.

Additionally, please list any contracts or purchase orders in the last three (3) years between the proposer and any agency of the City of Waterbury.

c. Personnel Listing. A complete listing of the staff identified in the work plan by job classification, along with their resumes. Each resume shall include the individual's qualifications and experience in the subject area.

d. Conflict of Interest. Disclose any current (within the last 3 years) business, financial, personal or other types of relationships which may pose a conflict of interest.

3. Statement of Qualifications and Work Plan

a. Qualifications. Please describe your firm's qualifications, experience and capabilities as they pertain to each of the areas of qualifications listed, as well as those of the personnel to be assigned to this project.

b. Work Plan. Please describe the approach that would be generally followed in undertaking the Scope of Services in Section C above.

c. Services Expected of the City. Identify the nature and scope of the services that would be generally required of the City in undertaking these projects.

3. Cost Schedule. Proposals shall include a single price for work to be performed in accordance with this RFP, inclusive of all personnel and non-personnel expenses, as per Attachment E. This price should encompass the entire Scope of Services in this RFP. The City reserves the right to negotiate costs, scope of services, and key personnel based on provider proposals. In order for the City to evaluate the proposed cost, proposers must include for each element in the Work Plan outlined in Section I.3.b. above, the staff, hours, hourly rates and the total cost. Include details generally associated with non-personnel costs as an additional cost section.

Since the City may desire to consider the proposer's experience, qualifications, statement of work, and other aspects of the RFP prior to the Cost Proposal, the Cost Proposal shall sealed in a separate envelope marked "Confidential: Cost Proposal".

Note: The City is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Such taxes must not be included in prices.

5. Information Regarding: Failure to Complete Work, Default and Litigation.

Please respond to the following questions:

a. Have you ever failed to complete any work awarded to you? If so, where and why?
b. Have you ever defaulted on a contract? If so, where and why?
c. Is there any pending litigation which could affect your organization's ability to perform this agreement? If so, please describe.
a. Has your firm ever had a contract terminated for cause within the past five years? If yes, provide details.
b. Has your firm been named in a lawsuit related to errors and omissions within the past five years? If yes, provide details.
c. During the past seven years, has your firm ever filed for protection under the Federal bankruptcy laws? If yes, provide details.
d. Are there any other factors or information that could affect your firm's ability to provide the services being sought about which the City should be aware?

6. Exceptions and Alternatives. Proposers wishing to take any exceptions to any requirement in the RFP shall state and explain such exceptions. The City may accept proposals which take exception to any requirements in this RFP, or which offer any alternative to a requirement herein, as well as consider such exceptions and alternatives in evaluating responses. Any exception or alternative must be clearly delineated and cannot materially affect the substance of this Request for Proposals.

7. Additional Data. Any additional information which the proposer wishes to bring to the attention of the City that is relevant to this RFP.

J. Evaluation of Proposals; Selection Process

1. Evaluation Criteria

The following criteria are expected to be among those utilized in the selection process. They are presented as a guide for the proposer in understanding the City's requirements and expectations for this project and are not necessarily all inclusive or presented in order of importance.

a. Proposed statement of work. Emphasis will be on grasp of the issues involved, soundness of approach and the quality of the overall proposal.

b. Proposed cost schedule.

c. Experience, expertise, and capabilities of the proposer. Background, qualifications, and previous experience of personnel to be assigned to the project and their demonstrated competence, experience and expertise in the type of work to be performed. The type of experience, expertise, capabilities, and qualifications desired are outlined in Section B. - Qualifications of this RFP. The City may contact one or more of the organization references listed in Section I.2.b. of this RFP as part of assessing the experience, expertise and capabilities of the proposers or those selected as the finalist(s).

d. Time, Project and Cost Schedule. Emphasis will be on the proposer's record with completing tasks and producing the necessary products within required time frames and within budget.

2. Selection Process

The City of Waterbury may elect to have the proposals evaluated by a committee as part of making a selection. If deemed necessary, the City reserves the right to arrange for interviews/oral presentations as part of the selection process, which invitations for interviews may involve a short-listing of the proposals received.

K. Rights Reserved To The City

The City reserves the right to award in part, to reject any and all proposals in whole or in part for misrepresentation or if the proposer is in default of any prior City contract, or if the proposal limits or modifies any of the terms and conditions and/or specifications of the RFP. The City also reserves the right to waive technical defects, irregularities and omissions if, in its judgment, the best interest of the City will be served.

L. Federal, State and Local Employment Requirements NOT APPLICABLE

Contractors, if applicable, shall be obligated to fully comply with the attached Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects, i.e. City of Waterbury Ordinances Chapter 34 ("Good Jobs Ordinance"), Federal Davis- Bacon Act, Federal American Recovery and Reinvestment Act of 2009, and the Housing and Urban Development Section 3 Clause, all as further specified in the attached City of Waterbury Contract form. Also attached hereto, is a full copy of the aforesaid City of Waterbury Ordinance, commonly referred to as the "Good Jobs Ordinance".

M. State Set-Aside Requirements NOT APPLICABLE

i. The contractor who is selected to perform this public works project, funded in whole or part by the State, must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by Public Act 23-204 and Public Act 25-168. An Affirmative Action Plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction.

ii. State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract be set aside for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the total state-funded value with DAS-certified Small Businesses and 6.25% of the total state-funded value with DAS-certified Minority-, Women-, and/or Disabled-owned Businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

iii. For public works contracts, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at https://portal.ct.gov/chro/contract-compliance/contract-compliance/contract-compliance-forms-and-reports

N. State DAS Requirements for Construction Projects NOT APPLICABLE

If applicable, Proposers shall submit with their Proposals their DAS Contractor Prequalification Certificate along with a current Updated Bid/Proposal Statement. In addition, any named Subcontractor whose subcontract value is equal to or greater than $500,000 shall hold a current DAS Contractor Prequalification Certificate in the closest applicable Classification of the work that the Subcontractor will complete in the contract. The proposer must submit with their proposal, all applicable Subcontractor DAS Prequalification certificates. Any Proposal submitted without a copy of the DAS Prequalification Certificate and an Updated Bid/Proposal Statement for the proposal and DAS Prequalification Certificates for Subcontractors whose subcontract value is equal to or greater than $500,000 shall be invalid.

The Successful Proposer and each of its Subcontractors having subcontracts in value equal to or greater than $500,000 shall maintain and keep current their respective DAS Contractor Prequalification Certificates at all times during the term of the Contract and any warranty period set forth in the Contract Documents.

O. Bid Bond NOT APPLICABLE

Each Proposal with a total cost greater than $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of **ten (10) percent** of the Total Proposal Price.

P. Performance/Payment Bonds

The Proposer to whom a contract is offered, must furnish to the City, if that contract has a total cost greater than $50,000.00, a 100 percent Performance Bond with a surety, and in a form, acceptable to the City. In the City's sole discretion, it may also require a 100 percent Payment Bond and/or other additional security with a surety, and in a form, acceptable to the City.

REQUEST FOR PROPOSAL
BY
THE CITY OF WATERBURY
Department of Public Works
Multi-Course Golf Management Software System
RFP 8865

ATTACHMENT E - COST PROPOSAL
(Must be submitted as part of the Proposal in a separate sealed envelope marked "Confidential: Price Proposal.")

Date: 07/27/2026

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

TenFore Golf, Inc.
(Print or Type Company/Corporate Name)

11816 Inwood Rd #70497
(Print or Type Business Address)
Dallas, TX 75244

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

[continued on following page(s)]

RFP 8865 Multi-Course Golf Management Software System Per-Year Cost Years 1 to 3 of Contract				
QTY	UNIT	DESCRIPTION	COST PER YEAR	TOTAL COST
3	Year	Annual Complete Golf Course Management System for Western Hills Golf Course & East Mountain Golf Course per year for implementation and support of multi-course golf management solution as outlined in RFP	$ 12,246	$ 36,738
3	Year	Annual Website Services for Western Hills Golf Course & East Mountain Golf Course per year for Website Services as outlined in RFP	$ 1,200	$ 3,600
			GRAND TOTAL	$ 40,338

RFP 8865 Multi-Course Golf Management Software System Option Year 1 of Contract				
QTY	UNIT	DESCRIPTION	COST PER YEAR	TOTAL COST
1	Year	Annual Complete Golf Course Management System for Western Hills Golf Course & East Mountain Golf Course per year for implementation and support of multi-course golf management solution as outlined in RFP	$ 12,246	$ 12,246
1	Year	Annual Website Services for Western Hills Golf Course & East Mountain Golf Course per year for Website Services as outlined in RFP	$ 1,200	$ 1,200
			GRAND TOTAL	$ 13,446

RFP 8865 Multi-Course Golf Management Software System Option Year 2 of Contract				
QTY	UNIT	DESCRIPTION	COST PER YEAR	TOTAL COST
1	Year	Annual Complete Golf Course Management System for Western Hills Golf Course & East Mountain Golf Course per year for implementation and support of multi-course golf management solution as outlined in RFP	$ 12,246	$ 12,246
1	Year	Annual Website Services for Western Hills Golf Course & East Mountain Golf Course per year for Website Services as outlined in RFP	$ 1,200	$ 1,200
			GRAND TOTAL	$ 13,446

Add additional response page(s) for more detailed pricing as outlined in C. Scope of Services.

39-4682267
Social Security Number
or Federal Identification Number

TenFore Golf, Inc.
Signature of Individual or
Corporate Name

TenFore Golf, Inc.
Company Name

Jonathan Wride, CEO
Corporate Officer
(if applicable)

By: CEO
(Title)
11816 Inwood Rd #70497
(Business Address)

Dallas, TX 75244
(City, State, Zip Code)

Date: 07/27/26

Email: jwride@tenfore.golf

END OF ATTACHMENT E

TenFore Golf, Inc.

Attachment E — Cost Proposal: Detailed Pricing Supplement

City of Waterbury RFP #8865 — Multi-Course Golf Management Software System
Western Hills Golf Course & East Mountain Golf Course (2 courses)
CONFIDENTIAL: PRICE PROPOSAL

1. One Flat All-Inclusive Annual Price — Turnkey, No Upfront Cost

TenFore Golf proposes a **single flat annual price of $13,446 for the complete solution across both courses, held level for all five years.** One unchanging fee covers everything: the full software municipality package (Section 2), **all POS hardware**, on-site installation and training, ongoing support, native mobile apps, **and website services** — with **no upfront or capital cost.** Prices exclude excise, transportation, and sales taxes, from which the City is exempt.

Per-Year Cost — Years 1 to 3 of Contract

Base term. Single flat all-in fee (software + hardware + on-site installation & training), held level; no upfront cost.

Description	Qty	Cost Per Year	Total Cost
Annual Complete Golf Course Management System for Western Hills GC & East Mountain GC — the entire municipality package as outlined in the RFP: software, online & in-app booking, POS, hardware, on-site installation & training, support, native mobile apps	3 Year	$12,246	$36,738
Annual Website Services for Western Hills GC & East Mountain GC — branded site for each course	3 Year	$1,200	$3,600
GRAND TOTAL			**$40,338**

Option Year 1 of Contract

Same flat annual fee as the base term.

Description	Qty	Cost Per Year	Total Cost
Annual Complete Golf Course Management System for Western Hills GC & East Mountain GC — the entire municipality package as outlined in the RFP: software, online & in-app booking, POS, hardware, on-site installation & training, support, native mobile apps	1 Year	$12,246	$12,246
Annual Website Services for Western Hills GC & East Mountain GC — branded site for each course	1 Year	$1,200	$1,200
GRAND TOTAL			**$13,446**

Option Year 2 of Contract

Same flat annual fee as the base term.

Description	Qty	Cost Per Year	Total Cost
Annual Complete Golf Course Management System for Western Hills GC & East Mountain GC — the entire municipality package as outlined in the RFP: software, online & in-app booking, POS, hardware, on-site installation & training, support, native mobile apps	1 Year	$12,246	$12,246

Description	Qty	Cost Per Year	Total Cost
Annual Website Services for Western Hills GC & East Mountain GC — branded site for each course	1 Year	$1,200	$1,200
GRAND TOTAL			**$13,446**

Total five-year value (if both option years are exercised): $67,230, with $0 due upfront — one predictable operating fee, no capital purchase.

2. Everything Is In the One Price — Municipality Package

Every capability below is delivered in the single annual fee. Because TenFore's booking and guest-engagement tools run on our **own proprietary web and mobile apps**, the City needs **no separate third-party booking-app subscription** (such as Gallus Golf) on top of the management system — one vendor, one integrated platform, one price.

Included in the single annual price — Municipality Package	What it covers
Integrated electronic tee sheet	Real-time scheduling, rate management, blocks
Online booking & e-commerce	Online tee-time booking and merchandise sales
POS — Golf + F&B	Pro shop, snack bar, restaurant, activities
Integrated payments (EMV)	Card-present & card-not-present; First Data FDMS North compatible
Inventory management	Pro-shop stock levels, reorder points, transfers
Reporting & analytics	Real-time and end-of-day reporting, exportable to Excel/CSV
Customer / employee management	Profiles, roles, permissions, CRM
Google Reserve integration	Tee times in Google Search & Maps ('Book on Google')
Tee-time confirmations (RSVP)	Automated booking & cancellation confirmations
Waitlist (NextUP)	Automated, manual, and notification with auto-booking
Custom TenFore website + hosting	Branded site for each course with online booking
Branded native mobile app	iOS + Android, each course's brand
Subscription memberships	Recurring billing for member programs
Passes, loyalty & prepaid play	Stored value, loyalty, and pass programs
Gift cards	Gift cards & certificates, in-shop and online
Email marketing	Email marketing

3. Basis of Pricing

TenFore delivers a **subscription-based software-as-a-service solution**, not a time-and-materials engagement. The price is a fixed annual subscription per the RFP rather than staff hours and hourly rates. Implementation, configuration, data migration, training, hosting, support, and maintenance are performed by TenFore's in-house team and are included at no additional labor charge; no personnel are billed hourly to the City. Per Section C and page 4 of the RFP, hardware is itemized separately with associated costs in Section 4 and is included in the fee at no upfront cost. Pricing assumes both courses under a single agreement and is held flat for all five years.

4. Component Detail (folded into the single flat price)

Software — Municipality Package (both courses)

Description		Amount
Annual Software License Fee (2 courses)		$12,960
Less: one free month annually		($1,080)
Annual Software License Fee (Years 1–5)		$11,880

Hardware — Municipality Package (both courses)

Item	Qty	Value
Pro Workstation — 22" touchscreen monitor w/ stand	4	$8,467
Mobile Tablet — 14" touchscreen, WiFi/cellular	4	$1,633
Barcode Scanner (Honeywell)	2	$150
Receipt Printer (Star)	2	$950
Credit Card Terminal (Ingenico Lane 3600)	4	$2,300
Clover Flex handheld	2	$1,298
Hardware value		**$14,798**
Less: Hardware Municipality Credit		**($8,467)**
Net hardware cost (one-time, included in the fee — no upfront)		**$6,331**

**Hardware can be packaged to meet each course's needs.*

Implementation & Support (both courses)

Item		Status
Online setup & configuration (tee sheet, rates, products, taxes)		Included
Data migration (customer, member, tee time, and product import)		Included
Staff training (live, role-based sessions)		Included
Go-live support (on-call during launch week)		Included
Phone & email support (life of agreement)		Included
On-site Installation & Training (five days on-site)		$1,500 — included

5. Value & Savings to the City

The single flat price already reflects significant TenFore concessions, delivering the latest technology while protecting the City's budget:

Included concession		Value to the City
Free software — one month every year for five years		$5,400
Hardware Municipality Credit — complimentary hardware		$8,467
More competitive credit-card processing rate (surcharging available at course request)		Documented savings
Total documented savings		**$13,867**

6. Alternate Pricing Options

1. Fee credit for allocated rounds of golf. Per the RFP's invitation on page 3, in lieu of a portion of the cash price, the course may allocate rounds of golf to TenFore Golf (e.g., one daily tee time per course for four golfers after 10:00 AM).

2. Pay hardware upfront (capital purchase). If the City prefers to purchase hardware directly, the net hardware cost of $6,331 may be paid one-time, lowering the recurring fee accordingly.

Prices exclude excise, transportation, and sales taxes, from which the City of Waterbury is exempt.

PROPOSAL FOR MULTI-COURSE GOLF MANAGEMENT SOFTWARE SYSTEM

The City of Waterbury

Request for Proposal # 8865

Presented by:

Jonathan Wride, CEO

July 30, 2026



TENFORE GOLF

TENFORE GOLF

Date: July 30, 2026

Mr. Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

RE: Proposal Submission – RFP #8865 Multi-Course Golf Management Software System

Dear Mr. McCaffery,

On behalf of TenFore Golf, I am pleased to submit our proposal to provide a modern, reliable, and fully cloud-based multi-course golf management software system for the City of Waterbury's Western Hills and East Mountain Golf Courses.

As a proprietary, cloud-based, all-in-one golf management platform, TenFore is uniquely positioned to meet and exceed the City's goals, from integrated online tee time reservations and point-of-sale transactions to full reporting, customer database management, included mobile apps, and optional web services. Our system is designed to operate efficiently across multiple municipal golf courses.

We understand your requirement for compatibility with First Data's North processing platform, and I can confirm that TenFore's EMV-certified POS system integrates directly with Fiserv and First Data Nashville/North. This eliminates the need for a gateway. Our solution supports offline mode when WiFi and power may be out, ensuring that transactions continue during internet outages, a must for continuity of operations.

By partnering with TenFore Golf, you'll receive **unlimited user licenses**, the latest hardware, which **includes four state-of-the-art touchscreen workstations and our proprietary mobile apps at no charge**, access to all software modules, ongoing software updates, 24/7/365 support with secure hosting and maintenance, and accredited QSA-verified PCI DSS-compliant credit card processing.

I invite you to see why leading municipalities — including the City of San Diego (Torrey Pines), City of Houston (Memorial Park), City of Memphis, and Montgomery County, MD — have selected TenFore Golf as their trusted technology partner.

Our single, unified platform also reduces or eliminates the need for multiple third-party vendors — waitlist technology, consumer mobile apps, websites, and custom development — and their associated costs, delivering exceptional value through one predictable investment.

By signing below, TenFore Golf, Inc. acknowledges receipt and review of all addenda issued for this solicitation through the proposal submission date.

Sincerely,

Jonathan Wride
CEO, TenFore Golf, Inc.



Jonathan Wride
CEO
214-680-3914
jwride@tenfore.golf

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1. Proposer Information

1. Proposer Information:

a. Firm Name: TenFore Golf, Inc. (d/b/a TenFore Golf)

b. Permanent main office address: 11816 Inwood Rd #70497, Dallas, TX 75244

Phone: 833-367-3968 | Web: www.tenfore.golf | Federal EIN: 39-4682267

c. Date firm organized: The business has operated under the TenFore Golf name since 2015 (originally organized as TenFore Golf, Inc. (d/b/a TenFore Golf) on March 9, 2015) and reorganized as TenFore Golf, Inc. on October 6, 2025.

d. Legal form of ownership: Corporation, incorporated in the State of Delaware.

e. Years engaged in services under the present name: Operating as TenFore Golf since 2015 (10+ years).

f. Principal members and officers of the organization (below).

1. Proposer Information

From onboarding through go-live and beyond, **our company leaders remain actively involved** to ensure your solution is delivered on time and exceeds expectations. We operate with full transparency, using shared project planning tools to keep both teams aligned and accountable every step of the way.



JONATHAN WRIDE, CEO

Role: Jonathan is dedicated to driving client success through world-class technology solutions. He leads the business and actively participates in partner relationships, ensuring seamless solution delivery and an exceptional client experience.

15+ Years Golf Industry Experience – Proven track record of leading the development of golf SaaS and consumer platforms, dedicated to empowering single and multi-course golf owners and operators. Multiple M&A transactions, including the acquisition and sale of a significant minority investment in foreUP and Club Caddie (formerly Golfler) and the acquisition of GolfBook and Golf Pipeline from CBS Interactive. Former board member of foreUP.



JARRETTE SCHULE, CTO & FOUNDER

Role: Jarrette leads the technology team and collaborates with partners to custom-develop and configure software, delivering innovative, market-leading solutions that give partners a competitive edge.

11+ Years Golf Experience – Founded TenFore Golf in 2015. Expert developer responsible for TenFore's development. Started TenFore based on owner frustrations and desire for a true all-in-one golf management software solution. 27+ years of software development experience. Full stack engineer for multiple start-ups. Created the Gravy POS. Bachelor's degree in Information Systems from the University of Texas (San Antonio). "I believe any solution can be realized through careful planning, smart execution, and diligent testing."



AUSTIN WRIDE, SENIOR VICE PRESIDENT

Role: Austin leads sales and operations, overseeing partnership implementation, customer success, and training. He is the direct contact for clients, ensuring effective account management and seamless delivery.

14+ Years Golf Industry Experience – Operation and Sales leader for TenFore Golf. Expert in multiple golf management software systems with extensive experience managing large multi-course operators, American Golf Corporation, Hampton Golf, Century Golf, and Arnold Palmer Golf, which included Los Angeles County golf courses and independent course owners. Previous experience as an assistant golf professional for Invited (ClubCorp). Bachelors in Communications and Marketing from Texas Christian University.

1. Proposer Information

Our technology team will work with you on transitioning to TenFore and future development to ensure you receive the best possible solution for your business today and tomorrow.



JARRETTE SCHULE, CTO

27+ Years Software Development Experience – Founded TenFore Golf in 2015. Expert developer responsible for TenFore's development. Started TenFore based on owner frustrations and desire for a true all-in-one golf management software solution. Twenty years of programming experience. Full stack engineer for multiple start-ups. Created the Gravy POS. Bachelor's degree in Information Systems from the University of Texas (San Antonio). "I believe any solution can be realized through careful planning, smart execution, and diligent testing."



CHRIS O'DELL, SVP - ENGINEERING

14+ Years Software Development Experience – Former CTO, Director, and Engineering team Lead with extensive development experience. Led development teams, including engineering, QA, and DevOps members. Developed and managed multiple applications of cloud infrastructure. Built and managed multiple CI/CD pipelines across several projects. Bachelors of Science in Computer Science from Washington State University.



HAMLET SUAZO, SENIOR DEVELOPER

17+ Years Software Development Experience Highly qualified IT Professional. Experienced in developing web, desktop, mobile, and real-time applications and web services. Adept at building software from the ground up, either independently or leading a team. Passionate about technology with an eye for detail. A quick and lifelong learner who strives to be ahead of the curve. Bachelors, Computer Systems Engineering from Universidad APEC.



MATT JENSEN, SVP - ENGINEERING

Created Systems Selling over $1 Billion in GMV Matt Jensen's background spans from being the founding engineer in a social media startup that hit the App Store's Top 5 to creating the novel systems and teams that powered businesses selling over $1 Billion in GMV. He's lived through the early days of waking up to spin up more servers in the moonlight and balancing those infrastructure costs with the budget of a seed phase start-up and engineered the solutions to keep it running smoothly for another million MAU.

Matt Jensen is at TenFore to bring course operators and their golfers the best software solution the industry has to offer. With his skillset in performance, security, reliability, and an eye for customer experience, we will continue our mission to offer you, your staff, and your customers a better and smoother way to run your course that you can trust.

2.a. Philosophy Statement & Business Focus

At TenFore Golf, our core philosophy centers around empowering municipal golf operations with reliable, modern, and fully integrated technology that simplifies operations, enhances the golfer experience, and increases operational efficiency.

We recognize that public golf courses are not just recreational spaces — they are vital community assets that must balance accessibility, service quality, and fiscal responsibility. Our approach is grounded in deep experience working with municipalities of all sizes, and delivering systems that are intuitive for frontline staff, transparent for administrators, and welcoming to the public.

We take a partnership-driven approach to every engagement. For the City of Waterbury, we will collaborate closely with staff to:

- Understand operational nuances at both Western Hills and East Mountain Golf Courses
- Tailor configuration and workflows to your local policies, staffing, and customer base
- Train your team thoroughly and provide responsive, ongoing support
- Future-proof your system through secure cloud hosting, remote access, and regular feature updates

Our all-in-one platform consolidates tee time reservations, POS (retail and F&B), membership tracking, reporting, kiosk options, and marketing tools, all within a single, easy-to-manage interface. This unified system reduces manual tasks, improves data visibility, and enables smarter decision-making.

Ultimately, our success is measured by your staff's confidence in the system, the satisfaction of Waterbury golfers, and the City's ability to operate efficiently and transparently. We are committed to delivering a system that the City of Waterbury can rely on, every round, every day.

2.a. Philosophy Statement & Business Focus

Company Overview.

TenFore Golf is a proprietary, all-in-one cloud-based golf management software company purpose-built for public, private, and resort golf courses, including municipal and high-volume daily fee operations.

Seamless integration between the tee sheet and point-of-sale system (all-in-one) is essential for multi-course operations. It ensures real-time data flow across all locations, allowing staff to operate efficiently and deliver a unified, high-quality experience for golfers and guests. When systems communicate effortlessly, it reduces errors, simplifies management, and enhances overall service.

Our all-in-one platform includes tee sheets, point-of-sale, online booking, golf, bay, tennis, and pickleball reservations, advanced reporting, marketing, payment processing (via Fiserv integration), self-service kiosks, and custom apps and websites.

TenFore is owned, developed, and supported entirely in-house by our U.S.-based team.

2.b. Summary of Relevant Experience

Experience. TenFore is led by a team with decades of experience in golf technology and operations. Our leadership includes former owners, executives, and technologists from foreUP, Supreme Golf, and Club Caddie. These companies have supported thousands of golf courses and facilitated hundreds of millions in transactions.

Notably, TenFore has already been selected by several flagship multi-course municipal and public daily fee facilities that demand the highest level in software and hardware technology, including:

- Montgomery County Revenue Authority (9 courses)
- City of San Diego (Torrey Pines, Balboa Park & Mission Bay)
- City of Houston (Memorial Park and Sharpstown Park)
- City of Memphis (7 courses)
- City of Cedar Rapids (3 courses)

These selections validate both the capability of our platform and our team's ability to serve public and private sector clients with complex operational needs.

Multi-Course & High-Volume Expertise. TenFore has become the choice of Multi-Course Owners, demonstrating our software's scalability and robustness. Our platform was built from the ground up with enterprise flexibility in mind, allowing it to support individual courses as well as regional and city-wide golf systems.

2.b. Summary of Relevant Experience

Key Differentiators

- **Fully cloud-based** and mobile-friendly system
- Self-service options to increase customer and staff satisfaction.
- Seamless **integration with Fiserv** for PCI-compliant and dependable payment processing. CardConnect had **zero downtime in 2024, 2025, and 2026.**
- Configurable modules for tee times, food & beverage, retail, entertainment, driving ranges, indoor and outdoor facilities, pickleball, tennis, and more
- **Proprietary waitlist technology,** online tournament booking, payment, and starting hole selection to reduce stress on golf course staff.
- Customized onboarding and training for each facility
- Ongoing support provided by a dedicated U.S.-based account team that has been called **"unprecedented"** by golf course operators.
- Proprietary development with complete control over future product direction

Conclusion. TenFore is uniquely positioned to support the City of Waterbury with an all-in-one, modern, flexible, and fully supported solution tailored to the needs of first-class municipal daily fee golf operations. We are confident that our proven track record, experienced team, and flexible technology make TenFore an ideal partner for this project.

2.b. Summary of Relevant Experience

TenFore Golf supports a growing portfolio of first-class public, private, and resort golf operations, including single- and multi-course clients. Below are selected examples of comparable projects that reflect our team's experience delivering scalable, full-service golf management software over the last three years.

1. Montgomery County Golf, MD – 9 Courses

Scope: Deployment across nine public golf courses operated by Montgomery County Golf.

Components Deployed: Tee sheet, POS, clinic and tournament management, kiosk, cross-course memberships and card on file, aggregated marketplace on app and web, automated waitlist, marketing automation. All completed on time and on budget in February 2025.

Contact Information: Ryan Denner, Revenue & IT Manager, PGA — rdenner@mcra-md.com — 301-762-9080

Project Highlights:

- Unified customer data and financial reporting across all properties
- Cross-course memberships and cards on file
- Enhanced operational efficiency for county and management staff

Previous Software Provider: Lightspeed

2.b. Summary of Relevant Experience

2. City of Memphis, TN – Seven Courses

Scope: Multi-course deployment across the city's public golf facilities.

Components Deployed: Tee sheet, POS (retail and F&B), online booking, mobile apps, self-service kiosks, and aggregated booking and reporting. Installation completed on time and on budget in May, 2025.

Contact Information: Mickey Barker — Mickey.Barker@memphistn.gov — P: (901) 636-4260

Project Highlights:

- Centralized control across multiple city-run locations
- Smooth data transition from legacy software
- Aggregated tee time marketplace apps and websites.

Previous Software Provider: foreUP Software

3. City of Houston, TX – Two Courses

Scope: Implementation will include Memorial Park (host of the PGA Tour's Houston Open) and multiple public courses citywide.

Components Deployed: Reservations, POS, reporting, walk-up waitlist, identity verification, self-service kiosks, prepaid advanced booking fees, tournament management, online bookings, call center, and Fiserv payment integration. All was completed on time and on budget in September 2025.

Contact Information: Glenn Childers - Glenn.Childers@houstontx.gov — P:(713) 530-8728

2.b. Summary of Relevant Experience

Project Highlights:

- Identity verification for residents at the point of booking to ensure price integrity and reduce stress on pro-shop staff
- Mobile walk-up waitlist to keep golfers updated online position for available tee times
- PCI-DSS compliant and reliable payment processing

Previous Software Provider: foreUP Software

Summary: These examples reflect TenFore Golf's versatility in serving public and private golf courses, management companies, and resort operators with a modern, scalable, and fully integrated all-in-one golf technology platform. Additional multi-course municipalities have been operating on TenFore's software since 2019.

There are no contracts or purchase orders between TenFore Golf, Inc. and any agency of the City of Waterbury within the last three (3) years.

2.b. Reference Contract Values

Reference / Project	Gross Contract Value (Annual)
Montgomery County Golf, MD (9 courses)	$65,000 - $70,000
City of Memphis, TN (7 courses)	$30,000 - $35,000
City of Houston, TX (2+ courses)	$40,000 - $50,000

2.c. Personnel Listing

Please see Section 1.f. above

2.d. Conflict of Interest

There is no conflict of interest.

3.a. Qualifications

1. Experience and expertise in regard to providing golf management software solutions or similar services as those outlined in the Scope of Services in this RFP.	Yes
2. A proposer with a proven track record in providing these types of or similar services for municipal and privately owned golf courses.	Yes
3. Proposer must provide a minimum of three verifiable municipal references.	Included
4. Ability to provide user-friendly on-line tee time reservation system available 24 hours per day, 7 days per week.	Yes
5. Ability to provide hardware and software support during all normal golf course hours of operation (7 days per week, daylight hours, from March 15 - December 15).	Yes
6. Ability to provide a comprehensive networked point of sale system	Yes

3.a. Qualifications - References

MONTGOMERY COUNTY GOLF

Ryan Denner, Revenue & IT Manager, PGA

E: rdenner@mcra-md.com

P: 301-762-9080

A: 13501 Penn Shop Rd, Mt Airy, MD 21771

Services: Tee sheet, golf, retail, and F&B POS, aggregated marketplace on web and app, cross-course card on file, and memberships. Custom development, waitlist/no-show software, trigger-based marketing, online clinics, and more. Self-service kiosks now live.

CITY OF MEMPHIS

Mickey Barker, City of Memphis, Administrator of Golf, PGA

E: Mickey.Barker@memphistn.gov

P: (901) 636-4260

A: 125 N Main St Memphis, TN 38103-2026

Services: Tee sheet, POS (retail & F&B), online booking, mobile app, self-service kiosks, identity verification, and aggregated reporting across the City's seven public golf courses.

CITY OF HOUSTON

Glenn Childers, City of Houston, Director of Golf, PGA

E: Glenn.Childers@houstontx.gov

P: (713) 530-8728

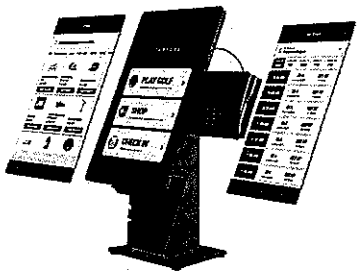
A: 1001 E. Memorial Loop Drive, Houston, TX 77007

Services: Reservations, POS, reporting, mobile walk-up waitlist, identity verification, self-service kiosks, tournament management, online bookings, and Fiserv payment integration (Memorial Park & Sharpstown Park).

3.a. Qualifications - Capabilities

TenFore Golf

TenFore Golf is a 100% proprietary, cloud-based, all-in-one digital technology platform built for golf courses, restaurants, and retail establishments. TenFore provides a full suite of Software as a Service (SaaS), integrated tee sheet and point of sale and payment processing, durable hardware, and a partner network of integrated software solutions.



TenFore's powerful, easy-to-use software includes an advanced tee sheet with integrated golf, retail, and F&B point of sale, booking, and reservations, e-commerce, memberships, integrated credit card processing through Fiserv, identity verification, automated and manual waitlist, driving range hardware integration with unattended payments capabilities through Fiserv, operations, financial reporting dashboard, marketing, loyalty, gift cards, mobile applications, hotel room integration and much more.

Our cutting-edge platform is designed to streamline operations, enhance efficiency, and elevate the overall experience for your staff and patrons. With features tailored to the specific needs of multi-course owners, municipalities, public, private, and resorts, TenFore Golf is confident that our technology will significantly contribute to the long-term success of your golf operations.

We are experts in golf technology with vast industry knowledge and experience. Our team members have previously owned and successfully sold competitor companies, integrated with all leading

3.a. Qualifications - Capabilities

software, and installed and managed software for municipalities, resorts, and leading multi-course operators Century Golf, American Golf, and Hampton Golf, which included golf facilities such as PGA West, The Citrus Club, and Walt Disney Golf.

By partnering with TenFore Golf, you'll receive unlimited user licenses, state of the art touchscreen computers at no cost, access to our software modules, the latest hardware, ongoing software updates, 24/7/365 support with secure hosting and maintenance, a dedicated support team committed to your success, and a development partner that will develop your golf management software to meet your exact needs to set you apart from others.

We are confident that our team, technology, and commitment to success will significantly contribute to the long-term success of your business.

3.a. Qualifications - Capabilities

A Golf Management System (GMS) must equip staff and customers with **the industry's best technology solutions**. TenFore offers a comprehensive **all-in-one system**, featuring an integrated tee sheet, point of sale, payment processing, cutting-edge hardware, and a partner network of integrated software solutions. With TenFore Golf, you're not just meeting today's standards, you're positioned to lead tomorrow.

ALL-IN-ONE GOLF MANAGEMENT SYSTEM

TenFore is a **100% proprietary, cloud-based, all-in-one** digital technology platform built for golf courses, restaurants, and retail establishments. TenFore provides a full suite of Software as a Service (SaaS), integrated tee sheet and point of sale, payment processing, durable hardware, and a partner network of integrated software. TenFore Golf provides a multi-product portfolio of solutions for facilities to operate their courses, tennis courts, pickleball courts, restaurants, retail shops, and more.

CREDIT CARD PROCESSING fiserv.

TenFore Golf integrates with the world's largest processing company, Fiserv, which provides **next-day payments** directly into the merchant account, automated surcharging capabilities, and the highest level of PCI Compliance. Fiserv's ownership of First Data, CardConnect, CardPointe, Clover, and Pineapple provides further connectivity into companies such as Select Pi and others to ensure a single provider across your facility. **Zero downtime in 2024.**

TEE SHEET

Reserve players, regular groups, events, and blocks with a fully integrated tee sheet and point of sale. Add tee times to your shopping cart and retail, food and beverage, gift cards, and more. **View multiple courses side by side** with scrolling capabilities to see the whole day. Manage different courses at your facility and courses at other geographical locations. Communicate with golfers via text, SMS, and email.

POINT OF SALE (POS)

Check out tee times, retail & F&B, gift cards, and tournament fees on one ticket **anywhere on the course**, complete inventory management, reporting and data insights, integrated payments, golf packaging, gift cards, promo codes, bundles, and more. Accept cash, check, gift cards, contactless credit and debit card payments, room charging, allow for customer credit and payment accounts, punch cards, subscription members, charge to member accounts, etc.

3.a. Qualifications - Capabilities

FOOD & BEVERAGE

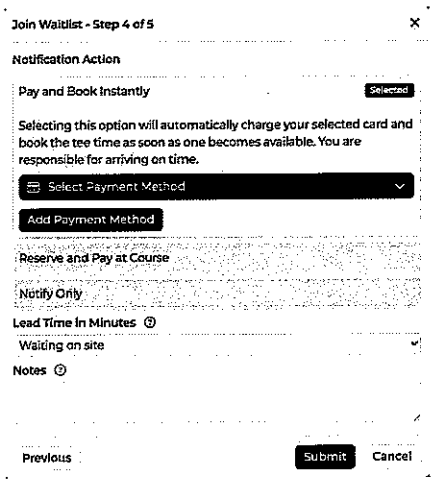
The F&B module integrates with the POS system, enabling staff to **process orders for food, drinks, and merchandise on a single tab.** This integration eliminates the need for separate systems for different departments, improving efficiency. Staff can easily update menus, prices, and specials, which will automatically reflect across all POS terminals. Enables staff to track orders (dine-in, takeout, or delivery) and route them to the correct kitchen or bar station, create table layouts, and transfer tabs property-wide.

"UNPRECEDENTED" CUSTOMER SUPPORT

TenFore Golf is committed to providing comprehensive support, which our clients have told us is "unprecedented." With customer and technical support centers in the Eastern, Central, Mountain, and Pacific Time Zones, we ensure complete and reliable coverage. Our technical and customer support staff grows dynamically as course clients increase, ensuring we always have the required staff to provide the best support in the industry.

WAITLIST TECHNOLOGY w/ AUTO-BOOKING

Unlike systems that only send alerts, **TenFore NextUP** proprietary waitlist software offers a smarter way to fill tee times. Golfers can choose auto-booking or manual booking when joining the waitlist. **Auto-booking** gives golfers top priority — if a matching tee time opens, it's booked instantly with no competition. **Manual booking** allows golfers to review and confirm after receiving a notification. Courses can require **pre- or post-payment**, and all bookings are **fully attributable**, providing transparent reporting and driving higher tee time utilization.



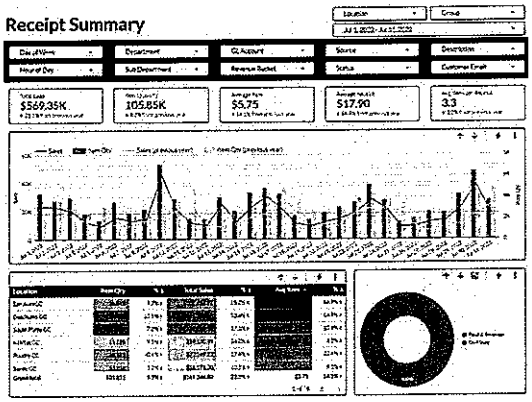
BOOKING ENGINE

An all-encompassing customer portal allows self-verification, booking and prepaying for tee times, event and tournament signup, clinic and lesson sales, restaurant reservations, hitting bays, activities, courts, and e-commerce, where retail, F&B, gift cards, and other intangibles can be purchased. Customers can view and access their online account to manage spending history, pay invoices, and manage gift cards and rain checks.

3.a. Qualifications - Capabilities

ADVANCED DASHBOARD REPORTING

TenFore offers powerful reporting to provide the "exact" information you need to see at your fingertips. **Customizable dashboards** and detailed reports are available in an easy-to-read format, allowing you to save, transfer, and download them in your preferred format. Reports can be sorted, saved, emailed, exported to Excel, or scheduled for regular delivery to any email address.



BEHAVIORAL-BASED MARKETING

Follow up with a golfer who hasn't played in 30 days, send a thank-you after specific purchases, or prompt a rebooking after a canceled round, all **automatically** and in real time. Courses can also create powerful **audience segments**, such as golfers who played in a past tournament, prefer certain tee times, buy specific products, or haven't visited recently, and target them with personalized promotions, invitations, or incentives. Integration with TenFore's tee sheet, point-of-sale, and payment platform allows precise targeting based on real golfer behavior. The result: higher retention, increased revenue, and stronger golfer relationships, with no extra lift from course staff.

PARTNER NETWORK

Our API provides clients access to specialized integrated software to meet your business needs. Clients may request integrated software solutions for marketing, revenue, room charging, tournament and inventory management, bot prevention, reporting dashboards, driving range technology, **Google** "Book Online" distribution, etc. TenFore can manage your agreements and provide a single bill for ease. Integrations reduce errors and allow account provisioning and data collection at every customer touchpoint.

Google · Opera · HotelKey · roommaster · fiserv. · cardconnect. · clover · QuickBooks · SHOGO · PRISWING · GIFTIFY · ID.me · Golf Genius · Gallus · Noteefy · SELECTpi · e-range

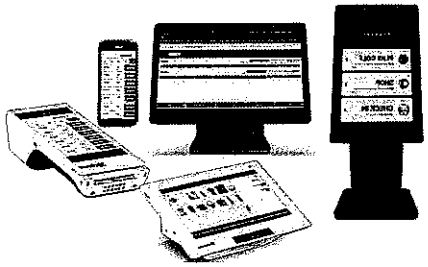
3.a. Qualifications - Capabilities

CUSTOM WEBSITE & APPS

Our custom websites, mobile websites, and apps are integrated with our golf management software and provide significant value by enhancing operations, improving the customer experience, and boosting marketing efforts. Digital platforms contribute to a golf course's success by providing a seamless user experience, improved customer engagement, increased revenue opportunities, branding, data collection and analytics, operational efficiency, and enhanced customer loyalty.

HARDWARE

Our software is developed using the latest technology, so matching the industry's best hardware makes sense to maximize performance. Touchscreen computers, kiosks, workstations, and handhelds include our complete golf management system which provides our clients with unmatched connectivity and solutions. We work together to select the best hardware for your staff and customers.



TOURNAMENT MANAGEMENT

Tournament management software designed to simplify and automate the organization, administration, and execution of golf tournaments. The software is integrated into our golf management system and provides features that cater to tournament planners, golf course staff, and participants. Tournament setup and scheduling and online registration and payment are included, along with integration into Gallus and Golf Genius for advanced capabilities.

CUSTOMER VERIFICATION

Identity verification at the point of booking ensures golfers access rates they qualify for, helping golf courses protect their pricing integrity and maximize revenue. Our robust, all-encompassing customer management capabilities are achieved through seamless integration with ID.me. Golfers self-register online while the system verifies key details such as identity, residency, customer type, and even passes through driver's license information with photo verification.

ID.me

3.a. Qualifications - Capabilities

PUBLIC SUBSCRIPTION MEMBERSHIPS

TenFore's subscription membership software for golf courses allows golf facilities to manage and offer flexible membership options, where members pay recurring fees to access courses, amenities, and services. This integrated software helps golf courses automate and streamline membership management, billing, and customer engagement, making offering subscription-based models that attract a broad range of golfers easier. Our software provides an omnichannel experience, so customer information, including membership and player types, is available across phone, mobile, and in-person.

RSVP CONFIRMATION

RSVP Confirmation reduces no-shows by automatically reaching out to golfers a configurable number of times before their tee time (for example, 48 and 24 hours prior) to confirm or cancel their booking. Confirmed tee times give staff certainty, while canceled times are released back to inventory in real time so they can be resold — protecting revenue and maximizing tee-sheet utilization. Modify is currently in development, which will allow golfers to reduce a group size (for example, drop one player from a foursome) without canceling the entire booking.

CUSTOM DEVELOPMENT

Providing **custom development sets TenFore Golf apart from competitors**. Golf course facilities have unique needs and operate under varying business models. Custom development allows TenFore Golf to deliver **tailored solutions** that maximize efficiency and cater to specific requirements. Our custom development provides greater flexibility, deeper client relationships, and greater value than providers offering generic solutions. This capability ensures that our golf management system meets the immediate needs of golf course owners and will grow and evolve alongside them, offering an edge in customer satisfaction and market differentiation.

3.a. Qualifications - Capabilities

GOOGLE RESERVE / "BOOK ON GOOGLE"

Your tee times appear directly in Google Search and Google Maps with a "Book Online" button, capturing golfers at the moment of intent and driving incremental online bookings — included at no additional cost.

PASSES, LOYALTY & PREPAID PLAY

Stored-value, loyalty, punch/green-fee passes, and prepaid-play programs, managed in the platform and redeemable both online and in the pro shop.

GIFT CARDS & RAIN CHECKS

Issue, redeem, and track gift cards and gift certificates in-shop and online, and manage rain checks with balance tracking — fully integrated with the POS and customer portal.

INVENTORY MANAGEMENT

Real-time pro-shop inventory across locations: stock levels, reorder points, transfers, purchase orders, and counts, integrated with the POS.

3.b. Work Plan — Scope of Services Compliance (RFP Section C)

Scope Requirement (RFP Section C)	TenFore Response
a. Support two municipally owned golf courses as individual locations	**Yes.**
b. Online tee time reservations from the golf course website or a third-party affiliate site	**Yes.**
c. City discretion to limit the number of available tee times and the time slots scheduled	**Yes.**
d. Network-ready software (multiple computers at a facility sharing one tee sheet)	**Yes.**
e. Integrated electronic tee sheet	**Yes.**
f. Automated, customizable email confirmations of bookings and cancellations	**Yes.**
g. Statistics reporting to generate custom reports for budgeting and marketing	**Yes. All reports export to Excel/.csv for use in other software as desired.**
h. Current delay and weather conditions editor	**Yes.**
i. Create multiple administrators with varying access to the system	**Yes.**
j. Remote access to the system by management	**Yes.**
k. Reports to analyze all data	**Yes.**
l. Remote access for creating, running, and analyzing reports and data	**Yes.**
m. CRM with automated email marketing tools	**Yes.**
n. Golfer database: name, street address, city/state/zip, phone, email	**Yes.**
o. Recognize and accept the City's Season Pass Photo ID	**Yes. This will be developed to meet the City's needs (picture and number) prior to launch.**
p. Integrated POS with a complete back-office accounting system	**Yes.**
p.i Accept/track all transactions (online reservations, cash, credit/debit, gift certificates, season passes & memberships, green-fee passes, discount cards/coupons)	**Yes.**
p.ii Full sales and account-ledger tracking	**Yes.**
p.iii Interface with the City's financial system (Lawson) via easily imported export	**Yes. Exports in .csv (preferred) or Excel for easy import into Lawson.**
p.iv Compatible with First Data North / FDMS Nashville; EMV-certified or gateway-connected	**Yes. EMV-certified POS integrated with Fiserv/First Data and the FDMS Nashville/North platform.**
p.v Tolerant of communication problems — continue collecting fees, recording sales, and generating receipts if links are down	**Yes. A key differentiator: TenFore operates during WiFi outages and power outages, syncing automatically when connectivity returns.**

3.b. Website Services & Network Environment

Network Environment & Infrastructure Recommendation

TenFore is fully cloud-hosted outside the City's network — the RFP's preferred model. It operates over the City's existing site-to-site VPN and cable internet linking Western Hills and East Mountain; no changes to the City's core network or datacenter are required. We recommend only reliable business-grade internet at each course and will confirm bandwidth and any minor firewall/allow-list settings with City IT during implementation. The platform continues operating during internet or power outages and syncs automatically when connectivity is restored.

Website Services (RFP Scope C.3)

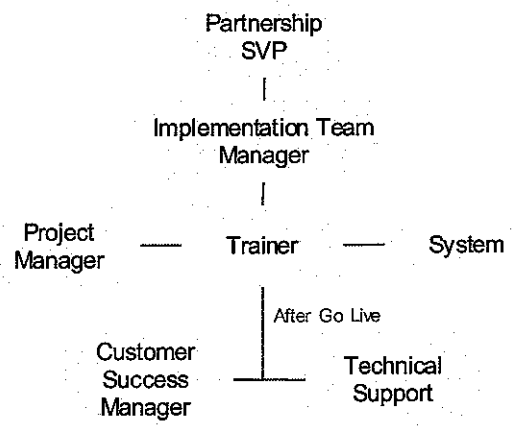
TenFore provides website design, development, and hosting for both courses, working with and through City IT to re-design and enhance the current golfwaterbury.com sites, delivering at minimum:

- Easy, prominent access to the online tee-time reservation system
- Links to the vendor's website/booking
- Integrated email sign-up and marketing technology
- Calendar of events
- Social media integrations

Advertising disclosure: TenFore does not place third-party advertisements, pop-ups, or sidebars on the City's golf websites.

3.b. Workplan – Project Team

From project management to training, consultation, and support, your project team will assist you throughout the development process to ensure your project's success and complete satisfaction. Based on our years of experience administering projects, it has become our policy to assign dedicated team members to our clients. Based on the goals of our partnership, clients will be supported by our entire leadership team. This way, we can be sure we deliver the attention and effort you need and deserve to achieve your vision of success.



IMPLEMENTATION

Partnership SVP: Austin Wride, SVP at TenFore Golf, will be your direct contact to ensure all projects are delivered on time and that our implementation, training, support, and success team meet your needs.

Implementation Team Manager – Oversees the Implementation Consultants, Project Managers, and Trainers for the Golf Management System and assigns your dedicated project team.

Project Manager – Will kick off your project by collecting deliverables, establishing a timeline, and executing all add-on tasks. They will serve as the main point of contact for most non-product specific questions. Upon completion of the training and consulting engagements, the project manager will work to closeout all administrative duties and seamlessly transition the customer to our Client Success and Technical Support Teams.

Trainer/Consultant – Will host all educational and guidance engagements throughout your project. They will serve as the main point of contact for all product specific questions. Consulting may come in the form of scheduled time or may be executed ad hoc based on the customers' needs and preferences. The Trainer/Consultant will work alongside the Project Manager to ensure a seamless transition through close-out and in some instances go-live stabilization.

POST GO LIVE

Customer Success Manager – Partners with you after closeout of implementation to provide you with further information on how to utilize your new system alongside other TenFore Golf products.

Technical Support – Answers your technical questions by phone, email, and live chat, as well via emergency services after regular hours.

Golf Management Analyst – Supports the development of your golf management software by supporting all technical aspects of your system, such as financial extracts, imports, and integrations.

3.b. Workplan – Approach

PROJECT APPROACH

During the Initiate and Analyze Phases, the golf course client and the TenFore Golf Implementation Team will work together to determine a project plan and timeline based on your goals and contracted items. This includes agreeing to a launch plan, software and hardware requirements, required integrations, configuring your accounting settings, importing GL codes and other data, setting up your payment gateway, ordering hardware, and establishing off-site and on-site training schedules.

During the Design and Configuration Phase, golf course clients will learn the ins and outs of your new Golf Management System through on-site and off-site training. Your implementation team will train your team on the system's necessities and tailor training based on your specific needs. Clients are expected to test every item in its new system for practice and quality assurance.

After training is complete, clients enter the Optimize and Launch Phases, where you will work with the TenFore Golf Implementation Team to prepare to launch to your community. Both parties will help ensure all requirements are met to make your launch successful. It will be up to the golf course to determine when to launch once all implementation tasks are complete. We will be by your side and on-site for launch day to ensure success.

TRAINING PLAN

An included Training Plan covers the foundation of the Golf Management System: Configuration, Facilities, Activities, and Daily Operations and includes four additional training sessions based on the specific needs of your operation. One of these sessions is typically reserved a few weeks after implementation is complete to answer any lingering questions or scenarios you encounter as you ramp up going live to your community.

A final review of your system will occur prior to launch, during which your team can ask any final questions before being handed off to our Technical Support Team. This will ensure you are confident moving forward with your new system and all the resources available to you when implementation is complete. We would like to be at your facility for launch day so we can answer any questions and assist with the system.

DATA IMPORTS

Implementing a new system does not mean starting entirely from scratch. Following are some examples of imports:

- Golf course settings
- GL Codes
- Membership Lists
- Customer Lists
- Products & Inventory
- Golf & Cart Fees
- Employees

INTEGRATION DEVELOPMENT

TenFore Golf has developed integrations between our Golf Management System and various third-party applications. Our clients can choose the integrations they want to manage their business.

3.b. Workplan – Implementation

Project Timeline

The following is a simplified example project plan. A typical premium implementation averages four weeks. Golf course timelines can be affected by the date of our agreement, additional training or integration needs, schedules, availability, learning pace, and a target launch date. The Project Timeline will be tailored to your needs upon award and date confirmations.

PHASE 1: INITIATE	• Project Initiation & Review • Project Timeline Review & Approval • Kickoff Deliverables • Kickoff Call • Hardware requirements & order
PHASE 2: ANALYZE	• Payment Gateway Setup • Accounting Setup • GL Code Import • Prepare Data Imports • Prepare Integrations • Prepare Public Page Design (if required) • Onsite training scheduled
PHASE 3: DESIGN & CONFIGURE	• Import Data • Online training ahead of onsite training and launch • Configuration • Facilities Training & Testing • Q&A / Elective Training & Testing • Daily Operations Training & Testing • Integrations
PHASE 4: OPTIMIZE	• Complete System Testing • Complete Integration Testing • Complete Public Page Design (if required) • Remove Test Data • Onsite training
PHASE 5: LAUNCH	• System Implementation • Enable 100% Functionality • Transition to Dedicated Customer Success Manager • Launch • Post-Hand Off / Launch Q&A / Continued training

3.b. Change Management, Training & Adoption

Training Approach

- Role-based, hands-on training for each staff group
- Simulation-based practice on the live POS before go-live
- Quick-reference guides and cheat sheets for daily operations

Stakeholder Engagement

- Golf course staff (pro shop, starters, F&B), management (Director, Operations Manager), City IT, Finance/Accounting, and golfers

Adoption / Resistance Management

- Address concerns early through dialogue
- Identify and empower change champions
- Recognize and reward early adopters
- Provide reassurance and continual feedback loops

Success Metrics

- 100% of staff trained before go-live
- 90%+ system adoption within 4 weeks
- Reduction in POS-related support tickets after 1 month
- Improved staff and customer satisfaction
- Improved reporting accuracy and transaction time

3.c. Services Expected of the City

You should consider the following roles for a successful project team. It is usual for companies to provide contacts that handle multiple roles:

Project Executive – Provides focus and guidance for the overall project. Helps to prioritize key objectives, assists with issue escalations, is a key decision-maker, and acts as project champion. Recommended attendance at all engagements.



Project Manager – Works closely with the TenFore Golf Implementation Team to facilitate the execution of project trainings, tasks, and logistics. Identifies Q&A topics or elective trainings for front-line staff, facility managers, supervisors, and/or league coordinators. Will likely be a system administrator. Recommended attendance at all engagements.

Lead Staff – Golf and facility managers who will do the bulk of configuration and setup within your new golf management software. Will likely be a system administrator. Recommended attendance at all engagements.

Frontline Staff – Acts as end users of the system and will participate in training sessions led by system administrators internally. Recommended attendance at Daily Operations training, at minimum, or at a dedicated Frontline Training (i.e. repurposed Q&A Time).

Information Technology – Coordinates with TenFore Golf on technical aspects of the system such as payment gateways, hardware, integrations, and transfer of data. Recommended attendance at Project Kick Off and Prep for Closeout Meeting at minimum.

Finance – Coordinates the payment gateway in and works with TenFore Golf to properly configure the necessary accounting setup. Recommended attendance during Configuration and Daily Operations Training at minimum.

Marketing – Identifies and communicates rollout and adoption process both internally and to the public. Recommended attendance during Configuration Training, Daily Operations Training, and Prep for Closeout Meeting at minimum.

Time Commitment - Most of a golf course's time commitment is spent training on the new system. To maximize success, we suggest online and in-person training pre- and post-launch day. The exact time recommended is two half-day training sessions followed up with additional training as needed based on position and knowledge of the system. Time will be required from administration and technical staff to provide needed data files, hardware requirements, and system configuration.

5. Information Regarding: Failure to Complete Work, Default and Litigation.

Question	Response
a. Have you ever failed to complete any work awarded to you?	**No.**
b. Have you ever defaulted on a contract?	**No.**
c. Is there any pending litigation that could affect your organization's ability to perform this agreement?	**No.**
d. Has your firm ever had a contract terminated for cause within the past five years?	**No.**
e. Has your firm been named in a lawsuit related to errors and omissions within the past five years?	**No.**
f. During the past seven years, has your firm ever filed for protection under the Federal bankruptcy laws?	**No.**
g. Are there any other factors or information that could affect your firm's ability to provide the services being sought about which the City should be aware?	**No.**

6. Exceptions and Alternatives

None. TenFore Golf, Inc. accepts the RFP as issued and the City's standard agreement language (Attachment B) without material exception.

7. Additional Data

Why TenFore Golf is the Right Partner for the City of Waterbury

TenFore Golf is more than just a software provider; we are a true technology partner dedicated to your long-term success. Our platform is designed to support complex, high-volume municipal golf operations, such as the City of Waterbury, and we tailor every implementation to meet the specific needs of your courses, staff, and customers.

Innovation drives everything. We listen to our clients and continuously improve the platform to help you maximize revenue, reduce costs, and enhance the experience for staff and golfers.

Unmatched customer support is another key differentiator. With TenFore, you're never just a support ticket in a queue. Our clients have direct access to our team, and response times are almost immediate, not days or weeks. When you need help, you get it, period.

TenFore Golf is a true one-stop provider. From tee sheets and point-of-sale to payments, marketing, and customer verification, you get a unified platform, a dedicated team, and a responsive partner who's always available when you need us. When you choose TenFore Golf, you're choosing a partner committed to delivering long-term value.

Adherence to Conditions: TenFore Golf, Inc. has read and positively affirms its willingness to adhere to all Conditions set forth in Section H (items 1–15) of RFP #8865.

Addenda: TenFore Golf, Inc. acknowledges receipt and review of all addenda issued for this solicitation through the submission date.

ATTACHMENTS

Submitted with this proposal under separate cover:

- **Attachment A** — Financial Interests, Debarment Certification & Disclosure Affidavit (notarized)
- **Attachment C** — Non-Collusion / Notice of Acceptance
- **Attachment D** — Insurance
- **Attachment E** — Cost Proposal (enclosed in a separate sealed envelope marked "Confidential: Cost Proposal")

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202 6)
Persons or Entities Conducting Business with the City

I. Outstanding Purchase Orders of Contracts with the City

A. Contracts

No Contracts with the City [XX]

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 2026)
Persons or Entities Conducting Business with the City

B. Purchase Order(s).

No Purchase Order(s) with the City [XX]

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202 6)
Persons or Entities Conducting Business with the City

II. Financial Interest Disclosure

(Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City)

No Officials, Employees or Board and Commission Members with Financial Interest [XX]

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc...)

Interest Held By:
Self [ ] Spouse [ ] Joint [ ] Child [ ]

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc...)

Interest Held By:
Self [ ] Spouse [ ] Joint [ ] Child [ ]

FILL IN AND RETURN WITH YOUR SUBMISSION

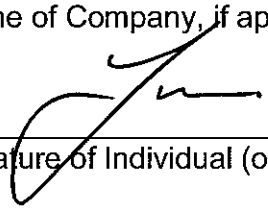
1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

2. I understand that if I fail to file an Annual Statement (or amendment thereto) or an inaccurate Statement I will be in violation with Chapter 39 of the Code of Ordinance and, thereby, subject to the remedies set forth in §§38.71 and 39.101 of said Code.

3. I understand that I must file with the City Clerk, within fifteen (15) days following any reportable occurrence, any amendments to the Annual Statement.

I have read and agree to the above certification.

TenFore Golf, Inc.
(Name of Company, if applicable)



Signature of Individual (or Authorized Signatory)

07/27/2026
Date

Jonathan Wride, CEO
Print or Type Name and Title (if applicable)

DELIVERED | By Mail [XX] Hand-Delivered [ ]

FILL IN AND RETURN WITH YOUR SUBMISSION

City of Waterbury Certification
Regarding
Debarment, Suspension, Ineligibility and Exclusion

If the transaction is Federally funded, in whole or in part (including pass through grants to state and/or municipal government), this certification is required by the regulations implementing one or more Presidential Executive Orders. If this transaction is funded by the State of Connecticut, in whole or in part, this certification is required in accordance with one or more State of Connecticut general statutes.

1. By signing and submitting the attached proposal and/or this document, the prospective lower tier participant, vendor, or contractor is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant, vendor, or contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal , State, or City government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant, vendor or contractor shall provide immediate written notice to the person to which the attached proposal and/or this document is submitted if at any time the prospective lower tier participant, vendor or contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used herein, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 and/or State of Connecticut statutes and regulations. You may contact the person to which this proposal and/or this document is submitted for assistance in obtaining a copy of the foregoing.
5. The prospective lower tier participant, vendor or contractor agrees by submitting the attached proposal and/or this document that, should the proposed covered transaction be entered into, it shall not knowingly enter into any covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant, vendor or contractor further agrees by submitting the attached proposal and/or this document that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions", without modification, in all covered transaction and in all solicitations for covered transactions.
7. A participant in a covered transaction may rely upon the certification of a prospective participant in a covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to, check the Non-procurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required herein. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 herein, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal, State or Municipal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

(1) The prospective recipient of monies hereby certifies, by submission of its attached proposal and/or by execution of this document, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, disqualified, or voluntarily excluded from bidding or participation in the proposed transaction by any Federal, State, or Municipal department or agency or by the statutes, regulations or ordinances of the foregoing departments and agencies.

(2) Where the prospective recipient of monies is unable to certify to any of the statements in this certification, such prospective participant shall attach a written explanation hereto.

Full Legal Name and address of Recipient, Vendor, or Contractor: TenFore Golf, Inc.
11816 Inwood Rd #70497
Dallas, TX 75244

Print Name and Title of Authorized Representative: Jonathan Wride, CEO

Signature of Authorized Representative:

Date: 07/27/2026

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

For the purposes of this Disclosure of Outstanding Financial Obligations, the following definitions apply:

(a) "Contract" means any Public Contract as defined below.

(b) "Person" means one (1) or more individuals, partnerships, corporations, associations, or joint ventures.

(c) "Public Contract" means any agreement or formal commitment entered into by the city to expend funds in return for work, labor, services, supplies, equipment, materials or any combination of the foregoing, or any lease, lease by way of concession, concession agreement, permit, or per agreement whereby the city leases, grants or demises property belonging to the city, or otherwise grants a right of privilege to occupy or to use said property of the city.

(d) "City" means any official agency, board, authority, department office, or other subdivision of the City of Waterbury.

State of Texas

SS.: Bridgeport, Wise, Texas

County of Wise

_____, being first duly sworn, deposes and says that:

1. I am the ***owner, partner, officer, representative, agent or*** CEO of TenFore Golf, Unc. (Contractor's Name), the Contractor that has submitted the attached agreement.

2. I am fully informed respecting the preparation and contents of the attached Agreement and of all pertinent circumstances respecting such Agreement;

3. That as a person desiring to contract with the City (check all that apply):

____ The Contractor and each owner, partner, officer, representative, agent or affiliate of the Contractor has filed a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

XX Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor are required to file a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

XX Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, owes back taxes to the City of Waterbury

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

XX Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, has any other outstanding obligations to the City of Waterbury

4. The following list is a list of the names of all persons affiliated with the business of the Contractor, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1 Jonathan Wride	CEO	NONE	Software	10/15/1969
2 Jarrette Schule	CTO	NONE	Software	08/07/1975
3				
4				

5. That as a person desiring to contract with the City:

(a) The Contractor or an owner, partner, officer, representative, agent or affiliate of the Contractor provides, or has provided, services or materials to the City within one (1) year prior to the date of this disclosure, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1 N/A				
2				
3				
4				

(b) The Contractor possesses an ownership interest in the following business organizations, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized) :

Organization Name	Address	Type of Ownership
1 N/A		
2		
3		
4		

(c) The following persons possess an ownership interest in the Contractor. If the Contractor is a corporation, list all of the officers of the corporation and the names of each stockholder whose shares exceed twenty-five

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

(25) percent of the outstanding stock, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

	Name	Title	DOB	Stock %
1	Jarrette Schule	CTO	08/07/1975	34%
2	Blueprint Equity II, LP	Investor	EIN: 88-0595399	32%
3				
4				

(d) Of the following of the affiliates, individuals or business entities identified in this affidavit, list each that owns, owned, or within one (1) year prior to the date of this disclosure has owned, taxable property situated in the City of Waterbury, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

	Name	Title	Affiliated Company (if none state NONE)	Address	DOB
1	N/A				
2					
3					
4					

(e) If the Contractor conducts business under a trade name, the following additional information is required: the place where such entity is incorporated or is registered to conduct such business; and the address of its principal place of business, if none, state none:

	TRADE NAME	PLACE OF INCORPORATION/REGISTRY	PRINCIPAL PLACE OF BUSINESS
1	TenFore Golf	C-Corporation - Delaware	Dallas, TX
2			
3			
4			

I hereby certify that the statements set forth above are true and complete, and I understand that any incorrect information or omission of information from this affidavit may result in the immediate termination of the Contractor's agreement with the City of Waterbury.

For Partnership/Sole Proprietor

In presence of:

_____ _____

Witness Name of Partnership/Business

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DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

By: _____
Name of General Partner/ Sole Proprietor

_____
Address of Business

State of _____)

) SS

County of _____)

_____ being duly sworn,

Deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202_.

_____
(Notary Public)

My Commission Expires: _____

For Corporation

Witness

TenFore Golf, Inc.
Name of Corporate Signatory

11816 Inwood Rd # 70497, Dallas, TX 75244
Address of Business

Affix Corporate Seal

By: Jonathan Wride
Name of Authorized Corporate Officer

Its: CEO
Title

FILL IN AND RETURN WITH YOUR SUBMISSION

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

State of Texas)

) SS

County of Wise)

Jonathan Wride being duly sworn,

deposes and says that he/she is CEO of TenFore Golf, Inc. and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this 28 day of July 2026.

Patricia Arce
(Notary Public)

My Commission Expires: 02-25-29

PATRICIA ARCE
Notary Public, State of Texas
Comm. Expires 02-25-2029
Notary ID 135502834

CORPORATE RESOLUTION

I, **Jarrette Schule**, hereby certify that I am the duly elected and acting Secretary of TenFore Golf, Inc., a corporation organized and existing under the laws of the State of Delaware, do hereby certify that the following facts are true and were taken from the records of said corporation.

The following resolution was adopted at a meeting of the corporation duly held on the **9th** day of **September**, **2026**.

"It is hereby resolved that Jonathan Wride, CEO is authorized to make, execute and approve, on behalf of this corporation, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the corporate seal of said TenFore Golf, Inc, corporation this **9th** day of **September**, 2026.

Jarrette Schule

Secretary

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

FILL IN AND RETURN WITH YOUR SUBMISSION

ATTACHMENT C

KEVIN MC CAFFERY
DIRECTOR OF PURCHASING
235 GRAND STREET, ROOM 103
WATERBURY, CT 06702

The undersigned declares that the only persons or parties interested in this Proposal as principals are as stated; that the Proposal is made without any collusion with other persons, firms, or corporations; that Proposer has carefully examined the entire Request for Proposal; that Proposer has informed itself fully in regard to all conditions pertaining to the Work and the place where it is to be performed; and that with this representation, the undersigned makes this Proposal. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Proposal and Form are a part.

The undersigned agrees and covenants that the Contract Time shall commence on delivery of the City of Waterbury's written notice to proceed, which shall occur after contract execution by both parties.

The undersigned acknowledges receipt of addenda numbered: (insert date)

1 RFP 8865 Addendum 1.pdf 4 _____

2 _____ 5 _____

3 _____ 6 _____

All Work for this Project shall be performed at the Proposal Prices as described in the Proposal Documents.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

39-4682267
Social Security Number
or Federal Identification Number

TenFore Golf, Inc
Signature of Individual or Corporate Name

Jonathan Wride, CEO (Incorporated in Delaware)
Corporate Officer
(if applicable)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name Jonathan Wride
By: CEO
(Title)
Business Address: 11816 Inwood Rd, #70497 Dallas, TX 75244
(City, State, Zip Code)

Phone: 214-680-3914
Email: jwride@tenfore.golf
Date: 07/27/2026

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

RFP #8865

Attachment D

Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name the City of Waterbury and the Waterbury Board of Education as Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of "A"VIII.

If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

Original, completed Certificates of Insurance must be presented to the City of Waterbury and the Waterbury Board of Education prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above-described policies be cancelled, limits reduced or coverage altered, 30 days written notice must be given to the City of Waterbury and the Waterbury Board of Education.

General Liability:	$1,000,000 each Occurrence $2,000,000 General Aggregate $2,000,000 Products/ Completed Operations Aggregate
Auto Liability:	$1,000,000 Combined Single Limit each Accident Any Auto, All Owned and Hired Autos
Workers Compensation:	WC Statutory Limits Employer Liability (EL) $1,000,000 EL each Accident $1,000,000 EL Disease each Employee $1,000,000 EL Disease Policy Limits
Excess/Umbrella Liability:	$1,000,000 each Occurrence $1,000,000 Aggregate
Cyber/Privacy/Network:	$1,000,000 per Loss $1,000,000 Aggregate

Wording for Additional Insured Endorsement and Waiver of Subrogation:

The City Waterbury and its Board of Education is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation. All policies shall include a Waiver of Subrogation..

REQUEST FOR PROPOSAL
BY
THE CITY OF WATERBURY
Department of Public Works
Multi-Course Golf Management Software System
RFP 8865

ATTACHMENT E - COST PROPOSAL
(Must be submitted as part of the Proposal in a separate sealed envelope marked "Confidential: Price Proposal.")

Date: 07/27/2026

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

TenFore Golf, Inc.
(Print or Type Company/Corporate Name)

11816 Inwood Rd, #70497, Dallas, TX 75244
(Print or Type Business Address)

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

[continued on following page(s)]

RFP 8865 Multi-Course Golf Management Software System Per-Year Cost Years 1 to 3 of Contract				
QTY	UNIT	DESCRIPTION	COST PER YEAR	TOTAL COST
3	Year	Annual Complete Golf Course Management System for Western Hills Golf Course & East Mountain Golf Course per year for implementation and support of multi-course golf management solution as outlined in RFP	$	$
3	Year	Annual Website Services for Western Hills Golf Course & East Mountain Golf Course per year for Website Services as outlined in RFP	$	$
***Includes four (4) touchscreen computers and keyboards valued at $_____ at no-cost and three months software free.**			**GRAND TOTAL**	$

RFP 8865 Multi-Course Golf Management Software System Option Year 1 of Contract				
QTY	UNIT	DESCRIPTION	COST PER YEAR	TOTAL COST
1	Year	Annual Complete Golf Course Management System for Western Hills Golf Course & East Mountain Golf Course per year for implementation and support of multi-course golf management solution as outlined in RFP	$	$
1	Year	Annual Website Services for Western Hills Golf Course & East Mountain Golf Course per year for Website Services as outlined in RFP	$	$
			GRAND TOTAL	$

RFP 8865 Multi-Course Golf Management Software System Option Year 2 of Contract				
QTY	UNIT	DESCRIPTION	COST PER YEAR	TOTAL COST
1	Year	Annual Complete Golf Course Management System for Western Hills Golf Course & East Mountain Golf Course per year for implementation and support of multi-course golf management solution as outlined in RFP	$	$
1	Year	Annual Website Services for Western Hills Golf Course & East Mountain Golf Course per year for Website Services as outlined in RFP	$	$
			GRAND TOTAL	$

Add additional response page(s) for more detailed pricing as outlined in C. Scope of Services.

Social Security Number
or Federal Identification Number

Signature of Individual or
Corporate Name

Company Name

Corporate Officer
(if applicable)

By:_____
(Title)

(Business Address)

(City, State, Zip Code)

Date: _____ Email:_____

END OF ATTACHMENT E

CITY OF WATERBURY FIRE DEPARTMENT

Bureau of Administrative Services

September 22, 2026

Board of Aldermen
235 Grand Street
Waterbury, CT 06702

RE: Request for Approval to Accept an Assistance to Firefighters Grant for Fire Officer Training

Dear Honorable Members of the Board of Aldermen:

Approval is sought to accept the award of an Assistance to Firefighters Grant (EMW-2025-FG-01730) which provides funding for fire officer certification training for the Waterbury Fire Department.

This grant project will provide 24 fire officers with training to the Fire Officer 1 level of the National Fire Protection Association - *Standard for Fire Officer Professional Qualifications*. Classroom instruction will be supplemented by online learning and projects. This training will develop officers' skills in effectively managing emergency operations, supervising personnel, and communicating with the public. They will also learn about safety, fire inspections and investigations, and service delivery. This will be a common foundation that future officer development will build on. In addition to the instructional fees, the grant funds backfill so that personnel attending the classes will be off-duty and focused on learning.

The total program cost is $222,450. The federal share is $202,227. Waterbury will contribute $20,223 as their required matching funds, which is 9.1% of the total funds.

LOCAL SHARE	Instruction	Backfill	Total
Waterbury Fire Department	$1,915	$19,145	**$20,223**

The Fire Department respectfully requests that you place this item on the agenda for your consideration and approval.

Respectfully Submitted,

Javier Lopez
Fire Chief

236 GRAND STREET, WATERBURY, CT 06702
OFFICE: (203) 597-3450

Award Letter

U.S. Department of Homeland Security
Washington, D.C. 20472

Effective date: 09/21/2026

James Burns
CITY OF WATERBURY
235 GRAND STREET
WATERBURY, CT 06702

EMW-2025-FG-01730

Dear James Burns,

Congratulations on behalf of the Department of Homeland Security. Your application submitted for the Fiscal Year (FY) 2025 Assistance to Firefighters Grant (FG) Grant funding opportunity has been approved in the amount of $202,227.27 in Federal funding. As a condition of this award, you are required to contribute non-Federal funds equal to or greater than $20,222.73 for a total approved budget of $222,450.00. Please see the FY 2025 FG Notice of Funding Opportunity for information on how to meet this cost share requirement.

Before you request and receive any of the Federal funds awarded to you, you must establish acceptance of the award through the FEMA Grants Outcomes (FEMA GO) system. By accepting this award, you acknowledge that the terms of the following documents are incorporated into the terms of your award:

- Summary Award Memo - included in this document
- Agreement Articles - included in this document
- Obligating Document - included in this document
- 2025 FG Notice of Funding Opportunity (NOFO) - incorporated by reference

Please make sure you read, understand, and maintain a copy of these documents in your official file for this award.

Sincerely,

Associate Administrator (A)
FEMA Resilience

Cynthia Spishak

Acting Associate Administrator
Resilience

Summary Award Memo

Program: Fiscal Year 2025 Assistance to Firefighters Grant
Recipient: CITY OF WATERBURY
UEI-EFT: VF8HWQF5HSN3
Award number: EMW-2025-FG-01730

Summary description of award

The purpose of the Assistance to Firefighters Grant program is to protect the health and safety of the public and firefighting personnel against fire and fire-related hazards. After careful consideration, FEMA has determined that the recipient's project or projects submitted as part of the recipient's application and detailed in the project narrative as well as the request details section of the application - including budget information - was consistent with the Assistance to Firefighters Grant Program's purpose and was worthy of award.

Except as otherwise approved as noted in this award, the information you provided in your application for Fiscal Year (FY) 2025 Assistance to Firefighters Grant funding is incorporated into the terms and conditions of this award. This includes any documents submitted as part of the application.

Amount awarded table

The amount of the award is detailed in the attached Obligating Document for Award.

The following are the budgeted estimates for object classes for this award (including Federal share plus your cost share, if applicable):

Object Class	Total
Personnel	$201,390.00
Fringe benefits	$0.00
Travel	$0.00
Equipment	$0.00
Supplies	$4,560.00
Contractual	$16,500.00
Construction	$0.00
Other	$0.00
Indirect charges	$0.00
Federal	$202,227.27
Non-federal	$20,222.73
Total	$222,450.00

Approved scope of work

After review of your application, FEMA has approved the below scope of work. Justifications are provided for any differences between the scope of work in the original application and the approved scope of work under this award. You must submit scope or budget revision requests for FEMA's prior approval, via an amendment request, as appropriate per 2 C.F.R. § 200.308 and the FY2025 FG NOFO.

Approved request details:

WATERBURY
DEVELOPMENT CORPORATION

Date: September 21, 2026

To: Michael Digiovancarlo
President, Board of Aldermen

Members, Board of Aldermen

Mayor Paul K. Pernerewski, Jr.

From: Robert Dowd RJD
Project Manager

Subject: Project Authorization Letter for the Waterbury Community Health Resource Center

Dear Honorable Members of the Board of Aldermen,

Kindly give favorable consideration by approving the attached Project Authorization Letter to allow WDC to manage and administer the Waterbury Community Health Resource Center Project pursuant to Master Municipal Agreement between Waterbury Development Corporation and the City of Waterbury Dated February 12, 2014.

This Project consists of the management and administration of the development of a Waterbury Community Health Resource Center located at 24 Branch Street. WDC shall be responsible for the overall management, and administration of all Phases related to this Project. In working collaboratively with the City, WDC shall provide all related services to this Project including, but not limited to, general administration, professional and technical services, contract management, funding oversight and coordination, scheduling, assisting with the City's contracting with all necessary consultants and contractors to perform the services herein. The contract was awarded to J.A. Rosa Construction, LLC on August 28, 2026. The Contract was submitted to be added to the BOA meeting agenda for approval on October 05, 2026 meeting.

The Cost will be $6,764,675 plus an $85,325 OCC for a total contract amount of $6,850,000. $5 million of the contract for eligible construction costs will be funded from a Health Resources and Services Administration (HRSA) grant. The $1,850,000 balance of the contract would be funded by Local City Funds subject to approval of a requested transfer from the City's Unallocated Capital Funds. All Documents and grant agreements related to funding sources are herein incorporated by reference and made a part of this PAL

Attached please find the Project Authorization Letter.

Lastly, please be advised that WDC will have a representative present at your upcoming meeting to answer any questions you may have regarding this matter.
Thank you.

Tel: (203) 346-2607 • Fax: (203) 346-3910 • 83 Bank Street, 3rd Floor • Waterbury, CT 06702
www.wdconline.org

PAUL K. PERNEREWSKI JR.
MAYOR

OFFICE OF THE MAYOR
THE CITY OF WATERBURY
CONNECTICUT

September 23, 2026

The Waterbury Development Corporation
Attn: James Nardozzi, Executive Director
83 Bank Street, 3rd Floor
Waterbury, CT 06702

RE: Project Authorization Letter, Abatement, Demolition and Renovations to the Waterbury Community Health Resource Center pursuant to Master Municipal Agreement between Waterbury Development Corporation and the City of Waterbury Dated February 12, 2014

Dear Mr. Nardozzi:

On February 12, 2014, the City of Waterbury (City) and the Waterbury Development Corporation (WDC) entered into a Master Municipal Agreement for the Management of Projects. This Project Authorization Letter (PAL) is hereby issued pursuant to the Master Municipal Agreement.

The Waterbury Development Corporation shall be responsible for the project management services for the Abatement, Demolition and Renovations to the Waterbury Community Health Resource Center at 24 Branch Street, Waterbury, CT (hereinafter "Project"), as more specifically set forth in Exhibit A, attached hereto and made a part of this PAL. WDC shall commence work on this Project upon the receipt by the City of this PAL signed by WDC along with all necessary documents and insurance coverage as required by the Master Municipal Agreement. WDC shall perform all services set forth herein and as set forth in the Master Municipal Agreement pursuant to Exhibit A.

At this time, the estimated cost for this Project is as follows: $6,764,675 plus an $85,325 OCC for a total construction contract amount of $6,850,000. $5 million of the contract for eligible construction costs will be funded from a Health Resources and Services Administration (HRSA) grant. The $1,850,000 balance of the contract would be funded by Local City Funds subject to approval of a requested transfer from the City's Unallocated Capital Funds All documents and grant agreements related to funding sources are herein incorporated by reference and made a part of this PAL.

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • (203) 574-6712

WDC shall be compensated through the City's annual contribution to WDC for services herein provided and otherwise in an amount not to exceed that amount allowed by said Federal and/or State and/or other funding sources for services herein provided. If additional funds are secured by WDC and/or City for this completion of this Project, WDC shall be compensated in such additional amount not to exceed that amount allowed by said additional funding sources. The City and WDC agree that this PAL may be revised in accordance with the Master Municipal Agreement.

Payment to WDC shall be made (a) pursuant to authorization by the City after the review and final approval of WDC's requests for draw–downs against grant and program funds allocated to the City pursuant to the Master Municipal Agreement; and/or (b) pursuant to any Federal and/or State funding agreements for funds allocated directly to WDC on behalf of the City of Waterbury for the Project. In addition, any reimbursement for actual expenditures will be in accordance with the terms of the Master Municipal Agreement.

WDC is hereby given authorization to apply for, on behalf of the City of Waterbury, additional Federal and/or State funding that may be available to complete this project, with Board of Aldermen approval. **WDC agrees not enter into a contract until a funding source is identified and approved by the relevant governing bodies.**

Please indicate your concurrence with this PAL by signing below and returning a copy to the City of Waterbury. Submission of the written acknowledgement of the PAL by facsimile or electronic transmission is acceptable. The Master Municipal Agreement will be incorporated into this PAL and shall together contain the legal and binding obligations of the WDC with respect to the management of this Project.

Very truly yours,

Paul K. Pernerewski Jr.
Mayor, City of Waterbury

Accepted and agreed this _____ day of _____, 2026.

WATERBURY DEVELOPMENT CORPORATION

By: _____
James Nardozzi
Executive Director

EXHIBIT A
Renovations to the Waterbury Community Health Resource Center
Scope of Services

General Overview

This Project consists of the management and administration of the Abatement and demolition and Renovations to the Waterbury Community Health Resource Center located at 24 Branch Street. WDC shall be responsible for the overall management, and administration of all Phases related to this Project. In working collaboratively with the City, WDC shall provide all related services to this Project including, not limited to, general administration, professional and technical services, contract management, funding oversight and coordination, scheduling, and assisting with the City's contracting with all necessary consultants and contractors to perform the services herein.

WDC shall (as applicable to this Project):

1. Work with City staff to create an overall plan for this Project, shepherd this plan through approval process and implement and oversee all activities mandated by this plan;

2. Work with the City's Director of Finance, or his designee, to determine the cash flow needs of this Project;

3. Liaise with stakeholders including the City and the Project's consultants, engineers and contractors regarding various aspects of this Project;

4. Work with the City's Purchasing Department to procure all necessary professional, engineering and/or construction services for this Project;

5. Work with City on the bid/proposal/qualification evaluation process to ensure that all submission requirements are accounted for and that the most qualified/capable respondent is selected;

6. Evaluate submitted value engineering proposals with the City to identify options for obtaining optimum value and otherwise realize maximum value;

7. Attain all requisite approvals, clearances, consultant/contractor documentation, etc. for any/all professional service, engineering and/or construction agreements, contracts, and/or purchase orders and maintain copies of all associated paperwork;

8. Contract, on behalf of the City of Waterbury, with all necessary professionals, engineers and/or contractors for this Project; - N/A

9. On behalf of the City of Waterbury, enter into confidentiality, access or other agreements, with or without options to buy, as needed for this Project;

10. Manage the day-to-day activities of this Project on the City's behalf;

11. Oversee/Review the work of consultants, engineers and contractors to ensure compliance with terms and conditions of contracts, agreements, and/or purchase orders and perform all other obligations and responsibilities of the City's Project Manager as delineated in any agreement, contract and/or purchase order that the City and/or WDC may enter into for this Project;

12. Inform/Advise the City about the design, cost/budget, schedule, status, etc. of all work associated with this Project. This will likely include the review, management and administration of the following:

    a. Environmental assessment/abatement/remediation plans (hazardous building material, soil, groundwater, etc.)
    b. Environmental and geotechnical sampling plans and results
    c. Work plans
    d. Health and safety plans
    e. Architectural/Construction plans
    f. Demolition plans
    g. Grading and drainage plans
    h. Structural plans
    i. Zoning regulations
    j. Technical specifications
    k. Work schedules
    l. Agreements/Contracts/Purchase Orders for professional, engineering and construction services

13. Obtain and maintain all closeout documentation (reports, warranties/warranty letters, as-built drawings, etc.);

14. Assist in the preparation and presentation of all materials all materials, forms and reports required on the part of the City;

15. Make presentations to and appear before the Waterbury Board of Aldermen, Waterbury Board of Education and/or other committees or departments, as requested, to provide requested information or to provide status reports, with supporting documentation, which shall include, but is not limited to, budgetary and accounting information, project schedules and updates; and

16. Pursue additional funding opportunities, with approval of the Board of Aldermen, that may become available that are consistent with and comply with City Ordinances.

(Remainder of the page intentionally blank)

WATERBURY
DEVELOPMENT CORPORATION

Date: September 23, 2026

To: Michael Digiovancarlo
President, Board of Aldermen

Members, Board of Aldermen

Mayor Paul Pernerewski

From: Robert Dowd /Tom Favazzo
Project Manager(s) at WDC

Subject: Construction Contract for RFP #8753 Chase Building Renovations

Dear Honorable Members of the Board of Aldermen,

I request approval of the attached Construction Contract for the Chase Building Renovations between the City of Waterbury and KBE Building Corporation.
Three responses were received for RFP #8753: Downes Construction Company LLC, J.A. Rosa Construction, LLC and KBE Building Corporation. The cost proposals were as follows:

Downes	$37,003,127
J.A. Rosa	$34,831,212
KBE	$28,428,319

A Selection Committee was formed to review and evaluate the RFP responses. The Committee consisted of: Kevin McCaffrey, Director of Purchasing; Robert Dowd, Project Manager at WDC; Tom Favazzo, Project Manager at WDC, Dave Simpson, Director of Public Works, and Michael LeBlanc, Director of Finance.

The Selection Committee discussed the project history and reviewed the three submitted bids. All three bidders were interviewed, and as a result of the interviews, the Selection Committee requested each firm revisit their bid amounts and submit their firm's best & final offer. Each firm requested an opportunity to re-visit the Chase Building; the Selection Committee agreed.

On 26 July 2026 another walk-thru of the Chase Building was conducted; all three respondent firms participated.

On 10 July 2026 each of the three firms submitted their best & final offers including add alternates and allowances as follows:

Downes	$32,647,060
J.A. Rosa	$29,133,860
KBE	$28,227,300

On 04 August 2026 the Selection Committee met again to review the best & final offers noted above.
The Committee was unanimous in its decision to recommend awarding the project to KBE based upon the following reasons and other considerations:

1) KBE submitted the lowest price in both initial and best & final proposals.
2) KBE's relevant recent experience.
3) KBE's prior experience with the City, particularly successful large-scale projects such as the new Carrington School and the new Consolidated Public Works Department Facility.
4) That Downes and J.A. Rosa both substantially decreased their initial prices in providing a best & final price was a concern.

The contract value is $28,227,300, which does not include an Owner Controlled Contingency Allowance. The contract will be funded from City Funds. The contract duration is 730 consecutive calendar days from City's written Notice To Proceed to reach substantial completion and 760 consecutive calendar days from City's written Notice To Proceed to reach final completion.

Attached please find the construction contract between the City of Waterbury and KBE Building Corporation along with all relevant materials. One record copy of the contract documents has been submitted to City Clerk and six copies have been submitted for the Board of Aldermen.

Lastly, WDC will have a representative present at the Board of Aldermen meeting to answer any questions you may have regarding this matter.

Thank you,

CONSTRUCTION CONTRACT FOR REQUEST FOR PROPOSAL NO. 8753 BETWEEN THE CITY OF WATERBURY AND KBE BUILDING CORPORATION FOR THE CHASE BUILDING RENOVATIONS

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut 06702 (the "City") and **KBE BUILDING CORPORATION**, located at 76 Batterson Park Road, Farmington, Connecticut 06032, a duly registered Connecticut corporation (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") Number 8753** relating to and describing a project known as The Chase Building Renovations (the "Project");

WHEREAS the City accepted the Contractor's bid for **RFP Number 8753**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract for the Project.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with (i) all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder and (ii) generally accepted professional standards.

1.1. The Project is detailed and described in **RFP Number 8753** and its attachments and as listed in **Attachment A** and any other attachments hereto, which are hereby made material provisions of this Contract. The Contracts attachments shall consist of the following, which are referenced and/or attached hereto, and are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof :

- **1.1.1** City's **RFP Number 8753** and all attachments thereto (incorporated by reference);
- **1.1.2** Addenda 1 through 4 to **RFP Number 8753** (incorporated by reference);
- **1.1.3** Contractor's Price Proposal and Unit Prices revised as of July 10, 2026, consisting of 16 pages in total (attached hereto);

1.1.4 Contractor's Response with associated attachments to **RFP Number 8753**, dated May 18, 2026, consisting of 135 pages (incorporated by reference);

1.1.5 City of Waterbury **RFP Number 8753**, Scope of Services/ Technical Specifications, (incorporated by reference);

1.1.6 List of Drawings in **RFP Number 8753**, (incorporated by reference);

1.1.7 General and Special Conditions (attached hereto);

1.1.8 State of Connecticut Prevailing Wage Schedule dated February 20, 2026, and related information, consisting of 9 pages (attached hereto and as otherwise incorporated by reference);

1.1.9 Contractor's Certificate of Insurance (attached hereto, or otherwise incorporated by reference);

1.1.10 Contractor's Performance Bond (attached hereto, or otherwise incorporated by reference);

1.1.11 Contractor's Payment Bond (attached hereto, or otherwise incorporated by reference);

1.1.12 All amendments and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.13 All applicable Federal, State, and local statutes, regulations charter and ordinances to the extent such provisions are applicable; and

1.1.14 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of this executed instrument with all attachments are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflicts with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;

1.2.3 Amendment(s) and Change Orders;

1.2.3 This Contract;

1.2.4 Special Conditions;

1.2.5 General Conditions;

1.2.6 Addendums to **RFP Number 8753**;

1.2.7 **RFP Number 8753** including Scope of Services/Technical Specifications;

1.2.8 Contractor's Price Proposal;

1.2.9 Contractor's Response; and

1.2.10 Drawings.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill,

expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon the City's request, the Consultant shall provide the City with a copy of the Consultant's licenses, certifications, registrations, etc.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibility to examine and to be thoroughly familiar with the City's bid documents, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity by the City to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submitting its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP Number 8753** (collectively, the "Bid Documents");

3.1.7 it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8 it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes;

3.1.10 it possesses the knowledge and understanding of the requirements associated with the City's funding source, including all rules, regulations and mandatory contract provisions required by it; and

3.1.11 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, State and Federal health and safety regulations. Contractor shall immediately correct any dangerous conditions caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. The City shall confirm with Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense (i) adequate off-site storage space for equipment, materials, incidentals, etc., and (ii) all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to **Section 8** of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract. Contractor shall comply with Special Conditions Provision section 1.08 - Prosecution and Progress.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity unless the City provides prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the

Contractor shall be made only with the prior written consent of an authorized representative of the City.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are (i) subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or (ii) unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in **Section 1** of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in **Section 1** of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, necessary, or prudent for the performance of the Contractor's obligations under this Contract, and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment. At a minimum, Contractor's record retention shall be consistent with provisions set forth in 2 **CFR** Section 200.334-200.338, and as required by law under 24 **CFR** Part 570.

4. Responsibilities of the City and Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; initially, the Waterbury Development Corporation ("WDC") is so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such an event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **seven hundred thirty (730) consecutive calendar days** from the City's issuance of a written Notice to Proceed and shall achieve final completion within **seven hundred sixty (760) consecutive calendar days** from the City's issuance of a written Notice to Proceed ("Contract Time"). The procurement of materials shall start upon the execution of the contract. **NB: DELAY CLAIMS DUE TO INABILITY TO PROCURE MATERIALS IN A TIMELY MANNER WILL NOT BE ACKNOWLEDGED OR ACCEPTED.**

5.1. The Contractor's Project schedule is attached hereto as **Attachment B**, if any. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages.

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will ensure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **One Thousand Five Hundred and 00/100 Dollars ($1,500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in **Section 5**, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damage from any monies due to the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire **Section 5**, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3. No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for the satisfactory provision of all the goods and services set forth in this Contract as follows in this **Section 6**. No claims for additional compensation will be considered for conditions made known to the Contractor

prior to bidding. No claims for additional compensation will be considered on account of the failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this **Section 6**, the fee payable to the Contractor shall not exceed **TWENTY-EIGHT MILLION TWO HUNDRED TWENTY-SEVEN THOUSAND THREE HUNDRED DOLLARS ($28,227,300)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Bid set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

i. Base Bid Total (Items 1 through 44): $26,420,000;

ii. Allowances:
- a. No. 1 for Commissioning Close Out - $10,000;
- b. No. 2 for Winter Conditions - $150,000;
- c. No. 3 for Unforeseen Conditions (Renovations) - $100,000; and
- d. No. 4 for Mobile File Storage Trailers - $120,000;

iii. Alternates:
- a. No. 1 for Exterior Restoration - $900,000;
- b. No. 2 for Replacement of all Site Fencing - $43,000;
- c. No. 3 for Ceiling Upgrade - $311,000;
- d. No. 4 for Landscape Scope and Plantings - $11,300;
- e. No. 5 for Exterior Site Lighting - $67,000; and
- f. No. 6 for Replace Upper Fourt Floor and Penthouse Standing Seam Roof Assemblies - $95,000.

6.1.1 Owner Controlled Contingency/Allowance. At the sole discretion and control of the City, the contingency or any allowance amount as set forth above shall be utilized for the payment to the Contractor for additional work requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the additional work under the contingency or allowance shall be separate and apart from the Base Payment set forth above. The contingency or allowance shall be the funding source for any City approved additional work and services not provided for in this Contract. Unless properly approved in writing by the City (**see Section 27**), the Contractor shall not be entitled to any compensation from such contingency or allowance. The parties agree that a Change Order Form shall be utilized to set forth the additional services, cost of additional services and time for the Contractor to provide said service.

6.1.2 Value Engineering. Contractor has provided an initial value engineering schedule (the "VES") with potential savings, dated July 10, 2026. During the course of the Project, the parties shall meet to review the VES to accept, reject or supplement/amend such schedule.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with this Contract's provisions.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in **Section 6.1** of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc., all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Contractor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP Number 8753** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed. Additionally, during the Project, at the City's option, it may require partial waivers of lien and claim from the Contractor and all subcontractors and materialmen with each payment application.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide, at the City's request, reasonable documentation to substantiate the Contractor's Application for Payment.

6.10.2 Progress and Final Payments.

The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by the City, according to the schedule of

values provided for in the Contract Documents and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City and the City shall avail itself of same to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. The City's beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon its final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that the City shall be responsible for loss or damage caused by its gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized the City's representative.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City and its Boards, WDC and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, any City's boards, WDC and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, any City's boards, WDC and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and City boards, WDC and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure for the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for

infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by it, both a performance bond and a payment bond, each bond written for a penal sum equaling the **Section 6** "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in **Section 7** of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this **Section 11** has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City, WDC and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: **$1,000,000.00** per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** for products/completed operations aggregate; insurances shall provide coverage to protect the City and WDC for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: **$1,000,000.00** combined single limit (CSL); providing coverage to the City and WDC with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances: **$30,000,000.00** each occurrence and **$30,000,000.00** aggregate.

11.4.5 Contractor's Pollution Liability Insurance: **$1,000,000.00** each claim, **$1,000,000.00** aggregate coverage; there shall not be hazardous material, including asbestos and lead, exclusion. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for Contractor caused pollution events such as asbestos or lead abatement but not limited to only these pollution causes of loss.

11.4.6 Builder's Risk Insurance: coverage equaling the monetary value of the construction components of the Project, including the equipment stored at Contractor's place of business prior to installation. "All Risk" Builders Risk insurance (also known as "course of construction") coverage with limits equal to or better than the maximum possible loss of all equipment and materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of the City and WDC, the Contractor and all subcontractors. If deemed necessary by

the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury and WDC and shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: The Contractor's General, Automobile, and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City, WDC and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees as an additional insured and provide waiver of subrogation on all policies except Pollution Liability. The insurance afforded to the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to it, subject to its approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City and others, as follows **"City of Waterbury and any of its Boards, WDC and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage; waiver of subrogation applies to all lines of coverage except Pollution Liability as their interest may appear".** The City's Invitation to Bid Number must be shown on the certificate of insurance to ensure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy (ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed to the City and a copy to the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by

the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 **CFR**, Part 3); and **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 **CFR** Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 **CFR** Part 5); **THE HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974**, as amended; 24 **CFR** Part 570 – Community Development Block Grants, and all applicable cross-cutting requirements, as applicable, under Subpart K, "Other Program Requirements," including but not limited to: Civil Rights and Fair Housing (24 **CFR** 570.601), Employment and Contracting Opportunities (24 **CFR** 570.607), Architectural Barriers and Americans with Disabilities (24 **CFR** 570.614), Labor Standards (24 **CFR** 570.603), Environmental Requirements, Historic Preservation, Floodplain Management, **NFIP**, Relocation, and Lead-Based Paint (24 **CFR** 570.608); the Build America, Buy America Act ("**BABA**"), 41 USC § 8301; **TITLE 31** and section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements and will require the same of all subcontractors.

14. Good Jobs Ordinance.

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly Funded Construction Projects.

14.1.1 If applicable, the Contractor and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance, and that Contractor

is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower-tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is

defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance. The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan of action shall include the anticipated number of job positions required for the Work. Not later than five (5) business days prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed without this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2. Liquidated Damages Applicable To Section 14.1.

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five-day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due to the City, as liquidated damages, because of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to

liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination. Notwithstanding the above, upon determination by a court of competent jurisdiction that the termination of the agreement pursuant to this **Section 16.1** was wrongful, such termination will be deemed converted to a termination for convenience pursuant to **Section 16.2** and the Contractor's remedy for wrongful termination shall be limited to the recovery of the payments permitted for termination for convenience pursuant to **Article 16.2**.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by it by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience. The City may terminate this Contract at any time for its convenience, by a notice in writing from it to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an

amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that this Contract is subject to the appropriation and disbursement of funds sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate

the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by the City and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in **Section 5** of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control the activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional costs or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 8753** and **(ii)** the Contractor's Bid response to **RFP Number 8753**. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: KBE Building Corporation
76 Batterson Park Road

Farmington, CT 06032

City: City of Waterbury
City Hall
235 Grand Street
Waterbury, CT 06702

With a copies to: Corporation Counsel's Office 3rd Floor
City of Waterbury
City Hall
235 Grand Street
Waterbury, CT 06702

Waterbury Development Corporation
Third Floor
83 Bank Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10. The Contractor hereby acknowledges receipt of a copy of Chapters 38 and 39 of the City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: http://www.waterburyct.org/content/458/539/default.aspx [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in **Section 6** of

this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

34.16. CONFLICT OF INTEREST UNDER CFR. Contractor agrees to abide by the provisions of 2 **CFR** § 200.112 and 24 **CFR** Part 570.611 with respect to the conflicts of interest, and covenants that it presently has no financial interest and shall not acquire any financial interest, direct or indirect, which would conflict in any manner or degree with the performance of services under this Agreement. The contractor further covenants that in the performance of this Agreement, no person having such a financial interest shall be employed or retained by the Contractor hereunder. The conflict-of-interest provisions apply to any person who is an employee, agent, consultant, officer, or elected official or appointed official with the City or of any of the designated public agencies or subrecipients, which are receiving funds from DECD.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1. Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2. Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3. Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4. City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5. Construction Supervisor: An employee of the City, or other City duly authorized person, including the Waterbury Development Corporation.

35.6. Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion and (ii) Final Completion.

35.7. Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8. Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized

representative's written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9. **Notice to Proceed:** A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10. **Plans:** All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11. **Project Engineer or Manager:** An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12. **Shop Drawings:** Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13. **Specifications or Technical Specifications:** The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14. **Subcontractor:** A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15. **Substantial Completion:** The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16. **Substitution:** A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17. **Supplementary General and Special Conditions:** An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18. **Work:** All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19. Using Agency: Department of Education.

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Paul K. Pernerewski, Mayor

Date: _____

WITNESSES:

_____

_____

KBE BUILDING CORPORATION

By:_____
Michael Kolakowski, President

Date: _____

ATTACHMENT A

ATTACHMENT B

Chase Building Renovation Price Proposal Sheet RFP#8753- REVISED 04/22/2026 (11 PAGES TOTAL)	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
1	**MOBILIZATION AND DEMOBILIZATION** The work under this item shall include all personnel and equipment necessary for mobilization, demobilization, and administrative costs including the movement of all the contractor's storage facilities, maintenance and protection of traffic, transportation of equipment to and from the project site, and necessary to the performance of the work as shown and in accordance with the Contract Drawings and Technical Specifications, for the lump sum cost of: Eighty Five Thousand Dollars and Zero Cents Lump Sum ($ 85,000.00) Written figures
2	**GENERAL CONDITIONS** The work under this item shall include, but is not limited to full time field supervision required, project staffing (including conducting weekly project meetings and recording project minutes), required insurance, bonds, overhead, profit, survey of property, and installation of property monuments, for the lump sum cost of: Three Million Four Hundred Fifteeen Thousand Dollars and Zero Cents Lump Sum ($ 3,415,000.00) Written figures
3	**TEMPORARY FACILITIES AND CONTROL** The work under this item shall include all personnel and equipment necessary to set up temporary facilities and control on site. This should also include any required project means and methods to execute the work, for the lump sum cost of: Seventy Two Thousand Dollars and Zero Cents Lump Sum ($ 72,000.00) Written figures
4	**ABATEMENT** The work under this item shall include all materials, equipment, and labor to perform the abatement as necessary for the selective demolition work and as identified in environmental drawings and specifications, and as described in the Contract Drawings and Technical Specifications for the lump sum cost of: One Million Seven Hundred Four Thousand Dollars and Zero Cents Lump Sum ($ 1,704,000.00) Written figures
5	**SELECTIVE DEMOLITION AND SALVAGE** The work under this item shall include all materials, equipment and labor necessary for the selective interior and exterior demolition, removal, disposal, and salvage of materials in accordance with the Contract Drawings and Technical Specifications for the lump sum cost of: Four Hundred Fifty Thousand Dollars and Zero Cents Lump Sum ($ 450,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
6	**CAST-IN-PLACE CONCRETE** The work under this item shall include, but is not limited to: all material, labor, and equipment for cast-in-place concrete identified on the plans and specifications for the lump sum cost of: Ninety Five Thousand Dollars and Zero Cents Lump Sum ($ 95,000.00) Written figures
7	**UNIT MASONRY** The work under this item shall include all materials, equipment and labor for masonry work not limited to concrete masonry units, mortar and grout, masonry joint reinforcement, ties and anchors and material accessories as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Eight Hundred Eleven Thousand Dollars and Zero Cents Lump Sum ($ 811,000.00) Written figures
8	**METAL FABRICATIONS/ STRUCTURAL STEEL** The work under this item shall include, but is not limited to: all material, labor, and equipment for structural steel and metal fabrication identified on the plans and specifications for the lump sum cost of: Three Hundred Twenty Four Thousand Dollars and Zero Cents Lump Sum ($ 324,000.00) Written figures
9	**ROUGH CARPENTRY** The work under this item shall include all materials, equipment and labor for rough carpentry work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One Hundred Five Thousand Dollars and Zero Cents Lump Sum ($ 105,000.00) Written figures
10	**INTERIOR ARCHITECTURAL WOODWORK** The work under this item shall include all materials, equipment and labor for interior architectural wood work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two Hundred Fifty One Thousand Dollars and Zero Cents Lump Sum ($ 251,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
11	**DAMPROOFING/WATERPROOFING** The work under this item shall include all materials, equipment and labor for damproofing/waterproofing work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Fifty Thousand Dollars and Zero Cents Lump Sum ($ 50,000.00) Written figures
12	**MEMBRANE ROOFING** The work under this item shall include removal of old and installation of all new membrane roofing, equipment and labor to supply and install membrane roofing and all related flashings, as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Five Hundred Forty Two Thousand Dollars and Zero Cents Lump Sum ($ 542,000.00) Written figures
13	**PENETRATION FIRESTOPPING** The work under this item shall include all materials, equipment and labor for penetration firestopping work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Ten Thousand Dollars and Zero Cents Lump Sum ($ 10,000.00) Written figures
14	**JOINT SEALANTS** The work under this item shall include all joint sealants, equipment and labor to supply and install any sealants, as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Seven Thousand Dollars and Zero Cents Lump Sum ($ 7,000.00) Written figures
15	**HOLLOW METAL DOORS AND FRAMES** The work under this item shall include all materials, equipment and labor to supply and install any hollow metal doors and frames as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Twenty Eight Thousand Dollars and Zero Cents Lump Sum ($ 28,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
16	**WOOD DOORS AND FRAMES** The work under this item shall include all materials, equipment and labor to supply and install any wood doors and frames as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Thirty Seven Thousand Dollars and Zero Cents Lump Sum ($ 37,000.00) Written figures
17	**WINDOWS** The work under this item shall include all materials, equipment and labor to supply and install all windows as shown on the Contract Drawings and as specified in the Technical Specifications. This work also includes removal and disposal of existing windows prior to installation of new, for the lump sum cost of: One Million Five Hundred Seventy Three Thousand Dollars and Zero Cents Lump Sum ($ 1,573,000.00) Written figures
18	**DOOR HARDWARE** The work under this item shall include all materials, equipment and labor to supply and install any door hardware shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Eighty Six Thousand Dollars and Zero Cents Lump Sum ($ 86,000.00) Written figures
19	**GLASS AND GLAZING** The work under this item shall include all materials, equipment and labor to supply and install any glass and glazing as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Forty Six Thousand Dollars and Zero Cents Lump Sum ($ 46,000.00) Written figures
20	**ARCHITECTURAL LOUVERS AND VENTS** The work under this item shall include all materials, equipment and labor to supply and install any louvers and vents as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Fourteen Thousand Dollars and Zero Cents Lump Sum ($ 14,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
21	**GYPSUM BOARD** The work under this item shall include all materials, equipment and labor to supply and install any gypsum board assembly shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Seven Hundred Eighty Five Thousand Dollars and Zero Cents Lump Sum ($ 785,000.00) Written figures
22	**TILE** The work under this item shall include all materials, equipment and labor to supply and install any tile shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Four Hundred Eighty Two Thousand Dollars and Zero Cents Lump Sum ($ 482,000.00) Written figures
23	**ACOUSTIC CEILING & SOUND ABSORBING PANELS** The work under this item shall include all materials, equipment and labor to supply and install any acoustic ceiling and sound absorbing panels shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two Hundred Sixty Eight Thousand Dollars and Zero Cents Lump Sum ($ 268,000.00) Written figures
24	**RESILIENT FLOORING** The work under this item shall include all materials, equipment and labor to supply and install any resilient tile flooring shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One Hundred Twenty Thousand Dollars and Zero Cents Lump Sum ($ 120,000.00) Written figures
25	**CARPET** The work under this item shall include all materials, equipment and labor to supply and install any carpet shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One Hundred Thirty Nine Thousand Dollars and Zero Cents Lump Sum ($ 139,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
26	**PAINTING & WALL COVERINGS** The work under this item shall include all materials, equipment and labor to supply wall coverings and paint all areas called for and shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Five Hundred Twenty Five Thousand Dollars and Zero Cents Lump Sum ($ 525,000.00) Written figures
27	**SIGNAGE** The work under this item shall include all materials, equipment and labor to supply and install any signage shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Seventy Three Thousand Dollars and Zero Cents Lump Sum ($ 73,000.00) Written figures
28	**TOILET COMPARTMENTS** The work under this item shall include all materials, equipment and labor to supply and install any toilet compartments shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Sixty Nine Thousand Dollars and Zero Cents Lump Sum ($ 69,000.00) Written figures
29	**WALL AND DOOR PROTECTION** The work under this item shall include all materials, equipment and labor to supply and install any wall and door protection shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Zero Dollars and Zero Cents Lump Sum ($ 0.00) Written figures
30	**TOILET AND BATH ACCESSORIES** The work under this item shall include all materials, equipment and labor to supply and install any toilet and bath accessories shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Forty Two Thousand Dollars and Zero Cents Lump Sum ($ 42,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
31	**EMERGENCY ACCESS CABINETS & EXTERNAL DEFIBRILLATOR CABINETS (AED)** The work under this item shall include all materials, equipment and labor to supply and install any emergency access cabinets and external defibrillator cabinets shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Four Thousand Dollars and Zero Cents Lump Sum ($ 4,000.00) Written figures
32	**METAL STORAGE SHELVING** The work under this item shall include all materials, equipment and labor to supply and install any metal storage shelving shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Thirty Four Thousand Dollars and Zero Cents Lump Sum ($ 34,000.00) Written figures
33	**FIRE PROTECTION SPECIALTIES** The work under this item shall include all materials, equipment and labor to supply and install any fire protection specialties shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Zero Dollars and Zero Cents Lump Sum ($ 0.00) Written figures
34	**WINDOW TREATMENT** The work under this item shall include all materials, equipment and labor to supply and install any window treatment as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Seventy Three Thousand Dollars and Zero Cents Lump Sum ($ 73,000.00) Written figures
35	**ELEVATORS** The work under this item shall include all materials, equipment and labor to supply and install any elevators as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Six Hundred Thirty Seven Thousand Dollars and Zero Cents Lump Sum ($ 637,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
36	**FIRE PROTECTION** The work under this item shall include all materials, equipment and labor to supply and install any fire protection shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Five Hundred Seventy Two Thousand Dollars and Zero Cents Lump Sum ($ 572,000.00) Written figures
37	**PLUMBING** The work under this item shall include all materials, equipment and labor to supply and install any plumbing and all plumbing fixtures shown on the Contract Drawings and all below grade piping as specified in the Technical Specifications for the lump sum cost of: One Million Seven Hundred Thirty Seven Thousand Dollars and Zero Cents Lump Sum ($ 1,737,000.00) Written figures
38	**MECHANICAL (HVAC)** The work under this item shall include all materials, equipment and labor to supply and install any mechanical systems shown on the Contract Drawings and as specified in the Technical Specifications including commissioning and instrumentation and controls for the lump sum cost of: Seven Million Five Hundred Thirty Thousand Dollars and Zero Cents Lump Sum ($ 7,530,000.000) Written figures
39	**ELECTRICAL** The work under this item shall include all materials, equipment and labor to supply and install any electrical work shown on the Contract Drawings and as specified in the Technical Specifications including instrumentation and controls for electrical systems for the lump sum cost of: Two Million Sixty Thousand Dollars and Zero Cents Lump Sum ($ 2,060,000.00) Written figures
40	**COMMUNICATIONS** The work under this item shall include all materials, equipment and labor to supply and install any communication systems shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Six Hundred Twenty Six Thousand Dollars and Zero Cents Lump Sum ($ 626,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
41	**ELECTRONIC SAFETY & SECURITY** The work under this item shall include all materials, equipment and labor to supply and install any electronic safety and security systems shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Three Hundred Forty Nine Thousand Dollars and Zero Cents Lump Sum ($ 349,000.00) Written figures
42	**EARTHWORK** The work under this item shall include all materials, equipment and labor to perform necessary excavation, backfilling, and grading operations as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two Hundred Ten Thousand Dollars and Zero Cents Lump Sum ($ 210,000.00) Written figures
43	**SITE IMPROVEMENTS** The work under this item shall include but not limited to all materials, equipment and labor to conduct site restoration and any site work shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two Hundred Eighty Thousand Dollars and Zero Cents Lump Sum ($ 280,000.00) Written figures
44	**UTILITIES** The work under this item shall include but not limited to all materials, equipment and labor to supply and install water systems, sanitary sewer systems, and storm drainage systems shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One Hundred Thousand Dollars and Zero Cents Lump Sum ($ 100,000.00) Written figures
	ALLOWANCE #1 – COMMISSIONING CLOSE OUT The work under this item shall include but not limited to any commissioning close out contingency. This item is controlled by WDC and can only be used with WDC's authorization: TEN THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 10,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
	ALLOWANCE #2 – WINTER CONDITIONS This work shall include but is not limited to any winter conditions and protection plan during the course of construction. This item is controlled by WDC and can only be used with WDC's authorization: ONE HUNDRED FIFTY THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 150,000.00) Written figures
	ALLOWANCE #3 – UNFORESEEN CONDITIONS (RENOVATIONS) This work shall include but is not limited to any unforeseen conditions during the course of construction. This item is controlled by WDC and can only be used with WDC's authorization: ONE HUNDRED THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 100,000.00) Written figures
	ALLOWANCE #4 – MOBILE FILE STORAGE TRAILERS (4) This work shall include but is not limited to furnish and install (deliver, place, and remove) for two (2) years during the course of construction. Trailers are to be equal to WILSCOT 40' x 8' mobile mini office storage unit. This shall also include any electrical power requirements for each trailer. This item is controlled by WDC and can only be used with WDC's authorization: ONE HUNDRED TWENTY THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 120,000.00) Written figures
	Lump Sum Base Bid Total (Items 1 through 44) Written amount Twenty Six Million Four Hundred Twenty Thousand Dollars and Zero Cents Lump Sum ($ 26,420,000.00)
	ALTERNATE #1 – EXTERIOR RESTORATION The work under this item shall include but not limited to all materials, equipment and labor for exterior restoration scope from grade to underside of parapet datum shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Nine Hundred Thousand Dollars and Zero Cents Lump Sum ($ 900,000.00) Written figures

Chase Building Renovation Price Proposal Sheet RFP#8753	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
	ALTERNATE #2 – REPLACEMENT OF ALL SITE FENCING The work under this item shall include but not limited to all materials, equipment and labor to supply and install site fencing (cast iron and chain link) shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Forty Three Thousand Dollars and Zero Cents Lump Sum ($ 43,000.00) Written figures
	ALTERNATE #3 – CEILING UPGRADE The work under this item shall include but not limited to all materials, equipment and labor to upgrade the standard lay-in ACT ceiling with more seamless product and grid shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Three Hundred Eleven Thousand Dollars and Zero Cents Lump Sum ($ 311,000.00) Written figures
	ALTERNATE #4 – LANDSCAPE SCOPE AND PLANTINGS The work under this item shall include but not limited to all materials, equipment and labor to replace landscape scope and plantings at main entry shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Eleven Thousand Three Hundred Dollars and Zero Cents Lump Sum ($ 11,300.00) Written figures
	ALTERNATE #5 – EXTERIOR SITE LIGHTING The work under this item shall include but not limited to all materials, equipment and labor to replace the exterior site lighting outlets and devices, excluding wiring, at main entry shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Sixty Seven Thousand Dollars and Zero Cents Lump Sum ($ 67,000.00) Written figures
	ALTERNATE #6 – REPLACE UPPER FOURTH FLOOR AND PENTHOUSE STANDING SEAM ROOFING ASSEMBLIES The work under this item shall include but not limited to all materials, equipment and labor to replace the upper fourth floor and penthouse roofing shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Ninety Five Thousand Dollars and Zero Cents Lump Sum ($ 95,000.00) Written figures

RFP# 8753

ATTACHMENT A-1.1

GENERAL CONDITIONS

INTRODUCTORY NOTE:

These General Conditions supplement the provisions and requirements of Contract and modify all Contract Documents which follow it numerically, as set forth in Section 1.2 of the Contract. The General Conditions may be amended, revised or supplemented by the Special Conditions, which are project specific. The Contractor's attention is directed to the attached Special Conditions for any amendments, revisions or supplements to the General Conditions for this project. The terms used in these General Conditions which are defined in the Contract have the meanings assigned to them in said Contract.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project and all drawings, specifications and general provisions of the Contract apply to these General Conditions. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise in the Contract Documents, all costs associated with any work/services required or necessary under the General Conditions shall be considered as included in the Contract Amount (also referred to as Total Compensation). No separate or additional payment will be made for this work and/or services.

ARTICLE 1. PLANS AND SPECIFICATIONS AT THE SITE / AS-BUILTS

1.01 The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications, Schedules and Instructions, in good order. One copy is to be marked to record all changes made during construction. These shall always be available to the Project Engineer and the City or their authorized representatives. At the conclusion of construction, the Contractor is to turn one (1) corrected set of all documents over to the Project Engineer.

ARTICLE 2. CONSTRUCTION PROGRESS SCHEDULE

2.01 Within seven (7) consecutive calendar days of the written Notice to Proceed, and prior to commencement of any work on site, the Contractor shall prepare and submit for the approval of the City three (3) copies of a complete Construction Progress Schedule which shall be comprised of a critical path method network. (At the same time, the Contractor shall submit the Schedule of Values, Sedimentation and Erosion Control Measures, Water Control Plan and Environmental Protection Plan, as outlined in the various Articles of these General Conditions).

2.02 The critical path of the Project must be identified on the Construction Progress Schedule which shall provide a workable plan for monitoring the progress of all the elements of the Project, establish and clearly display the critical elements of the Work, on which each part or division of the Work is expected to be started and completed, forecast completion of the elements of the Project, and match the Contract duration in time. The Construction Progress Schedule shall also indicate the logic of the work for the major elements and components of work under the Contract, such as the planned mobilization of plant and

equipment, sequences of operations, procurement of materials and equipment, duration of activities, type of relationship, lag time (if any), and such other information as it is necessary to present a clear statement of the intended activities.

2.03 The Construction Progress Schedule shall, at a minimum, indicate the proposed scheduling of all major items of work and Project components. The schedule shall state the methods for doing each portion of the work and show the significant on-site construction activities with planned early/late start early/late completion dates and total float for each activity, including activities of the Contractor, subcontractors, fabricators, and suppliers to ensure adequate planning and communication. Activities shall include, the following items, as applicable: (a) milestone events; (b) seasonal weather limitations (c) the procurement and fabrication of materials, plant and equipment and any associated submittals; (d) the order in which the Contractor proposes to complete activities; (e) temporary structures or systems; (f) major construction or work zone traffic control stages; (g) activities assigned to Utilities, railroads and other parties; (h) activities assigned to the City and other State or municipal entities; (i) sampling and testing of materials; (j) settlement, surcharge or cure periods; (k) punch list work, (l) inspection activities assigned to the City, including final inspection and (m) all project closeout activities and requirements. The Contractor shall evaluate the status of the Project at least monthly, comparing it to the original schedule, which shall be revised as required herein. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the current schedule.

2.04 Upon approval of the initial Construction Progress Schedule by the Project Engineer, this schedule shall also be referred to as the "Baseline Construction Progress Schedule" or "Baseline Schedule."

2.05 The Contractor shall perform the work of this Contract to satisfy the approved Construction Progress Schedule; however, the Project Engineer and City reserve the right to amend and alter the Construction Progress Schedule, as approved, at any time and in a manner which the Project Engineer deems to be in the best interests of the City. The latest version of the Construction Progress Schedule, as amended and approved by the Project Engineer, shall also be referred to as the "Current Construction Progress Schedule" or "Current Schedule." The approval of the Construction Progress Schedule, or any revision thereof, shall in no way waive the requirements of the Contract nor shall it excuse the Contractor from any obligations under the Contract.

2.06 The Contractor shall be required to execute his work in accordance with the Construction Progress and in accordance with any additional requirements specified herein and/or revisions approved by the Project Engineer.

2.07 The Construction Progress Schedule shall forecast the times for doing each portion of the work. The Contractor shall arrange the work under this Contract to conform with the Construction Progress Schedule, as it may be revised by the Project Engineer from time to time, at no additional expense to the City.

2.08 Contractor shall provide, at a minimum, the following:

a. Monthly Updates: Each month, as of a calendar date mutually acceptable to the Contractor and to the Project Engineer, the Contractor shall deliver to the Engineer three (3) prints of all required schedule diagrams and tabulations. Until Final Completion of the work, Contractor shall continually evaluate the status of the Project, comparing it to the current Construction Progress Schedule, or approved revision thereof. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the Current Schedule, or any component thereof.

b. Biweekly Schedules: Each week, the Contractor shall be required to produce and submit to the Project Engineer a biweekly schedule showing all activities planned for the following two-week period. This short-term schedule may be handwritten; however, a two week "look ahead" filter from the Construction Progress Schedule is preferred. The biweekly schedule shall clearly indicate all work planned on a crew basis for the two-week period.

c. Recovery Schedules: If completion of any part of the work, delivery of equipment or materials, or submission of submittals or required documentation is behind the approved Construction Progress Schedule and will impact the end date of the work past the Contract completion dates (create negative float), the Contractor shall submit in writing, a revised Construction Project Schedule acceptable to the City for completing the work on or before the current Contract completion dates.

d. The revised Construction Project Schedule shall take some or all the following actions to demonstrate the manner in which an acceptable rate of progress will be regained, by the following methods:

i. Increase construction manpower in such quantities and crafts as shall substantially eliminate the backlog of work and meet the current Contract completion date.
ii. Increase the number of working hours per shift, the number of shifts per day, the number of workdays per week, or the amount of construction equipment, or any combination of the foregoing.
iii. Reschedule work items to achieve concurrent accomplishment of work activities.

e. Under no circumstances will the adding of equipment or construction forces, increasing the working hours, or employing any other method, manner, or procedure to return to the contractually required completion dates be a justification for additional compensation to the Contractor.

ARTICLE 3. ESTIMATED QUANTITIES

3.01 Any Estimated Quantities for the Project furnished by the City, including those provided on the Bid Form, are approximate only and are: a) for procurement related comparison purposes only, and b) given as a basis for the pricing and c) are not represented to be actual quantities for completion of the Work. Within the limits of available funds, the Contractor will be required to complete the Work at the unit prices provided in the Bid Form/or Price Proposal whether it involves quantities greater or lesser than the estimate. The Contractor will be compensated only for the actual quantity of authorized, and performed, and/or materials furnished.

ARTICLE 4. SCHEDULE OF VALUES; APPLICATION FOR PAYMENT

4.01 Within seven (7) consecutive calendar days after the Notice to Proceed, as a basis for estimating partial payments, the Contractor shall submit for the approval of the City a certified Schedule of Values, broken down into quantities and unit costs for the various parts of the work, divided as may be directed and aggregating the total sum of the Contract; and if required, he shall submit evidence supporting this schedule.

4.02 The Contractor's requisition for payment shall be submitted on forms supplied by the Contractor and approved by the City and shall be in such numbers of copies as may be designated by the City. Sample forms are included in the Bid Documents. Alternate payment application forms may be utilized provided they are approved by the City, in writing, prior to submission by the Contractor.

4.03 If the Project is funded by multiple funding sources, the Contractor may be required to submit separate requisitions for payment to each source, on the forms provided by each source and in accord with all requirements of each individual funding source.

4.04 For Lump Sum projects, the requirements for the Schedule of Values are further defined as follows: a) the Schedule of Values shall delineate the various tasks that comprise the lump sum items. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, when accepted by the Project Engineer, shall only be used as a basis for Contractor's periodic payment applications. No payment will be made to Contractor until such Schedule has been submitted and accepted by Project Engineer, and b) the lump sum item shall be broken down sufficiently to provide a convenient and realistic means for determining the amount of work done during various stages of progress.

ARTICLE 5. PARTIAL PAYMENTS

5.01 The City will review the Contractor's monthly requisitions for Partial Payments to arrive at what is, in its opinion, a fair and just estimate of the materials suitably stored on the site and the amount of work performed on the Contract. At its discretion, the City may allow to be included in the monthly requisitions those materials stored off-site. In the event the City allows the Contractor to include in its requisitions payments for materials stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored material and follow such other procedures as may be required by the City.

5.02 In making such Partial Payments for the Project, retainage shall be held in the amount of 5% of the value of work completed to date. The Retainage does not include additional sums that the City may withhold due to the Contractors failure to comply with construction plans, specifications etc. deemed provisions of this contract.

5.03 Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Project Engineer will estimate the value of work completed and will deduct some amount to arrive at a conservative value which will allow City to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Project Engineer's determinations.

ARTICLE 6. INSPECTION AND TESTS

6.01 All material and workmanship shall be subject to inspection, examination and testing by the City and/or Project Engineer (in addition to that required by the Specifications) all times during manufacture and/or construction and at all places where such manufacture and/or construction is carried on. Notice of the time of all tests to be made at the site shall be given to all interested parties.

6.02 Contractor must obtain the Engineer's approval of any sources of materials to be incorporated into the Project before beginning to use them for the Project.

6.03 If, at any time before final acceptance of the Project, the City and/or Project Engineer considers it necessary or advisable to examine any portion of the Project already completed by removing or testing out the same, the Contractor shall upon request furnish promptly all necessary facilities, labor and materials. If such work is found to be defective in any material respect because of a fault of the Contractor or any of its subcontractors, or if any.

work shall have been covered over without the approval or consent of the City (whether it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including labor, material, services of required consultants, additional supervision and administrative costs.

6.04 Unless expressly provided for otherwise, for Projects that include material testing to ensure compliance with the Technical Specifications, the Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

6.05 Without additional charge, the Contractor shall promptly furnish all reasonable facilities, labor and materials necessary to make tests safe and convenient. Special, full size and performance tests shall be as described in the Specifications.

ARTICLE 7. UTILITIES

7.01 The accuracy and completeness of the utility information shown on the Plans and/or otherwise provided by the City is not guaranteed. The Contractor shall make its own investigation of the extent and location of utilities and of the possibility of relocation work by the utility companies and shall plan its operations accordingly. No claim for any delays, damage or extra work occasioned thereby will be allowed.

7.02 The Contractor shall allow others access to the Project for the purpose of placing, relocating or maintaining utilities, and he shall cooperate in every way in the performance of this Project.

7.03 The Contractor shall notify the utility owners well in advance of the time the Contractor proposes to perform any work which would endanger utility installations, and the Contractor shall cooperate with the utility owners in relocating and/or protecting such installations during construction operations.

7.04 No payment will be made to the Contractor for locating, protecting and making arrangements for relocating public utilities or for any delays caused thereby. The Contractor shall include all the costs of this Project in the other scheduled items of the Contract.

ARTICLE 8. SEDIMENTATION AND EROSION CONTROL

8.01 All watercourses shall be protected from sedimentation, both during and after construction. The Contractor shall control erosion and sedimentation problems in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control prepared by the Connecticut Council on Soil and Water Conservation, dated 2002, as amended.

8.02 The Contractor shall submit the Sedimentation and Erosion Control Plan for the approval of the Project Engineer within seven (7) consecutive calendar days after the Notice to Proceed.

8.03 The Contractor shall be responsible for providing silt fences, staked haybales and other temporary erosion control measures which may be required to properly complete this Project. No extra compensation will be allowed, due to water or precipitation levels fluctuation.

ARTICLE 9. PROTECTION OF ENVIRONMENTAL RESOURCES

9.01 The environmental resources within the Project boundaries and those affected outside the limits of permanent work under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine its activities to areas defined by the Plans and Specifications. Environmental protection shall be as stated in the following subparagraphs:

a. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure or destroy land resources including trees, shrubs, vines, grasses, topsoil and landforms without special written permission from the property owner. No ropes, cables or guys shall be fastened or attached to any trees for anchorage unless specifically authorized in writing by the Project Engineer. Where such special emergency use is permitted, the Contractor shall always provide effective protection for land and vegetation resources as defined in the following subparagraphs.

b. Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under the Contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to its personnel the purpose of marking and/or protection of all necessary objects.

c. Trees, shrubs, vines, grasses, landforms and other landscape features indicated and defined on the Plans to be preserved shall be clearly identified by marking, fencing or wrapping with boards, or any other approved techniques.

d. Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earth work shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the City and/or Project Engineer.

e. Runoff from the construction site shall be controlled by the construction of diversion ditches, benches and berms to retard and divert runoff to protected drainage courses, and any measures required by area wide plans approved under Paragraph 208 of the Clean Water Act, as amended.

f. The Contractor shall construct or install all temporary erosion control features as indicated in the submitted Sedimentation and Erosion Control Plans or directed by the City and/or Project Engineer. Temporary erosion control measures such as berms, dikes, drains, grass and mulching shall be maintained until construction of the Project is completed.

g. The Contractor's field offices, staging areas, stockpile storage and temporary buildings shall be placed in areas designated on the submitted Plan. A temporary move or relocation of the Contractor's facilities shall be made only on approval by the City and/or Project Engineer.

h. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby watercourses.

i. Spoil areas shall be managed and controlled to limit spoil areas and to prevent erosion of soil or sediment from entering nearby watercourses. Spoil areas shall be developed in accordance with the grading plan indicated on the Plans.

ARTICLE 10. ENVIRONMENTAL PROTECTION PLAN

10.01 Within seven (7) consecutive calendar days after the Notice to Proceed, and prior to commencement of any work on site, the Contractor shall submit an Environmental Protection Plan for the approval of the City in accordance with the provisions herein specified. The plan shall include but not be limited to the following:

a. A list of Federal, State and Local laws and regulations concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws and regulations.

b. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and groundcover, landscape features, air and water quality, fish and wildlife, soil, historical, archeological and cultural resources.

c. Procedures to be implemented by the Contractor to provide the required environmental protection and to comply with applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the Environmental Protection Plan.

d. The location of the nearest suitable solid waste disposal area and a permit allowing the Contractor to use those facilities.

e. Drawing showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess' or spoil materials.

f. Environmental monitoring plans for the job site, including land, water, air and noise monitoring as necessary, and as required by the Project Engineer.

g. Environmental monitoring and management plans for the any endangered wildlife or plant species as determined by CT DEEP, City or Project Engineer.

h. Traffic control plan when necessary.

i. Methods of protecting surface and ground water during construction activities.

j. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan should include measures for marking the limits of use areas.

ARTICLE 11. TEMPORARY UTILITIES

11.01 Unless expressly otherwise provided for in the Contract Documents the Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities of any nature whatsoever needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 12. ABBREVIATIONS

12.01 Where one of the following abbreviations are used in the Contract Documents, it shall have the meaning set forth opposite each below:

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AGA American Gas Association

AIEE American Institute of Electrical Project Engineers

AISC American Institute of Steel Construction

API American Petroleum Institute

ANSI American National Standards Institute

ASCE American Society of Civil Engineers

ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers

ASME American Society of Mechanical Engineers

ASTM American Society of Testing and Materials

AWG American (or Brown and Sharpe) Wire Gauge

AWWA American Water Works Association

CONNDOT Connecticut Department of Transportation

DEP Department of Environmental Protection

EDR Equivalent Direct Radiation

EPA Environmental Protection Agency

FWQA Federal Water Quality Administration

IBR Institute of Radiator and Boiler Manufacturers

MCB Master Car Builders

NBS National Bureau of Standards

NEC National Electrical Code (latest edition)

NEMA National Electrical Manufacturers Association

NEWWA New England Water Works Association

NFPA National Fire Protection Agency

NPT National Pipe Thread

SMACNA Sheet Metal and Air Conditioning Association

OS&Y Outside Screw and Yoke

STLWG United States Steel Wire, Washburn and Moen, American Steel And Wire Companies and Roebling Gauge

USS GAUGE United States Standard Gauge

WOG Water, Oil, Gas

WSP Water Steam Pressure

"Federal Specification" means a Federal specification issued by the Federal Supply Services Administration, Washington, D.C.

ARTICLE 13. SUBSURFACE EXPLORATION

13.01 Where applicable, boring logs, probes and related information contain data regarding subsurface conditions at the dates and location indicated. This information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true or approximately true picture of the actual subsurface conditions to be encountered. The boring log data is contained within the Appendices of the Technical Specifications.

ARTICLE 14. CONTRACT AND CONTRACT DOCUMENTS

14.01 The City shall interpret its own requirements. In case of any conflict or inconsistency between the provisions of this signed portion of the Contract and those of the Specifications, the provisions of the signed portion of the Contract shall govern.

14.02 The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the priority of the documents shall be in accordance with Section 1.2 of the Contract.

ARTICLE 15. SHOP DRAWINGS, CATALOG CUTS AND SAMPLES

15.01 The Contractor shall promptly submit to the Project Engineer five copies of each submittal prepared in accordance with the approved schedule. After examination of such submittal by the Project Engineer and the return thereof, the Contractor shall make such corrections to the submittal as have been indicated and shall furnish the Project Engineer with five corrected copies. If requested by the Project Engineer, the Contractor must furnish additional copies. Regardless of corrections made on, or approvals given to, such submittal by the Project Engineer, the Contractor shall nevertheless be responsible for the accuracy of such submittal. The Contractor shall also be responsible for the submittal's conformity to the Submittal and Specifications unless the Contractor notifies the Project Engineer in writing of any deviations at the time of submission of the submittal.

15.02 Submittal of all fabricated work shall be submitted to the Project Engineer and no work shall be fabricated unless it is done at the Contractor's own risk until approval has been given by the Project Engineer and City.

15.03 The Contractor shall submit all submittals on dates sufficiently in advance of requirements to enable the Project Engineer and City to properly review them. This period shall include time to correct, resubmit and recheck, if necessary, and no claim for delay will be granted to the Contractor because of the Contractor's failure in this respect. The Project Engineer and City will be given a minimum of fourteen (14) consecutive calendar days for the initial review of each submitted submittal.

15.04 All submitted submittals must bear the approval stamp of the Contractor and reference conformance to the applicable provisions of the Specifications as evidence that the Contractor has checked the drawings. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for resubmission. If the submittals show variations from the requirements of the Contract Documents because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in the letter of submission to the Project Engineer. If the variation is acceptable to the Project Engineer and City, suitable action may be taken for proper adjustment. If not acceptable, the Contractor shall not be relieved from the responsibility for executing the work in accordance with the Contract Documents, although such submittals had been approved.

15.05 Where submittals are submitted by the Contractor that indicate a departure from the Contract Drawings which the Project Engineer deems to be a minor adjustment and in the City's interest and not involving a change in the Contract price or an extension in time, then the Project Engineer may approve the drawings. Such approval will contain, in substance the following:

The modification shown on the attached drawings is approved in the interest of the City to affect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time. The modification is generally subject to all Contract stipulations and covenants, and it is without prejudice to all rights of the City under the Contract.

The approval of submittals will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract nor of the responsibility for any errors that may exist.

15.06 The Contractor agrees to hold the Project Engineer and the City harmless and to defend them against damage or claims for damages arising out of injury to others or to property of third parties which result from errors on shop or working drawings, whether they have been approved by the Project Engineer and/or the City.

15.07 Working Drawings. When required by the Contract or when ordered to do so by the City Representative, the Contractor shall prepare and submit 4 copies of the working drawings to the City Representative for review. These drawings shall be submitted sufficiently (at least 15 consecutive calendar days) in advance of the proposed use, to allow for their review, and any necessary revisions, without delay of the Project. No work covered by these working drawings shall be done until the drawings have been submitted to the City Representative for review and the City Representative's comments have been appropriately taken into account and implemented. The furnishing of the working drawings shall not serve to relieve the Contractor of any part of its responsibilities under the Contract.

ARTICLE 16. CONTRACTOR'S TITLE TO MATERIALS

16.01 No material, supplies or equipment for the work shall be purchased by the Contractor, or by any Subcontractor, subject to any chattel mortgage or under any conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work. The Contractor further warrants that, upon completion of all work, he will deliver the premises, together with all improvements and appurtenances constructed thereon, to the City free of any claims, liens, charges or encumbrances. The Contractor further warrants that neither the Contractor nor any person, firm or corporation furnishing any material, labor or equipment for any work covered by this Contract shall have a right to lien upon the premises or any improvement or appurtenance thereon.

ARTICLE 17. "OR EQUAL" CLAUSES

17.01 Unless otherwise provided for in the Bid Documents, the Contract will be based on material and equipment described on the Bid Documents without consideration of possible substitute or "equal" items. However, after award of the Work, whenever a material or article required is specified or shown on the plans by using the name of a proprietary product or of a particular vendor or manufacturer, any materials or article which, in the sole discretion of the Project Engineer, is equal or superior to the specified item to material, may be considered an "equal." Requests for substitutions must be supported by evidence such as technical data, test results, or other pertinent information that demonstrates that the substitute offered is equal to or better than the specification's requirements. Such items shall not be purchased or installed without the written approval of the Project Engineer. In all cases, only new materials shall be used for the work.

ARTICLE 18. REPRESENTATIONS OF THE CONTRACTOR

18.01 The Contractor represents and warrants:

(a) That he is financially solvent and that he is experienced and competent to perform the type of work or to furnish the plant, material or equipment to be performed or furnished by him; and

(b) That he is familiar with all Federal, State and municipal laws, ordinances, orders and regulations which may in any way affect the work of those employed therein, including but not limited to any special acts relating to the work or to the project of which it is a part; and

(c) That such permanent and temporary work required by the Contract Documents to be done can be satisfactorily constructed and be used for the purpose for which it is intended, and that such construction will not injure any person nor damage any property; and

(d) That he has carefully examined the drawings, specifications and addendum (or addenda) if any, and the site of the work, and that, from his own investigations, he has satisfied himself as to the nature, quality and quantity of surface and subsurface materials likely to be encountered; of the character of equipment required for the work; of other facilities needed for the performance of the work; of the general and local conditions and of all other materials which in any way may affect the work and its performance; and

(e) That he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without injury to persons or property; and that he can provide the necessary equipment, labor and materials to complete the contract work within the specified contract duration.

ARTICLE 19. PROTECTION OF WORK AND PROPERTY (EMERGENCY)

19.01 The Contractor shall always safely guard and protect the City's property from injury or loss in connection with this contract. He shall always safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in the Contract or by the City or its duly authorized representatives.

19.02 In case of an emergency that threatens the loss or injury of property and/or safety of life, the Contractor will be allowed to act in a diligent manner without previous instructions from the City. He shall notify the City immediately thereafter.

19.03 Where the Contractor has not acted but has notified the City of an emergency threatening injury to persons or damage to the work or to any adjoining property, he shall act as instructed or as authorized by the City.

19.04 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided elsewhere in the Contract Documents.

ARTICLE 20. WEATHER CONDITIONS

20.01 In the event of temporary suspension of the work, or during inclement weather, or whenever the City shall direct, the Contractor shall carefully protect his work and materials against damage or injury from the weather. The Contractor shall cause all his subcontractors to provide the same protection for their portion of the work. If, in the opinion of the City, any work or material was damaged or injured by reason of failure on the part of the Contractor, or any of his subcontractors, so to protect his work, or otherwise damaged by the negligence of the Contractor or any of his subcontractors or their agents or servants, or is otherwise defective, such materials shall be removed and replaced at the expense of the Contractor.

20.02 For projects involving asphalt paving, all work shall be temporarily suspended, upon direction of the City, when the Contractor can no longer properly pave exposed areas in accordance with the plans and specifications during inclement weather or during winter months.

ARTICLE 21. SUBLETTING

21.01 The Contractor is not to assign, transfer or sublet the Contract in whole or in part to any other person or persons without written permission from the City. The Contractor cannot abridge the

terms of the Contract in any way without written permission of the City. The Contractor must keep the Contract in his name and control until all work is completed and finally accepted by the City. The Contractor shall likewise not assign any of the money payable under this Contract. Approval by the City of the subletting of any part of the work shall not, under any circumstances, relieve the Contractor or his Surety of any liabilities or obligations under the terms of the Contract Documents.

21.02 The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of the persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Should any subcontractor violate any of the terms of these specifications, the City may, at its option, require the Contractor to end and terminate such subcontract.

21.03 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract and the General Conditions and other provisions of the Contract Documents. This language is to be applicable insofar as necessary to the work and is to give the Contractor the same power over as regards terminating any subcontract as the City may exercise over the Contractor under any provisions of the Contract Documents.

21.04 Nothing contained in this Contract shall create any contractual relation between the City and any subcontractor.

ARTICLE 22. SUBSTITUTE BOND

22.01 If, at any time, the Contractor's Surety or Sureties, or the carriers of other insurance herein specified to be written, become insolvent or, in a reasonable judgment of the City, become unsafe or unsound then, upon five days written notice from the City to the Contractor, the Contractor shall substitute such Performance and Labor and Material Bond or insurance with such other Surety or carrier in such form as shall be acceptable to the City. Any additional premium caused by such a substitution shall be paid for by the Contractor. No further payments will be deemed due nor will be made until the new Surety or Sureties have furnished such an acceptable bond to the City.

ARTICLE 23. RIGHT TO WITHHOLD PAYMENTS

23.01 The City may withhold from the Contractor so much of any approved payments due as may in the judgment of the City be necessary to:

a. Assure the payment of any lien, stop notice or claim, filed with the City for work, labor, or materials done, performed or delivered and used in the prosecution of the work herein provided for (whether in strictly legal form or otherwise)

b. Protect the City from loss due to defective work not remedied or through any improper or defective machinery, implements or appliances used by the Contractor or for failure of the Contractor to fully comply with any requirements of the Contract.

c. Protect the City from loss due to injury to persons or damage to the work or property of other contractors, subcontractors or others caused by the act' or neglect of the Contactor or any subcontractors.

23.02 The City shall have the right, as agent for the Contractor, to apply any amounts so withheld in such manner as the City may deem proper to satisfy such claims or to secure such protection. Such applications of such money shall be deemed payments to the account of the Contractor.

23.03 Notwithstanding the above, the Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials furnished.

ARTICLE 24. PAYMENTS BY CONTRACTOR

24.01 The Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials.

ARTICLE 25. NOTICE OF WARNING

25.01 If the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work; or refuse or fail to supply enough properly skilled workmen or proper materials; or refuse or fail to prosecute the work or any part thereof in accordance with the Contract Documents or with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof); or fail to complete the work within said period; or refuse to regard laws ordinances, codes or instructions of the City then the City shall forward A Notice of Warning to the Contractor by registered mail at the address given in the Contract. In the event the Contractor fails to comply with said Notice of Warning within five (5) consecutive calendar days from receipt thereof, the City shall have the right to terminate the Contract.

ARTICLE 26. PROGRESS MEETINGS

26.01 Progress meetings will be held weekly at locations, dates and times selected by the City for the purpose of reviewing, scheduling and coordinating the Project's progress as well as other matters.

ARTICLE 27. PERMITS

27.01 The Contractor shall keep himself fully informed of all existing and current Municipal, State or Federal ordinances, regulations or laws in any way limiting or controlling the operations or actions of those engaged in the work or affecting the materials supplied to or by them. The Contractor shall always observe and comply with all such valid and binding ordinances, laws or regulations. The Contractor shall protect and indemnify the City and its representatives against any claims arising from, or based upon, any violation of the same.

ARTICLE 28. RIGHT TO USE THE WORK

28.01 The City may enter upon the use of the whole or of any portion of the work, which may be in condition to use, at any time before its final acceptance of the Project. Such use shall not constitute, or be evidence of, acceptance by the City or by the Project Engineer of the whole or any part of the material furnished, or work performed under the Contract.

ARTICLE 29. PROVISIONS REQUIRED BY LAW

29.01 Every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If, through mistake or otherwise, any such provision is not inserted, then, upon application of either party, the Contract shall forthwith be physically amended to make such insertion.

29.02 If this Contract contains any unlawful provisions not an essential part of the general structure of the Contract, and which shall not appear to have been a controlling or material inducement in the making thereof, the same shall be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 30. WAIVER

30.01 Neither the inspection by the City or Project Engineer or by any of their employees; nor any order, measurement or certificate by the Project Engineer; nor any order by the City for the payment of any money; nor any payment for or acceptance of the whole or any of the work by the Project Engineer for the City; nor any extension of time; nor any possession taken by the City or its employees shall operate as a waiver of any provision of this Contract or of any power herein reserved to the City; nor shall such action waive any right to damages herein provided. Nor shall any waiver of any breach of the Contract constitute a waiver of any other or subsequent breach. Any remedy provided in this Contract shall be construed as cumulative - i.e., in addition to each and every other remedy herein provided.

ARTICLE 31. USE OF PREMISES AND REMOVAL OF DEBRIS

31.01 The Contractor expressly undertakes at his/her own expense:

a. To take every precaution against injuries to persons or damage to property;

b. To store apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of the work or the work of any other contractor;

c. To place upon the work or any portion thereof only such loads as are consistent with the safety of that portion of the work;

d. To frequently clean up all refuse, rubbish, scrap materials and debris caused by the Contractor's operations to the end that at all times the site of the work shall present a neat, orderly and work manlike appearance;

e. To remove all surplus material; falsework; temporary structures including foundations thereof; plant of any description and debris of any nature resulting from the Contractor's operations before final payment is made;

f. To put the site in a neat orderly condition, to remove all clean-up materials, to remove such materials from the construction site, and to deposit them in a refuse disposal site at his/her expense; and

g. To affect all cutting, fitting or patching of work required to make the same conform to the Drawings and Specifications and, except with the consent of the City, not to cut or otherwise alter the work of any other contractor.

ARTICLE 32. RIGHT-OF-WAY AND SUSPENSION OF WORK

32.01 Land and rights-of-way for the purposes of this Contract will be furnished by the City to the extent shown on the Drawings. The City will use diligence in acquiring said land and rights-of-way as speedily as possible. However, it is possible that not all land and rights-of-way will be obtained as herein contemplated before construction commences. In such case the Contractor shall begin the work upon such land and rights of-way as the City may have previously acquired. No claim for damages whatsoever will be allowed by reasons of the delay in obtaining the remaining lands and/or rights-of-way. Should the City be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of litigation or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to withdraw from the Contract because of these occurrences. In the event of any of the above occurrences, the time for completion of the work may be extended in the manner provided elsewhere in the Contract Documents.

ARTICLE 33. CONSTRUCTION EQUIPMENT AND MACHINERY

33.01 The Contractor shall furnish and maintain, at its own cost and risk, all tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and all other similar work or material necessary to insure speed, convenience and safety in the execution of its Contract. All such items shall be subject to approval of the City, upon the Project Engineer's recommendation, as to general stability, type and location, but the responsibility for proper design, strength and safety shall remain with the Contractor. All such items shall comply with OSHA regulations and all other applicable codes, statutes, rules and regulations.

33.02 The Contractor shall provide all drains, drainage, ditches and pumping apparatus (including power and attendance for same) that may be necessary to keep all excavations and sub-grade work free from water.

33.03 All machines, equipment, trucks and vehicles used in the prosecution of the work, or in connection therewith, shall always be in proper working condition. Only gasoline, electric or diesel engines shall be used for the power in operating equipment.

33.04 The Contractor shall be responsible for curtailing noise, smoke, fumes or other nuisances resulting from the operations. Contractor shall, upon written notification from the City or Project Engineer, make any repairs, replacements, adjustments or additions and furnish mufflers when necessary to fulfill requirements. No oil tanks for fueling equipment shall be stored less than one hundred (100) feet from any watercourse.

33.05 All costs involved in complying with the stipulations outlined shall be included in the various prices set in the proposal.

ARTICLE 34. CONTRACTOR'S GENERAL WARRANTY PERIOD

34.01 The One Year General Warranty Period shall commence on the date of the written notice of final acceptance of the Project by the City and during such time Contractor shall guarantee his work is free from faulty materials and lack of workmanship. Within the One Year General Warranty Period, if any portion of the Work in the City's opinion require repairing, replacing or rebuilding, the Contractor shall start such repairs within five (5) consecutive calendar days after receipt of notice from the City. If the Contractor fails to or neglects to start the repairs within five consecutive calendar days, the City may employ such other person or persons as it may deem proper to make such repairs. The City will charge the Contractor the cost thereby incurred. Nothing herein provided shall limit the liability of the Contractor or Surety to the City for non-performance of the Contractor's obligations at any time.

34.02 The Payment and Performance Bonds, and Material Bond, if required, shall remain in full force and effect through the one-year General Warranty Period.

34.03 Deficiencies in the Work discovered after the date of the written notice of final acceptance of the Project by the City shall be deemed General Warranty Work. Such deficiencies shall be corrected by Contractor under this Article.

34.04 The Contractor shall remedy any defects due to faulty materials or workmanship within thirty (30) consecutive calendar days of receiving notice thereof by the City. Should the Contractor fail to correct the deficiency within thirty (30) consecutive calendar days, the City may perform the corrective work and Contractor shall be responsible for all reasonable costs incurred by the City in performing such correction.

ARTICLE 35. PROCEDURE IN CONSTRUCTION

35.01 The Contractor shall start work and carry it on at such point or points and in such order of precedence and at times and seasons as may be determined by the City. The Contractor shall complete the various portions of the work in accordance with the schedule approved by the City.

35.02 Complete organization, complement of equipment and ample materials shall be on hand before actual work commences. The Contractor shall arrange his/her organization, plant, equipment and materials so that construction operations will be carried on continuously. The Contractor will not be permitted to reduce the force of workers or remove any equipment from the work if such reduction or removal impairs the progress of the work.

35.03 If the City awards more than one contract to the Contractor, the Contractor shall be required to prosecute the work on each contract simultaneously. The Contractor will be required to maintain a separate and independent organization and staff, labor forces and machinery on each contract to complete the work within the time set forth for the respective contracts.

ARTICLE 36. APPRENTICES

36.01 Apprentices shall be permitted to work only under a bona fide apprenticeship program registered either with the State Apprenticeship Council or with the Bureau of Apprenticeship, United States Department of Labor.

ARTICLE 37. CONTROL OF WORK

37.01 The Contractor shall abide by all orders, directions and requirements of the Project Engineer in the performance of the work.

37.02 In the event the Contractor is not personally present at the project site, he/she shall have a superintendent present at the site that possesses more than adequate communication skills. The superintendent must have proper knowledge of all applicable project requirements and conditions and must have authority to fully represent the Contractor with power to act and to be the recipient of orders and to obey all the instructions of the Project Engineer and/or the City. If proper provision for the carrying out of this stipulation is not made, then the Contractor shall be held responsible for the execution of such orders and instructions which the Project Engineer and/or City may deem necessary to issue to any employee regarding the work. The City or Project Engineer may order the work stopped until a duly authorized representative of the Contractor appears and receives instructions; no claims for damages or for an extension time in which to complete the work because of such delay will be allowed by the Contractor.

37.03 In all cases, the Project Engineer shall determine classifications, quantities, quality, acceptability and fitness of the several kinds of work that are to be paid for under the Contract. The Project Engineer and/or City shall interpret the Plans and Specifications and any extra work orders and shall determine all questions in relation to said work and to the construction thereof.

37.04 The Contractor shall not employ any plant, equipment, material, methods or workers to which the City objects. The Contractor shall not remove any plant, materials, equipment or other facilities from the site of the work without the City's permission.

ARTICLE 38. CITY'S CONTROL NOT LIMITED

38.01 The enumeration in this Contract of particular instances in which the opinion, judgment, discretion or determination of the City shall control, and in which work shall be performed to the City’s satisfaction and approval or inspection, shall not imply that only matters similar to those enumerated shall be so governed; without exception all the work shall be so governed and performed.

ARTICLE 39. AUTHORITY AND DUTIES OF INSPECTORS

39.01 Inspectors shall be authorized to inspect all work done and all materials furnished. Such an inspection may extend to all parts of the work and to the preparation or manufacture of the materials to be used. In the case of any dispute arising between the Contractor and an Inspector as to materials furnished, or as to the manner of performing the work, the Inspector shall have the authority to reject material or to suspend the work until the question at issue can be referred to, and decided by, the City.

39.02 The Inspector shall not be authorized to revoke, enlarge, relax or release any requirements of these Specifications nor to approve or accept any of the provisions of the Contract Documents. The Inspector shall in no case act as a foreman or perform other duties for the Contractor. The Inspector shall not interfere with the management of the work by the Contractor. Any advice which the Inspector may give the Contractor shall not be binding on the City or the Project Engineer in any way. Such advice will not release the Contractor from the fulfillment of the terms of the Contract.

ARTICLE 40. INSPECTION AND CORRECTION OF WORK

40.01 All material furnished and work done will be inspected by the Project Engineer. The Project Engineer shall condemn any work or materials not in accordance with the Contract Documents. All condemned work and materials shall be removed, and other work and materials furnished in accordance therewith. All materials rejected by the Project Engineer as being unfit for the clause in the Specifications to which they refer shall be removed from the site. Removal shall be within twenty-four (24) hours or shorter if the Project Engineer so directs. Should the Contractor refuse to remove the work and materials as ordered, then the Project Engineer may stop the Contractor from proceeding with the work. The City may supply workers and materials to remove the condemned work and materials at the expense of the Contractor.

40.02 Failure on the part of the Project Engineer, or any authorized Inspectors, to detect inferior work or materials, and to condemn the same, shall not be construed to imply an acceptance of such work or materials. Such failure shall not be construed as barring the City, at any subsequent time, from the recovery of such sum of money from the Contractor which may be required to construct or to build anew all portions of the work in which fraud was practiced, improper work executed, or improper material furnished and built into the work. The Contractor shall furnish all necessary facilities should it be desirable at any time to make an examination of the work already completed.

40.03 If any work is found defective in any respect, the expense of the examination must be borne by the Contractor. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided for elsewhere in the Contract Documents. If all work is found satisfactory, the expense of the examination will be paid for as Extra Work.

40.04 If, in the opinion of the City, it is undesirable to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the Contractor's compensation hereunder shall be reduced by such amount as may be equitable under all circumstances.

ARTICLE 41. CONTRACTOR'S OBLIGATIONS

41.01 The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and material, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by this Contract. All to be accomplished within the time specified; in accordance with the provisions of this Contract and Specifications; in accordance with the Plans and Drawings pertaining to this Contract; in accordance with any and all supplemental Plans and Specifications and in accordance with the directions of the City as given from time to time during the progress of the work. The Contractor shall furnish, erect, maintain and remove such construction plant and such temporary work as may be required. The Contractor alone shall be responsible for the safety, efficiency and adequacy of the plant, appliances and methods. The Contractor shall be responsible for any damage, which may result from their failure or from their improper construction, maintenance or operation. The Contractor shall observe, comply with and be subject to all terms, conditions, requirements and limitations of the Contract and the Specifications. The Contractor shall do, carry on and complete the entire work to the satisfaction of the City.

41.02 The Contractor shall be solely responsible for all the work and shall provide all precautionary measures necessary for preventing injury to persons or damage to property. All injury or damage, of whatever nature, resulting from the work, or resulting to persons, from whatever cause, shall be the responsibility of, and shall be borne and sustained by, the Contractor. The Contractor shall hold the City and Project Engineer, or their agents, harmless and shall defend and indemnify the City and Project Engineer, or their agents, against damages, or claims for damages, due to injury to

.persons or to property arising out of the execution of work and for damages to material furnished for the work; for infringement of inventions, patents and patent rights used in doing the work; for damages arising out of the use of any improper material, equipment or labor used in the work and for any act of omission by any subcontractors therein. The Contractor shall bear all losses including, but not limited to, losses sustained on account of the character, quality or quantity of any part or all of th e work, or because the nature of the land in or on which the work is done being different from what may have been estimated or indicated, or on account of the weather, elements or other causes, except for acts beyond the reasonable control of the Contractor.

ARTICLE 42. TOILET ACCOMMODATIONS AND DRINKING WATER

42.01 The Contractor shall provide necessary sanitary toilet accommodations and drinking water for the workers. Separate facilities shall be provided for female workers.

ARTICLE 43. SAFETY AND HEALTH REGULATIONS

43.01 These documents, and the joint and several phases of construction hereby contemplated are to be always governed by applicable provisions of the Federal law(s), including, but not limited to, the latest amendments of the following:

a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956.

b. Part 1910 - Occupational Safety and Health Standards; Chapter XVII of Title 29, Code of Federal Regulations.

c. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

43.02 This project is subject to all the Safety and Health Regulations (see 29 CFR 1926m as amended) as promulgated by the U. S. Department of Labor on June 24, 1974. The Contractor shall thoroughly familiarize him/herself with the requirements of these regulations.

ARTICLE 44. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

44.01 Subsequent to award of the contract, except for the Contractor's executed set, all drawings and specifications are the property of the City. The City shall furnish one (1) paper and one electronic set, in PDF Format, of the construction drawings and specifications to the Contractor without charge. No additional sets will be furnished by the City. Such drawings and specifications are not to be used in other work.

ARTICLE 45. RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

45.01 Except to the extent prohibited by Federal or State statute, the Contractor shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

Section 2(b) each contract for any such project covered by this section under the supervision of the State or any of its agents shall contain the following provision:

"In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the State who are and, continuously for at least six months

prior to the date hereof, have been residents of the State, and if no such person is available, then to residents of other states."

ARTICLE 46. LISTING OF EMPLOYMENT OPENING

46.01 This Contract is executed subject to the Governor's Executive Orders No. 3 and No. 17, which are hereby made a part of this agreement. The Governor's Executive Order No, 17 requires, inter alia, that all contractors and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area in which the work is to be performed or where the services are to be rendered. Failure of the Contractor to conform to the requirements of the Governor's Executive Orders No. 3 and No. 17, and any orders, rules, or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the City.

ARTICLE 47. SERVICE OF PROCESS

47.01 The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoint(s) the Secretary of State of the State of Connecticut, and successors in office, agent for service of process. Such service, as arising out of, or because of, this Contract. Such appointment shall in effect throughout the life of this Contract and for a period of six (6) years thereafter.

ARTICLE 48. CITY OF WATERBURY ORDINANCE CHAPTER 34

48.01 For projects subject to the City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34), the provisions thereof are in addition to any requirements of these General Conditions, and to any requirements of other funding sources for the Project, but only to the extent permitted by federal and state law.

ARTICLE 49. WAGE RATES

49.01 The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein, contracted to be done shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. The amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund (as defined in Section 31-53 of the Connecticut General Statutes) shall also be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. If the Contractor is not obligated by agreement to make such payment or contribution on behalf of such employees to any such welfare fund, the Contractor shall pay to each employee the amount of payment of contribution for his classification on each payday as part of his wages.

49.02 For Prevailing Wage Rate projects, the Contractor shall furnish to the Project Engineer certified copies of payrolls showing the names of its employees working on the Project, the specific days and hours and number of hours that each of them has spent in doing so, and the amount paid to each person for said work.

ARTICLE 50. SCHEDULE AND POSTING OF MINIMUM WAGE RATES

50.01 Where applicable, the Contractor, and every subcontractor, shall post a legible copy of the Minimum Wage Rates and Classifications included in the Contract Documents. This posting shall

be in a prominent and accessible place at the site of the work (See ARTICLE 49). The schedule shall show all determined minimum wage rates for the various classes of laborers and mechanics to be engaged to work on the project. The schedule shall also show all deductions, if any, required by law to be made from wages earned by the laborers and mechanics so engaged.

50.02 The rates established by each schedule are the minimum and all employees shall be paid no less than the established rate for each trade or occupation. In the case of a conflict between schedules in anyone trade or occupation, the higher rate listed shall control and such higher rate shall be the minimum.

50.03 State: Where applicable, the minimum rates of wages and schedule of supplements to be provided for the various trades shall be in accordance with the Prevailing Wage rate Schedule included herein. The rate of wages and schedule of supplements for any trade not appearing or mentioned in this schedule shall be in accordance with the prevailing rates established for that trade by the Connecticut Department of Labor or by the Comptroller or other analogous officer of the City of Waterbury. The minimum wages required to be paid shall include supplements for hospital, surgical, medical or other benefits as determined by all applicable sections of the General Statutes of the State of Connecticut. The Contractor shall file a Wage Certification Form with the Labor Department of the State of Connecticut prior to beginning work on the site.

50.04 If for any reason and at any time, the Federal Government, the State of Connecticut, or the City of Waterbury, shall in any way supplement, change or amend the Prevailing Wage Rates Schedule, then the Contractor or subcontractor shall follow such Schedule as supplemented, changed or amended. In no case shall the Contractor or subcontractor be entitled to any additions, compensations or extras because of any supplement, change, amendment or predetermination of the Prevailing Wage Rate Schedule.

50.05 Federal Wage Rates, where applicable, shall be applied in any case where they exceed the State of Connecticut Minimum Wage rates or in any case where a rate has not been established by the State.

ARTICLE 51. COMPUTATION OF WAGES AND OVERTIME COMPENSATION

51.01 The Contractor and each subcontractor shall comply with all applicable Federal, State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project. The Contractor and all subcontractors shall also comply with all applicable Federal, State and local ordinances with respect to compensation for overtime hours worked by laborers and mechanics engaged in work on the project.

ARTICLE 52. WAGE UNDERPAYMENTS AND ADJUSTMENTS

52.01 In addition to any applicable Federal or State regulations, the City may, in the case of underpayment of wages to any worker on the project under this Contract by the Contractor or by any subcontractor, withhold an amount from payments due the Contractor. Said amount to be sufficient to pay such worker the difference between the wages required to be paid the worker under this Contract and the amount actually paid the worker for the total number of hours worked. The City will disburse the amount so withheld by it for, and on behalf of, the Contractor to the employee to whom the amount is due. Such monies withheld pursuant to this article will be in addition to percentages to be retained pursuant to other provisions of the Contract.

ARTICLE 53. CONFORMANCE OF WORK

53.01 The work, during its progress and at its completion, shall conform to the work as shown on the drawings and to the directions given by the Project Engineer from time to time. The work shall be subject to such modifications or additions as the Project Engineer may deem necessary during the execution of the work. In no case will any work be paid for which is performed in excess of such requirements. The work shall also be accomplished in accordance with the Specifications.

ARTICLE 54. DIMENSIONS AND SCHEDULES

54.01 The Contractor will be required to check all dimensions and quantities shown on the drawings or schedules given to him by the Project Engineer. The Contractor shall notify the Project Engineer of all errors therein which he may discover by examining and checking the same. The Contractor shall not take advantage of any error or omission in these specifications, drawings and schedules. The Project Engineer will furnish all instructions should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

ARTICLE 55. PROTECTION FROM STORM

55.01 Should storm warnings be issued, the Contractor shall take every practicable precaution to minimize danger to persons, to the work and to adjacent property. These precautions shall include closing all openings; removing all loose materials, tools and/or equipment from exposed locations; and removing or securing scaffolding and other temporary work.

55.02 The Contractor shall provide measures to prevent stormwater runoff from entering excavation areas.

ARTICLE 56. PROTECTION OF WORK AND MATERIALS

56.01 The Contractor shall assume full responsibility for the protection of the work and materials during the progress of construction, and until final acceptance of the Project by the City, against loss or damage by any cause or agency. The Contractor shall, at his own expense, provide efficient means for such protection.

ARTICLE 57. FURTHER SAFEGUARDS

57.01 In case the City or the Project Engineer shall at any time be dissatisfied with the means provided by the Contractor for any aforesaid protection of the work or of any other properties, the City or the Project Engineer may order additional measures and precautions for that purpose. The Contractor, at his own expense, shall immediately comply with such orders and carry them out.

ARTICLE 58. FIRST AID TO INJURED

58.01 The Contractor shall keep on site, ready for immediate use, all articles necessary for giving first aid to injured employees. He shall also provide arrangements for the immediate removal and hospital treatment of any injured employee who may require such treatment.

ARTICLE 59. CONFORMANCE WITH DIRECTIONS

59.01 The Project Engineer may make alterations in the lines, grades, forms, dimensions or materials to be used in the project, or any part thereof, either before or after the commencement of construction. If such alterations diminish the quantity included in any item of work to be done and paid for at a unit price, the Contractor shall have no claim for damages or for anticipated profits on the work thus dispensed with. If the changes increase the quantity included in any such item, such an increase shall be paid for at the stipulated unit price.

ARTICLE 60. COMPETENT HELP TO BE EMPLOYED

60.1 The Contractor shall employ an experienced foreman, craftsmen and other workmen competent in the work in which they are to be engaged. All work shall be accomplished by able, skilled and competent personnel. If any person employed on the work by the Contractor appears to be incompetent or unreliable in any way, he shall be discharged immediately upon the request of the Project Engineer and shall not be employed again upon the work.

ARTICLE 61. STREETS AND SIDEWALKS TO BE KEPT OPEN

61.01 The Contractor shall keep the street and sidewalks in which he may be always working open to pedestrian and vehicular traffic. If, in the opinion of the City or the Project Engineer, the interest of abutters and the public requires it, the Contractor shall bridge or construct plank crossings over trenches at street crossings, roads or private ways. The Contractor shall conduct his work for this project in such manner as the City or the Project Engineer may direct from time to time. No sidewalk shall be obstructed where it is possible to avoid it. No additional payment shall be made to the Contractor for such work.

61.02 The Contractor shall provide all necessary fire crossings at principal intersections or ways usually traveled by fire apparatus. The Contractor shall make provision for the passage of fire apparatus to the work area, including along the line of pipeline installations.

61.03 All work shall be conducted in such a manner as to create minimum interference with existing businesses and commercial establishments. Such establishments shall be allowed to always conduct business during the construction.

61.04 The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the streets free of the accumulation of sand and other similar materials.

ARTICLE 62. LIGHTS, BARRIERS, FENCES, WATCHMEN AND INDEMNITY

62.01 The Contractor shall put up and maintain such barriers, fences, lighting, and warning lights, danger warning signals and signs as will prevent accidents during the construction. The Contractor will protect the work and will always ensure the safety of the personnel and of the public and places. The Contractor shall defend, indemnify and save harmless the City and its agents in every respect from any injury or damage whatsoever caused by any act, omission or neglect of the Contractor or his subcontractors, or their servants or agents. Such indemnification shall also include any claims arising out of failure to erect and maintain sufficient railing or fencing as required by Section 13a-111 of the Connecticut General Statutes. The fact that the City may retain control of the premises, or that the City, or its agents, may take action to erect or maintain railings or fencing shall not relieve the Contractor's obligations hereunder.

62.02 The Contractor shall furnish, maintain and use all necessary safety devices; follow all such safety practices in the prosecution of the work and shall adopt, follow and maintain such additional safety measures as, in the opinion of the Project Engineer, are conducive to safe operation by the Contractor. The Contractor shall cause his subcontractor(s) to also adopt, follow and maintain these measures. All of this shall be done at the Contractor's or subcontractor's own expense. The City shall have the right to order any or all work suspended where, in the opinion of the City, such work is not being carried out in a safe and proper manner or where persons or property are not being properly protected or safeguarded. Such work shall not be resumed until the City's requirements have been met and the City or Project Engineer has directed that work be resumed. Any work so suspended shall be at the Contractor's expense.

62.03 In addition to the above, when as is necessary or when required by the City and/or the Project Engineer, the Contractor shall post signs and shall employ watchmen or flagmen for the direction of the traffic at the site and to always exclude unauthorized persons from the site. The Contractor will not be paid additional compensation for this work.

62.04 At all times the Contractor shall be responsible for excluding all persons from land within easement areas and all persons not directly connected with the work or authorized by the City and/or the Project Engineer to be within the project limits.

ARTICLE 63. WORK OUTSIDE REGULAR HOURS

63.01 Night work or work on Saturdays, Sundays or legal holidays requiring the presence of the City, Project Engineer or an Inspector will not be permissible except in the case of emergency and then only upon approval of the Project Engineer. Should it be desired or required for by the City or Project Engineer to operate an organization for continuous night work, the lighting, safety and other facilities that are deemed necessary for performing such night work shall be provided by the Contractor. For night work on Saturdays, Sundays or legal holidays, if any be performed, the Contractor will receive no extra payment. Compensation for such work shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.

ARTICLE 64. BUS LINE INTERFERENCE

64.01 Whenever it may be necessary to interfere with any bus lines, notice shall be given to the corporation or agency owning the same. A reasonable amount of time shall be given to said organization to rearrange their schedule(s) as may be necessary.

ARTICLE 65. COLD WEATHER WORK

65.01 The Project Engineer will determine when low temperature conditions are unfavorable for work and may order the work, or any portions of it, suspended whenever, in his opinion, the conditions are not such as will ensure first class work.

65.02 All methods and materials used in the performance and for the protection of the work in cold weather shall be subject to the approval of the Project Engineer. The Contractor shall take the necessary precautions to protect the work from damage and to remove ice and frost from materials. The removal shall include all necessary heating and the additional removal of any resultant water. The Contractor shall also supply any required sand and/or coarse aggregate required to prevent slipping on ice.

65.03 Except for specific work for which the City has issued a Certificate of Partial Acceptance, the Contractor shall be responsible for maintaining the project roadways, sidewalks, ramps, driveway aprons and asphalt pathways from the time of contract signing until final acceptance of the Project by the City. This responsibility will include snow and ice removal, sanding and mechanical sweeping, and patching with materials approved by the Project Engineer for all roadways, sidewalks, ramps, driveway aprons and asphalt pathways, etc. within the project limits.

65.04 The Contractor shall not continue road excavation after bituminous concrete plants have shut down for the winter. At that time, the Contractor shall request a "winter shutdown". The Contractor shall receive no extra payment for any labor, apparatus, tools or materials necessary to comply with the above requirements, but compensation shall be construed items of work as listed in the bid proposal/form.

ARTICLE 66. BLASTING AND EXPLOSIVES

66.01 No blasting shall be allowed without the Contractor securing a permit and permission from the office of the Waterbury Fire Marshall. The Marshall's office is located at 185 South Main Street, Garden Level, (1 Jefferson Square), Waterbury, CT 06702 Phone: (203) 597-3452. The Marshall's office must be advised between 7:00 AM and 10:30 AM of each day's blasting schedule.

66.02 Explosives for blasting shall be stored, handled and used in accordance with the laws, ordinances and regulations of the State of Connecticut; with all local regulations and with such other additional regulations as the City Representative may require. Blasting shall be conducted so as not to endanger persons or property. The Contractor shall be responsible for and shall make good any damages of whatever nature caused by blasting or accidental explosions.

66.03 The Contractor shall also adhere to any additional conditions imposed by the Fire Marshall's office.

Additionally, the Contractor shall have a pre-blast survey conducted of the adjacent area(s) at no cost to the City.

66.04 Steel or rubber matting shall be used at all blast sites where required by the Bureau of Fire Prevention. Any blast or shot involving more than 99 pounds of explosives must be monitored using seismographs. All seismographs are at the expense of the Contractor. Wire and debris must be cleared from all areas.

66.05 The Contractor shall notify each utility with facilities in proximity to the site of such blasting operations, and any other individuals and entities that may be affected thereby of the Contractor's intention to use explosives; and such notice shall be given sufficiently in advance of any blasting to enable such affected parties to take steps to prevent such blasting from injuring persons or property. Such notice shall not relieve the Contractor of responsibility for damage resulting from its blasting operations.

66.06 Where blasting is required after commencement of construction, insurance, as required by the City’s Risk Manager, shall be obtained by the Contractor and approved by the City’s Risk Manager.

ARTICLE 67. TUNNELING

67.01 Tunneling will not be permitted without the express written consent of the City.

ARTICLE 68. RESERVED MATERIALS/EXCAVATED MATERIALS

68.01 Materials excavated from trenches and excavations and those used in the construction of the work shall be deposited in such a manner so that they do not endanger persons or the work. Materials shall also be deposited in such a manner that free access may be had at any time to all hydrants and gates near the work. The materials shall be kept trimmed-up so to be of as little inconvenience as possible to public travel or to adjoining tenants. All excavated materials not approved for backfill and/or fill; all surplus material; all rock and all boulders resulting from excavations shall be removed and satisfactorily disposed of off the site by the Contractor at no additional cost to the City.

68.02 Any excavated material not used in the installation of contracted items shall be removed from the site and legally disposed of by the contractor.

ARTICLE 69. OBSTRUCTIONS AND CROSSOVERS

69.01 Whenever any trench or other excavation obstructs pedestrian and/or vehicular traffic in or to any public street, private driveway or property entrance or to private property, the Contractor shall employ such means as may be necessary to maintain pedestrian and vehicular traffic and access. The Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway or property in question as specified or as directed. These crossings shall be maintained for as long as it is not expedient to backfill the excavation or until such time as sufficient, supportive backfill may be placed. No additional payment will be made for this work.

69.02 Movement of construction equipment and all other vehicles and loads over and adjacent to any slotted drainpipe shall be done at the Contractor's risk. Any pipe or backfill which becomes damaged or disturbed through any cause shall be replaced or repaired as directed by the City Representative at the expense of the Contractor and at no cost to the State. Suitable temporary crossovers consisting of steel plate or other materials approved by the City Representative shall be employed for a minimum of 7 consecutive calendar days following concrete backfill operations in all areas where vehicular traffic must be maintained or until such time as the pipe installation will withstand loading without damage. All concrete surfaces shall receive a protective coating. End cap installation shall be as recommended by the manufacturer.

ARTICLE 70. DIRECTIONAL SIGNS AND LIGHTS

70.01 Suitable signs, lights and such required items for direct traffic shall be furnished and maintained by the Contractor. No additional payment shall be made for this work.

ARTICLE 71. MAINTENANCE OF WORKPLACE

71.01 The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials. The City or Project Engineer may, at any time, order all equipment, materials and surplus from excavations to be removed from the work area. Debris and all other materials lying outside of the working area shall be promptly removed. Should the Contractor fail to remove such material within 24 hours of notice to remove it, the City or Project Engineer may cause any or all of said materials to be removed by others. The cost of this removal shall be deducted from any monies, which may be, or may become, due to the Contractor under the Contract. In special cases, the City or Project Engineer may cause such materials to be removed without prior notice.

ARTICLE 72. OPERATIONS AT SEVERAL POINTS

72.01 The Contractor may carry on the work simultaneously at more than on point only if, in the opinion of the City or Project Engineer, such action is acceptable and is necessary to insure completion of the work within the specified time.

72.02 The Contractor‘s Construction Progress Schedule shall be adjusted to provide for work being simultaneously conducted at more than one point (location) at the site or sites.

ARTICLE 73. INTERFERENCE WITH EXISTING STRUCTURES

73.01 Whenever it may be necessary to cross or to interfere with existing culverts, drains, sewers, water pipes or fixtures, guard rails, fences, gas pipes or fixtures or other structures needing special care, due notice shall be given to the City or Project Engineer. Work involving these items shall be done according to the City’s or Project Engineer’s directions. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it. Any damage that may occur shall be thoroughly repaired. If so directed by the City or Project Engineer, the location of any existing work shall be changed to meet the requirements of the proposed work, if necessary, to leave all in good working order. The entire work shall be the responsibility of the Contractor and the work shall be done at no additional expense to the City.

73.02 The Contractor shall be responsible for repairing all broken or damaged mains or utilities, property markers, monitoring wells, and other existing structures to remain, or outside the Limit of Work, during the progress of the Work. The Contractor shall repair and shall be responsible for all damages to existing utilities and structures with no additional expense to the City. The Contractor shall contact the proper utility or authority to correct or make any changes due to utility or other obstructions during the prosecution of the work, but the entire responsibility and expense shall be with the Contractor.

73.03 All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the City and/or utility at no additional expense to the City.

ARTICLE 74. TURF, TOPSOIL AND OTHER REPLACEMENT ITEMS

74.01 Where the construction runs through cultivated or sodded lands, the Contractor shall stockpile the turf and topsoil separately and replace the same after the excavation is filled. The Contractor shall leave the land as nearly as possible in its original condition. Trees, fences, walls, walkways and other items must not be damaged.

ARTICLE 75. MATERIALS

75.01 All materials furnished and used in the completed work shall be new, of the best quality, workmanship, and design and shall be recognized as standard in good construction practices. Whenever a specification number or reference is given, the subsequent amendments (if any) shall be included. The standards set forth in the selection of materials and supplies are intended to conform to those standards adopted by the City. Preference to manufacture shall be given to familiarize the Contractor with the requirements of the Project Engineer when the occasion or choice of materials or supplies so demands.

ARTICLE 76. DEFECTIVE MATERIALS

76.01 No materials shall be laid, installed or used which are known to be, or which may be found to be, in any way defective. Notice shall be given to the Project Engineer of any defective or imperfect material. Defective or unfit material found to have been laid, installed or used shall be removed and replaced by the Contractor with unobjectionable material. This removal and replacement shall be done without additional expense to the City.

ARTICLE 77. INSPECTION AND TESTING OF FURNISHED MATERIALS

77.01 Unless herein provided otherwise, all materials furnished by the Contractor are subject to thorough inspections and tests by the Project Engineer. Any materials condemned or rejected by the Project Engineer as not conforming to the specifications may be branded or otherwise marked. Branded or marked material shall be, on demand, at once removed by the Contractor to a satisfactory distance from the site. Removed materials shall not again be brought upon or near to the work.

ARTICLE 78. SAMPLES AND ORDERING LISTS

78.01 Unless herein provided otherwise, the Contractor shall submit samples of the various materials used on the contract as required by the specifications for testing purposes. All ordering lists shall be submitted by the Contractor to the Project Engineer for approval and must be approved before the ordering of the materials.

ARTICLE 79. SANITARY CONVENIENCES

79.01 Adequate sanitary conveniences, properly secluded from public observation, for the use of workmen on the premises shall be provided and maintained by the Contractor in accordance with the requirements of local and State health authorities. These conveniences shall be maintained in such manner and at such points as shall be approved and their use shall be strictly enforced. Sanitary waste shall be treated and disposed of in a manner satisfactory to, and as directed by, the City and/or the local and State health authorities. Under no circumstances shall sanitary waste be allowed to flow on the surface of the ground or in the work area.

79.02 The cost of sanitary conveniences and the maintenance of same will not be paid for separately, but compensation will be included in the prices stipulated for the items of work as listed in the bid form.

ARTICLE 80. FINISHING AND CLEANING UP

80.01 In completing any backfilling operation, the Contractor shall replace all surface material to the satisfaction of the City. The Contractor shall then immediately remove all surplus material, all tools, and other property belonging to him. The Contractor shall leave the entire street or surrounding area free and clean, in good order and at no additional expense to the City. Backfilling and removal of surplus materials shall follow closely upon the completion of the work. The Contractor shall exercise special care in keeping rights-of-way and private and public lands, upon which work is being performed, clean and free of debris at all times. The Contractor will remove tools and other property belonging to him when they are not being used.

80.02 In case the Contractor shall fail or neglect to promptly remove all surplus materials, tools and other incidentals after backfilling, or shall neglect to do required paving promptly, the City or Project Engineer may, after 24 hours' notice, cause the work to be done and the cost thereof shall be deducted from any monies then or thereafter due the Contractor.

ARTICLE 81. RIGHTS OF ACCESS

81.01 Nothing herein contained or shown in the drawings shall be construed as giving the Contractor exclusive occupancy of the work area involved. The City or any other Contractor employed by the City, the various utility companies, contractors or sub-contractors employed by Federal, State or local government agencies involved in the general project or upon public rights-of-way, may enter upon or cross the area of work or occupy portions of it as directed or permitted. When the territory of one contract is the convenient means of access to the other, each contractor shall arrange his work in such a manner as to permit such access and to prevent unnecessary delays in the work as a whole. Said access rights shall also include all Federal and State agencies and their representatives that have an interest in said project.

ARTICLE 82. WORK BY OTHERS

82.01 The City reserves the right to do any other work which may connect with, or become a part of, or be adjacent to the work embraced by this Contract, at any time, by contract work or otherwise. The Contractor shall not interfere with, nor obstruct in any way, the work of such other persons as the City may employ. The Contractor shall execute his own work in such a manner as to aid in the execution of work by others as may be required. No excavations or backfilling will be permitted if other work by the City is affected.

ARTICLE 83. WORK WITHIN THE LIMITS OF PRIVATE PROPERTY

83.01 Particular attention is hereby directed to the fact that some of the work included under this Contract may have to be done within the limits of properties that are publicly or privately owned. The City, where necessary has, or will have, secured the necessary easements to these properties for construction purposes. The Contractor will be permitted to utilize the areas of the City's easements, subject to all of the conditions and requirements as they may affect the Contractor's operations. The Contractor shall conduct his operations and activities in the performance of the work with all such conditions and requirements as may be imposed by the City or Project Engineer.

83.02 All means and rights of ingress and egress to the work areas and all other areas required for workspace, in addition to the City's easements, shall be the entire responsibility of the Contractor, All costs in connection therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

83.03 The Contractor shall neither use nor occupy public or private lands outside the limits of the City's easements and rights-of-way unless written permission from the owner of the public or private lands has first been obtained. Copies of the written agreements shall be submitted to the Project Engineer prior to entering upon such lands. The Contractor shall be responsible for cooperating with, and for coordinating the prosecution of, the work of this Contract with the public and private property owner. Any abuse to the lands of the public and private property owner shall be immediately corrected by the Contractor, at the Contractor's expense, to the complete satisfaction of the property owner. The Contractor shall take such precautionary measures, as required by the City, to prevent further nuisances, interference or inconvenience to abutting property owners.

83.04 It shall be the Contractor's full responsibility to be familiar with the limitations imposed upon the work of construction within the various properties of public or private ownership and rights-of-way by existing occupancy or use. The Contractor will be required to make every effort to protect trees, shrubs, lawns, gardens, fences, walks, driveways, structures and all and any other appurtenances of the property owners fully and satisfactorily.

83.05 The Contractor shall provide adequate access to all walks, driveways, yards or structures: shall protect all work by the erection or placement of safety guards or barriers, lights and such other incidentals; and where required, shall construct temporary plank crossings or timbers to always permit full use of private facilities. All these actions are to be performed at no additional expense to the City. All other applicable provisions for control of work within the areas of public travel set forth elsewhere herein shall also apply to work within the limits of private ownership.

83.06 The Contractor shall cooperate with the public and private property owners and shall also contact the City and Project Engineer for additional information regarding the requested (or required) length of time needed as a notice to be given to the public or private property owner before the Contractor enters their property to start the construction. In some cases, a certain time to start the work and a certain limited length of time may be required to complete the work on public and private property owners. Furthermore, the Contactor may be required to shutdown construction operations as necessary to prevent undo interference with the operation of private and public business within the project area.

83.07 Before proceeding with construction operations, the Contractor shall provide suitable and substantial gates or other approved forms of closing gap devices in every fence within the limits of the owner's easements through which the Contractor intends to move or pass equipment and materials. It is the responsibility of the Contractor to negotiate with the owner of each fence all of that owner's requirements, in addition to those specified above. It shall also be the responsibility of the Contractor to comply with all requirements as specified herein and as agreed to with the owner in a manner satisfactory to the owner.

83.08 No separate payment will be made for the requirements specified under **"WORK WITHIN THE LIMITS OF PRIVATE PROPERTY"** and all costs in conjunction therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 84. LOADING

84.01 No part of the structures involved in this Contract shall be loaded during construction with a load greater than that calculated for the safety of the structure. Should any accidents or damage occur through any violation of this requirement, the Contractor will be held responsible. If necessary, the Contractor shall request, in writing, the allowable loading from the Project Engineer.

ARTICLE 85. COMPLETION OF WORK

85.01 In addition to the specified or described portions, all other work and all materials, equipment and labor of whatever description which are necessary or required to complete the work, or for carrying out the full intent of the drawings and specifications, as interpreted by the Project Engineer, shall be provided by the Contractor. Payment therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 86. DUST AND SPILLAGE CONTROL

86.01 The Contractor shall exercise every precaution to prevent and to control dust arising out of all construction operations from becoming a nuisance. Water shall be provided and applied as required or as ordered by the Project Engineer to allay dust conditions. Pavements adjoining excavations shall be kept swept and/or washed clean of excess excavated material wherever and whenever directed. Earth piles adjacent to excavations, earth stockpiles and surfaces of refilled excavations shall be always kept moist as directed. No extra payment will be made for providing the dust control measures and for conforming to the requirements specified above. Compensation therefore shall be considered included in the prices stipulated for the appropriate items of work as listed in the bid form.

86.02 The Contractor shall take appropriate measures to control the generation of dust from its activities. Water shall be provided and applied as required or as ordered by the Project Engineer to allay dust conditions.

86.03 All vehicles utilized by the Contractor for delivery or removal of materials shall have appropriate covers to prevent spillage of material during transit.

ARTICLE 87. CARE OF THE WORK

87.01 The Contractor shall be responsible for all damage to persons or property that occurs because of the Contractor's fault or negligence concerning the prosecution of the work. The Contractor shall also be responsible for the proper care and protection of all material delivered and of all work performed until completion and final acceptance of the Project by the City, whether the same has been covered by partial payments authorized by the Project Engineer.

ARTICLE 88. EMERGENCY WORK

88.01 The Contractor shall file, with the City Engineer and the Project Engineer, if any, the name number of a person authorized by him who may be contacted regarding emergency work at the job site that may be required during non-working hours for reasons of public safety. This person shall be readily available and shall have full Authority to deal with any emergency that may occur.

ARTICLE 89. FIRE PREVENTION AND PROTECTION

89.01. All Federal laws (Occupational Safety and Health Act) and all state and municipal rules and regulations with respect to fire prevention, fire-resistant construction and fire protection shall be strictly adhered to by the Contractor. All work and facilities necessary therefore shall be provided and maintained by the Contractor in an approved manner.

89.02. All fire protection equipment (as per 89.01 above) shall be provided by the Contractor for the protection of the contract work including temporary work and adjacent property. Personnel experienced in the operation of the fire protection equipment and apparatus shall be available whenever work is in progress and at such other times as may be necessary for the safety of the public and of the work.

89.03. Open fires will not be permitted.

ARTICLE 90. PLANIMETER

90.01 For estimating quantities, where the computations of areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas, as utilized by an engineer.

ARTICLE 91. SUPERINTENDENT

91.01 During the entire duration of the project, the Contractor shall employ a competent superintendent in personal charge of the work. The superintendent shall be present during all phases of construction and shall have full authority to act for the Contractor. The superintendent shall continue in this capacity full time for this project, unless: (1) the person ceases to be on the Contractor's payroll; or (2) the person proves to be unacceptable to the City or Project Engineer. Instructions given to the superintendent and/or supervisory subordinates shall be considered as given to the Contractor. A chain-of-command listing shall be submitted by the Contractor to the City and Project Engineer and shall be adhered to in the temporary absence of the superintendent.

ARTICLE 92. CONTRACT ADMINISTRATION COSTS - OUTSIDE REGULAR HOURS

92.01 The working schedule shall be confined to a five (5) day week ending on Friday. The working day shall be any eight-hour period beginning no earlier than 7:00 AM and ending no later than 7:00 PM. Whenever the Contractor elects to perform work on Saturdays, Sundays or legal holidays observed by the City or to work more than the normal working hours stated above, the Contractor shall pay to the City the extra cost incurred by the City due to the increased cost of contract administration. Payment shall include all cost of inspection and administration for such Saturday, Sunday or legal holiday work or for work more than the normal working day, which the City is obligated to incur and for the extra expense involved in overtime work resulting from the performance of work on these days.

92.02 No work outside regular hours or overtime work shall be planned or executed without the approval of the City.

ARTICLE 93. DAILY REPORTS

93.01 The Contractor shall submit daily activity reports on an approved form for the duration of the project. The report shall indicate all personnel currently employed on the work, including each trade and every sub-contractor; all equipment and whether that equipment was idle for the day; a general description of all work accomplished and any authorized extra work (time and material reports shall be submitted on separate forms).

ARTICLE 94. MATERIAL AND WORKMANSHIP

94.01 All materials and workmanship incorporated in the work covered by this Contract are to be of the highest grade of their respective kinds for the purpose intended. The Contractor shall furnish to the Project Engineer for approval the name of the manufacturer of machinery and mechanical or other equipment that the Contractor contemplates incorporating in the project together with their respective performance capacities and other pertinent information.

94.02 When required by the Specifications, or when called for by the City or Project Engineer, the Contractor shall furnish the required information for approval of all material that the Contractor

contemplates incorporating in the work. Samples of material shall be submitted for approval to the Project Engineer when and as directed. Machinery, equipment and material installed or used without approval shall be at the risk of subsequent rejection.

ARTICLE 95. TEMPORARY WATER SUPPLY

95.01 In the event temporary water supply work is required, it shall be provided in accordance with the requirements of the Waterbury Water Bureau and all local and state health authorities. The Contractor shall provide and maintain facilities for an adequate supply of water suitable for use for construction purposes and for domestic use as required for the work of this Contract. The cost of all work, materials, equipment, appurtenances and accessories necessary for providing supplies of water at the site, including the cost of all water consumed, shall be borne by the Contractor.

95.02 Upon completion to the work of this Contract, and before final acceptance of the Project, the Contractor shall remove all temporary piping and appurtenant work used for the temporary water supply.

ARTICLE 96. FITTING AND COORDINATION OF WORK

96.01 The Contractor shall be responsible for the proper fitting of all work and for the coordination of operations of all trades, subcontractors or material suppliers engaged in the work. The Contractor shall be prepared to guarantee to each of his subcontractors the dimensions for which they may require for the fitting of their work to all surrounding work. The Contractor shall do, or shall cause his agents to do, all cutting, fitting, adjusting and patching necessary to make the several parts of the work come together satisfactorily and properly and to fit the work to receive, or to be received by, the work of other contractors.

ARTICLE 97. ARCHEOLOGICAL FINDS

97.01 During the life of this Contract, if any articles such as "charcoal", "bone", "shell", "cultural objects", "fire-cracked stones", "stone flaking material." or any other such related items of historical significance are discovered on the project, the Contractor is required to notify:

(1) The City; and
(2) Project Engineer or Inspector.

ARTICLE 98. EXCAVATIONS NEAR UNDERGROUND UTILITIES

98.01 In conformance with Section 16-345 of the Regulations of the Department of Public Utility Control, the Contractor shall not start any excavation and/or blasting of rock activity without first having ascertained the location of all such utilities in the area. The Contractor shall notify the Public Utilities Regulatory Authority (PURA) "CALL BEFORE YOU DIG" (Toll Free 1- 800-922-4455) at least two (2) full days in advance (excluding Saturday, Sunday and legal holidays), but no more than thirty (30) days before starting any such work. Such notice shall include the name, address and telephone number of the persons/agency performing the work, the date, location and type of excavation.

98.02 The PURA should immediately transmit such information to the utility companies whose facilities may be affected. Utility companies receiving notice should mark up the locations of their facilities on the work site. If they have no facilities in the area, they shall so inform the Contractor.

If the Contractor does not receive any information or marked-up locations on the work sites, the Contractor shall contact PURA again to verify that the utility companies have responded to the initial call. Under no circumstances will the Contractor be allowed to start any excavation and/or blasting work prior to obtaining all necessary information regarding the location of underground utilities at the site. It is the Contractor's responsibility to have all utilities marked on the work sites prior to starting the work.

ARTICLE 99. WATER QUALITY OF WELLS

99.01 The Contractor shall perform all tests required by the State Health Department on all water supply wells and reservoirs as directed by the City or Project Engineer before and after construction. All labor, materials and testing shall be paid by the Contractor at no cost to the City.

ARTICLE 100. WORK IN STATE HIGHWAYS

100.01 If any of the work under this Contract is in a state highway the Contractor shall obtain all required permits at his own expense. The Contractor shall perform the work in accordance with the terms and conditions stipulated by the Connecticut Department of Transportation (CONNDOT) and/or as required by CONNDOT inspectors. The Contractor must provide such bonds, security and insurance as may be required to obtain such permits.

100.02 In the event the City, or the City and the Contractor jointly, are required to obtain any permits, including detour permits, the Contractor shall be familiar with the conditions of the permits and shall be held responsible for compliance with all the requirements of the permits and all specifications attached thereto, as if the permits were held solely by the Contractor.

100.03 Whenever State inspectors, flagmen or other costs are incurred as a condition to obtaining permits, the Contractor shall be responsible for payment of these costs with no reimbursement from the City.

100.04 The Contractor shall conform to all CONNDOT requirements for materials and construction methods for all work within state highways. Sheeting or an adequate trench box may be required in all trenching operations to confine trench widths and to protect State facilities. Additional pavement replacement may be required to properly restore the roadway surface.

100.05 The cost of all labor, materials and equipment necessary to conform to CONNDOT requirements for work in, or adjacent to, state highways, including work not specifically stated in the Contract Plans and Specifications, shall be the sole responsibility of the Contractor and shall not be reimbursed by the City. Therefore, the Contractor is informed to evaluate all CONNDOT requirements for the project prior to submitting the Bid for the project and to include these costs in his bid prices.

ARTICLE 101. EXISTING INSPECTION REPORTS

101.01 Any existing inspection reports concerning the project which have been prepared by or for the City or Project Engineer will be made available for the Contractor's information.

ARTICLE 102. TEST REPORTS; CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS

102.01 Except where expressly provided otherwise in the Contract Documents, the Contractor shall furnish to the Project Engineer the material manufacturer's notarized test reports and methods of

testing by an approved independent laboratory in order to show compliance of all materials furnished with all specification requirements, the reports shall also contain manufacturer's notarized certificates of conformance stating that all materials furnished under these Specifications conform with all specification requirements; that each shipment of materials shall be accompanied by the manufacturer's notarized certificate of conformance and that a shipping list itemizing the amounts of each shipment shall accompany each shipment.

ARTICLE 103. CLEANING FINISHED WORK

103.01 After the work is completed, the sewers, manholes and structures shall be carefully cleaned free of dirt, broken masonry, mortar, construction and other debris and shall be left in first class condition, ready for use. All temporary or excess material shall be disposed of and the work left broom-clean to the satisfaction of the Project Engineer.

ARTICLE 104. COMPLIANCE TO ACTS AND EXECUTIVE ORDERS

104.01 If this Contract is federally assisted and the Contractor must comply with all applicable statutes, acts, executive orders and regulations, including without limitation:

(a) TITLE VI, CIVIL RIGHTS ACT OF 1964, which provides that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity, receiving Federal financial assistance.

(b) SECTION 3, HUD ACT OF 1968, which provides that, to the greatest extent feasible, opportunities for training and employment shall be given to lower income residents of HUD-assisted project areas, and that contracts for work in connection with such projects be awarded to business concerns which are located in or are owned in substantial part by persons residing in the area of the project.

(c) LABOR STANDARDS compliance with Davis Bacon Act, as amended (40 U.S.C. 267a-5) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) 13.0.

ARTICLE 105 SEMI-FINAL INSPECTION / SUBSTANTIAL COMPLETION

105.1 Contractor shall notify the Project Engineer when it believes the work (or a portion thereof) is Substantially Complete and shall file with the City a written, notarized "Contractor's Affidavit of Substantial Completion" and request a Semi- Final Inspection of the work.

105.2 Contractor, prior to requesting Semi-Final Inspection, shall complete and submit the following, listing known exceptions in its Affidavit of Substantial Completion:

i. Include supporting documentation for Substantial Completion as indicated in these Contract Documents;

ii. Advise City of outstanding permit closure requirements. Submit certificates of inspections conducted, reports, and other documentation required by local or state authorities;

iii. Where required, submit photographs, specific warranties, final certifications, and similar documents; and

iv. Provide Partial Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers may be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

105.3 After the City's receipt of Contractor's Affidavit of Substantial Completion, the Project Engineer will either proceed with Semi-Final Inspection or advise Contractor of prerequisites not fulfilled.

105.4 Following Semi-Final Inspection, Project Engineer will either inform the City to prepare a Certificate of Substantial Completion or advise Contractor of work that must be performed prior to issuance of said certificate and repeat the inspection when requested and assured that the work has been substantially completed in accordance with the Contract Documents.

105.5 Contractor's payment requisition coincident with, or first following the date claimed as Substantially Complete, shall be processed in the same manner as a partial payment requisition and shall show either 100% completion for the work claimed as Substantially Complete, and/or list incomplete items, value of incompletion, and reasons for being incomplete.

ARTICLE 106. CITY'S CERTIFICATE OF SUBSTANTIAL COMPLETION

106.1 For the portion of the work determined to be Substantially Complete, the City shall issue "City's Certificate of Substantial Completion" which shall establish the date of Substantial Completion by the Contractor.

106.2 Concurrently, the Project Engineer shall prepare a list (the "punch list") of remaining items of work to be completed and/or deficiencies to be addressed.

106.3 Prior to Final Inspection, the Contractor shall address and complete all "punch list" items.

ARTICLE 107. FINAL INSPECTION / FINAL COMPLETION

107.1 The Contractor shall notify the Project Engineer when it believes the Work is Finally Complete and shall file with the City a written, notarized "Contractor's Affidavit of Final Completion" and request a Final Inspection of the work by the Project Engineer.

107.2 After receipt of Contractor's Affidavit of Final Completion, Project Engineer will either proceed with Final Inspection or advise Contractor of prerequisites not fulfilled.

107.3 At the time of submission of its Affidavit of Final Completion, Contractor, as required by the Contract Documents and/or required for completion of the Project as determined by the City, shall also provide and/or submit the following, listing known exceptions (if any), in its Affidavit of Final Completion:

a. Supporting documentation not previously submitted and accepted;

b. Discontinue and remove, as appropriate, temporary facilities and services, along with construction tools and facilities, and similar elements;

c. Evidence of final, continuing insurance coverage complying with insurance requirements, including certificates of insurance for products and completed operations where required;

d. Reports and forms required by Federal and/or State funding sources, as required thereby;

e. A copy of City's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by City Representative;

f. Any final documents requested by City Representative;

g. If applicable, submit final liquidated damages settlement statement, acceptable to City;

h. Photographs, specific warranties, final certifications, and similar documents;

i. All required As-Builts, Record Drawings and Documents and Surveys, in number and formats specified; and

j. Provide Final Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers shall be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

107.4 Following Final Inspection, Project Engineer will either inform the City to a prepare the "City's Certificate of Final Completion" or advise Contractor of work that must be performed prior to issuance of said certificate and repeat the inspection when requested and assured that the work has been finally completed in accordance with the Contract Documents.

ARTICLE 108. CITY'S CERTIFICATE OF FINAL COMPLETION

108.1 If, following final inspection, the work is not determined to be Finally Complete, the City Representative will advise the Contractor accordingly, in writing, and the process will be repeated when Final Inspection is again requested by Contractor.

108.2 Upon determination that the work is Finally Complete, the City shall issue the "City's Certificate of Final Completion" that shall establish the date of Final Completion by the Contractor.

ARTICLE 109. SEMI-FINAL PAYMENT APPLICATION

109.01 After the issuance of the City's Certificate of Final Completion, the Contractor shall prepare a Semi- Final Payment Application showing the final estimate of quantities, as confirmed by the Project Engineer. Should the final estimate of quantities show either an increase or decrease from the approximate estimate of quantities, then such variations will be computed at the contract unit prices and reflected in the Final Estimate by adding or deducting said amounts from the Contract amount.

109.02 If use of the Owner Controlled Contingency Allowance or any other allowance(s) is required for this Semi-Final Payment Application, all required paperwork shall be processed prior to execution of the Semi-Final Payment Application.

109.03 All certificates of payments and estimates, upon which partial payments may have been made being merely estimates, shall be subject to correction in the Semi-Final Payment Application.

109.04 The Semi-Final Payment Application shall be processed in the same manner as a partial payment requisition.

ARTICLE 110. FINAL ACCEPTANCE OF PROJECT

110. Final Acceptance of the Project shall occur when:

(a) All Project work has been completed to the satisfaction of the City and the following have been submitted to the satisfaction of the Project Engineer and the City:

i. All documentation and supporting information required by the Contract Documents; including but not limited to: Final Waiver of Lien from each Subcontractor, supplier and the Contractor;

ii. Reports and forms required on all Federal Aid Projects;

iii. Warranties, guarantees, final operation and maintenance manuals, and documentation to the effect that training, and start-up support required by the Contract have been completed;

iv. After Final Inspection has been held, all required additional work and final cleaning-up have been completed, and all the Contractor's equipment and construction signs have been removed from the Project site;

(b) City has issued Semi-Final Payment to the Contractor; and

(c) Upon delivery to the Contractor by City of its written notice of Final Acceptance of the Project.

ARTICLE 111. FINAL ESTIMATE

111.01 Subsequent to Final Acceptance of the Project, the Project Engineer shall prepare a Final Estimate which shall state the final Contract amount, any liquidated damage amounts, all City payments to Contractor, the final amount of any holdback(s) by the City, plus any other credits from Contractor to the City as well as retainage to be released to Contractor with Final Payment. The Final Estimate shall be signed by the Contractor and by the Project Engineer.

ARTICLE 112. CERTIFICATION OF FINAL PAYMENT

112.01 Based on amounts set forth in the Final Estimate, the Contractor shall prepare and submit its Final Payment Application.

112.02 Final Payment to the Contractor shall be based on City's Certification of Contractor's Final Payment Application.

ARTICLE 113. ACCEPTANCE OF FINAL PAYMENT

113.01 The acceptance by the Contractor, or by anyone claiming by or through the Contractor, of Final Payment shall constitute and operate as a release for the City from any and all claims of any liability to the Contractor for anything, theretofore done or furnished for or relating to or arising out of the work done thereunder, and for any prior act of neglect, default on the part of the City or any of its officers, agents, or employees unless the Contactor serves a detailed and verified statement of claim upon the City not later than forty (40) consecutive calendar days after mailing of such Final Payment. Such a statement shall specify the items claimed. Should the Contractor refuse to accept the Final Payment as tendered, it shall constitute a waiver of any right of interest thereon.

END OF SECTION

RFP NO. 8753

ATTACHMENT A-1.2

SPECIAL CONDITIONS

INDEX TO SPECIAL CONDITIONS

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SPECIAL CONDITIONS

ARTICLE 1. SPECIAL NOTE

These Special Conditions shall be subject to all requirements of the Contract, amend or supplement the General Conditions, and modify all Contract Documents which follow them numerically, as set forth in Section 1.2 of the Contract. The terms used in these Special Conditions which are defined in the Contract or General Conditions have the meanings assigned to them in said documents. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project; and to all the Contract Documents. All Contract Documents apply to this Section. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided otherwise, the costs associated with all work and/or services required under the Special Conditions shall be included in the Contract Amount (also referred to as Contract Total Compensation amount). No separate or additional payment will be made for this work and/or services.

ARTICLE 2. PERMITS

The Contractor shall obtain all applicable Federal, State and local permits and registrations necessary to complete the project at no additional cost to the City. The cost of obtaining and maintaining the permits shall be included in the Contract Amount.

Exception: Local Permit Fess: **Local permit fees will be waived by the City**. Pursuant to City Code Section 110.12, the City portion of all local permit fees will be waived. However, the Contractor will be responsible for the applicable State and Federal portions of all local permit fees. All applicable Federal and State fees associated with local permits shall be paid for by the Contractor to the City, who will submit the fee(s) to the appropriate governmental entity.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

ARTICLE 3. DEWATERING AND WATER CONTROL

The Contractor shall be responsible for all dewatering required to complete the Contract including, but not limited to, pumping, well points, trenches, excavations, water control structures and cofferdams, which may be required to properly complete this Project. Particular

attention is called for regarding fluctuation in water levels due to precipitation. No extra compensation will be allowed due to water level fluctuation. Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 4. SITE RESTORATION

The Contractor will blend the new work into the existing ground surface and replace any adjacent disturbed materials that may have been damaged or irregular do to construction and/or new installations.

ARTICLE 5. CITY NOTIFICATION - BACKFILLING

Before backfilling any excavated area and after an improvement has been installed the contractor shall notify the City when a backfill operation is to occur. A City representative will make one observation for each excavated area.

ARTICLE 6. LENGTH OF WORK TO BE EXCAVATED

The length of trench to be opened at any time, from the point where ground is being broken to completed backfill, shall not exceed 200 feet. Additionally, the amount of space in streets and public and private lands occupied by equipment, trenches and supplies shall not exceed the length or space considered reasonably necessary and expedient by the Engineer. In determining the length of open trench or of spaces for equipment, materials, supplies and other necessities, the Engineer will consider the nature of the lands or streets where the work is being done; types and methods of construction; the equipment being used; possible inconvenience to the public and/or private parties; possible dangers and other proper matters. All work must be constructed with a minimum of inconvenience and danger to the public and to all other parties concerned. No additional payment will be made for this work.

ARTICLE 7. WINTER EROSION CONTROL MEASURES

Seeding and planting shall be performed March 15 to June 15 or August 15 to October 15. The Contractor shall submit a Winter Erosion Control Plan to the Project Engineer for approval prior to the start of construction. This plan shall indicate, in sufficient detail, the methods and materials which shall be used during the winter months to prevent erosion, scour and general deterioration of the Project and adjacent flora and fauna.

ARTICLE 8 PUBLIC USE OF EXISTING PUBLIC FACILITIES

The Contractor shall limit his work area to the site of the construction and its immediate vicinity. No equipment or construction activities are allowed on the existing public facilities, such as athletic fields, without prior written approval by the City. No equipment or storage is allowed outside of the designated construction area without prior written approval by the City. The number and location(s) of storage containers shall be approved by the City.

ARTICLE 9. ACCESS TO PRIVATE & PUBLIC PROPERTY

Throughout the duration of Construction, the Contractor shall maintain access to all businesses, places of worship, schools and private residences, etc. in the project area. Particular attention is paid for funeral processions, wedding processions, and other similar activities. Where required by the City, Contractor shall also conduct regular coordination meetings with Owners and Operators of businesses and other operations to coordinate active work periods.

ARTICLE 10. INTENT OF DRAWINGS – CTDEEP (THIS DOES NOT APPLY)

The drawings are intended to show general conformance with the **State of Connecticut Department of Energy and Environmental Protection (DEEP)** permitting requirements and may not show all elements necessary to meet all applicable codes.

ARTICLE 11. GENERAL INTENT OF DRAWINGS

It is the intent of the Solicitation Documents and the Contract Documents, including but not limited to the Drawings and Specifications, to call for finished, completed work. Any material or work not shown on the Drawings but mentioned in the Specifications, or vice versa, or any incidental accessories necessary to make the work complete and perfect in all respects, even if not particularly specified, shall be furnished, delivered and installed without additional expense to the City. Where discrepancies or variances occur between the Drawings and Specifications or within either of the Documents, or with any of the Contract Documents, the item or arrangement of better quality, greater quantity or higher cost shall be included in the Contract Amount. The City shall decide on the item(s) and the way the item(s) and/or work shall be performed or installed.

ARTICLE 12. ADDENDUM TO GENERAL CONDITION 31

Reference is made to General Condition Article 31 – Use of Premises and Removal of Debris. During the progress of the work, the Contractor shall keep the construction areas in a neat condition, free from accumulations of waste materials and rubbish. Lunch papers, bottles, lumber cut-offs, drinking cups and rubbish shall be removed from the site daily. No alcoholic beverages will be permitted at the construction site(s).

On or before the completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the site and adjacent property all surplus and discarded materials, rubbish, and temporary structures and restore, in an acceptable manner, all property and leave the whole area in a neat and presentable condition.

ARTICLE 13. SUBSURFACE EXPLORATION

Boring logs, probes, etc., and related information appended to the Solicitation Documents contain data regarding subsurface conditions for the dates and locations indicated. The information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true picture of the actual subsurface conditions to be encountered.

ARTICLE 14. ADJUSTMENT OF EXISTING UTILITIES

The contactor shall raise or lower as necessary the top of all utility valve boxes, gas service curb boxes, handholds, parking meter kiosks, cleanouts, traffic boxes, and any other utility access structures within the work area to match the finished grade. No extra compensation will be allowed, for adjustment of existing utilities.

ARTICLE 15. WINTER SHUTDOWN

No 'winter shutdown' will be permitted for this Project.

ARTICLE 16. ADDENDUM TO GENERAL CONDITION 2

Reference is made to General Condition Article 2 – Construction Progress Schedule. For this project, Contractor shall not be required to provide a Water Control Plan or Environmental Protection Plan as may be outlined or referenced in the General Conditions. However, the Contractor shall be responsible for any such requirements set forth in the Technical Specifications or elsewhere in the Solicitation Documents.

ARTICLE 17 ADDENDUM TO GENERAL CONDITION 10

Reference is made to General Condition Article 10 – Environmental Protection Plan. An Environmental Protection Plan in accordance with General Conditions Article 10 will not be required for this Project. However, the Contractor shall be responsible for any such requirements set forth in the Technical Specifications or elsewhere in the Bid Documents. Additionally, the Contractor shall be responsible for protecting the Environmental Resources as described in General Condition Article 9

ARTICLE 18. ADDENDUM TO GENERAL CONDITIONS ARTICLE 92

Reference is made to General Condition Article 92 – Contract Administration Costs – Outside Regular Hours. Compensation to the City for the extra cost incurred when the Contractor elects to perform work more than the normal working hours set forth in General Conditions Article 92 shall at the rate of $150 per hour and shall be deducted from the amount due the Contractor.

ARTICLE 19. ADDENDUM TO GENERAL CONDITION ARTICLE 4 – PARTIAL PAYMENTS

Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Engineer will estimate the value of work completed and will deduct some amount to arrive at a conservative value which will allow Owner to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Engineer's determinations.

ARTICLE 20. ADDENDUM TO GENERAL CONDITION 5 – INSPECTION AND TESTS

Reference is made to General Condition Article 5 – Inspection and Tests. The Project includes a variety of materials testing to ensure compliance with the Technical Specifications and disposal facilities to be identified by the Contractor. The Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

ARTICLE 21. ADDENDUM TO GENERAL CONDITION ARTICLE 39 – RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

Reference is made to General Condition Article 39 – Residents' Preference in Work on Other Public Facilities. In addition to the requirements of the State laws and regulations, the Contractor shall comply with the City of Waterbury Ordinance Chapter 34.

ARTICLE 22. ADDENDUM TO GENERAL CONDITION ARTICLE 40 – LISTING OF EMPLOYMENT OPENINGS

Reference is made to General Condition Article 40 – Listing of Employment Openings. In addition to the requirements of the Governor's Executive Order, the Contractor shall comply with the City of Waterbury Ordinance Chapter 34.

ARTICLE 23. PREVAILING WAGES

Davis Bacon and State Prevailing wage rates apply to this Project. The minimum rates to be paid labor of the various classifications shall be in accordance with the prevailing rate of wages established by the Connecticut Department of Labor. Because of the application of state wage laws to this Project, the Contractor should be aware that the Contractor will be obligated to certify payrolls and issue compliance statements in accordance with both state procedural requirements. Furthermore, the Contractor and all Subcontractors shall be responsible for paying the applicable state prevailing wages.

ARTICLE 24. WEEKLY PROGRESS MEETING MINUTES

There will be weekly job meetings at a location to be determined. The contractor will be responsible for preparing an agenda, submittal log, RFI log, and two-week look ahead. The contractor will be responsible for preparing and distribution the weekly job meeting minutes. A format of the minutes to be approved by WDC prior to the first set of meeting minutes

ARTICLE 25. CHANGES TO THE WORK

The cost and/or payment calculations for changes to the work shall be either on a firm proposal agreed to by the City or based on the provisions set forth herein.

Any changes in the work agreed to by the parties, or as directed by the Project Engineer, shall be evidenced by a Change Order authorized in accordance with Section 27 of the Contract and this Article. In no instance shall payments made pursuant to this Article result in an increase in the Contract Total Compensation or extension of Contract Time. Any increase above the Contract Total Compensation or Contract Time resulting from utilization of this Article must be by a duly authorized and executed Contract amendment in accordance with Section 27 of the Contract.

A. Differing Site Conditions

(l) During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and

generally recognized as inherent in the work provided for in the Contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and the Contractor shall thereafter wait for written instructions from the Project Engineer before proceeding with regard to such conditions.

(2) Upon written notification from the Contractor, the Project Engineer will investigate the conditions to determine if differing conditions exist. The Project Engineer will notify the Contractor of his/her determination whether differing conditions exist. If it is determined that the conditions materially differ and cause an increase in the Total Compensation or Contract Time required for performance of any work under the Contract, the City, with the Project Engineer's recommendation, will make an adjustment (excluding anticipated profits) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether an adjustment of the Contract is warranted.

(3) No use of this Article will be allowed unless the Contractor has provided the required written notice.

B. Suspension of Work Ordered by the Project Engineer.

(1) If the performance of all or any portion of the work is suspended or delayed by the Project Engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the Contractor believes that additional compensation and/or Contract Time is due as a result of such suspension or delay, the Contractor shall submit to the Project Engineer in writing a request for adjustment within seven (7) calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

(2) Upon receipt, the Project Engineer will evaluate the Contractor's request. If the Project Engineer agrees that the cost and/or Contract Time required for the performance of the Contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the City, with the Project Engineer's recommendation, will make an adjustment (excluding profit) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether an adjustment of the Contract is warranted.

(3) No Contract adjustment will be allowed unless the Contractor has submitted the request for adjustment within the time prescribed.

(4) No Contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this Contract.

C. Significant Change in the Character of Work

(1) The Project Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the Project. Such changes in quantities and alterations shall not invalidate the Contract nor release the surety, and the Contractor agrees to perform the work as altered.

(2) If the alterations or changes in quantities significantly change the character of the work

under the Contract, whether changed by any such different quantities or alterations, the cost for changes to the work shall be either on a firm proposal agreed to by the City or as calculated herein, and such costs shall not include loss of anticipated profits. If a cost cannot be agreed upon, then the cost calculation shall be in such amount as the Project Engineer may determine to be fair and equitable.

(3) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the cost calculations for the altered work will be at the prices bid.

(4) The term "significant change" shall be construed to apply:

(a) when the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or

(b) when an item of work, as defined elsewhere in the Contract, is increased in excess of 125% or decreased below 75% of the original Contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125% of original Contract item quantity, or in case of a decrease below 75%, to the actual amount of work performed.

D. Extra Work

Unforeseen work made necessary by the Project Engineer's changes as previously described, or work that is necessary for completion of the Project, but for which no price is provided in the Contract, shall be done in accordance with the requirements of the specifications and as directed by the Project Engineer. The Project Engineer shall notify the Contractor of the necessity for such extra work, stipulating its character and extent, and shall notify the Contractor as to whether the Project Engineer wants the Contractor to propose a unit price or, instead, a lump sum, for the extra work. Within 5 calendar days of receipt of such notification, the Contractor shall advise the Project Engineer, in writing, of the proposed compensation (as a unit price or lump sum, whichever has been requested by the Project Engineer) that the Contractor requests as compensation for the required extra work. The Contractor's request shall be itemized and reasonably detailed and shall include all known or anticipated direct and indirect costs of the work, including but not limited to, the costs of all safety and other equipment, small tools, labor, subcontractor quotes, consumables, field office overhead, home office overhead, insurance, bonding, and profit. The character and extent of the extra work, together with the basis of compensation, shall be communicated in a letter to the Contractor by the Project Engineer. If the Contractor objects to any portion of the defined extra work and/or basis of compensation, and if the Contractor is not willing to agree to the extra work, the Contractor must, within 15 calendar days of its receipt of said letter, respond in writing describing specifically what portions of the extra work the Contractor finds objectionable, the nature of its objections, and the basis for its objections. If the Contractor does not do so, it shall be deemed to have accepted the terms of the extra work as set forth in the Project Engineer's letter.

E. Cost Plus Work

The Contractor's compensation for all work done on a cost-plus basis shall be determined in accordance with the following:

(a) Labor:

(1) For all labor, payment calculations shall be based on the wage rate actually paid by Contractor as shown by its certified payroll, which shall be at least the minimum rate established for the Project by the State Labor Department or the U.S. Department of Labor. For all foremen in direct charge of Project work, payment calculations shall be based the actual wage paid by Contractor to the foremen as shown on the Contractor's certified payroll.

(2) The payment calculations shall the actual costs paid to, or on behalf of, workers by reason of allowances, health and welfare benefits, pension fund benefits and other such benefits, when such amounts are required by a collective bargaining agreement or another employment contract generally applicable to the classes of labor employed on the Project. The Contractor shall certify all such costs.

(3) For property damage, bonding, liability and workmen's compensation insurance premiums, unemployment insurance contributions and social security taxes on Project cost-plus work, the payment calculations shall include Contractor's actual Project costs. The Contractor shall provide to the Project Engineer documentation satisfactory to the Project Engineer in form and substance, of all such costs.

(4) The payment calculations shall also include an amount equal to 20% (15% for overhead, 5% for profit) of the total sums described in (a) (1) through (3) above.

No part of the salary or expenses of anyone connected with the Contractor's forces above the grade of foreman, who provides general supervision of Project work, will be included in the above cost calculations, except when the Contractor's organization is entirely occupied with cost-plus work, in which case the salary of a superintendent may be included in said labor item when the nature of the pertinent Project work is such that, in the opinion of the Project Engineer, a superintendent is required for that work. The allowable rate of pay for such superintendent shall be agreed upon before the Contractor begins the pertinent work. If no agreement on the rate can be reached, the Project Engineer will decide such rate as he deems reasonable.

The Project Engineer reserves the right to determine the number and type of personnel to be employed for the cost-plus Project work.

(b) Specialized Work: When the Project Engineer directs the Contractor to perform specialized work requiring skills, tools and equipment substantially unlike those ordinarily used by the Contractor or its authorized Project subcontractors, the payment calculations for such work shall include the cost for the use of a specialist to perform the specialized work. For such specialized services, including materials incorporated into the Project, the payment calculations for such work shall include Contractor's actual costs, plus additional compensation in accordance with subparagraph (e) below. Prior to performing such specialized work, the Contractor shall obtain and submit to the Project Engineer a minimum of three price quotes for the work, if requested by the Project Engineer.

(c) Materials: For all materials necessary for cost-plus Project work, the payment calculations shall include Contractor's actual cost for such materials as delivered to the Project site, including delivery charges as shown by original receipted bills, plus 15% of the sum of said cost and charges. In lieu of receipted bills for materials used which were not specifically purchased for the Project, but were taken from the Contractor's stock, the Contractor shall provide to the Project Engineer an affidavit certifying that such materials were not purchased for the Project, that the materials were taken from the Contractor's stock, that the quantity

claimed to have been used on the Project was so used, and that the payment calculations shall not include any penalty or charge incurred due to the Contractor's late or delayed payment for the pertinent materials.

(d) Equipment: All equipment used for cost-plus Project work must, in the judgment of the Project Engineer, be in good working condition and suitable for the purpose intended; and the Project Engineer reserves the right to determine the size and number of units of equipment to be used for such work. The manufacturer's ratings shall be the basis for all Rental Rate Blue Book classifications used for payment purposes. ("Rental Rate Blue Book" as used in these specifications refers to the current edition of the Rental Rate Blue Book, considering all current Rate Adjustment Tables, and amendments thereof, which is published by K III Directory Corporation of San Jose, California, including all current Rate Adjustment Tables and amendments thereof.) Trucks will be classified by cubic-yard capacity.

Amounts claimed by the Contractor based on equipment rental rates shall not include any percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be included in the payment calculation in connection with amounts claimed by the Contractor based on equipment rental rates.

The payment calculations shall not include rental rates for small tools needed to complete the cost-plus Project work.

For payment calculations purposes, estimated operating costs per hour from the Rental Rate Blue Book will apply only to the actual time during which the equipment is actively being used to perform cost-plus Project work.

For equipment that is also being used for non-cost-plus Project work, the payment calculations shall include the applicable hourly rate only for the actual time that the equipment is assigned to cost-plus Project work. The applicable period of assignment for each piece of equipment shall start when the equipment commences to be used for cost-plus Project work ordered by the Project Engineer and shall end at the time designated by the Project Engineer.

For equipment brought to the Project site exclusively for cost-plus work, the payment calculations shall include Contractor's loading and unloading costs and costs of transporting such equipment to and from the Project site; provided, however, that cost claimed for return transportation from the Project site shall not exceed the cost of moving the equipment to that site. If such a piece of equipment is self-propelled and is driven to the Project site under its own power, then the payment calculation shall include only operating costs and labor costs for its transport to and from the Project site. The payment calculations will not, however, include any loading, unloading and transportation costs if the equipment is used for any Project work on the site other than cost-plus work.

1) Owned Equipment: The payment calculation shall include the applicable rental rate set forth in the Rental Rate Blue Book for any equipment (1) which the Contractor uses, with the Project Engineer's authorization, to perform cost-plus Project work, and (2) which is owned by the Contractor or a subsidiary, affiliate, or parent company of the Contractor (no matter how far up or down the chain of ownership from the Contractor).

The maximum hourly rate to be used in payment calculations for Contractor-owned equipment assigned to cost-plus work shall be the applicable monthly rate in the Rental Rate Blue Book, divided by 176 (176 working hours per month).

Should the proper completion of the cost-plus Project work require equipment of a type not covered by the Rental Rate Blue Book, the Project Engineer will determine, and the payment calculation shall include a reasonable rental rate based on rates prevailing in the area of the Project. If practicable, such rates shall be determined by the Project Engineer before the affected work begins. If the Contractor proposes that the Project Engineer use a particular rate in such an instance, the Contractor must disclose to the Project Engineer the specific sources of, or support for, said rate.

If a piece of equipment owned by the Contractor is assigned to cost-plus Project work but remains idle for some portion of the period of the cost-plus work, the payment calculation, shall include for that idle time 50% of the applicable rental rate (exclusive of operating costs) in the Rental Rate Blue Book.

For payment calculation purposes, the period of equipment usage shall be deemed to start when the Contractor begins to use the equipment for cost-plus Project work and shall be deemed to end when the equipment is released by the Project Engineer from use for such work. Any hours during which the equipment is used for work other than cost-plus Project work will be deducted from the payment calculation. For any piece of Contractor-owned equipment assigned to cost-plus Project work, the payment calculation shall include aggregate minimum of 8 hours (of use time, idle time, or a combination thereof) in each 24-hour day (measured from one midnight to the following midnight) during the assignment period. The payment calculation shall not include Saturdays, Sundays and legal holidays during which the Contractor does no Project work, or for any other day on which the Project Engineer orders the Contractor to do no Project work. If the equipment is used to perform cost-plus Project work for more than 8 hours in a day, the payment calculation shall include the applicable hourly rate computed on a monthly basis for the actual time of use; however, the payment calculation shall not include any claim for more than 8 hours of idle time for a piece of equipment during a given day.

The City shall have the right to limit its aggregate payment calculations for idle time for a given piece of equipment to the replacement value of that equipment.

(2) Rented Equipment: If the Project Engineer determines that to perform the cost-plus Project work the Contractor must rent certain machinery, trucks or other equipment not owned by the Contractor or a subsidiary, affiliate, or parent company

of the Contractor (no matter how far up or down the chain of ownership from the Contractor), the Contractor shall inform the Project Engineer, in advance of such rental, (a) of the specific nature of the rental(s), (b) the reasons for its need for such rental(s), (c) the anticipated or proposed rental rate(s), and (d) the estimated duration for the use of the equipment. Rates for such rented equipment must be provided based on the following:

— A daily rate per hour when the equipment is to be specifically assigned to Project work by the Project Engineer for a period of 7 consecutive calendar days or less.

— A weekly rate per hour when such assigned time exceeds 7 consecutive calendar days but does not exceed 21 consecutive calendar days.

— A monthly rate per hour when such assigned time exceeds 21 consecutive calendar days.

The applicable daily, weekly, or monthly rate will be determined at the expiration of 21 calendar days or upon release of the equipment by the Project Engineer, whichever occurs first. Interruptions of the rental period, when equipment is used on other than assigned cost-plus work, will not entitle the Contractor to payment at a rental rate that would be applicable to the shorter periods arguably occasioned by such interruptions.

Prior to renting such equipment, the Contractor shall obtain and submit to the Project Engineer a minimum of three quotes, if requested by the Project Engineer.

The payment calculation shall include such rental rates actually paid by the Contractor, provided that the given use and rental rate are acceptable to the Project Engineer. For any such costs to be considered, the Contractor must provide the Project Engineer with a copy of the original receipted bill for the rental expenses incurred.

(e) Administrative Expense: When extra work on a cost-plus basis is performed by an authorized subcontractor, the payment calculation shall include an additional 7.5% for that work; and such amount will be in addition to the percentage payments described in (a), (b), (c) and (d) above, as a reimbursement for the Contractor's administrative expense in connection with such work. Approval of such additional amounts will be given only after the Contractor provides the Project Engineer receipted invoices for all relevant costs.

(f) Bonding Costs: For bonding on the total cost of the cost-plus work including administrative expenses as outlined in (e) above, the payment calculation shall include Contractor's actual cost. The Contractor shall provide the Project Engineer documentation satisfactory to the Project Engineer in form and substance, of all such costs.

(g) Miscellaneous: Any compensation associated with (a), (b), (c), (d) and (e) above shall be deemed to be payment in full for the extra work and shall be deemed as full compensation for same, including costs of superintendence, use of small tools, equipment for which no rental is allowed, safety equipment, consumables, field office overhead, home office overhead, bonding, other insurance, and profit. The Contractor's representative and the Project Engineer shall compare their respective

records of the extra work done on a cost-plus basis at the end of each day. Copies of these records shall be signed by both the Project Engineer and the Contractor's representative. The Project Engineer will then forward a copy of same to the Contractor and to any affected subcontractor in accordance with City procedures. Upon payment of such costs by the Contractor, the Contractor shall immediately furnish the Project Engineer with original receipted bills covering the costs, including transportation charges, for all materials used for such work.

ARTICLE 26. AS-BUILT IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY

Upon completion of all work and prior to final payment the Contractor shall provide an As-Built Improvement Location and Topographical Survey of all above ground and below ground improvements within the Limit of work. The survey shall include property lines, dimensions, stretch distances, vertical certification or datum and should be an A2 as built completed by a licensed land surveyor. Said survey(ies) shall be signed and sealed by a State of Connecticut Licensed Surveyor and shall be in accordance with the requirements of Connecticut General Statues, Section 20- 300b. The contractor shall provide one stamped mylar copy and one electronic AutoCAD copy of the As-Built Improvement Location and Topographical Survey. All AutoCAD submissions to the City shall be made in the

version required by the City's Public Works Department. No separate payment shall be made for an As-Built Improvement Location Survey, as the cost for such shall be included in the general cost of the project. Final payment will not be made to the Contractor until the As-Built Improvement Location and Topographical Survey is spot checked and approved by the City. Corrections, if any, shall be made to the AutoCAD, and to the mylar reproducible.

The Contractor will make video documentation of all new mechanical equipment showing the basic operation of the equipment and maintenance of the equipment.

ARTICLE 27. SBE/MBE SET-ASIDES/CHRO COMPLIANCE REQUIREMENTS (THIS DOES NOT APPLY)

The SBE/MBE set-aside and contract compliance requirements under the Connecticut General statutes **do apply** to this project.

ARTICLE 28. CITY OF WATERBURY ORDINANCE CHAPTER 34

The City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34) applies to "Covered Projects" as defined in the ordinance and the requirements set forth therein are in addition to any requirements of other funding sources for the Project. The bidder's attention is directed to the attached copy of the ordinance and to Sections 14.1 and 14.2 of the attached Sample Construction Contract for additional information regarding the requirements and application of the City's GOOD JOBS ORDINANCE.

"Covered Projects" are City projects with a value of $500,000.00 or greater.

The City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34) **does** apply to this Project.

ARTICLE 29. PHOTOGRAPHIC AND VIDEO DOCUMENTATION

Drawings and general provisions of the Contract, including General and Special Conditions apply to this Section.

This Section includes administrative and procedural requirements for a professional photographer to perform the following services:

1. Preconstruction Video;
2. Periodic construction photographs; and
3. Final completion construction photographs.

Qualification Data: For firms and people to demonstrate their capabilities and experience. Submit lists of completed projects with project names, contract value and addresses, names and addresses of engineers and owners with work performed.

Preconstruction Video-Within 14 days following the award of the Contract the Contractor's approved Photographer shall document the entire Project existing site conditions, in the presence of the Engineer's Representative, by use of a video camcorder. Camcorder shall, as a

minimum, be Sony Handy Cam HDR-XR160- camcorder-hard disc drive- flash card or approved equal with 1920x1080 Full HD video and sound. The Photographer shall always clearly identify the location of the video as it progresses and document the condition and site features of the existing road and elements and all adjacent and affected properties. Aerial angles shall be included to record the location of the existing pole mounted overhead wire and facilities.

The Contractor shall submit two (2) copies of the video no later than 14 days prior to the start of construction so it can be reviewed for clarity and content. Any areas that are missing, incomplete or unclear shall be repeated and re-submitted to the satisfaction of the Engineer.

Periodic Construction Photographs- Once a month, and at regular intervals designated by the Engineer, the Contractor's Photographer shall provide a maximum of twenty-four (24) digital photographs.

Final Completion Photographs- Take a minimum of 48 photographs after the date of substantial completion for submission with Project Record Documents. The Engineer will direct the photographer for desired vantage points. Submit two (2) copies of final completion photographs.

Measurement and Payment- The work under this section will not be measured for payment. The Contractor's cost in connection therewith will be considered incidental to, and included in, the general cost of the Contract.

ARTICLE 30. LAYDOWN AREAS / MATERIAL STORAGE

A Laydown Area shall not impede traffic flow within the City streets. The Contractor may use these areas during construction and shall be required to restore any disturbed areas to a condition as good as or better than existing conditions.

Contractor shall also be required to clean up, restore, and make safe and usable all Laydown Areas as directed by the Engineer. This may include removing equipment, materials, tools, etc., from the Laydown Area for a period to be determined by the City of Waterbury.

The City will not provide any staging area for Construction. The Contractor shall provide its own staging/storage area. Lay-down areas within the project's limits are allowed but require pre-approval from the City (see also General Conditions Article 31). In all cases, the Contractor shall be responsible for the protection of all materials, tools, etc. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public, adjacent property owners and tenants or the City.

The Contractor shall provide its own storage facilities and in all cases be responsible for the protection of all materials, tools, etc. The number and location(s) of storage containers shall be approved by the City. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public or the City or City's employees or tenants. All deliveries of material, equipment, etc., shall be made to the Contractor and accepted only by him/her and only during working hours. City personnel will not receive or accept any materials or equipment, etc. at any time.

ARTICLE 31. PROJECT RECORDS.

Records. Contractor shall keep full and detailed records and exercise such controls as may be necessary for proper management under this Agreement including but not limited to drawings, specifications, reports, maps, correspondence, instructions, books, receipts, trade contracts, purchase orders, vouchers, memoranda and other data relating to this Agreement. Accounting systems shall be capable of demonstrating satisfactory financial controls to the City.

Access to Records. The City or its designee shall be afforded access to Contractor's records, during normal working hours, for the purpose of inspection and audit, whether such records are held on-site or at Contractor's branch and home offices.

Records Retention and Preservation. Prior to final payment, Contractor shall furnish the City with a detailed inventory of the records maintained and thereafter shall preserve these records for a minimum of four (4) years after the final payment for the Work or for such longer period as may be required by law. If, after the end of this period, Contractor wishes to destroy or dispose of said records, the City shall be given the option to take possession of such records prior to destruction or disposal.

Public Access to Documentation. Contractor shall allow Governmental Entities access to Project documentation and accounting records as required by Law.

ARTICLE 32. SOLICITATION DOCUMENTS REFERENCES

All references in the General and/or Special Conditions to "Invitation to Bid," "ITB," "Bid Documents" or words/terms of similar import shall, for the purposes of this solicitation, mean "Request for Proposal" and/or "ITB" as the context so requires.

All references in the General and/or Special Conditions to "Bid" or "Bid Form" shall mean "Price Proposal "as the context so requires.

All references in the General and/or Special Conditions to "Contractor", Vendor" and/or "Consultant" shall mean "Proposer" or "Successful Proposer" as the context so requires.

ARTICLE 33. OFF-SITE WASTE STORAGE AREAS

The City does not provide offsite Waste Storage Areas ("WSA") locations for City projects. All WSA's shall be located within project limits and/or at properly permitted locations. Additionally, all WSA's and all associated activities, including testing, transportation and disposal, are to be the sole responsibility of the Contractor. No separate or additional payment will be made for this work, services and/or activities.

ARTICLE 34. PROJECT ENGINEERING CONSULTANT/OWNER'S REPRESENTATIVE

Friar Architecture is the Project Architect Consultant and **WDC** is the Owner's Representative for the Project.

ARTICLE 34. ADDENDUM TO GENERAL CONDITIONS 11 and 95

Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary

Water Supply. The City shall provide and maintain, at no cost to the Contractor, temporary power services to the building and the City's storage trailers, but not to Contractor's field office trailers. Contractor shall be responsible for determining and supplying at no cost to the City any other temporary utilities needed to maintain utility service to all adjacent property owners/tenants.

ARTICLE 36. AS-BUILT IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY

Upon completion of all work and prior to final payment the Contractor shall provide an As-Built Improvement Location and Topographical Survey of all above ground and below ground improvements within the Limit of work. The survey shall include property lines, dimensions, stretch distances, vertical certification or datum and should be an A2 as built completed by a licensed land surveyor. Said survey(ies) shall be signed and sealed by a State of Connecticut Licensed Surveyor and shall be in accordance with the requirements of Connecticut General Statues, Section 20- 300b. The contractor shall provide one stamped mylar copy and one electronic AutoCAD copy of the As-Built Improvement Location and Topographical Survey. All AutoCAD submissions to the City shall be made in the version required by the City's Public Works Department. No separate payment shall be made for an As-Built Improvement Location Survey, as the cost for such shall be included in the general cost of the project. Final payment will not be made to the Contractor until the As-Built Improvement Location and Topographical Survey is spot checked and approved by the City. Corrections, if any, shall be made to the AutoCAD, and to the mylar reproducible.

ARTICLE 37. ADDENDUM TO GENERAL CONDITION 1

Reference is made to General Condition Article 1 – Plans and Specifications at the Site; Record Documents.

a. The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings and other supplemental drawings, Change Orders, Change Directives, Addenda, Submittals, etc. and other modifications, schedules and instructions in good order.

b. One copy of all documents is to be marked daily to record all approved changes made during construction, including, but not limited to, field changes. At the conclusion of construction, the Contractor shall turn one (1) complete set of As-Built Documents over to the Project Engineer. Both sets shall always be available to the Project Engineer and the City or their authorized representatives.

c. Every sheet of the Plans and Specifications which differs from the actual construction shall be marked, and sheets so changed shall be noted on the title sheets of the Plans and Specifications.

d. Where supplementary drawings are used, including, but not limited to, Change Order Drawings Working Drawings, Shop Drawings or Coordination Drawings, the Contractor shall create an appendix to the As-Built Plans and record a cross-reference to the appendix at the corresponding location on the Plans.

e. As-Built Plan sheets shall document as-built details for the plans, profiles, cross-sections and shall note exact dimensions and actual locations of all elements changed or

modified during construction.

f. As-Built Documents shall also reflect details of changes or additional information, including, but not limited to, fabrication, erection, installation, sizing, material, and dimensions, etc. and, for underground utilities and improvements shall also show exact elevations, grade modifications, materials used and related information on piping utilities, earthwork, etc.

g. The Contractor shall mark the As-Built Documents with red erasable pencil, or where directed by the Project Engineer As-Built Documents shall be recorded with three base colors using a standard legend: RED = deleted items, GREEN = added items, BLUE = special information or details.

h. The Contractor shall also maintain one binder of all miscellaneous records such as diaries, field books, manufacturer startup reports, test reports, and Building and Fire Code inspection reports required by other Contract Provisions. The miscellaneous records shall be arranged systematically according to the organization of the Contract provisions.

ARTICLE 38. CONSTRUCTION STAKE OUT

The City will not provide control points, benchmarks or construction stake out. The Contractor shall be solely responsible for the actual construction stakeout. The work shall be included in the Contract Amount. No separate or additional payment will be made for this work and/or services.

ARTICLE 39. SALVING CITY ITEMS

The City shall identify, remove, and take possession of all items designated for salvage prior to issuing the Notice to Proceed.

END OF SECTION

Minimum Rates and Classifications
for Building Construction

ID#: 26-3619

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: 8753 Project Town: Waterbury
State#: FAP#:
Project: Construction of the Chase Building Renovation

CLASSIFICATION	Hourly Rate	Benefits
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	48.81	34.05
2) Boilermaker	50.21	30.01
3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	45.56	36.94 + a
3b) Tile Setter	43.0	34.75
3c) Tile and Stone Finishers	36.0	29.43
3d) Marble & Terrazzo Finishers	35.7	29.73
3e) Plasterer	44.52	29.63

3f) Terrazzo Mechanics & Marble Setters	40.6	39.93
------LABORERS------		
4) Group 1: General laborers, carpenter tenders, concrete specialists, wrecking laborers and fire watchers.	35.7	28.85
4) Group 1a: Acetylene Burners (Hours worked with a torch)	36.7	28.85
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman (Person running mixer and spraying fireproof only).	35.95	28.85
4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	36.2	28.85
4c) **Group 4: Pipelayers: Licensed P6 -P7 (one or two employees of the total crew who primary task is to perform mating of pipe sections).	36.7	28.85
4d) Group 5: Air track operator, sand blaster and hydraulic drills.	36.45	28.85
4e) Group 6: Blasters, nuclear and toxic waste removal.	38.7	28.85
4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	38.7	28.85
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	36.2	28.85
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	35.7	28.85

4i) Group 10: Traffic Control Signalman	21.42	28.85
4j) Group 11: Toxic Waste Removers A or B With PPE	38.7	28.85
5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	42.03	29.19
5a) Millwrights	43.25	29.13
5b) Carpenter - Welder	42.53	29.19
5c) Carpenter: Working with creosote lumber or acid	43.03	29.19
6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	47.4	35.32+3% of gross wage
7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	69.55	38.985+a+b
-----OUTSIDE LINE CONSTRUCTION----		
Groundman	32.1	13.95
Linemen/Cable Splicer	58.37	33.94
8) Glazier (Trade License required: FG-1,2)	43.13	26.50+ a

9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	43.62 + a
----OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone; Hoisting Engineer (2 drums or over). (Trade License Required)	58.19	29.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and Over	53.33	29.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	57.78	29.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	56.79	29.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer)	52.92	29.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Finegrade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	51.92	29.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper); Goldhofer.	51.42	29.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Spreader, Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24 mandrel).	50.63	29.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	50.63	29.80 + a

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	50.22	29.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under mandrel).	49.77	29.80 + a
Group 8: Mechanic; Grease Truck Operator; Hydroblaster; Barrier Mover; Power Stone Spreader; Welding; Work Boat Under 26 ft.; Transfer Machine; Rigger Foreman.	49.25	29.80 + a
Group 9: Front End Loader (under 3 cubic yards); Skid Steer Loader regardless of attachments; (Bobcat or Similar); Forklift, Power Chipper; Landscape Equipment (including Hydroseeder); Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	48.67	29.80 + a
Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	45.96	29.80 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	45.96	29.80 + a
Group 12: Wellpoint Operator.	45.87	29.80 + a
Group 13: Compressor Battery Operator.	45.12	29.80 + a
Group 14: Elevator Operator; Tow Motor Operator (solid tire no rough terrain).	43.6	29.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	43.06	29.80 + a
Group 16: Maintenance Engineer.	42.2	29.80 + a

As of: March 26, 2026

Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator; Portable Grout Plant Operator; Portable Water Filtration Plant Operator.	47.91	29.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (Minimum for any job requiring a CDL license); Rigger; Signalman.	44.7	29.80 + a
Surveyor: Chief of Party	48.16	29.80 + a
Surveyor: Assistant Chief of Party	44.41	29.80 + a
Surveyor: Instrument Man	42.73	29.80 + a
Surveyor: Rodman or Chainman	36.78	29.80 + a
------PAINTERS (Including Drywall Finishing)------		
10a) Brush and Roller	39.57	26.50
10b) Taping Only/Drywall Finishing	40.32	26.50
10c) Paperhanger and Red Label	40.07	26.50
10d) Spray	42.57	26.50
10e) Spray Helper	40.57	26.50
10f) Blast	44.57	26.50

10g) Blast Helper	40.57	26.50
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	50.58	36.30
12) Well Digger, Pile Testing Machine	37.26	24.05 + a
Roofer: Cole Tar Pitch	46.0	24.74 + a
Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	44.5	24.74 + a
15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	44.7	44.38
16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	50.58	36.30
------TRUCK DRIVERS------		
17) Block Truck	37.48	32.68 + a
17a) 2 Axle	36.16	32.68 + a
17ab) Helpers	34.66	32.68 + a
17b) 3 Axle, 2 Axle Mixer	36.27	32.68 + a

17c) 3 Axle Mixer	36.33	32.68 + a
17d) 4 Axle	36.39	32.68 + a
17e) 4 Axle Mixer	37.19	32.68 + a
17ef) 5 Axle	36.39	32.68 + a
17eg) 5 Axle Mixer	37.19	32.68 + a
17f) Heavy Duty Trailer (40 Tons and Over)	38.66	32.68 + a
17g) Euclids and Semi-Trailer	36.44	32.68 + a
17h) Heavy Duty Trailer up to 40 tons	37.39	32.68 + a
17i) Snorkle Truck	36.54	32.68 + a
17j) Swivel Dump and Tack Truck	36.39	32.68 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	53.76	33.44 + a
19) Theatrical Stage Journeyman	25.76	7.34

Welders: Rate for craft to which welding is incidental.
Surveyors: Hazardous material removal: $3.00 per hour premium.
*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.
**Note: Hazardous waste premium $3.00 per hour over classified rate.
Truck Drivers: Trainers Premium: $3.00 over wage rate.
Truck Drivers: Night Premium - Mixer Drivers: $2.00 over wage rate.

As of: March 26, 2026

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.
The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
All subsequent annual adjustments will be posted on our Web Site for contractor access.
Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: March 26, 2026

CITY OF WATERBURY
DEPARTMENT OF FINANCE – RISK MANAGEMENT
CERTIFICATE OF INSURANCE REVIEW FORM

Contract Recipient or Vendor Name: KBE Building Corp

Requesting Department: WDC / DPW

Department Contact: Robert Dowd rdowd@wdconline.org
Dave Simpson dsimpson@waterburyct.org

Description of work to be performed:
RFP# 8753 Chase Building Renovations

Estimated Contract Duration and End Date: multi

Date Reviewed: 09/18/2026

Insurance Certificate Term: 04/01/2026 – 04/01/2027

Payment / Performance Bond: # K42248022
Federal Insurance Company
Verification of Existence of Fidelity and Surety in CT
https://portal.ct.gov/-/media/CID/1_Lists/licencom.pdf

Certificate Meets Insurance Specifications: Yes

Insurance Carrier A.M. Best Rating: A-VIII or better

Comments:

Approved: Yes

9/18/2026
Risk Manager or Authorized Designee

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY) 05/13/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

Holder Identifier :

PRODUCER
Aon Risk Services Central, Inc.
Chicago IL Office
200 East Randolph
Chicago IL 60601 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 FAX (A/C. No.): (800) 363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Zurich American Ins Co	16535
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED
KBE Building Corporation
9977 N. 90th Street, Suite 150
Scottsdale AZ 85258 USA

COVERAGES **CERTIFICATE NUMBER:** 570119951024 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY	Y	Y	GLO302950806	04/01/2026	04/01/2027	EACH OCCURRENCE	$2,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$1,000,000
							MED EXP (Any one person)	$10,000
							PERSONAL & ADV INJURY	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$4,000,000
	POLICY X PRO-JECT X LOC						PRODUCTS - COMP/OP AGG	$4,000,000
	OTHER:							
A	AUTOMOBILE LIABILITY	Y	Y	BAP 2028156-05	04/01/2026	04/01/2027	COMBINED SINGLE LIMIT (Ea accident)	$2,000,000
	X ANY AUTO						BODILY INJURY (Per person)	
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	
	DED RETENTION							
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY		Y	WC437326818	04/01/2026	04/01/2027	X PER STATUTE OTH-ER	
	ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N N/A						E.L. EACH ACCIDENT	$1,000,000
	(Mandatory in NH)						E.L. DISEASE-EA EMPLOYEE	$1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE-POLICY LIMIT	$1,000,000

Certificate No : 570119951024

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: 4-Digit Code: 2026, Project Name: City of Waterbury, Project No.: Request for Proposal No.: 8753. City of Waterbury and any of its Boards, the Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are included as Additional Insured in accordance with the policy provisions of the General Liability and Automobile Liability policies. General Liability and Automobile Liability policies evidenced herein are Primary and Non-Contributory to other insurance available to Additional Insured, but only in accordance with the policy's provisions. A Waiver of Subrogation is granted in favor of Certificate Holder in accordance with the policy provisions of the General Liability, Automobile Liability and

CERTIFICATE HOLDER

City of Waterbury
235 Grand Street
Waterbury CT 06702 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services Central, Inc.

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AGENCY CUSTOMER ID: 570000097933

LOC #:

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED
Aon Risk Services Central, Inc.	KBE Building Corporation
POLICY NUMBER	
See Certificate Number: 570119951024	
CARRIER / NAIC CODE	EFFECTIVE DATE:
See Certificate Number: 570119951024	

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: ACORD 25 **FORM TITLE:** Certificate of Liability Insurance

Additional Description of Operations / Locations / Vehicles:

Workers' Compensation policies.

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CERTIFICATE OF LIABILITY INSURANCE

4/1/2027

DATE (MM/DD/YYYY): 5/13/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lockton Companies, LLC
DBA Lockton Insurance Brokers, LLC in CA
CA license #0F15767
1185 Avenue of the Americas, Ste. 2010
New York NY 10036
(646) 572-7300

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : XL Specialty Insurance Company	37885
INSURER B : Starr Indemnity & Liability Company	38318
INSURER C : The Ohio Casualty Insurance Company	24074
INSURER D : Starstone Specialty Insurance Company	44776
INSURER E : Indian Harbor Insurance Company	36940
INSURER F :	

INSURED 1565175
KBE Building Corporation
9977 N 90th Street, Suite 150
Scottsdale AZ 85258

COVERAGES **CERTIFICATE NUMBER:** 23517467 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY			NOT APPLICABLE			EACH OCCURRENCE	$ XXXXXXX
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ XXXXXXX
							MED EXP (Any one person)	$ XXXXXXX
							PERSONAL & ADV INJURY	$ XXXXXXX
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ XXXXXXX
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$ XXXXXXX
	☐ OTHER:							$
	AUTOMOBILE LIABILITY			NOT APPLICABLE			COMBINED SINGLE LIMIT (Ea accident)	$ XXXXXXX
	☐ ANY AUTO						BODILY INJURY (Per person)	$ XXXXXXX
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$ XXXXXXX
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$ XXXXXXX
								$ XXXXXXX
A	UMBRELLA LIAB ☒ OCCUR	Y	Y	US00138615LI26A	4/1/2026	4/1/2027	EACH OCCURRENCE	$ 50,000,000
B	☒ EXCESS LIAB ☐ CLAIMS-MADE			1000586939261	4/1/2026	4/1/2027	AGGREGATE	$ 50,000,000
C	DED ☐ RETENTION $			ECO(27)58 61 45 68	4/1/2026	4/1/2027		$ XXXXXXX
D				CSX90331864P-01	4/1/2026	4/1/2027		
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			NOT APPLICABLE			PER STATUTE ☐ OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ N/A (Mandatory in NH)						E.L. EACH ACCIDENT	$ XXXXXXX
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ XXXXXXX
							E.L. DISEASE - POLICY LIMIT	$ XXXXXXX
E	Prof./ Poll Liability	Y	N	CEO744679709	4/1/2026	4/1/2027	Limit: $5,000,000/Claim $5,000,000/Agg Prof. SIR: $100,000 Poll. SIR: $50,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
RE: City of Waterbury – Request for Proposal #8753
RFP #8753

City of Waterbury and any of its Boards, WDC and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are included as Additional Insured on Excess and Pollution Liability on a Primary and Non-Contributory basis as required by written contract. Waiver of Subrogation applies on Excess Liability as required by written contract. 30 days Notice of Cancellation applies except 10 days Non-payment of premium.

CERTIFICATE HOLDER

23517467
City of Waterbury
235 Grand Street
Waterbury CT 06702

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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EVIDENCE OF COMMERCIAL PROPERTY INSURANCE

DATE (MM/DD/YYYY): 9/17/2026

THIS EVIDENCE OF COMMERCIAL PROPERTY INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE ADDITIONAL INTEREST NAMED BELOW. THIS EVIDENCE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS EVIDENCE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE ADDITIONAL INTEREST.

PRODUCER NAME, CONTACT PERSON AND ADDRESS / **PHONE (A/C, No, Ext):** (646) 572-7300 Lockton Companies, LLC DBA Lockton Insurance Brokers, LLC in CA CA license #0F15767 1185 Avenue of the Americas, Ste. 2010 New York NY 10036	**COMPANY NAME AND ADDRESS** / **NAIC NO:** 37885 XL Specialty Insurance Company
FAX (A/C, No): / **E-MAIL ADDRESS:**	**IF MULTIPLE COMPANIES, COMPLETE SEPARATE FORM FOR EACH**
CODE: / **SUB CODE:**	**POLICY TYPE** Property
AGENCY CUSTOMER ID #:	
NAMED INSURED AND ADDRESS 1135370 KBE Building Corporation 76 Batterson Park Road Farmington CT 06032	**LOAN NUMBER** / **POLICY NUMBER** UM00088188MA26A
	EFFECTIVE DATE: 4/1/2026 / **EXPIRATION DATE**: 4/1/2027 / ☐ CONTINUED UNTIL TERMINATED IF CHECKED
ADDITIONAL NAMED INSURED(S)	**THIS REPLACES PRIOR EVIDENCE DATED:**

PROPERTY INFORMATION (ACORD 101 may be attached if more space is required) ☒ BUILDING OR ☐ BUSINESS PERSONAL PROPERTY

LOCATION / DESCRIPTION

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS EVIDENCE OF PROPERTY INSURANCE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

COVERAGE INFORMATION PERILS INSURED: ☐ BASIC ☐ BROAD ☒ SPECIAL ☐

COMMERCIAL PROPERTY COVERAGE AMOUNT OF INSURANCE: $ 50,000,000 DED: 10,000

	YES	NO	N/A	
☒ BUSINESS INCOME ☐ RENTAL VALUE	X			If YES, LIMIT: ☐ Actual Loss Sustained; # of months:
BLANKET COVERAGE	X			If YES, indicate value(s) reported on property identified above: $
TERRORISM COVERAGE	X			Attach Disclosure Notice / DEC
IS THERE A TERRORISM-SPECIFIC EXCLUSION?		X		
IS DOMESTIC TERRORISM EXCLUDED?		X		
LIMITED FUNGUS COVERAGE	X			If YES, LIMIT: 100,000 DED: 10,000
FUNGUS EXCLUSION (If "YES", specify organization's form used)		X		
REPLACEMENT COST	X			
AGREED VALUE			X	
COINSURANCE		X		If YES, %
EQUIPMENT BREAKDOWN (If Applicable)	X			If YES, LIMIT: Included DED: 10,000
ORDINANCE OR LAW - Coverage for loss to undamaged portion of bldg	X			If YES, LIMIT: Included DED: 10,000
- Demolition Costs	X			If YES, LIMIT: 1,500,000 DED: 10,000
- Incr. Cost of Construction	X			If YES, LIMIT: 1,500,000 DED: 10,000
EARTH MOVEMENT (If Applicable)	X			If YES, LIMIT: 25,000,000 DED: 25,000
FLOOD (If Applicable)	X			If YES, LIMIT: 25,000,000 DED: 25,000
WIND / HAIL INCL ☒ YES ☐ NO Subject to Different Provisions:		X		If YES, LIMIT: Included DED: 10,000
NAMED STORM INCL ☒ YES ☐ NO Subject to Different Provisions:	X			If YES, LIMIT: 50,000,000 DED: 10,000
PERMISSION TO WAIVE SUBROGATION IN FAVOR OF MORTGAGE HOLDER PRIOR TO LOSS	X			

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

ADDITIONAL INTEREST

☐ CONTRACT OF SALE ☐ LENDER'S LOSS PAYABLE ☐ LOSS PAYEE ☐ MORTGAGEE	**LENDER SERVICING AGENT NAME AND ADDRESS**
NAME AND ADDRESS **1010739** The City of Waterbury City Hall 235 Grand Street Waterbury, CT 06702	**AUTHORIZED REPRESENTATIVE**

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EVIDENCE OF COMMERCIAL PROPERTY INSURANCE-Including Special Conditions (Use only if more space is required)

THIS CERTIFICATE SUPERSEDES ALL PREVIOUSLY ISSUED CERTIFICATES FOR THIS HOLDER, APPLICABLE TO THE CARRIERS LISTED AND THE POLICY TERM(S) REFERENCED.

Project: The Chase Building Renovations
Number: 8753
Contract value: $28,227300
Thirty (30) Day Notice of Cancellation, applies to The City of Waterbury and WDC.

Bond No. K42248022

Document A312™ – 2010

Conforms with The American Institute of Architects AIA Document 312

Payment Bond

CONTRACTOR:
(Name, legal status and address)

KBE Building Corporation
76 Batterson Park Road
Farmington, CT 06032

SURETY:
(Name, legal status and principal place of business)

Federal Insurance Company
202B Hall's Mill Road
Whitehouse Station, NJ 08889
Mailing Address for Notices

202B Hall's Mill Road
Whitehouse Station, NJ 08889

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)

City of Waterbury
235 Grand Street
Waterbury, CT 06702

CONSTRUCTION CONTRACT
Date: 2026

Amount: $ 28,227,300.00 Twenty Eight Million Two Hundred Twenty Seven Thousand Three Hundred Dollars and 00/100

Description:
(Name and location) RFP#8753; Chase Building Renovations

BOND
Date: 2026
(Not earlier than Construction Contract Date)

Amount: $ 28,227,300.00 Twenty Eight Million Two Hundred Twenty Seven Thousand Three Hundred Dollars and 00/100

Modifications to this Bond: ☒ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*

KBE Building Corporation

Signature:
Name and Title: Timothy Shea Exec VP + CFO

SURETY
Company: *(Corporate Seal)*

Federal Insurance Company

Signature: Dana E Wium
Name and Title: Dana E. Wium Attorney-in-Fact

FEDERAL INSURANCE COMPANY · INDIANA ·

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:
Lockton Companies, LLC - Hartford
65 Memorial Rd, Suite C100, Rutherford Building
West Hartford, CT 06107

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

.1 the name of the Claimant;
.2 the name of the person for whom the labor was done, or materials or equipment furnished;
.3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
.4 a brief description of the labor, materials or equipment furnished;
.5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
.6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
.7 the total amount of previous payments received by the Claimant; and
.8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature: _____		Signature: _____	
Name and Title:		Name and Title:	
Address		Address	

Bond No. K42248022

Document A312™ – 2010

Conforms with The American Institute of Architects AIA Document 312

Performance Bond

CONTRACTOR:
(Name, legal status and address)

KBE Building Corporation
76 Batterson Park Road
Farmington, CT 06032

SURETY:
(Name, legal status and principal place of business)

Federal Insurance Company
202B Hall's Mill Road
Whitehouse Station, NJ 08889
Mailing Address for Notices

202B Hall's Mill Road
Whitehouse Station, NJ 08889

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)

City of Waterbury
235 Grand Street
Waterbury, CT 06702

CONSTRUCTION CONTRACT
Date: 2026

Amount: $ 28,227,300.00 Twenty Eight Million Two Hundred Twenty Seven Thousand Three Hundred Dollars and 00/100

Description:
(Name and location) RFP#8753; Chase Building Renovations

BOND
Date: 2026
(Not earlier than Construction Contract Date)

Amount: $ 28,227,300.00 Twenty Eight Million Two Hundred Twenty Seven Thousand Three Hundred Dollars and 00/100

Modifications to this Bond: [X] None [ ] See Section 16

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*
KBE Building Corporation

Signature:

Name and Title: Timothy Bolen Exec VP + CFO

SURETY

Company: *(Corporate Seal)*
Federal Insurance Company

Signature: Dana E. Wium

Name and Title: Dana E. Wium Attorney-in-Fact

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:
Lockton Companies, LLC - Hartford
65 Memorial Rd, Suite C100, Rutherford Building
West Hartford, CT 06107

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature: _____		Signature: _____	
Name and Title:		Name and Title:	
Address		Address	

LOCKTON

UNCOMMONLY INDEPENDENT

September 16, 2026

City of Waterbury
235 Grand Street
Waterbury, CT 06032

Re: KBE Building Corporation
Bond No.: K42248022
Bond Amount: $28,227,300.00

Project: RFP#8753; Chase Building Renovations

To Whom It May Concern,

This letter will serve as your authority to date the Bonds and the Powers of Attorney on the above captioned project.

Very truly yours,
Federal Insurance Company

Dana E. Wium
Attorney-in-Fact

FEDERAL INSURANCE COMPANY
INDIANA

CHUBB

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company
Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, **PACIFIC INDEMNITY COMPANY**, a Delaware corporation, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint **Dana E. Wium**

Surety Bond No. K42248022

Obligee: City of Waterbury

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** have each executed and attested these presents and affixed their corporate seals on this **25th** day of **June, 2025.**

Rupert HD Swindells, Assistant Secretary

Stephen M Haney, Vice President

STATE OF NEW JERSEY
County of Hunterdon ss.

On this **25th** day of **June, 2025** before me, a Notary Public of New Jersey, personally came Rupert HD Swindells and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Rupert HD Swindells and Stephen M. Haney, being by me duly sworn, severally and each for himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal

Stacy J Loftin
NOTARY PUBLIC OF NEW JERSEY
No. 50175208
COMMISSION EXPIRES OCT 15, 2026

Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Rupert HD Swindells, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this 2026.

Rupert HD Swindells, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

FEDERAL INSURANCE COMPANY

STATEMENT OF ASSETS, LIABILITIES AND SURPLUS TO POLICYHOLDERS

Statutory Basis

December 31, 2025

($ in thousands)

ASSETS		*LIABILITIES AND SURPLUS TO POLICYHOLDERS*	
Cash, Cash Equivalents, and ST Investments	$ (579,525)	Outstanding Losses and Loss Expenses	$ 11,088,245
U S Government Bonds	335,089	Reinsurance Payable on Losses and Expenses	1,740,572
Non-US Government Bonds	354,457	Unearned Premiums	3,393,935
Issuer Credit Obligations ("ICO") Bonds	7,795,356	Ceded Reinsurance Premiums Payable	413,131
Asset Backed Securities ("ABS") Bonds	5,133,641	Other Liabilities	677,572
Stocks	456,376		
Other Invested Assets	1,630,546		
TOTAL INVESTMENTS	15,125,940	TOTAL LIABILITIES	17,313,455
Investments in Affiliates		Capital Stock	20,980
Great Northern Ins. Co	458,458	Paid-In Surplus	2,711,474
Vigilant Ins. Co	406,475	Unassigned Funds	2,719,103
Chubb National Ins. Co	210,054		
Chubb Indemnity Ins. Co.	187,377	SURPLUS TO POLICYHOLDERS	5,451,557
Chubb Ins. Co. of New Jersey	42,766		
Chubb Lloyds Ins. Co. of Texas	6,321		
Other Affiliates	72,521		
Premiums Receivable	2,656,438		
Other Assets	3,598,664		
TOTAL ADMITTED ASSETS	$ 22,765,012	TOTAL LIABILITIES AND SURPLUS	$ 22,765,012

Investments are valued in accordance with requirements of the National Association of Insurance Commissioners. At December 31, 2025 investments with a carrying value of $574,475,305 were deposited with government authorities as required by law

STATE OF PENNSYLVANIA

COUNTY OF PHILADELPHIA

John Taylor, being duly sworn, says that he is Senior Vice President of Federal Insurance Company and that to the best of his knowledge and belief the foregoing is a true and correct statement of the said Company's financial condition as of the 31st day of December, 2025

Sworn before me this March 11, 2026

Senior Vice President

Jaime L. Yates

Notary Public

September 19, 2027

My commission expires

Commonwealth of Pennsylvania - Notary Seal
Jaime L. Yates, Notary Public
Philadelphia County
My commission expires September 19, 2027
Commission number 1357070
Member, Pennsylvania Association of Notaries

Prepared on
3/13/2026 by CB

CITY OF WATERBURY
Insurance Bid Specifications Recommendation
RISK MANAGEMENT

Submitting Department: WDC
Contact Name: Emily Zao zao@wdconline.org Dave Simpson dsimpson@waterburyct.org
Description of Project/Work/Services: RFP# 8753 Renovate the Chase Building

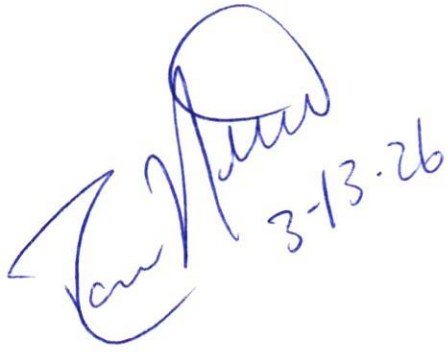
Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name City of Waterbury as an Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of "A-"VIII.
If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.
Original, completed Certificates of Insurance must be presented to The City of Waterbury prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, 30 days written notice must be given to the City of Waterbury.

General Liability: **$1,000,000 each Occurrence**
$2,000,000 General Aggregate
$2,000,000 Products/ Completed Operations Aggregate

Auto Liability: **$1,000,000 Combined Single Limit each Accident**
Any Auto, All Owned and Hired Autos

Workers Compensation: **WC Statutory Limits**
Employer Liability (EL)
$1,000,000 EL each Accident
$1,000,000 EL Disease each Employee
$1,000,000 EL Disease Policy Limits



Excess/ Umbrella Liability: **$30,000,000 each Occurrence**
$30,000,000 Aggregate

Builder's Risk/Installation Floater Insurance: Limits Equaling The Value of the Project

Contractors Pollution Liability Insurance: **$1,000,000 each Occurrence/Claim**
$1,000,000 Aggregate
There will be no exclusion for Hazardous materials, including Asbestos and Lead

Payment/Performance Bond Determination:
All requests should be closely reviewed for determination of needing a payment/performance bond equal to the contract value. A payment/performance bond can be called to provide replacement funding for maintaining critical recurring services not being performed and/or failure to complete a project. Additionally, the payment bond provides replacement funding for a contractor/vendor's failure to provide payment to subcontractors for work performed. The person submitting this request is responsible for determining if a payment/performance bond is required. The parameters are included in the procurement process/RFP paperwork.

Wording for Additional Insured Endorsement and Waiver of Subrogation:
The City of Waterbury and Waterbury Development Corp is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation and Professional Liability. All policies shall include a Waiver of Subrogation except Professional Liability and Builders Risk.
******Where additional insured and waiver of subro is contractually required, the endorsement page MUST be included with the COI submission******

Insurance Bid Request Form

I. Project Description:

Scope of Services -

This project is to renovate the Chase Building

II. Project information:

RFP# 8753

Anticipated Cost: $25,000,000

Bonds will be required: **Yes** ☑ / **No** ☐

Expected Start Date (if known): 05/2026

Agreement Term: **1 Year** ☐ / **Multi Year** ☐

III. General Information:

a. Project/program associated with the BOE. **Yes** ☑ / **No** ☐

b. Project/program involves students. **Yes** ☐ / **No** ☑

1. If involving students:
   i. Is the vendor working directly with children? **Yes** ☐ / **No** ☐

   ii. Staff members *will* be with vendor at all times while on school/city property or where program is running? **Yes** ☐ / **No** ☐

   iii. If the project/program requires transportation to a different location – how will the students/staff members be transported?
   Vendor provided service ☐ / **City contracted bus company** ☐ **OR**
   other: _____

c. Vendor ***will*** be coming on-site anywhere in the City. **Yes** ☑ / **No** ☐

d. Vendor ***will*** be delivering in their business owned or personal vehicles. **Yes** ☑ / **No** ☐

e. Vendor ***will*** be instructing or giving direction on anything (either on-line or in person) to staff and/or students. **Yes** ☑ / **No** ☐

f. There ***will*** be cash or electronic banking transactions involved. **Yes** ☑ / **No** ☐

g. There ***will*** be information exchanged between the City's computer system and the vendor's system. **Yes** ☑ / **No** ☐

h. Services being provided ***will*** involve design work. **Yes** ☑ / **No** ☐

i. Services being provided ***will*** involve actual construction work. **Yes** ☑ / **No** ☐

j. Services being provided ***will*** involve digging into soil. **Yes** ☑ / **No** ☐

   a. If yes, how deep? 0-10 ft

k. Vendor ***will*** be storing items/supplies on site. **Yes** ☑ / **No** ☐

l. Vendor ***will*** be finished in one day. **Yes** ☐ / **No** ☑

Note: For all of the above, "vendor" shall mean "vendor," "contractor," or "consultant," as may be applicable to the project.

If there is any other information you feel will be helpful, please make note of it:

For the soil, the depth is 0-10 feet depending on existing utilities.

This RFP is being readvertised because the architect updated the drawings and specifications. To save confusion with potential bidders, the RFP is being readvertised.

Again, the email to send this is:

Insurancerequest@waterburyct.org

If you would like to cc the emails for any reason, please note the below email addresses for the Risk Management Team:
Rona Nickerl rnickerl@waterburyct.org Risk Manager
Crystal Burr cburr@waterburyct.org Administrative Assistant

*****If you have any questions please reach out to our Team.*****

Crystal Burr

From: Emily Zao
Sent: Thursday, March 12, 2026 11:05 AM
To: Insurance Requests
Subject: Insurance Request - RFP 8753 Chase Building Renovation
Attachments: Insurance Bid Request Form Questions 2025.pdf; Approved Insurance Requirements.pdf

Good Morning,

Please see attached the insurance bid request form and the previously approved insurance requirements. This RFP is being readvertised, nothing major changed. Can you please provide insurance recommendations?

Thank you,

Emily Zao, EIT
Project Engineer

WATERBURY
DEVELOPMENT CORPORATION

83 Bank Street, 3rd Floor
Waterbury, CT 06702
203-346-2607 ext 7291
zao@wdconline.org
Website | Facebook | LinkedIn

Prepared on
2/3/2026 by CB

CITY OF WATERBURY
Insurance Bid Specifications Recommendation
RISK MANAGEMENT

Submitting Department: WDC
Contact Name: Emily Zao zao@wdconline.org
Description of Project/Work/Services: Renovate the Chase Building

Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name City of Waterbury as an Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of "A-"VIII.
If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.
Original, completed Certificates of Insurance must be presented to The City of Waterbury prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, 30 days written notice must be given to the City of Waterbury.

General Liability: **$1,000,000 each Occurrence**
$2,000,000 General Aggregate
$2,000,000 Products/ Completed Operations Aggregate

Auto Liability: **$1,000,000 Combined Single Limit each Accident**
Any Auto, All Owned and Hired Autos

Workers Compensation: **WC Statutory Limits**
Employer Liability (EL)
$1,000,000 EL each Accident
$1,000,000 EL Disease each Employee
$1,000,000 EL Disease Policy Limits



Excess/ Umbrella Liability: **$30,000,000 each Occurrence**
$30,000,000 Aggregate

Builder's Risk/Installation Floater Insurance: Limits Equaling The Value of the Project

Contractors Pollution Liability Insurance: **$1,000,000 each Occurrence/Claim**
$1,000,000 Aggregate
There will be no exclusion for Hazardous materials, including Asbestos and Lead

Payment/Performance Bond Determination:
All requests should be closely reviewed for determination of needing a payment/performance bond equal to the contract value. A payment/performance bond can be called to provide replacement funding for maintaining critical recurring services not being performed and/or failure to complete a project. Additionally, the payment bond provides replacement funding for a contractor/vendor's failure to provide payment to subcontractors for work performed.
The person submitting this request is responsible for determining if a payment/performance bond is required. The parameters are included in the procurement process/RFP paperwork.

Wording for Additional Insured Endorsement and Waiver of Subrogation:
The City of Waterbury and Waterbury Development Corp is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation. All policies shall include a Waiver of Subrogation except Builders Risk.

Insurance Bid Request Form

I. Project Description:

Scope of Services -

This project is to renovate the Chase Building

II. Project information:

RFP#_____

Anticipated Cost: $25,000,000

Bonds will be required: **Yes** ☑ / **No** ☐

Expected Start Date (if known): 05/2026

Agreement Term: **1 Year** ☐ / **Multi Year** ☐

III. General Information:

a. Project/program associated with the BOE. **Yes** ☑ / **No** ☐

b. Project/program involves students. **Yes** ☐ / **No** ☑

1. If involving students:
   i. Is the vendor working directly with children? **Yes** ☐ / **No** ☐

   ii. Staff members *will* be with vendor at all times while on school/city property or where program is running? **Yes** ☐ / **No** ☐

   iii. If the project/program requires transportation to a different location – how will the students/staff members be transported?
   Vendor provided service ☐ / **City contracted bus company** ☐ **OR**
   other: _____

c. Vendor ***will*** be coming on-site anywhere in the City. **Yes** ☑ / **No** ☐

d. Vendor ***will*** be delivering in their business owned or personal vehicles. **Yes** ☑ / **No** ☐

e. Vendor ***will*** be instructing or giving direction on anything (either on-line or in person) to staff and/or students. **Yes** ☑ / **No** ☐

f. There ***will*** be cash or electronic banking transactions involved. **Yes** ☑ / **No** ☐

g. There ***will*** be information exchanged between the City's computer system and the vendor's system. **Yes** ☑ / **No** ☐

h. Services being provided ***will*** involve design work. **Yes** ☑ / **No** ☐

i. Services being provided ***will*** involve actual construction work. **Yes** ☑ / **No** ☐

j. Services being provided ***will*** involve digging into soil. **Yes** ☑ / **No** ☐

   a. If yes, how deep? 0-10 ft

k. Vendor ***will*** be storing items/supplies on site. **Yes** ☑ / **No** ☐

l. Vendor ***will*** be finished in one day. **Yes** ☐ / **No** ☑

Note: For all of the above, "vendor" shall mean "vendor," "contractor," or "consultant," as may be applicable to the project.

If there is any other information you feel will be helpful, please make note of it:

For the soil, the depth is 0-10 feet depending on existing utilities

Again, the email to send this is:

Insurancerequest@waterburyct.org

If you would like to cc the emails for any reason, please note the below email addresses for the Risk Management Team:
Rona Nickerl rnickerl@waterburyct.org Risk Manager
Crystal Burr cburr@waterburyct.org Administrative Assistant

*****If you have any questions please reach out to our Team.*****

Crystal Burr

From: Emily Zao
Sent: Monday, February 2, 2026 10:09 AM
To: Insurance Requests
Cc: Rona Nickerl; Crystal Burr
Subject: Insurance Request - Construction for Chase Building Renovation
Attachments: Insurance Bid Request Form Questions 2025.pdf

Good Morning,

Please see attached the insurance bid request form for the Construction for Chase Building Renovation. Can you please provide the insurance requirements?

Thank you,

Emily Zao, EIT
Project Engineer

WATERBURY DEVELOPMENT CORPORATION

83 Bank Street, 3rd Floor
Waterbury, CT 06702
203-346-2607 ext 7291
zao@wdconline.org
Website | Facebook | LinkedIn

WATERBURY
DEVELOPMENT CORPORATION

To: Michael Digiovancarlo
President, Board of Aldermen

Members, Board of Aldermen

Mayor Paul K. Pernerewski, Jr.

From: Robert Dowd
Project Manager, WDC RD

Date: September 22, 2026

RE: Construction Contract for RFP#8800, Fire Station#6 Roof Replacement & Window Repairs between City of Waterbury and Macri Roofing in the amount of $250,000

I request approval of the Construction Contract for Roof Replacement and Window Repair Services for Fire Station #6.

Six firms responded to RFP#8800 and attended the mandatory pre-bid walk-thru of Fire Station #6 held on 13 July 2026.

Of these six firms, only three submitted a response: Macri Roofing, Kronenberger, and Milestone Construction Services. The bid amounts, including add alternates and allowances, were as follows:

Milestone Construction Services	$696,275.74
Kronenberger	$581,065
Macri Roofing	$234,700

The above three RFP respondents were invited to present their RFP responses and be interviewed by the Selection Committee. The Selection Committee consisted of:

Javier Lopez – Chief, Waterbury Fire Department
Sean Barry – Captain, Waterbury Fire Department
Michael LeBlanc, Director of Finance
Kevin McCaffrey, Director of Purchasing
Mansi Doshi, Project Manager – WDC (non-voting member)
Robert Dowd, Project Manager – WDC

Interviews were held on 7 August 2026 in the Cass Gilbert room.

As a result of the interviews, the Selection Committee requested that each firm revisit their bid amounts and submit their firm's best & final offer.

On 14 August 2026 each of the three firms submitted their best & final offers, including add alternates and allowances, as follows:

Milestone Construction Services	$684,275.74
Kronenberger	$565,365
Macri Roofing	$234,000

On 17 August 2026 the Selection Committee reviewed the best & final offers noted above.

The Committee was unanimous in its decision to recommend awarding the project to Macri Roofing based upon the following reasons and other considerations:

1) Macri Roofing submitted the lowest price in both initial and best & final proposals.
2) Macri's relevant recent experience.
3) Macri's prior experience with the City in these successful projects: North End Recreation Center roof replacement, Washington Park House roof replacement, and the Western Hills Golf Course Maintenance Building roof replacement.

The contract value is $250,000 which includes $191,000 (base bid items 1-8), $10,000 allowance for decking and roof trim, $10,000 allowance for hazardous material removal, $17,000 alternate for interior and window painting, $6,000 for painting of exterior window trim, and $16,000 as Owner Controlled Contingency.

The contract duration is 45 consecutive calendar days from City's written notice to proceed to reach substantial completion, and 60 consecutive calendar days from City's written notice to proceed to reach final completion.

This project is funded through City Local Bond funds.

Attached for your review and consideration is the proposed contract and all supporting documentation.

I look forward to answering any questions you may have regarding this request.

Thank you for your consideration of this matter.

Attachment

cc: Attorney Joseph P. Yamin, via email, w/o attachment.
James Nardozzi, via email, w/o attachment.
Robert Dowd, via email, w/o attachment

FINAL CONTRACT FOR MACRI
RFP 8800 – FS 6 RR
JPY 9.22.26

CONSTRUCTION CONTRACT
FOR
REQUEST FOR PROPOSAL NO. 8800
BY
WATERBURY DEVELOPMENT CORPORATION
ON BEHALF OF
CITY OF WATERBURY FIRE DEPARTMENT
FOR
ROOF REPLACEMENT AND WINDOW REPAIRS
AT
FIRE STATION 6

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and **MACRI, ROOFING, INC.**, located at 36 Duffy Avenue, Meriden, Connecticut 06450, a duly registered Connecticut corporation (the "Contractor").

WHEREAS the Contractor submitted a bid to the WDC in response to **Request for Proposal ("RFP") No. 8800** for the roof replacement and window repairs at the City's Fire Station 6 located at 431 Willow Street (the "Project"); and

WHEREAS the City accepted the Contractor's bid for **RFP Number 8800**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract for the Project.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as the "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of a roof replacement and window repairs at the City's Fire Station 6, all of which is more detailed and described in the Bid Documents in **Attachment A**. **Attachment A and B (if any)** are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP No. 8800** (incorporated by reference);
1.1.2 Addendum 1 to **RFP No. 8800** (incorporated by reference);
1.1.3 Contractor's Price Proposal (revised), consisting of 4 pages (attached hereto);
1.1.4 Contractor's Response (original) with associated attachments to **RFP No. 8800**, consisting of 39 pages (incorporated by reference);
1.1.5 **RFP No. 8800**, "Scope of Services" (also referred to as "Technical Specifications") (attached hereto);
1.1.6 "Site Map" with List of Drawings prepared by Landmark Architects, P.C. (attached hereto);
1.1.7 State of Connecticut Prevailing Wage Schedule dated June 26, 2026, and related information, consisting of 9 pages (incorporated by reference);
1.1.8 General Conditions and Special Conditions (attached hereto);
1.1.9 Contractor's Certificate of Insurance (incorporated by reference);
1.1.10 Contractor's Performance Bond (incorporated by reference);
1.1.11 Contractor's Payment Bond (incorporated by reference);
1.1.12 All amendments and change orders issued by the WDC after execution of Contract (incorporated by reference);
1.1.13 All applicable Federal, State and local statutes, regulations charter and ordinances; and
1.1.14 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument (including **Attachments B**, if any) are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The WDC's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflicts with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;
1.2.2 Contract Amendment(s) and Change Orders;
1.2.3 This Contract;
1.2.4 Special Conditions;
1.2.5 General Conditions;
1.2.6 Addendums to **RFP No. 8800**;
1.2.7 **RFP No. 8800** including "Scope of Services" (Technical "Specifications");
1.2.8 Drawings;
1.2.9 Contractor's Price Proposal; and
1.2.10 Contractor's Response.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of

this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Contractor hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Contractor and/or its employees be licensed, certified, registered, or otherwise qualified, the Contractor and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon the City's request, the Contractor shall provide the City with a copy of its licenses, certifications, registrations, etc.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibility to examine and to be thoroughly familiar with the City's bid documents, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submitting its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP Number 8800** (collectively, the "Bid Documents");

3.1.7 it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8 it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes;

3.1.10 it possesses the knowledge and understanding of the LoCIP program and with requirements associated with this funding source, including all rules, regulations and mandatory contract provisions required by it; and

3.1.11 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, State and Federal health and safety regulations. Contractor shall immediately correct any dangerous conditions caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense (i) adequate off-site storage space for equipment, materials, incidentals, etc., and (ii) all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract. Contractor shall comply with Special Conditions Provision section 1.08 - Prosecution and Progress.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity unless the City gives prior written consent to such use of its name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the

Contractor shall be made only with the prior written consent of an authorized representative of the City.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are (i) subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or (ii) unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, necessary, or prudent for the performance of the Contractor's obligations under this Contract, and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and its duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment. At a minimum, Contractor's record retention shall be consistent with provisions set forth in 2 CFR Section 200.334-200.338, and as required by law under 24 CFR Part 570.

3.15. Place Holder.

4. Responsibilities of the City and Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as its Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; initially, Waterbury Development Corp. ("WDC") is so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with its own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such an event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **forty-five (45) consecutive calendar days** and shall reach Final Completion within **sixty (60) consecutive calendar days** of the WDC's issuance of a written Notice to Proceed with the Project ("Contract Time"). **NB: DELAY CLAIMS DUE TO INABILITY TO PROCURE MATERIALS IN A TIMELY MANNER WILL NOT BE ACKNOWLEDGED OR ACCEPTED.**

5.1. The Contractor's Project schedule is attached hereto as **Attachment B**, if any. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule, if any.

5.2. Delay Damages.

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will ensure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **One Thousand Five Hundred and 00/100 Dollars ($1,500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damage from any monies due to the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire **Section 5**, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of its exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for the satisfactory provision of all the goods and services set forth in this Contract as follows in this **Section 6**. No claims for additional compensation will be considered for conditions made known to the

Contractor prior to bidding. No claims for additional compensation will be considered on account of the failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this **Section 6**, the fee payable to the Contractor shall not exceed **TWO HUNDRED FIFTY THOUSAND DOLLARS ($250,000)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Pricing Proposal (revised) set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

- **i.** $191,000 (base bid items 1-8);
- **ii.** $10,000 (allowance for decking and roof trim substrate replacement);
- **iii.** $10,000 (allowance for hazardous materials removal);
- **iv.** $17,000 (alternate for interior window painting – billed at $150 per window painted);
- **v.** $6,000 (alternate for painting of exterior window trim – billed at $200 per window painted); and
- **vi.** $16,000 in Owner Controlled Contingency as governed by **Section 6.1.1** below.

6.1.1 Owner Controlled Contingency/Allowances. At the sole discretion and control of the City, the contingency and allowance amounts set forth in **Section 6.1(ii)**, **(iii)** and **(iv)** of this Contract shall be utilized for the payment to the Contractor for extra and additional work requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the extra and additional work under the contingency/allowance shall be separate and apart from the base bid payment set forth above. The Owner Controlled Contingency/Allowances shall be the funding source for any City approved extra and additional work and services. Unless properly approved in writing by the City (**see Section 27**), Contractor shall not be entitled to any compensation from such contingency. The parties agree that a Change Order Form shall be utilized to set forth the extra and additional services, the cost of same and time for Contractor to provide said service.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with this Contract's provisions.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its

review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc., all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in its sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Contractor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP Number 8800** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed. Additionally, during the Project, at the City's option, it may require partial waivers of lien and claim from the Contractor and all subcontractors and materialmen with each payment application.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to it a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that it may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following: The City must receive the Contractor's Application for Payment by the City for its or its designee's review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide, at the City's request, reasonable documentation to substantiate the Contractor's Application for Payment.

6.10.2 Progress and Final Payments. The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by it, according to the schedule of values provided for in the Contract Documents and approved by it. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. The City's beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon its final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that the City shall be responsible for loss or damage caused by its gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized City representative.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City and its Boards and Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, any City's boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, any City's boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and City boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure for the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor's, or its subcontractor's, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: **$1,000,000.00** per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** products and completed operations aggregate; providing coverage to protect the WDC and the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: **$1,000,000.00** combined single limit (CSL); providing coverage to protect WDC and the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances: **$1,000,000.00** each occurrence and **$1,000,000.00** aggregate.

11.4.5 Builder's Risk Insurance: coverage equaling the monetary value of the construction component of the Project, whichever is greater. This "All Risk" Builders Risk insurance (also known as "course of construction") coverage with limits equal to or better than the maximum possible loss of all materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of WDC, the City, the Contractor and all subcontractors. If deemed necessary by the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy or final completion is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.4.6 Contractors Pollution Liability Insurance: $1,000,000.00 each claim and **$1,000,000.00** aggregate coverage. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for Contractor caused pollution events such as asbestos or lead abatement but not limited to only these pollution causes of loss.

11.5. Failure to Maintain Insurance. In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation. The City of Waterbury and the Waterbury Development Corporation shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance. The Contractor's General, Automobile, and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees as an additional insured and provide waiver of subrogation on all policies except Pollution Liability. The insurance

afforded to the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to it, subject to its approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City and others, as follows **"City of Waterbury and any of its Boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage; waiver of subrogation applies to all lines of coverage except Pollution Liability as their interest may appear"**. The City's Invitation to Bid Number must be shown on the certificate of insurance to ensure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy (ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 **CFR**, Part 3); and **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 **CFR** Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 **CFR** Part 5); **THE HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974**, as amended; 24 **CFR** Part 570 – Community Development Block Grants, and all applicable cross-cutting requirements, as applicable, under Subpart K, "Other Program Requirements," including but not limited to: Civil Rights and Fair Housing (24 **CFR** 570.601), Employment and Contracting Opportunities (24 **CFR** 570.607), Architectural Barriers and Americans with Disabilities (24 **CFR** 570.614), Labor Standards (24 **CFR** 570.603), Environmental Requirements, Historic Preservation, Floodplain Management, **NFIP**, Relocation, and Lead-Based Paint (24 CFR 570.608); the Build America, Buy America Act ("**BABA**"), 41 USC § 8301; **TITLE 31** and section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.3. Compliance with Build America, Buy America ("BABA") – Infrastructure Projects. The Contractor agrees to comply with the requirements of the Build America, Buy America ("**BABA**") Act, 41 **USC** § 8301 note, and all applicable rules and notices, as may be amended, if applicable to the Subrecipient's infrastructure project. Pursuant to **HUD**'s Notice, "Public Interest Phased Implementation Waiver for **FY** 2022 and 2023 of Build America, Buy America Provisions as Applied to Recipients of **HUD** Federal Financial Assistance" (88 **FR** 17001), any funds obligated by **HUD** on or after the applicable listed effective dates, are subject to BABA requirements, unless excepted by a waiver.

12.3.1. Subcontract Provisions. The Contractor shall include the provisions of Subsection 12.3 (**BABA**), herein, in every sub or tiered contract, specifically or by reference, so that such provisions will be binding upon each of its own contractors or subcontractors.

12.4. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all

pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.5 Place Holder.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements and will require the same of all subcontractors.

14. Place Holder.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving

written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination. Notwithstanding the above, upon determination by a court of competent jurisdiction that the termination of the agreement pursuant to this **Section 16.1** was wrongful, such termination will be deemed converted to a termination for convenience pursuant to **Section 16.2** and the Contractor's remedy for wrongful termination shall be limited to the recovery of the payments permitted for termination for convenience pursuant to **Article 16.2**.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by it by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due it from the Contractor is determined.

16.2. Termination for Convenience. The City may terminate this Contract at any time for its convenience, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges this Contract is subject to the appropriation and disbursement of funds is not sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to it.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as it may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) it. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by it prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to it as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by it (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience, the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by it, all documents and other tangible items furnished by, or owned, leased, or licensed by the City and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control the activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or

neglect.

18.3. The Contractor shall not, without the prior written approval of the City, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to it all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining

provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principals of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional costs or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 8800** and **(ii)** the Contractor's Bid response to **RFP Number 8800**. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall

continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor:	Macri Roofing, Inc. PO Box 712 Meriden, CT 06450
City:	Corporation Counsel's Office City of Waterbury City Hall 235 Grand Street Waterbury, CT 06702
With a copy to:	Waterbury Development Corporation Third Floor 83 Bank Street Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a

Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10. The Contractor hereby acknowledges receipt of a copy of Chapters 38 and 39 of the City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: http://www.waterburyct.org/content/458/539/default.aspx [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to

its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

34.16. CONFLICT OF INTEREST UNDER CFR. Contractor agrees to abide by the provisions of 2 **CFR** § 200.112 and 24 **CFR** Part 570.611 with respect to the conflicts of interest, and covenants that it presently has no financial interest and shall not acquire any financial interest, direct or indirect, which would conflict in any manner or degree with the performance of services under this Agreement. The contractor further covenants that in the performance of this Agreement, no person having such a financial interest shall be employed or retained by the Contractor hereunder. The conflict-of-interest provisions apply to any person who is an employee, agent, consultant, officer, or elected official or appointed official with the City or of any of the designated public agencies or subrecipients, which are receiving funds under the State of Connecticut LoCIP program.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1. Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2. Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3. Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4. City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5. Construction Supervisor: An employee of the City, or other City duly authorized person, including the Waterbury Development Corporation.

35.6. Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion and (ii) Final Completion.

35.7. Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8. Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized representative's written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9. Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10. Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11. Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction, which initially shall be Waterbury Development Corporation personnel.

35.12. Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13. Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14. Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15. Substantial Completion: The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16. Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17. Supplementary General and Special Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18. Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19. Using Agency: Waterbury Fire Department.

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Paul K. Pernerewski, Jr., Mayor

Date: _____

WITNESSES:

_____

_____

MACRI ROOFING, INC.

By:_____
Michael Macri, duly authorized

Date: _____

ATTACHMENT A

CORPORATE RESOLUTION

I, Michael A. Macri, hereby certify that I am the duly elected and acting Secretary of Macri Roofing, Inc., a corporation organized and existing under the laws of the State of Connecticut, do hereby certify that the following facts are true and were taken from the records of said corporation.

The following resolution was adopted at a meeting of the corporation duly held on the 2nd day of September, 2026.

"It is hereby resolved that Brandon Macri is authorized to make, execute and approve, on behalf of this corporation, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the corporate seal of said Macri Roofing, Inc. corporation this 2nd day of September , 2026.

Michael A Macri

Secretary

THE CITY OF WATERBURY
CONNECTICUT

MEMORANDUM

Date: 09/03/2026

From: **Delinquent Tax Office**

To: **Mansi Doshi**
Waterbury Development Corporation

Subject: **Tax Clearance Verification**

As of the date of this letter, the records of the Tax Collector's Office indicate that the following ***is not*** delinquent in the payment of property taxes, water charges, or parking tickets.

Macri Roofing, Inc.
36 Duffy Ave.
Meriden, CT 06451

If you have any questions or require additional information regarding this matter, please do not hesitate to call our office at (203) 574-6810.

Respectfully,

Heidi Barbieri. CCMC
Deputy Tax Collector
City of Waterbury

HB/wf

Macri Roofing, Inc.

Macri Roofing, Inc.
36 Duffy Avenue
P.O. Box 712
Meriden, CT 06450
Toll Free: (800) 454-4830
Phone: (203) 235-4830
Fax: (203) 235-7510
www.macriroofing.com

8/14/2026

RFP #8800 Firehouse 6

ATTN: Kevin McCaffery

After reviewing our pricing for this project, we have determined that our best and final pricing for this project is as follows.

Roof Replacement & Window Repairs at Fire Station 6:	- $700.00
Revised Total:	$211,000.00

Thank you for considering our company for this project.

Best Regards,

Brandon Macri
General Manager
Macri Roofing, Inc.

Waterbury Fire Station 6

BASE BID SCHEDULE

	ITEM DESCRIPTION IN WORDS AND FIGURES
1.	**MOBILIZATION AND DEMOBILIZATION** The work under this item shall include all personnel and equipment necessary for mobilization, demobilization, and administrative costs including the movement of all the contractor's storage facilities, maintenance and protection of traffic, transportation of equipment to and from the project site, and necessary to the performance of the work as shown and in accordance with the Contract Drawings and Technical Specifications, for the lump sum cost of: Lump Sum ($ 19,200.00) Written Figures Nineteen thousand two hundred dollars
2.	**GENERAL CONDITIONS** The work under this item shall include, but is not limited to full time field supervision, project staffing (including weekly project meetings and recording project minutes), project schedule, insurance, bonds, overhead, and profit, for the lump sum cost of: Lump Sum ($ 17,500.00) Written Figures Seventeen thousand five hundred dollars
3.	**SELECTIVE STRUCTURE DEMOLITION** The work under this item shall include all materials, equipment and labor necessary for the selective structure demolition, removal, disposal, and salvage of materials in accordance with the Contract Drawings and Technical Specifications as per Section 024119- Selective Structural Demolition for the lump sum cost of: Lump Sum ($ 10,000.00) Written Figures Ten thousand dollars
4.	**EXTERIOR BRICK** The work under this item shall include repointing exterior brick, cleaning and water repellent application, for the lump sum cost of: Lump Sum ($ 19,800.00) Written Figures Nineteen thousand eight hundred dollars Work beyond work shown on drawings for any additional damage found: Unit Price ($ 75.00/sqft) Written Figures Seventy five dollars per sq ft
5.	**WINDOW EXTERIORS** The work under this item shall include removal of trim around all windows, waterproofing and installation of primed window trim, for the lump sum cost of: Lump Sum ($ 29,600.00) Written Figures Twenty nine thousand six hundred dollars

6.	**INTERIOR BRICK** The work under this item shall include repointing of interior brick in attic as shown on drawings, for the lump sum of: Written Figures Six thousand one hundred dollars Lump Sum ($ 6,100.00)
7.	**ROOFING** The work under this item shall include removal of existing roof surface and installation of new 30-year warranty roofing with all new roof drain, hatches and pipe penetrations as shown on plans, for the lump sum of: Written Figures Seventy eight thousand three hundred dollars Lump Sum ($ 78,300.00)
8.	**PROJECT CLOSEOUT** The work under this item shall include all materials, equipment and labor to provide project closeout services including but not limited to preparing as-built drawings, preparing warranties, preparing O&M Manuals, final project clean-up and any materials as necessary to the performance of the work as shown and in accordance with the Contract Drawings and Technical Specifications for the lump sum cost of: Written Figures Eleven thousand two hundred dollars Lump Sum ($ 11,200.00)
	SUB-TOTAL of BASE BID ITEMS 1 through 8: $ 191,700.00
9.	**ALLOWANCE: DECKING REPLACEMENT/ roof trim substrate replacement** Decking replacement work in excess of 15% of existing decking: The work under this item shall also include removal and replacement of damaged substrate and nailers for roof trim, assuming 10% vertical substrate and 20% coping trim base, for the lump sum of: Written Figures Ten thousand dollars Allowance ($10,000.00) Written Figures Five dollars Per SF Unit Price ($ 5.00 /sf)
10.	**ALLOWANCE: HAZARDOUS MATERIALS REMOVAL** The work under this item shall include the removal and disposal of painter plaster and/or masonry wall sections as PCB bulk waste (>50PPM, within containment) for the lump sum of: Written Figures Ten thousand dollars allowance ($ 10,000.00) Written Figures Ten dollars per sq ft Unit Price ($ 10.00/sqft)
	TOTAL of BASE BID ITEMS + ALLOWANCES: $ 211,700.00

11.	**ALTERNATE #1 –INTERIOR PAINTING** The work under this item shall include interior painting of areas shown on the plans, for the lump sum of: Written Figures Seventeen thousand dollars — Lump Sum ($ 17,000.00) Written Figures One hundred fifty dollars — Unit Price per window ($ 150.00)
12.	**ALTERNATE #2 – EXTERIOR PAINTING** The work under this item shall include exterior painting of newly applied window trim on all windows, for the lump sum of: Written Figures Six thousand dollars — Lump Sum ($ 6,000.00) Written Figures Two hundred dollars — Unit Price per window ($ 200.00)

All bid items shall include all costs necessary to perform the work and the costs for all materials, equipment, tools, labor and work incidental thereto, including profit and overhead.
All items in the Price Proposal shall include all applicable taxes, fees and other incidental costs.

Proposer's must fill in all blank spaces on the Price Proposal and must summit a price for every item.

Proposer's must fill in all blank spaces on the Price Proposal, including without limitation lump sum prices, unit prices, extended prices and total prices, as requested therein, or the Proposal will not be considered and shall be void. The price of each item on the form shall be stated in format requested. Prices are to be written in words and figures. In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount using any estimated quantities and/or unit prices shall govern in determining the Proposal pricing. In case of a discrepancy in prices, the bid amount in words shall prevail.

The undersigned also agrees that any quantities indicated are for price comparison purposes only and are not represented to be actual quantities to be procured and/or required for completion of the Project.

The undersigned hereby certifies under the penalties of perjury that this Price Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity

Respectfully submitted by:

Macri Roofing, Inc.
Business/Corporate Name (Print or Type)

Signature of Authorized Official (Print or Type)

Brandon Macri
Printed Name of Authorized Official (Print or Type)

General Manager
Title of Authorized Official (Print or Type)

Proposer shall provide Proposer's Contact Information below:

36 Duffy Ave
Business Address: (Print or Type)

Meriden, CT 06451
City, State, Zip Code: (Print or Type)

203-235-4830
Business Telephone Number: (Print or Type)

203-235-7510
Business Fax Number: (Print or Type)

N/A
Business Mobile Number: (Print or Type)

brandon@macriroofing.com
Business Email Address: (Print or Type)

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF COST PROPOSAL

TABLE OF CONTENTS

ARCHITECTURAL SPECIFICATIONS

DIVISION	TITLE
01	**GENERAL REQUIREMENTS**
011000	General Conditions
04	**MASONRY**
040120	Unit Masonry Restoration
06	**WOOD, PLASTICS & COMPOSITES**
064013	Exterior Architectural Woodwork
07	**THERMAL AND MOISTURE PROTECTION**
071900	Water Repellents
075423	Adhered TPO Membrane Roofing
079200	Joint Sealants
09	**FINISHES**
099000	Painting

SECTION 011000 through SECTION 018200: GENERAL REQUIREMENTS

SECTION 011000: SUMMARY OF WORK

1.1 CONTRACT

A. The Project will be constructed under a single prime contract and in a phased manner. The contractor shall submit a construction schedule showing the sequence, commencement, and completion dates and move-out & move-in dates of Owner's personnel for all phases of the work.

B. It is a mandatory job requirement that all bidders (contractors) physically visit the jobsite and familiarize themselves with all conditions. These drawings are schematic only and indicate the subcontractor's work to be completed and the finished product (completed work) must meet all the building codes which is the intent of the drawings.

C. The owner will vacate the station to allow the contractor full access to the site. The site is very tight and care must be taken to avoid disruption of immediate neighbors.

D. Comply with restrictions on construction operations and Coordinate operations that may result in high levels of noise and vibration, odors or other disruption to Owner occupied areas.

1.2 PERMITS

A. The Contractor performing the work shall make all necessary applications and assume all responsibilities for the securing of required permits.

1.3 LICENSES

A. The Contractor and its subcontractors performing the work shall hold a relevant license issued by the State of Connecticut, and all work under this contract shall be subject to the rules and ordinances of the state of Connecticut, City of Meriden, and all Federal Regulations.

B. All work to be performed under Specifications shall be made in accordance with all applicable State laws, and all applicable ordinances, codes, rules, and regulations of the local authorities, for any public board or officer having any jurisdiction, regulation, or control over any work to be done.

C. Other portions of the manual apply to this Section.

   1. Separation of the Specifications into divisions and sections is for convenience only and is not intended to establish limits of work.

D. Consult Table of Contents to be certain that the set of documents is complete. Report omissions or discrepancies to the Architect.

E. Items which may be indicated on the Drawings as "NIC" or noted "Not in Contract" are shown for convenience only and are not a part of this Contract. Work so denoted may be done prior to, during, or later than the term of work for this Contract but under a separate contract.

1.4 PROJECT INFORMATION

A. Project Identification: Waterbury Fire Station 6

1. Project Location: 431 Willow Street, Waterbury CT 06710

B. Owner: City of Waterbury c/o Waterbury Development Corporation, 83 Bank Street, Waterbury, CY 06702

C. Architect: Landmark, P.C., 100 Riverview Center, Suite 204 Middletown, CT 06457 (860) 346-1333

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and consists of the following:

1. The work includes the repair and replacement of the building envelope at Station 6, located at 431 Willow Street, Waterbury. The existing built-up flat roof is to be demolished and replaced by a new 30-year warranty TPO roof with added insulation, new drains and parapet wall, and cap flashing. In addition, the existing brick is to have several areas repointed as on plans, including slight brick movements areas. Once complete, the entire brick exterior is to be coated with a siloxane water repellant system. Additionally, the existing window trim is to be removed and flashed properly with new trim to be installed. The existing windows are to remain in place. Finally, the attic will have the top 2 feet of exposed brick's jointing cleaned out to approximately one inch and repointed. See plans and details for other work related to this description. This does not include all the work further described on the plans

B. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.6 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather tight condition throughout construction period. Repair damage caused by construction operations.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Work hours to be coordinated by owner but in general work can begin at 7 A.M. and end by 6 P.M.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner's representative not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's representative written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner's representative.

1. Notify Owner's representative not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's representative written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor air intakes.

F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

SECTION 012200: UNIT PRICES

1.8 PROCEEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

SECTION 012500: SUBSTITUTION PROCEEDURES

1.9 SUBMITTALS

A. Substitution Requests: Use CSI Form 13.1A and submit digital pdf copy of each request for consideration. Identify product or fabrication or installation method to be replaced.

SECTION 012600: CONTRACT MODIFICATION PROCEEDURES

1.10 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect through Construction Manager will issue a detailed description, may include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect through Construction Manager are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, 5 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in

activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect through Construction Manager.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

C. On Owner's approval of a Proposal Request, Architect through Construction Manager will issue a Change Order for signatures of Owner and Contractor on AIA Document G701form included in Project Manual

SECTION 012900: PAYMENT PROCEDURES

1.11 SCHEDULE OF VALUES

A. Submit the schedule of values to Architect through Construction Manager at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment. Use the AIA Document A312 Performance Bond and Payment Bond

1. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
2. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

3. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
4. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
5. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

6. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.12 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

    1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect through Construction Manager. One copy shall include waivers of lien and similar attachments if required.

    1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

D. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Owner reserves the right to designate which entities involved in the Work must submit waivers.
2. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

E. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

F. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens." 6. AIA Document G707, "Consent of Surety to Final Payment."
6. Evidence that claims have been settled.
7. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
8. Final liquidated damages settlement statement.

G. Lien Waivers: The Contractor will have all Subcontractors and Suppliers submit executed Mechanic's Lien Waivers monthly for prior payments made by Owner.

1.13 CHANGES

A. Changes: Any written proposals for an increase/decrease of changes to the contract must include:

1. Direct cost information outlining materials, equipment, quantities, and labor.
2. Any Subcontractor's work and related materials.
3. Any related insurance, bonds or taxes.
4. Any increase/decrease of time.

5. Any Overhead, Profit and Commission.
6. Allowable overhead profit and commissions shall be negotiated, but in no case shall exceed the following:

	Overhead	Profit	Commission
To Contractor on work performed by other than his own forces.	0%	0%	5%
To first tier subcontractor on work performed by its subcontractor.	0%	5%	0%
To Contractor and/or the subcontractor for that portion of work performed with their respective forces.	10%	5%	0%

SECTION 013100: PROJECT MANAGEMENT AND COORDINATION

1.14 **COORDINATION**

A. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

B. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.

C. Make adequate provisions to accommodate items scheduled for later installation
D. Have registered land surveyor check the accuracy of the building location to within a tolerance of a tenth of an inch. Correct any errors before they affect other trades, or the appearance of the building.
E. Do not cast any aluminum (conduit, inserts, etc.) in concrete.
F. Underground Utility Location:

1. The Sub-contractor shall notify utility companies of pending excavation at or near public utilities.
2. The Sub-Contractor shall phone "Call-Before-You-Dig" at least 48 hours prior to the beginning of excavation.

G. Testing and adjustments shall be as required to provide that product are left in proper condition for satisfactory operation under conditions specified
H. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and his Subcontractors or trades and shall assist in incorporating the work of other trades where necessary or required. Cutting and patching, drilling and fitting shall be carried out where required by the trade or Subcontractor having jurisdiction, unless otherwise indicated herein or directed by the owners Representative.

1.15 KEY PERSONNEL

A. Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.16 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI to the Architect through the Construction Manager. Use CSI Form 13.2A.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Name of Contractor.
2. Name of Architect and Construction Manager.
3. RFI number, numbered sequentially.
4. RFI subject.
5. Specification Section number and title and related paragraphs, as appropriate.
6. Drawing number and detail references, as appropriate.
7. Field dimensions and conditions, as appropriate.
8. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
9. Contractor's signature.
10. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. Allow seven working days for Architect's response for each RFI. RFIs received by Architect or Construction Manager after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Architect's actions on submittals.
    f. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manage in writing within 10 days of receipt of the RFI response.

D. On receipt of Architect's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven days if Contractor disagrees with response.

E. Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at project meetings and on Project Web Site.

1.17 PROJECT MEETINGS

A. Conduct progress meetings on the project weekly. Notify the Owner of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

D. Reporting: No later than 3 days after each meeting, distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

1. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

SECTION 013200: CONSTRUCTION PROGRESS DOCUMENTATION

1.18 INFORMATIONAL SUBMITALS

A. Format for Submittals: Submit required submittals in the following format:

1. PDF electronic file.

B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

C. CRITICAL PATH METHOD Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.
4. Daily Construction Reports: Submit at weekly intervals.
5. Material Location Reports: Submit at weekly intervals.
6. Field Condition Reports: Submit at time of discovery of differing conditions.
7. Special Reports: Submit at time of unusual event.
8. Qualification Data: For scheduling consultant.

1.19 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.20 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for commencement of the Work, to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

C. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.

D. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered RFIs.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.

E. Recovery Schedule: When periodic update indicates the Work is 14 (fourteen) or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1.21 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.

6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (refer to special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

1.22 SPECIAL REPORTS

A. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare, and submit a special report. List chain of events, persons participating, and response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1.23 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

B. Distribute copies of approved schedule to Construction Manager and other parties identified by Contractor and Construction Manager with a need-to-know schedule responsibility.

SECTION 013330: SUBMITTAL PROCEEDURES

1.24 DESCRIPTION OF REQUIREMENTS

This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals, Shop Drawings, Product Data, Samples, and sequencing of Construction operations. Detailed submittal requirements will be specified in the technical specifications sections.

A. Shop Drawings, Project Data Samples:

1. Shop Drawings:

a. Shop Drawings in general and as specified in individual work Sections include, but are not limited to, custom-prepared data such as fabrication and erection/installation drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, coordination drawings, individual system or equipment inspection, and test reports including performance curves and certifications, as applicable to the work.

b. All Shop Drawings submitted by subcontractors for approval shall be sent directly to the Contractor for preliminary checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

c. The Contractor shall check all Subcontractor's Shop Drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the Subcontractors for correction before submission thereof.

d. All details on Shop Drawings submitted for approval shall clearly show the elevations of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted for approval.

2. Product Data:

a. Product data as specified in individual Sections include, but are not necessarily limited to, standard preparation data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specifications and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, printed performance curves and operational range diagrams, production and quality control inspection

and test reports and certifications, mill reports, product operating and maintenance instructions, and recommended spare-parts listing, and printed product warranties, as applicable to the work.

3. Samples:

   a. Samples specified in individual Sections include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively used products, color-texture-pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Owner's Representative or Owner for independent inspection and testing, as applicable to the work.

4. Sequencing of Construction Operations:

   a. In order to accommodate projected needs of the Owner, and implementation of erosion and sedimentation control measures, the Contractor performing the work shall plan his work to suit his overall planning aspects but must also consider the requirements of the Owner and shall be prepared to be flexible in his plans if needed. Within ten (10) days after written notice of acceptance, the Contractor performing the work shall confer with the Owner for the purpose of drafting a construction schedule satisfactory to the Owner which is to include all the work of this Contract. The Contractor shall perform the work of this Contract to conform to the construction schedule as approved by the Owner, except that the Owner reserves the right to amend and alter the construction schedule as approved, at any time, in a manner which it deems to be in the best interests of the Owner to do so. The Contractor shall arrange his work under this Contract to conform with the construction schedule as it may be revised from time to time by the Owner, at no additional expense to the Owner. The Contractor performing the work shall notify the Owner immediately of any circumstance which may affect performance of the work in accordance with the current construction schedule.

B. Contractor's Responsibility:

1. It is a mandatory job requirement that all bidders (contractors) physically visit the jobsite and familiarize themselves with all conditions. These drawings are schematic only and indicate the subcontractor's work to be completed and the finished product (completed work) must meet all the building codes which is the intent of the drawings.
2. The Contractor performing the work shall review Shop Drawings, product data and samples prior to submission to determine and verify the following:

a. Field Measurements.
b. Field Construction Criteria.
c. Catalog Numbers and Similar Data.
d. Conformance with the Specifications.

3. Notify the Owner in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
4. The review and approval of shop drawings, samples or catalog data by the Owner's Representative shall not relieve the Contractor performing the work from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor performing the work, and the Owner's Representative will have no responsibility, therefore.
5. No portion of the work requiring a shop drawing, working drawing, samples, or catalog data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased, or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
6. Project work, materials, fabrication, and installation shall conform to approved shop drawings, working drawings, applicable samples, and catalog data.

C. Submission Requirements:

1. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the work or in the work of any other Contractors.
2. Number of submittals required:

   a. Shop Drawings: Submit (6) copies
   b. Product Data: Submit (6) copies
   c. Samples: Submit number stated in the respective specification sections.

3. Submittals shall contain:

   a. The date of submission and the dates of any previous submissions.
   b. The Project title and number.
   c. Identification of the Contractor performing the work.
   d. The names of:

      1) Contractor performing the work.
      2) Supplier.
      3) Manufacturer.

e. Identification of the product, with the specification section number.
f. Field dimensions clearly identified as such.
g. Relation to adjacent or critical features of the work or materials.
h. Applicable standards, such as ASTM or Federal Specification numbers.
i. Identification of revisions on resubmittals.
j. A 3" x 6" blank space for Architect approved stamp.

D. Re-submission Requirements:

1. Make any corrections or changes in the submittals required by the Owner's Representative and resubmit until approved.

   a. The Architects review of submissions in excess of one (1) original and two (2) resubmissions will include costs to be borne by the Contractor performing the work.

2. Shop Drawings and Product Data:

   a. Revise initial drawings or data and resubmit as specified for the initial submittal.
   b. Indicate any changes which have been made other than those requested by the Owner's Representative.

3. Samples: Submit new samples as required for initial submittal.

E. Distribution:

1. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Owner's Representative.

F. General Procedure for Submittals:

1. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections of the Specifications, so that the installation will not be delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be granted for failure to transmit submittals and obtain acceptance sufficiently in advance of the work.

G. Substitutions:

1. Wherever a trade name or the name of a certain manufacturer appears in these Specifications, it is included to establish a standard of quality. The absence of an "or equal" clause is not meant to exclude competition. Similar products of other manufacturers which are equal in quality as determined by the Owner and Architect may be approved upon request of the Contractor performing the work. The owner and architect reserve the right to approve or disapprove any substitutions. Burden of proof of equality information and samples of the specified product are the Contractors responsibility.

H. Installation:

1. Unless otherwise stated, all codes, regulations and manufacturer's instructions, recommendations and specifications shall govern installation of all materials.

SECTION 014000: QUALITY REQUIREMENTS

1.25 CONTRACTORS' RESPONSIBILITY

A. The Contractor performing the work will establish, maintain, and be responsible for all lot lines, restrictions, grades, levels, and benchmarks required for completion of all Work. He shall furnish the above for all Subcontractors. He shall verify all grades, lines, levels and dimensions as indicated on the Drawings. He shall report any errors or inconsistencies in the above to the Architect before commencing work.

B. Any difference between the actual surface and what is marked as the existing grade on the Drawings shall not entitle the Contractor performing the work to extra compensation.

C. The Contractor performing the work shall prepare as-built drawings of all footings, foundations, slabs-on-grade, site utilities, lot lines, easements and paving to be submitted with each month's requisition for payment. Surveys shall be prepared by a licensed surveyor. Final as-built drawings shall be required of the completed Work prior to final payment.

D. The Contractor performing the work shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto.

E. The Contractor performing the work shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor performing the work shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

SECTION 014200: REFERENCES

1.26 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

1.27 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.28 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the United States."

SECTION 015000: TEMPORARY FACILITIES AND CONTROLS

1.29 CONTRACTORS' RESPONSIBILITY

A. The Contractor performing the work shall be responsible for providing general services and temporary facilities as specified herein and as required for proper and expeditious prosecution of Work. Contractor performing the work shall pay costs of such general services and temporary facilities, except as otherwise specified, until Final Acceptance of Work.
B. All such service and facilities shall comply with applicable Federal, State and Municipal regulations.
C. The Contractor performing the work shall make all connections to existing services, and sources of supply, shall provide all necessary installation, labor, materials, and equipment. In a manner subject to the approval of the Owner and shall remove temporary installation and connections when no longer required, or

when so directed by the Owner and restore the services and sources of supply to proper operating condition as directed.

1.30 USE CHARGES

A. Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated.
B. Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
C. Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.31 TEMPORARY UTILITIES

A. Provide and maintain toilet facilities for use of all personnel. Chemical toilets shall be provided where Work is in progress and of quantity required to serve conveniently, needs of personnel. Quantity of units to work forces on-site shall confirm to State Health Requirements and other jurisdictions having authority.
B. Provide potable water for construction purposes for all trades. Pay all costs of installation, maintenance, removal, and water.
C. Make arrangements with local electric company for temporary electric service, pay expenses in connection with installation, operation, and removal thereof and pay cost of energy consumed by all trades.
D. Temporary Enclosures and Heating:

1. Temporary weather-tight enclosures and temporary heating shall be provided by the Contractor performing the work as required during construction to make building weather-tight and protect Work from freezing or frost damage, and as necessary to ensure suitable working conditions for trades. All costs of closing in the buildings and all costs of temporary heat shall be paid for by the Contractor performing the work until acceptance of the building by the Owner. In areas of buildings where work is being conducted, temperature shall be maintained as specified but not less than 55 degrees F. Under no circumstances shall temperature be allowed to reach level which will cause damage to portion of Work which may be subject to damage by low temperatures.
2. When Work has progressed sufficiently for installation of glazing, Contractor performing the work may, if approved by Owner, use glazed windows in place of temporary enclosures. Permanent windows shall be protected against damage and on completion of Work shall be thoroughly cleaned, damaged component parts including glass shall be satisfactorily repaired or replaced and windows left in perfect condition.
3. Until permanent heating system is in place, temporary heating shall be by smokeless portable unit heaters (UL, Factory Mutual approved). Contractor

performing the work shall pay for fuel, maintenance and attendance required in connection with temporary heat.

4. When permanent heating system, or suitable portion thereof, is in operating condition, such system may be used for temporary heating, provided that Contractor performing the work 1) obtains written approval of Owner, 2) assumes full responsibility for entire heating system, 3) pays costs for operation, maintenance and restoration of system, and 4) complies with jurisdiction having authority.

E. Temporary Telephone/Facsimile:

1. Install a job telephone and facsimile machine and maintain same for duration of the Contract. Both local and long-distance calls shall be paid for by the Contractor performing the work. It shall be the Contractor's responsibility to collect for any long-distance calls made by persons other than those in his own organization.

F. Temporary Fire Protection:

1. Provide and maintain adequate fire protection in the form of fire extinguishers or other effective means of extinguishing fire, ready for instant use, distributed around the project and in and about temporary inflammable structures during construction of Work. Fire extinguishers shall be standard 2-1/2-gallon chemical non-freeze type, bearing UL label and shall be checked regularly.
2. Gasoline and other flammable liquids shall be stored in and dispensed from UL listed safety containers in conformance with National Board of Fire Underwriters' recommendations. Storage shall not be within building.
3. Make arrangements for periodic inspection by local fire protection authorities and insurance underwriter inspectors. Cooperate with said authorities and promptly carry out their recommendations.

1.32 TEMPORARY CONSTRUCTION

A. Furnish and maintain all temporary ramps, stairs and similar items required for proper execution of Work, and permit use of such facilities by other Contractors, Subcontractors, or trades. Hoists and chutes shall be so constructed as to prevent damage, staining, or marring of permanent Work.

B. Permanent stairs shall be erected as soon as possible, and Contractor performing the work shall provide suitable temporary treads, risers, etc. as required to protect permanent stair members, and provide temporary railings as required for safety.

C. No materials, rubbish or debris shall be permitted to drop free, but shall be removed by use of material hoists or rubbish chute.

D. No materials shall be permitted to be passed through finished openings of exterior walls.

E. Contractor performing the work shall protect finished surfaces, including jambs and soffits of openings used as passageways against possible damage resulting from conduct of Work by trades.

1.33 BARRIERS AND ENCLOSURES

A. Construct all fences and barricades required for the protection of the public in accordance with local and state regulations. Furnish and install all signs, lights, reflectors, etc., required.

B. Take proper precautions to protect the Owner's and adjoining property from injury or unnecessary interference; provide proper means of access to the property and replace or put in good condition, every public or private way, conduit, catch basin, fence, tree, or other thing injured by the Contractor performing the work in carrying out the Work.

C. The contractor performing the work shall save the owner harm from all claims arising from the use of public streets, sidewalks, and adjoining properties for construction purposes.

D. Protect everything on the premises from injury by water, frost, wind, fire, accident or other cause, and any interference.

E. Provide ways and means to control the flow water from every source which may cause inconvenience, sitting or other damage during construction.

1.34 ACCESS ROADS AND PARKING AREA

A. The Contractor performing the work shall provide and maintain, for the duration of construction, a means of access to the site for vehicular traffic and authorized personnel. This means of access shall be constructed to sustain the weight of equipment customarily engaged for use in construction projects of this type and magnitude.

1.35 TEMPORARY CONTROLS

A. The Contractor performing the work shall be responsible for all breakage of glass, from the time the glazier has complete his Work until the building is turned over to the Owner. He shall replace all broken glass and deliver the entire building with all glazing intact and clean.

1. All construction facilities, debris and rubbish shall be removed from the Owner's property.
2. All finished surfaces within the building shall be swept, dusted, washed and polished. This includes cleaning of the Work of all finished trades where needed whether or not cleaning for such trades is included in their respective Specifications.
3. All finish flooring and resilient bases shall be thoroughly cleaned with a well-rinsed mop containing only enough moisture to clean off any surface dirt or

dust. The floors shall be buffed dry by machine, bringing the surfaces to sheen.

4. Install and maintain adequate runner strips of building paper on all finished floors, to the satisfaction of the Architect.
5. All glass shall be washed, both sides, by a window cleaning contractor specializing in such work.

B. The subcontractors performing the work for mechanical and electrical Work, shall respectively clean all materials and equipment installed by them, leaving all in a finished and clean state.

C. Immediately after unpacking all packing materials, case lumber, excelsior, wrapping, or other rubbish (flammable or otherwise), shall be collected and removed from the building and premises.

D. The Contractor shall require each of his Subcontractors to bear his full responsibility for cleaning up during and immediately upon completion of his Work, and shall remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of his Work; but this shall in no way be construed to relieve the Contractor of his primary responsibility for maintaining the building and site clean and free of debris, leaving all work in a clean and proper condition.

E. The Contractor performing the work shall employ all possible methods and materials to control dust as necessitated by weather or site conditions.

1.36 FIELD OFFICE AND SHEDS

A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until Completion.

B. Provide incombustible construction for offices, shops, and sheds located within the construction area. Comply with requirements of NFPA 241.

C. Field Offices: Provide insulated, weather-tight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:

1. Furnish with a desk and chairs, a four-drawer file cabinet, plan table, plan rack, and a six shelf bookcase. Equip with a water cooler.
2. Provide medical safety kit, telephone, fax machine and adequate power for mobile equipment.

1.37 PRODUCT REQUIREMENTS

A. Unless otherwise specified, only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor

shall be subject to the inspection and approval of the Owner and Architect. No material shall be delivered to the work without prior approval of the Owner and Architect.

B. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor performing the work.

C. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of a claim against the Owner or the Owner's Representative.

D. The materials and equipment used on the work shall correspond to the approved samples or other data.

1.38 DELIVERY, STORAGE AND HANDLING

A. Materials for all trades shall be delivered to the jobsite in manufacturer's original unopened containers with manufacturer's brand name clearly marked thereon.

B. Handle and store materials carefully in accordance with manufacturer's recommendations and protect them from moisture and extremes of heat and cold.

C. Provide at the site, where directed, maintain in good condition, and remove when directed, suitable and substantial weather-tight storage as required for materials that may be damaged by storage in open.

D. All materials and equipment to be incorporated in the work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor performing the work before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, puncture, contamination and any injury, theft, or damage of any kind whatsoever to the material or equipment.

E. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous, reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spalling to a minimum.

F. All mechanical equipment or other supplies subject to damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a building to prevent injury or damage. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Owner and Architect.

G. All materials which, in the opinion of the Owner and Architect, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.

1.39 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's

disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.
2. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures

SECTION 017300: EXECUTION

1.40 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment

1.41 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

1.42 MATERIALS

A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

1.43 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping, underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

    a. Description of the Work.
    b. List of detrimental conditions, including substrates.
    c. List of unacceptable installation tolerances.
    d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

1.44 PREPARATION

A. Existing Utility Information: Furnish information to Owner through construction manager, when it is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Section "Project Management and Coordination."

1.45 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly.

B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

1.46 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

1.47 CUTTING AND PATCHING

A. Cutting and Patching, General: Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Temporary Support: Provide temporary support of work to be cut.

C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements of Section "Summary."

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

   a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

1.48 OWNER – INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.
B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

1.49 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Utilize containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where more than one installer has worked.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.50 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

1.51 CORRECTION OF WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.
C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
E. Remove and replace chipped, scratched, and broken glass or reflective surfaces

SECTION 017410: CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

1.52 CONSTRUCTION WASTE MANAGEMENT PLAN

A. Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.
2. Comply with Volume 2: Section 0200 Sitework of the 2013 CHFA Standards of Design and Guidelines, for waste management practices and requirements.
3. Reference NAHB Research Center's "Builder's Field Guide to Residential Construction Waste Management" publications for more information on waste management practices and requirements.

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

1.53 RECYCLING WASTE, GENERAL

A. General: Recycle paper, plastic food and beverage containers used by on-site workers, through an approved local recycling program.

B. Recycle jobsite demolition and construction waste, like wood, drywall, metals, concrete, dirt and cardboard through an approved local recycling facility.
C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

1.54 WASTE

A. General: Except for items or materials to be, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a State approved construction and demolition landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.
C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

SECTION 017700: CLOSEOUT PROCEEDURES

1.55 CLOSE OUT PROCEEDURES

A. Submit a written request for inspection for Substantial Completion. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

B. Submit a written request for final inspection for acceptance. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1.56 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1.57 WARRANTIES

A. Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

1.58 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1.59 FINAL CLEANING

A. Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from
    e. Project site.
    f. Remove snow and ice to provide safe access to building.
    g. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    h. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    i. Sweep concrete floors broom clean in unoccupied spaces.
    j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    l. Remove labels that are not permanent.
    m. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

        1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.

    n. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    o. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

p. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
q. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

1) Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.

r. Clean HVAC system in compliance with NADCA Standard 1992-01.
s. Provide written report upon completion of cleaning.
t. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
u. Leave Project clean and ready for occupancy.

C. Semi-Final Inspection: Prepare a complete, detailed list of items for completion and correction. List to be submitted to the Owner and Architect at time of request for this inspection.
D. Final Inspection: Inform the Owner and Architect in writing when all the items of semi-final inspection have been completed and when the work is ready for final inspection. Owner shall have the final say if the finished product is suitable for acceptance.
E. If the Owner and/or Architect be required to conduct more inspections than noted in B. above, all re-inspection report costs shall be borne by the Contractor.

SECTION 017820: OPERATION AND MAINTENANCE DATA

1.60 CLOSEOUT SUBMITTALS

A. Deliver to the Owner, upon substantial completion of the Work, two (2) copies of each house maintenance and instruction manuals customarily supplied by manufacturers for items incorporated in this Work.
B. Give physical demonstration and oral instruction for proper operation and maintenance of machines and equipment to the Owner (or his designated representative).
C. At termination of Work, submit complete maintenance manuals presenting full details for care and maintenance of visible surfaces and equipment of every nature.
D. In order to ensure adequate servicing, adjustments, and replacement of equipment furnished or installed under the Contract, the Contractor and his Subcontractors performing the work shall submit to the Owner at the completion of Work, three (3) loose leaf binders containing the following:

1. Shop drawings

2. Operating and maintenance instructions
3. Manufacturer's cuts and pertinent information
4. Guarantee cards with name, address, and phone number of person or company who will be responsible for repairs.
5. Parts list and ordering information.

E. Where guarantees are required for Work performed by Subcontractors, secure warranties from said Subcontractors to be addressed to and in favor of Owner and deliver copies of same to Owner upon completion of Work.

1.61 WARRANTIES AND BONDS

A. Deliver to the Owner, three copies of all required guarantees and warranties for each house. Provide original documents as required by manufacturer.

B. The Contractor performing the work shall secure guarantees-warranties from all Subcontractors for their part of the Work. All Work shall be guaranteed-warranted for one year unless specified to be for a longer period. The start of the guaranty-warranty period shall be the date of certificate of completion.

C. The fact that an equipment manufacturer's warranty is for less than one year shall not relieve the Contractor performing the work of his one-year guarantee-warranty. If a manufacturer's Owner exceeds one year, the Contractor performing the work shall turn over such warranty to the Owner at the end of the one-year guarantee-warranty period.

D. Guarantees covering specific Work, as called for in the Specifications shall be furnished to the Owner.

E. Provide the minimum warranty period for the following items (and other items unique to the project):

1. GC: 1-year warranty.
2. Membrane Roofing: 20- years material and labor (no dollar limit).
3. Windows and Exterior Doors: 10 years minimum on entire assembly (window units and installation).
4. Miscellaneous warranties as provided by the manufacturers for specified products and equipment.
5. Miscellaneous labor warranties as provided by manufacturer-trained/approved installers, in conjunction with the manufacturers of specified products and equipment.

1.62 RECORD DRAWINGS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

1. Record Drawings (Infrastructure and House-construction related work): Maintain a clean, undamaged set of blue or black-line white prints of

Contract Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; Give particular attention to concealed elements that would be difficult to measure and record at an alternate date including locations of underground utilities or drains that have been capped and the depth and locations of all excavations that have been filled.

2. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
3. Mark new information that is important to the Owner and Architect but was not shown on Contract Drawings or Shop Drawings.
4. Note related Change Order numbers where applicable.
5. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on the cover of each set.

B. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily described later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Owner.

C. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records, and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Owner and Architect.

D. Prepare record (two sets), or as-built drawings as work progresses, or as necessary to show changes from the Contract documents. Submit to the Owner and Architect.

E. Show deviations from Documents with reference to locations, sizes, methods, qualities, quantities, and other specified requirements.

F. Indicate the actual locations of all pipes, conduits, switches, cut-offs, equipment and machinery which would be visible and readily accessible after work is completed. H. Deliver two sets of As-builts to the Owner at completion of project.

G. Provide an as-built survey at the completion of the Project.

SECTION 017900 – DEMONSTRATION AND TRAINING

1.63 DEMONSTRATION AND TRAINING

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
B. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect

END OF GENERAL REQUIREMENTS

SECTION 04 01 20 UNIT MASONRY RESTORATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Repairing of Cracks

B. Restoration Work

C. Cleaning

1.02 RELATED SECTIONS

A. Section 071900 Water Repellents

1.03 PAYMENT

A. Repair and restoration of existing masonry will be paid for at the indicated Contract lump-sum price as indicated in the Bid Schedule of the Bid Form.

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C881 Specification for Epoxy-Resin-Base Bonding System for Concrete
2. ASTM C928 Specification for Packaged, Dry Rapid-Hardening Cementitious Materials for Concrete Repairs
3. ASTM C1107 Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

1.05 DEFINITIONS

A. The station or building involved in this work will be vacated by employees during the construction period. This will enable that the Contractor plan the Work carefully to work around unavoidable obstacles in the prosecution of the Work.

B. Provide such additional temporary facilities as may be required to facilitate continuous, unobstructed station or building operations safety during transitional construction work.

1.06 REGULATORY REQUIREMENTS

A. In addition to the foregoing referenced standards, the regulatory requirements that govern the work of this Section include the following code requirements:

All activities shall be in compliance with State and Governmental regulations and codes.

1.07 QUALITY ASSURANCE

A. Repair and restoration of existing masonry surfaces shall be performed by a skilled and experienced subcontractor specializing in the restoration of masonry with at least five years experience in the type of work involved.

B. Repair and restoration of existing stone and unit masonry work shall achieve security, strength, and weather protection, as applicable and required, and shall preserve the integrity and continuity of fire-rated assemblies.

C. Repair and restoration of existing masonry work shall successfully duplicate undisturbed adjacent finishes, colors, textures, and profiles. Where there is a dispute as to whether or not duplication is successful or has been achieved to a reasonable degree, the Engineer's judgment shall be final.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, AND FACILITIES

A. Requirements: Provide all materials, equipment, tools, appurtenances, facilities, and services as required for performing and completing all repair and restoration of existing stone and unit masonry as indicated.

B. Equipment, Tools, and Materials: Provide appropriate and proper equipment, tools, and materials for the chipping and air-pressure cleaning of cracks in masonry, for pressure injection grouting of cracks in mortar joints, for sandblasting or water-blasting of masonry surfaces, and for hose cleaning of masonry.

C. Stone and Unit Masonry Materials: Where cut stone or concrete masonry units are damaged and require replacement, provide new stone or masonry units that match exactly the species, color, and texture of adjacent masonry surfaces. Replacement cut stone and concrete

masonry units require approval of the Architect before they may be used in the work.

D. Mortar Bonding Agent: Adhesive for the bonding of new mortar and grout to existing masonry and mortar shall be an epoxy adhesive meeting requirement of ASTM C881, of type required for the conditions

E. Mortar Repair Materials:

1. Mortar: Mortar for joints and tuckpointing shall be an epoxy mortar, polymer-fortified mortar, or similar high-strength bonding mortar conforming with ASTM C928. Minimum compressive strength at 28 days shall be 2,500 psi.

2. Sand: Sand shall be a clean, washed, kiln-dried, fine sand, all passing a U.S. Standard No. 16 sieve.

F. Grout: Grout for pressure-injection grouting shall be a high-strength, nonshrink, cementitious, adhesive grout conforming with ASTM C1107, Grade C, or a high-strength, non-shrink, manufactured epoxy adhesive grout. Minimum compressive strength at 28 days shall be 4,000 psi.

G. Cleaning Agent: Prosoco Sure Clean 600 or approved equal.

PART 3 - EXECUTION

3.01 REQUIREMENTS

A. Perform cutting, chipping, patching/restoring work, and cleaning in a manner to prevent damage to other work, and as required to return exterior building surfaces to essentially their original condition and configuration.

B. Major cracks shall be repaired and filled by pressure-injection grouting. All other cracks shall be repaired in the manner most appropriate and as required for weatherproofing or waterproofing the building or structure.

C. Do not cut or alter structural members when not indicated without prior approval of the Engineer.

D. Finish or refinish as required to match adjacent finishes.

3.02 CUTTING AND CHIPPING

A. Cutting and chipping work shall be neatly and accurately performed with proper tools and equipment. Cuts shall be of minimum size required for

the work. Check the locations carefully of existing steel reinforcement before cutting or chipping.

B. Existing work to remain shall be properly protected to prevent damage from cutting and chipping operations.

3.03 REPAIRING OF CRACKS

A. Cracks shall be repaired and filled with grout by the pressure-injection process. Masonry joint cracks shall be mapped, and the injection shall be on center-to-center spacings as necessary to achieve proper structural bonding.

B. Adhesive material shall be mixed with grout in proportion necessary to provide structural bonding of concrete. Grout material shall be inserted into cracks by pressure-injection grouting in accordance with the manufacturer's installation instructions and recommendations.

C. Minor cracks too small for injection grouting shall be repaired as specified in Article 3.04 for restoration work.

D. Small holes, cracks, and other imperfections to be painted shall be suitably primed and patched with a compound recommended by the manufacturer of the paint to be applied to these surfaces as specified in Section 09 91 00 - Painting.

3.04 RESTORATION WORK

A. Preparation of Existing Surfaces: Where masonry is cracked or spalled, cut or chip out to solid surface. Use power wire brush and high pressure air to clean masonry of dirt, dust, and loose particles.

B. Repairing of Masonry:

1. Repairing and patching of existing masonry surfaces and joints shall be expertly performed with specified adhesive, mortar, and grout materials. At completion, patched surfaces shall match adjacent existing surfaces as closely as possible.

2. Mortar bonding agent, mortar, and grout shall be applied or installed where indicated, or where otherwise required, in accordance with the manufacturer's instructions and recommendations.

3. Where necessary to build out cut, spalled, or chipped masonry surfaces, mix mortar bonding agent, mortar, and sand into a special mortar, and apply in layers as required to fill out or build up surfaces. Float, trowel, or texture surfaces to match adjacent existing surfaces.

4. Where indicated or required to replace existing, damaged cut stone or concrete masonry units, expertly cut out damaged units with masonry saw or cutting wheel. Clean out all loose particles and dust with air-pressure cleaning. Then install new units to match adjacent existing masonry surfaces as closely as possible, including joint treatment.

C. Tuckpointing:

1. Joints of cut stone and concrete unit masonry shall be routed out and tuckpointed as herein specified. Only such tuckpointing shall be performed as required to put all joints of the building in good repair.

2. Faulty joints to be tuckpointed shall be routed out the full width of the existing joint with a machine masonry cutting wheel to a minimum depth of 3/8 inch into the existing mortar. Newly routed joints shall be washed clean before tuckpointing.

3. Tuckpointing mortar shall be the repair mortar specified in Article 2.01.E herein.

3.05 UNIT MASONRY RESTORATION REMOVAL OF PAINT

A. Where removal of existing paint film is required for restoration of masonry surfaces, existing painted masonry surfaces shall be sandblasted by the "wet" sandblast method to remove all such paint film. Surfaces not to be sandblasted shall be properly masked and otherwise protected to preclude any damage to these surfaces.

3.06 CLEANING

A. Existing masonry surfaces are to be cleaned or washed to remove dirt, dust, and stains, such surfaces shall be washed clean to an even and uniform effect, free of stains and blemishes. Include adjacent cornices, ledges, and masonry ornaments. Method of cleaning (e.g. high-pressure water, steam cleaning, or diluted acid cleaning) are subject to approval by the Architect.

B. All adjacent glass areas shall be cleaned after washing of masonry surfaces.

C. Replace any glass damaged by the cleaning operations.

END OF SECTION 04 01 20

SECTION 064013 - EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Exterior trim that is shown on building plans.

B. Related Sections include the following:

1. Division 06 Section "Rough Carpentry" for exposed framing.

2. Division 06 Section "Miscellaneous Rough Carpentry" for other wood applications.

1.3 SUBMITTALS

A. Product Data: For each type of product and process indicated and incorporated into items of exterior architectural woodwork during fabrication, finishing, and installation to match existing dimensions and profiles.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.
2. Show locations and sizes of blocking and nailers, including concealed blocking and reinforcement specified in other Sections.

3. Apply WI-certified compliance label to first page of Shop Drawings.

C. Samples for Verification:

1. Lumber and panel products for field-applied opaque finish, 8 by 10 inches (200 by 250 mm) for panels and 50 sq. in. (300 sq. cm) for lumber, for each finish system and color, with 1/2 of exposed surface finished.

D. Product Certificates: For each type of product, signed by product manufacturer.

E. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

F. Qualification Data: For Installer and fabricator.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a certified participant in AWI's Quality Certification Program.

B. Installer Qualifications: Certified participant in AWI's Quality Certification Program.

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of exterior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1. Provide AWI Quality Certification Program labels and certificates indicating that woodwork, including installation, complies with requirements of grades specified.

D. Forest Certification: Provide exterior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

1.5 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation of exterior woodwork only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.

2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and

coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.6 COORDINATION

A. Coordinate sizes and locations of framing, blocking, reinforcements, and other related units of Work specified in other Sections to ensure that exterior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Products:

1. Boral Manufactured trim.

2. Tru-exterior siding and trim.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Nonpressure Process: Comply with AWPA N1 using the following preservative for woodwork items indicated to receive water-repellent preservative treatment:

1. Water-Repellent Preservative: Formulation made specifically for dip treatment of woodwork items and containing 3-iodo-2-propynyl butyl carbamate (IPBC) complying with AWPA P8 as its active ingredient.

2. Water-Repellent Preservative/Insecticide: Formulation made specifically for dip treatment of woodwork items and containing 3-iodo-2-propynyl butyl carbamate (IPBC) as its active ingredient, combined with an insecticide containing chlorpyrifos as its active ingredient, both complying with AWPA P8.

B. Preservative Treatment by Pressure Process: AWPA C2 (lumber) and AWPA C9 (plywood) and the following:

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
2. Kiln-dry lumber and plywood after treatment to a maximum moisture content, respectively, of 19 and 15 percent. Do not use materials that are warped or do not comply with requirements for untreated materials.

3. Mark each treated item with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

C. Extent of Treatment: Treat blocking and nailers by pressure process and treat other exterior architectural woodwork either by pressure or nonpressure process.

2.3 INSTALLATION MATERIALS

A. Blocking, Shims, and Nailers: Softwood or hardwood lumber, pressure-preservative treated, kiln dried to less than 15 percent moisture content.

B. Nails: hot-dip galvanized or stainless steel.

C. Screws: hot-dip galvanized or stainless steel.

1. Provide self-drilling screws for metal framing supports, as recommended by metal-framing manufacturer.

D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts, unless otherwise indicated. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.4 FABRICATION, GENERAL

A. Wood Moisture Content: 10 to 15 percent.

B. Fabricate woodwork to dimensions, profiles, and details to match existning.

C. Complete fabrication, including assembly and finishing application, to maximum extent possible before shipment to Project site. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

2.5 EXTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Grade: Custom.

B. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

C. Assemble casings in plant except where shipping limitations require field assembly.

D. Wood Species:

1. Manufactured wood trim

2.6 SHOP PRIMING

A. Woodwork for Opaque Finish: Shop prime woodwork for paint finish with one coat of wood primer specified in Division 09 painting Sections.

B. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Back priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

2.7 SHOP FINISHING

A. Grade: Provide finishes of same grades as items to be finished.

B. Grade: Custom.

C. General: Entire finish of exterior architectural woodwork is specified in this Section. To greatest extent possible, finish architectural woodwork at fabrication shop. Defer only final touchup and cleaning until after installation.

D. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Back priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

E. Opaque Finish:
1. WI Finish System 5: Catalyzed polyurethane.

2. Color: As selected by Architect from manufacturer's full range to match existing.

3. Sheen: Semigloss 46-60 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and back priming.

3.2 INSTALLATION

A. Contractor to prepare a mock-up of one window to show extents of window trim repair prior to continuing the work. The mock-up is to be reviewed and accepted by the Architect and Owner.

B. Quality Standard: Install woodwork to comply with same grade specified in Part 2 for type of woodwork involved.

C. Install woodwork true and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.

F. Preservative-Treated Wood: Where cut or drilled in field, treat cut ends and drilled holes according to AWPA M4.

G. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk concealed fasteners and blind nailing. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork.

H. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

   1. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).

I. Complete finishing work specified in this Section to extent not completed at shop or before installation of woodwork. Fill nail and screw holes with matching filler where exposed.

J. Refer to Division 09 Sections for final finishing of installed architectural woodwork.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; replace woodwork where not possible to repair. Adjust joinery for uniform appearance.

B. Clean woodwork on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064013

SECTION 07 19 00 – WATER REPELLENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Water Repellent Treatment Applied to Exterior Exposed Masonry Unit and Stone Walls.

B. Related Sections:

1. Section 04 01 20.91- Unit Masonry Restoration

1.2 SUBMITTALS

A. General: Submit the following according to the Conditions of the Contract and Division 01 General Requirements specification sections.

1. Submit product data including detailed test results of materials applied to surfaces similar to requirements of this Section.
2. Submit manufacturer's instructions for methods and application procedures.
3. Submit manufacturer's certification indicating water repellent treatment conforms to or exceeds requirements stated herein.

1.3 QUALITY ASSURANCE

A. The Contractors involved with work covered by this Section shall have had a minimum of five years of experience using specified techniques for water repellent treatment application.

B. Tradesman must be competent and experienced and shall demonstrate reasonable care during performance of operations described in this Section.

C. Tests and Approvals:

1. Sample Area:
   a. Contractor shall apply a test area of wall surface from four square feet in size for inspection and approval by the Owner's Representative after treatment has cured. Test area shall be available for comparison during the specified scope of work.
   b. Samples of adjacent materials shall be tested for possible reaction with the water repellent treatment. Such samples shall be available for inspection by the Owner's Representative.
2. If any part of this work shall be found defective (because of improper preparation of surfaces or application of water repellent treatment) at any time before the final acceptance of the item, the Contractor shall, at his own expense, make good such defect to the satisfaction of the A/E.

1.4 PROJECT CONDITIONS

A. Protection:

1. Contractor shall provide, at all times, covered access to premises and necessary utilities, space for storage of material and equipment, etc.
2. All activities shall be in compliance with local and governmental regulations and codes.

3. The surface and atmospheric temperature should be at least 40 degrees F. and rising during application and for eight hours following. Surface and air temperatures should not exceed 90 degrees F.
4. Surfaces should be dry.
5. Apply only in well-ventilated areas.
6. All caulking (sealants) should be applied a minimum of 24 hours prior to application, or as required by sealant manufacturer, whichever is greater, before application of water repellent treatment.
7. The Contractor shall require applicators to observe safety precautions as outlined on containers and labels. It is the responsibility of the Contractor to provide well ventilated areas for all workmen as well as to observe safety precautions as stipulated on labels and instructions of all materials used, and as required by governing authorities during application and drying.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Water-Based Silane/Siloxane Water Repellent Treatment:

1. Use water-based silane/siloxane water repellent for concrete and most masonry and stucco surfaces to protect them from water penetration without altering the natural appearance.
2. Physical and Performance Properties:
   a. Water Absorption Reduction (Brick) per ASTM C 67: Greater than 89 percent.
   b. Water Absorption Reduction (CMU) per ASTM C 140: Greater than 93 percent.
   c. Water Absorption Reduction (Mortar) per ASTM D 6532: Greater than 98 percent.
   d. Water Vapor Transmission WVT per ASTM D 6490: Minimum 4 perms.
   e. VOC Content: Less than 30 g/L.
3. Approved Products:
   a. "Sure Klean Weather Seal Siloxane PD "; PROSOCO, Inc. (800-255-4255) (Basis of Design).
   b. Approved equal.
   c.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify surfaces to receive water repellent treatment are clean, free of efflorescence, oil, grease, or other foreign matter detrimental to application.

B. Remove loose particles and foreign matter. Remove grease or oil with a solvent, effective alkaline cleaner, or detergent as instructed by water repellent manufacturer. Scrub surfaces with water.

C. Allow surfaces to dry prior to application.

D. Protect all surrounding areas as recommended by the manufacturer or as directed by the Architect.

1. Windows: Windows shall be protected from contact with materials by masking with polyethylene or other approved techniques.
2. All polished stone, metal, or non-masonry surfaces shall be protected from contact with the material by masking with polyethylene.
3. Masonry surfaces must be in good repair. All new construction or repointed surfaces must be allowed to cure for a minimum of 28 days prior to application. Surfaces must be completely dry.

E. Verify all windows, exterior intakes and air conditioning vents are covered and air handling equipment is shut down during application and until vapors have dissipated.

F. Coordination with Sealants: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

3.2 WATER- BASED SILANE/SILOXANE WATER REPELLENT TREATMENT APPLICATION (VERTICAL APPLICATION)

A. Test each surface and/or material to be treated to ensure compatibility and water repellent treatment results. The surface to be treated must be clean and free of all foreign matter and as dry as possible to ensure proper penetration of water repellent treatment.

B. Do NOT dilute water repellent treatment.

C. Proceed with application of water repellent treatment in an orderly manner once application rate has been tested; work from bottom to top of each scaffold width and from one end of each elevation to the other.

D. Apply water repellent treatment wet-on-wet to vertical visibly dry and absorbent surfaces and comply with manufacturer's written instructions; use brush or spray application methods, at Contractor's option.

E. Preferred method of application is with low pressure, airless diaphragm-type spray equipment or with a heavily saturated roller or brush. Apply in coverage rate as recommended by manufacturer for type of material.

F. Spray Application:

1. Apply water repellent treatment from bottom- up using a wet-on-wet application, creating a 4 to 8 inch rundown below the spray contact point. Let the first application penetrate for 5 to 10 minutes then reapply. Apply in accordance with manufacturer recommendation. Do not spray apply at pressures exceeding 50 psi.

G. Roller or Brush Application:

1. Thoroughly saturate the surface uniformly with water repellent treatment for 5 to 10 minutes. Avoid excessive overlapping. Backroll or brush out heavy runs and drips that do not penetrate.

3.3 PROTECTION

A. Protect adjacent surfaces not scheduled to receive water repellent treatment. If applied on unscheduled surfaces, remove immediately, by manufacturer approved method.

B. Protect treated surfaces from rain for 6 hours.

C. Correct damage by cleaning, repairing or replacing, and repainting, as approved by A/E.

END OF SECTION 07 19 00

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Urethane joint sealants.

B. Related Sections:

1. Division 06 Section "Exterior Architectural Woodwork"

C. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:

    a. Each kind of sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of

noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.
B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

E. Qualification Data: For qualified Installer.
F. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
G. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
I. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

J. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.
D. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 URETHANE JOINT SEALANTS

A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Tremco Incorporated; DymoniC 100
b. BASF Building Systems; Sonolastic NP1, Sonalastic TX1, Sonolastic Ultra.
c. Pecora Corporation; Dynatrol I-XL.
d. Sika Corporation, Construction Products Division; Sikaflex - 1a.

2.3 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Masonry.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed, and cured sealant joints as follows:

    a. Perform 3 tests for the first 1,000 feet (300 m) of joint length for each kind of sealant and joint substrate.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

    a. Whether sealants filled joint cavities and are free of voids.
    b. Whether sealant dimensions and configurations comply with specified requirements.
    c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Wood Trim

B. Related Sections include the following:

1. Division 06 Sections for shop priming carpentry with primers specified in this Section.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of topcoat product indicated.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."

2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures, less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. ICI Paints.
3. Sherwin-Williams Company (The).

2.2 PAINT - GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range.

2.3 PRIMERS/SEALERS

A. Alkali-Resistant Primer: MPI #3.

1. VOC Content: E Range of E1.

B. Bonding Primer (Water Based): MPI #17.

1. VOC Content: E Range of E1.

C. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint system indicated.

2.4 WOOD PRIMERS

A. Exterior Latex Wood Primer: MPI #6.

1. VOC Content: E Range of E1.

2.5 EXTERIOR LATEX PAINTS

A. Exterior Latex (Semi-gloss): MPI #11 (Gloss Level 5).

1. VOC Content: E Range of E1.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Wood: 15 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and re-prime substrate with compatible primers as required to produce paint systems indicated.

D. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

E. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE

A. Wood Substrates:
   a. Prime Coat: Primer, Latex for exterior wood, MPI #6.
   b. Intermediate Coat: Latex exterior, matching topcoat.
   c. Topcoat: Latex Exterior, semigloss (gloss Level 5) MPI #11.

END OF SECTION 099113

RFP #8800

RFP ATTACHMENT I

Drawings for Construction

Fire Station #6

431 Willow Street
Waterbury, CT.

Issued For Bid

6/1/2026



FIRE STATION #6 - 431 WILLOW STREET WATERBURY, CT.

(FOR PROJECT SCOPE SEE DRAWING 'A-0.0')

LOCATION MAP:



DRAWINGS:

A-0.0	Abbreviations & General Notes	A-5.1	Roof Details
		A-5.2	Roof Details
AD-1.1	Demolition Plan - Roof		
		A-6.1	Window Elevations
A-1.1	Construction Plan - First Floor	A-6.2	Window Details
A-1.2	Construction Plan - Second Floor		
A-1.3	Construction Plan - Attic		
A-1.4	Construction Plan - Roof		
A-2.1	Exterior Elevations		
A-2.2	Exterior Elevations		

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO THE MENTIONED PROJECT IS STRICTLY PROHIBITED.

PROFESSIONAL SEALS:

No.	Date	Description

CLIENT:

WATERBURY DEVELOPMENT CORPORATION

CONSULTANTS:

ARCHITECT OF RECORD:

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD
100 Riverview Plaza, Suite 204
Middletown, CT 06457
phone: 860-346-1333
www.landmarkarch.com

Abbreviations:

Project Scope:

Project scope shall include (but may not be limited to) the following (Contractor to review contract documents and job specifications to determine full extent of work.)
Weatherproofing of building including: Replacement of existing exterior window trim with new trim. Repair and repointing of exterior face brick. Application of weatherproof sealant to exterior face brick and grout and exterior stone foundation and grout.
Replacement of existing roofing system (SHAE) and roof curbs with new EPDM roofing and roof curbs. High and low roof areas. Replacement of existing roof hatch.
Repair of interiors as required due to water damage and painting of same. Re-pointing portion of existing face brick within attic space.
Replacement of existing stove exhaust hood and vent to exterior. Replacement of existing ladder to roof.

General Notes:

1. All work shall comply with the 2021 International Building Codes and the subsequent 2022 Connecticut State Building Code.
2. Contractor is to review all drawings and specifications in the contract document set. The contractor shall coordinate all work shown in the contract document set. The contractor shall provide a complete set of contract documents to all sub-contractors and all related parties. Sub-contractors shall review all the documents and examine information that affects their work.
3. Contractor shall furnish all material, labor, and equipment required to provide a complete build-out including all finishes, structural, mechanical, electrical and plumbing components and provide all items as shown or indicated on the drawings or written in the specifications. Contractor shall furnish a completed job all in accordance with local and state governing authorities and others having lawful jurisdiction over the work.
4. The contractor and sub-contractors shall give all necessary notices, obtain all permits, pay for all government, state sales taxes and applicable fees. The contractor shall file all drawings, complete all documents and obtain all necessary approvals from the proper authority or agency having jurisdiction. The contractor to obtain all required certificates of inspection covering work. The contractor shall see that all required inspections and tests are made and shall cooperate to make these tests as thorough and as readily made as possible.
5. Contractor shall maintain a current set of drawings and specifications on-site at all times and ensure the distribution of new drawings to sub-contractors and other relevant parties as soon as they are made available. All old drawings shall be marked void and shall be removed from the contract area. Contractor shall furnish a clean marked 'As-Built' set of drawings from original permit set to the building owner upon completion of the project.
6. Unless items are noted as existing, they shall be new and shall be included and/or provided as part of the work of this contract.
7. Do not scale drawings. Check details & related drawings when not dimensioned on plans.
8. Drawings indicate the minimum required standards, but if any work should be indicated to be substandard by any ordinance, laws, codes, rules, or regulations bearing on the work, the contractor shall include in his work and shall execute the work correctly and in accordance with such ordinances, laws, codes, rules, or regulations.
9. All equipment and products purchased for installation in this project are to be reviewed by the contractor and all applicable sub-contractors for any condition or requirement per manufacturer's recommendations.
10. Any and all errors, discrepancies, and missed items are to be brought to the attention of the owner and/or architect/engineer during the bidding process by the contractor.
11. Contractor shall be responsible for all onsite safety from the time the job is awarded until all work is complete and accepted by the owner and architect.
12. Contractor shall review all shop drawings and submit copies to the architect/engineer for review. Shop Drawings must bear the shoulder's initials and stamp before submittal to the architect/engineer for review.
13. The contractor shall field verify all dimensions, elevations, angles, and existing conditions prior to the fabrication and/or installation of any work in the contract area.
14. The contractor is solely responsible for the determination of all construction procedures and construction sequences, and shall ensure the safety of the occupants, on the site and within the building and the component parts during the construction. This includes the addition of all necessary barriers, shoring, bracing, underpinning, etc. That may be necessary.
15. Actual conditions and extent of work required may vary from that shown on these drawings. Bidders must visit site prior to bidding on this project.
16. Contractor is responsible for actual quantities used and must be verified by the contractor.
17. Contractor shall protect people, buildings, equipment, furnishings, grounds, and plantings from damage. Provide protective coverings and barricades as required. Protect finished building surfaces as required. Limit traffic and storage of materials on waterproofed and roofed surfaces. See specifications for additional protective measures.
18. Contractor to maintain all egress paths for any adjacent occupied areas during the construction process. Contractor to provide temporary exits when required.
19. Drawings indicate typical details of construction. Where conditions are not specifically indicated but are of similar character to details shown, similar details of construction shall be used, subject to review and approval by the architect and structural engineer.
20. Building systems and components not specifically detailed shall be installed, as per minimum manufacturers recommendations. Notify the architect of any resulting conflicts.
21. Errors or omissions on any drawings or in any schedule do not excuse the contractor from completing the work intended on the drawings or written in the specifications.

Hatches Legend:

	plan	section	elevation
Rubber Flooring		N/A	N/A
Wood Flooring		N/A	N/A
Ceramic tile		N/A	N/A
Vinyl tile		N/A	N/A
Carpeting		N/A	N/A
Stone			N/A
Metal			N/A
Solid PVC trim	N/A		N/A
Finish Wood			N/A
Stucco			
Shake Siding	N/A	N/A	
Clapboard Siding	N/A	N/A	
Concrete			N/A

	plan	section	elevation
Gypsum Wall Board			N/A
Plywood			N/A
Wooden Framing			N/A
Gravel			N/A
Earth	N/A		
Sand			N/A
Undisturbed Earth	N/A		N/A
Sloped Roofing	N/A	N/A	
Spray Insulation			N/A
Batt Insulation			N/A
Rigid Insulation			N/A
Brick			
Concrete Masonry			

WATERBURY DEVELOPMENT CORPORATION

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

No.	Description	Date

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Abbreviations & General Notes

A-0.0

General Notes - Roofing Demolition:

1. All demolition shall be performed in accordance with federal, state and local regulations. Contractor shall be responsible for the removal and proper disposal, including all costs for hauling and dumping, of all materials demolished.
2. Contractor shall be responsible for obtaining all required permits pertaining to work noted, detailed and specified in the contract documents.
3. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning demolition.
4. Contractor shall be responsible for the safety of building occupants and property during all stages of demolition, protecting building occupants from demolition debris and maintaining exterior doors clear of obstructions.
5. Contractor to coordinate demolition schedule, areas of anticipated daily demolition and the location of dumpster(s) with building owner.
6. Damage to existing construction caused by demolition shall be patched, repaired and/or replaced as required with new construction materials and finishes to match existing.
7. Contractor to remove existing roof or fascia mounted items as required to allow new roof and fascia/soffit installation, including but not limited to satellite dish, antenna, conduit (electrical feeds) and lightning protection systems as may exist. Not all items may be shown on drawings. Contractor to reinstall same upon completion of roof and fascia installation. Coordinate removal and reinstallation with owner.
8. Contractor shall protect all existing to remain materials and construction from weather as may be exposed due to previous demolition. Upon workday close building shall be left weathertight.
9. Contractor shall provide temporary shoring of existing structure and/or construction as may be required due to demolition.
10. See also "Job Specifications" and "Project General Notes" on drawing 'A-001' for additional information.

Key Notes - Roofing Demolition:

Area of roof demolition:

(R01) Remove and dispose of all existing roofing layers or plies down to the surface of the existing wood plank decking including but not limited to Built up Roofing (B.U.R.), (Surface layer, insulation, roofing paper/felt and asphalt sealer as may exist and free of any and all materials and fasteners.

(R02) Existing metal coping/drip edge to be removed. Existing wood blocking/nailer(s) to remain.

(R03) Existing roof drain to be removed. See drawing 'A-14' for new roof drain location. Maintain interior roof leader, to be modified as required for connection to new roof drain.

(R04) Existing fan roof vent/hood to be removed, to be reinstalled on new curb. See drawing 'I/A.A.1'. Existing roof curb to be removed.

(R05) Existing roof u-bolt penetration. Remove existing flashing/roof tie in as may exist. Leave ready for new roofing tie in.

(R06) Existing scupper box. (Overflow) Remove exist. flashing/B.U.R. tie in as may exist. Leave ready for new roofing.

(R07) Existing roof hatch and curb to be removed.

(R08) Existing chimney to remain. Remove exist. base flashing/B.U.R. tie in including reglet and counter flashing as may exist.

(R09) Existing base tie-in/B.U.R. with reglet and counter flashing to be removed.

(R10) Exist. satellite dish to be removed, to be reinstalled on new curb. See drawing 'I/A-14'. Existing exposed roof curb to be removed. Coordinate removal and reinstallation of satellite dish with owner.

Symbols Legend:

Callout — Detail # / Sheet #

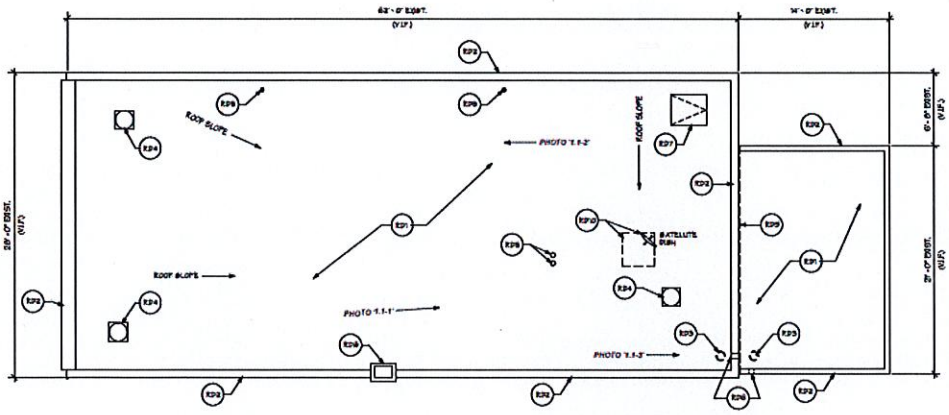
Elevation — Elev # / Sheet #

Section — Section # / Sheet #

Level Elevation — Name / Elevation

Window Tag

Revision Tag



Demolition Plan - Roof
1/4" = 1'-0" (1)

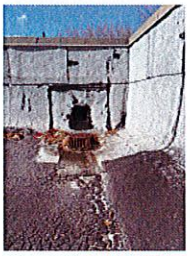


PHOTO '1.1-3'



PHOTO '1.1-2'



PHOTO '1.1-1'

WATERBURY

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

No.	Description	Date

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Demolition Plan
Roof

AD-1.1

General Notes - Construction:

1. Contractor shall provide separate quote of all work and materials for work as follows and identify as "ALTERNATE #1" :
   One Lump Sum - Interior Painting:
   Painting of interior walls and ceiling(s) as noted on drawings.
   Colors as selected by owner/architect.
   See specifications.
2. See also, Project Phasing/Key Plans and Project General Notes on drawing 'A-0.0'.
3. All dimensions are measured from finished face of wall, (gypsum board, paneling, brick, cmu and concrete) unless noted otherwise.
4. Existing dimensions shall be verified in field.
   Drawings are based on limited field observations. Discrepancies with actual building conditions, or impact new construction as discovered by contractor shall be reported to owner and architect/engineer.
5. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning construction.
6. Contractor shall be responsible for the safety of building occupants and property during all stages of construction, protecting building occupants from ongoing work, and maintaining egress ways and exterior doors clear of obstructions.
7. Contractor to coordinate work schedule, delivery schedule and product/material storage area(s) with building owner.
8. Patch and repair or replace existing materials and construction to fix new where removed or damaged due to demolition, new construction or mechanical, electrical or plumbing repairs.
9. Not materials and construction to match existing.
10. Existing substrates to receive new finishes shall be patched, repaired or replaced to fix new condition and prepped per finish manufacturer's direction prior to application/installation of new finishes.
11. Contractor shall take appropriate measures and provide appropriate protection from inhalation of silica dust with regard to existing mortar joint removal, cleaning and repointing. Such work shall be performed in accordance with federal, state and local regulations.
12. Painted materials are presumed to contain PCBs (>50ppm). Materials should be removed within negative pressure polyethylene sheeting containments. Debris to be disposed of as PCB Bulk Product Waste."

Key Notes - Construction:

(C1) Indicates existing window type. Existing exterior trim to be removed and replaced to achieve weathertight seal. Typical of window types as indicated on drawing 'A-6.1'. See also: 'Exterior Elevations' drawings 'A-2.1' and 'A-2.2'. 'Window Elevations' drawing 'A-6.1'. Section details '1/A-6.2' and '2/A-6.2'. New window trim to be painted. See note #1.

(C2) Face brick and mortar and stone foundation and mortar to receive application of water based penetrating sealer. Typical - exterior face of building and chimney. See Exterior Elevations dwgs. 'A-2.1' and 'A-2.2'. See specifications.

(C3) Shading indicates rough area of required repair to existing failing or missing mortar joint(s) in face brick, stone face or stone accent abutment. Failing or missing mortar to be replaced/repointed to fix new condition. Match existing mortar color and jointing. See specifications.

(C4) Screening indicates approximate area of existing paint (grout's) or tar residue to be removed from face of existing brick.

(C5) Existing brick(s) to be removed and steel lintel to be set off flush with exterior face of brick. Typical of (24). Verify in field.

(C6) Aluminum parapet coping. Existing to be removed and replaced. See drawing 'AD-1.1' and 'A-1.4'.

(C7) Patch and repair or replace existing damaged wall construction as exists to fix new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.)
See also General Notes #9, #10 and #12.

(C8) Patch and repair or replace existing damaged ceiling construction as exists to fix new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.)
See also General Note #9, #10 and #12.

(C9) Clean and disinfect existing walls and ceiling. Entire room.

(C10) Replace existing exhaust hood at stove including venting to exterior. Provide thru wall venting, exterior vent cap and seal weathertight. Repoint mortar joints adjacent.
Basis of Design - "Zephyr" - Duct exhaust hood (stainless steel) model #AK71SG8E290-W 120-250 (min/max) blower CFM with horizontal internal blower (3 1/4"x10") rear discharge, LumiLight LED, 6W x2, 120 Volt 60Hz max 1.56A
Note - Unit to be wall mounted. Not ceiling mounted. Provide mounting hardware as required.

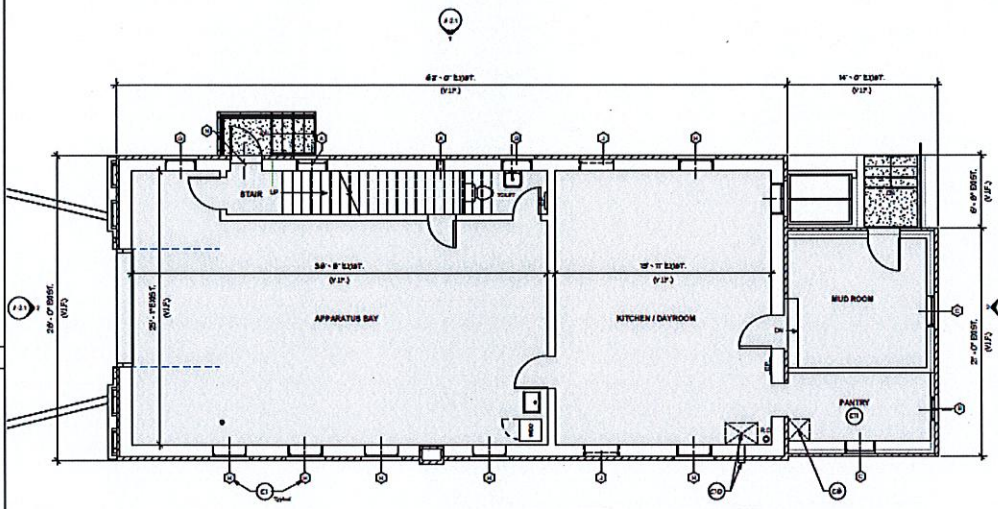
(C11) Upon completion of room repairs, cleaning and/or disinfection paint walls and ceiling complete. See General Note #9, and #10.

(C12) Existing interior brick mortar joints to be cleaned and repointed to fix new for entire perimeter of attic space.
Typical - top of wall to 24" below bottom of rafters.

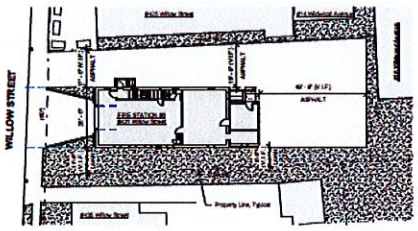
(C13) New steel ladder to roof at roof hatch.
(Remove and dispose of existing wood ladder.)
Basis of Design - "Cleveland Ladder" - Aluminum Ship Ladder (mill finish) model #S23A with extruded aluminum stringers, 4"x1 1/4" serrated aluminum treads and aluminum handrails 1.67" dia. adjustable 40 Ladder size (height and width) and angle from level to be determined in field. Coordinate ladder location, size and angle from level to accommodate access from existing opening into attic from second floor and available landing space behind.

Symbols Legend:

Callout — Detail # / Sheet #
Elevation — Detail # / Sheet #
Section — Detail # / Sheet #
Level Elevation — Name / Elevation
Window Tag
Revision Tag



Construction Plan - First Floor (1)
1/4" = 1'-0"



Site Plan (2)
1" = 20'-0"

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Construction Plan
First Floor

A-1.1

General Notes - Construction:

1. Contractor shall provide separate quot of all work and materials for work as follows and identify as "ALTERNATE #1 :
   One Lump Sum - Interior Painting:
   Painting of interior walls and ceiling(s) as noted on drawings.
   Colors: as selected by owner/architect.
   See specifications.
2. See also, Project Phasing/Key Plans and Project General Notes on drawing 'A-0.0'.
3. All dimensions are measured from finished face of wall, (gypsum board, paneling, brick, cmu and concrete) unless noted otherwise. Existing dimensions shall be verified in field.
4. Drawings are based on limited field observations. Discrepancies with actual building conditions, or impact new construction as discovered by contractor shall be reported to owner and architect/engineer.
5. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning construction.
6. Contractor shall be responsible for the safety of building occupants and property during all stages of construction, protecting building occupants from ongoing work and maintaining egress ways and exterior doors clear of obstructions.
7. Contractor to coordinate work, schedule, delivery schedule and product/material storage area(s) with building owner.
8. Patch and repair or replace existing materials and construction to like new where removed or damaged due to demolition, new construction or mechanical, electrical or plumbing repairs.
9. New materials and construction to match existing.
10. Existing substrates to receive new finishes shall be patched, repaired or replaced to like new condition and prepped per finish manufacturer's direction prior to application/installation of new finishes.
11. Contractor shall take appropriate measures and provide appropriate protection from inhalation of silica dust with regard to existing mortar joint removal, cleaning and repointing. Such work shall be performed in accordance with federal, state and local regulations.
12. Painted materials are presumed to contain PCBs (>50ppm). Materials should be removed within negative pressure polycarbonate sheeting containments. Debris to be disposed of as PCB Bulk Product Waste."

Key Notes - Construction:

C1 Indicates existing window type. Existing exterior trim to be removed and replaced to achieve weathertight seal. Typical all window types as indicated on drawing 'A-6.1'. See also: 'Exterior Elevations' drawings 'A-2.1' and 'A-2.2'. 'Window Elevations' drawing 'A-6.1'. Section details '1/A-6.2' and '2/A-6.2'. New window trim to be painted. See note #1.

C2 Face brick and mortar and stone foundation and mortar to receive application of water based penetrating sealer. Typical - exterior face of building and chimney. See Exterior Elevations dwgs. 'A-2.1' and 'A-2.2'. See specifications.

C3 Scarifying indicates rough area of required repair to existing failing or missing mortar joint(s) in face brick, stone face or stone column abutment. Failing or missing mortar to be replaced/repointed to like new condition. Match existing mortar color and jointing. See specifications.

C4 Scarifying indicates approximate area of existing paint (graffiti) or tar residue to be removed from face of existing brick.

C5 Existing brackets to be removed and steel bolts to be cut off flush with exterior face of brick. Typical of (24). Verify in field.

C6 Aluminum parapet coping. Existing to be removed and replaced. See drawing 'AD-1.1' and 'A-1.4'.

C7 Patch and repair or replace existing damaged wall construction as exists to like new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.) See also General Notes #9, #10 and #12.

C8 Patch and repair or replace existing damaged ceiling construction as exists to like new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.) See also General Note #9, #10 and #12.

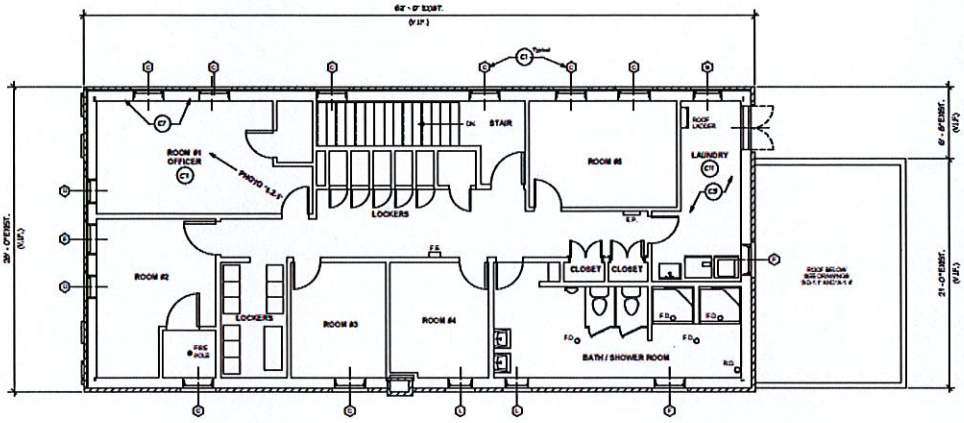
C9 Clean and disinfect existing walls and ceiling. Entire room.

C10 Replace existing exhaust hood at stove including venting to exterior. Provide thru wall venting, exterior rain cap and seal weathertight. Repoint mortar joints adjacent.
Basis of Design - "Zephyr" - Quest exhaust hood (stainless steel) model #AK71548B230-W 120-230 (min-max.) blower CFM with horizontal internal blower (3 1/4"x 10") rear discharge, LumiLight LED, 6W x2, 120 Volt 60Hz max. 1.56A
Note - Unit to be wall mounted. Not cabinet mounted. Provide mounting hardware as required.

C11 Upon completion of room repairs, cleaning and/or disinfection paint walls and ceiling surfaces. See General Note #1, and #10.

C12 Existing interior brick mortar joints to be cleaned and repointed to like new for entire perimeter of attic space.
Typical - top of wall to 24" below bottom of rafters.

C13 New steel ladder to roof at roof hatch.
(Remove and dispose of existing wood ladder.)
Basis of Design - "Otsego Inc." - Aluminum Ship Ladder (mill finish) model #S23A with extruded aluminum stringers, 4"x1 1/4" serrated aluminum treads and aluminum handrails 1.67" dia. schedule 40. Ladder size (height and width) and angle from level to be determined in field. Coordinate ladder location, size and angle from level to accommodate access from existing opening into attic from second floor and available landing space behind.



Construction Plan - Second Floor (1)
1/4" = 1'-0"

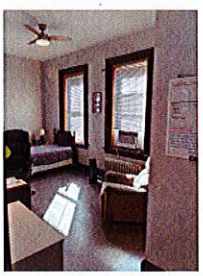
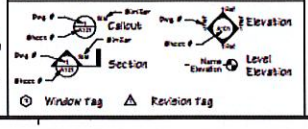


PHOTO '1.2-1'

Symbols Legend:



NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Construction Plan
Second Floor

A-1.2

General Notes - Construction:

1. Contractor shall provide separate quote of all work and materials for work as follows and identify as "ALTERNATE #1":
   One Lump Sum - Interior Painting:
   Painting of interior walls and ceiling(s) as noted on drawings.
   Colors: as selected by owner/architect.
2. See also, Project Phasing/Key Plans and Project General Notes on drawing 'A-0.0'.
3. All dimensions are measured from finished face of wall, (gypsum board, paneling, brick, stone and concrete) unless noted otherwise.
   Existing dimensions shall be verified in field.
4. Drawings are based on limited field observations. Discrepancies with actual building conditions, as impact new construction as discovered by contractor shall be reported to owner and architect/engineer.
5. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning construction.
6. Contractor shall be responsible for the safety of building occupants and property during all stages of construction; protecting building occupants from ongoing work, and maintaining egress ways and exterior doors clear of obstructions.
7. Contractor to coordinate work, schedule, delivery schedule and product/material storage area(s) with building owner.
8. Patch and repair or replace existing materials and construction to fix new where removed or damaged due to demolition, new construction or mechanical, electrical or plumbing repairs.
9. New materials and construction to match existing.
10. Existing substrates to receive new finishes shall be patched, repaired or replaced to fix new condition and prepped per finish manufacturer's direction prior to application/installation of new finishes.
11. Contractor shall take appropriate measures and provide appropriate protection from inhalation of silica dust with regard to existing mortar joint removal, cleaning and repointing. Such work shall be performed in accordance with federal, state and local regulations.
12. Painted materials are presumed to contain PCBs (>50ppm). Materials should be removed within negative pressure polyethylene sheeting containments. Debris to be disposed of as PCB Bulk Product Waste"

Key Notes - Construction:

(C1) Indicates existing window type. Existing exterior trim to be removed and replaced to achieve weathertight seal. Typical all window types as indicated on drawing 'A-6.1. See also: 'Exterior Elevations' drawings 'A-2.1' and 'A-2.2'. 'Window Elevations' drawing 'A-6.1' Section details '1/A-6.2' and '2/A-6.2'. New window trim to be painted. See note #1.

(C2) Face brick and mortar and stone foundation and mortar to receive application of water based penetrating sealer. Typical - exterior face of building and chimney. See Exterior Elevations dwgs. 'A-2.1' and 'A-2.2'. See specifications.

(C3) Scarcing indicates rough area of required repair to existing failing or missing mortar joint(s) in face brick, stone face or stone column abutment. Failing or missing mortar to be replaced/repointed to fix new condition. Match existing mortar color and jointing. See specifications.

(C4) Scarcing indicates approximate area of existing paint (graffiti) or tar residue to be removed from face of existing brick.

(C5) Existing brackets to be removed and steel holes to be cut off flush with exterior face of brick. Typical of (24). Verify in field.

(C6) Aluminum parapet coping. Existing to be removed and replaced. See drawing 'AD-1.1' and 'A-1.4'.

(C7) Patch and repair or replace existing damaged wall construction as exists to fix new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.) See also General Notes #9, #10 and #12.

(C8) Patch and repair or replace existing damaged ceiling construction as exists to fix new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.) See also General Notes #9, #10 and #12.

(C9) Clean and disinfect existing walls and ceiling. Entire room.

(C10) Replace existing exhaust hood at stove including venting to exterior. Provide thru wall venting, exterior rain cap and seal weathertight. Repoint mortar joints adjacent.
Basis of Design - "Zephyr" - Quet exhaust hood (stainless steel) model #AK71588E290-W 120-290 (min-max.) blower CFM with horizontal internal blower (3 1/4"x10") rear discharge, LumiLight LED, 6W x2, 120 Volt 60Hz max. 156A
Note - Unit to be wall mounted. Not ceiling mounted. Provide mounting hardware as required.

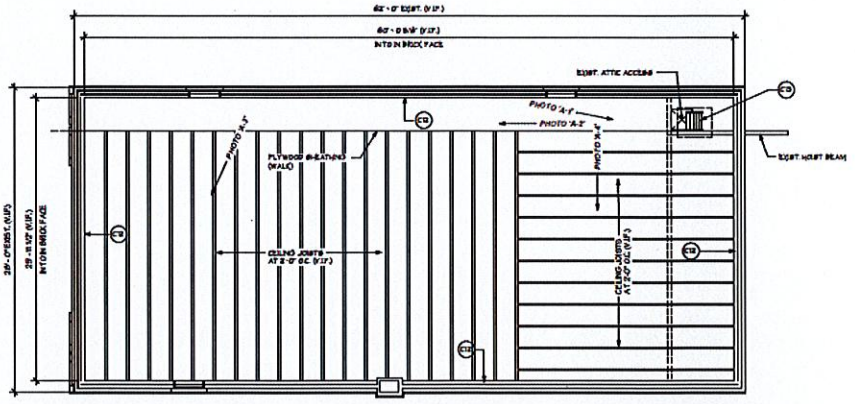
(C11) Upon completion of room repairs, cleaning and/or disinfection paint walls and ceiling samples. See General Note #1, and #10.

(C12) Existing interior brick mortar joints to be cleaned and repointed to fix new for entire perimeter of attic space.
Typical - top of wall to 24" below bottom of rafters.

(C13) New steel ladder to roof at roof hatch
(Remove and dispose of existing wood ladder.)
Basis of Design - "Otto-Fab Inc." - Aluminum Ship Ladder (mill finish) model #S234 with extruded aluminum stringers, 4"x1 1/4" serrated aluminum treads and aluminum handrails 1.67" dia. schedule 40. Ladder size (height and width) and angle from level to be determined in field. Coordinate ladder location, size and angle from level to accommodate access from existing opening into attic from second floor and available landing space below.

Symbols Legend:

Callout — Detail # / Sheet #
Elevation — Detail # / Sheet #
Section — Detail # / Sheet #
Level Elevation — Name / Elevation
Window Tag
Revision Tag

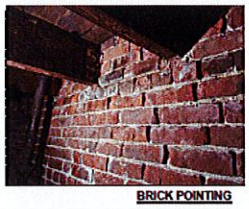


Construction Plan - Attic
1/4" = 1'-0" (1)


PHOTO 'A-3'


PHOTO 'A-2'


PHOTO 'A-1'


BRICK POINTING

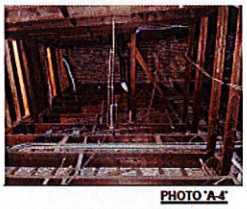


PHOTO 'A-4'

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Construction Plan
Attic

A-1.3

General Notes - Roofing Construction:

1. Contractor shall provide separate cost of all work and materials for work as follows:
2. Contractor shall be responsible for obtaining all required permits pertaining to work noted, detailed and specified on the drawings.
3. Prior to installing new roofing, contractor shall verify existing roof deck and substrates are sufficiently sound and of suitable condition to accept new roofing materials per roof manufacturer's specifications. Contractor to notify owner and architect of any areas of unsound and/or unacceptable deck or substrate including existing brick or masonry.
4. Contractor shall be responsible for the safety of building occupants and property during all stages of construction, maintaining exterior doors clear of obstructions.
5. Contractor to coordinate work schedule, delivery schedule and product/material staging area(s) with building owner.
6. Contractor shall be recognized by the roof manufacturer as a licensed installer of the manufacturer's roof products as specified.
7. Drawings are based on limited field observations. Discrepancies with actual existing building conditions, or impact new roofing installation as discovered by contractor shall be reported to owner and architect.
8. See also 'Job Specifications' and 'Project General Notes' on drawing 'A-0.0' for additional information.

Key Notes - Roofing Construction:

K1 Area of new roofing installation:
Basis of Design:
Firestone .090" Platinum EPDM adhered to
1/2" High Density Cavityboard adhered to
(2) Layers 2.60" (R-15) Polyisocyanurate insulation mechanically fastened to the existing wood plank roof deck.
Total minimum R value = (R-30)
Warranty = 30 year manufacturer warranty

K2 New parapet coping. See section(s) as noted. See also: 1/A-5.1

K3 New roof drain. See section as noted.

K4 Existing fan roof vent/hood to be re-installed on new roof curb. Provide minimum 8" of height above adjacent roof membrane to top of curb. See: 5/A-5.1 similar.

K5 Existing vent stack to remain. Replacement or replace as required to provide 8" min. height above adjacent membrane roofing. See: 6/A-5.1.

K6 Existing overflow scupper slow roll. Reflash/tie in with new EPDM roofing to maintain active. See section as noted.

K7 New roof hatch and curb. See section as noted.

K8 New base tie-in with reglet and counter flashing. See: 3/A-5.2. Re-point face brick as required.

K9 New 12"x12" roof curb with 5/8" plywood cap. Provide minimum 8" of height above adjacent roof membrane to top of curb/cap. Infill existing roof deck adjacent as required to match existing. Provide base tie-in and roof membrane over cap. Re-install satellite dish. Coordinate removal and re-installation of satellite dish with owner.

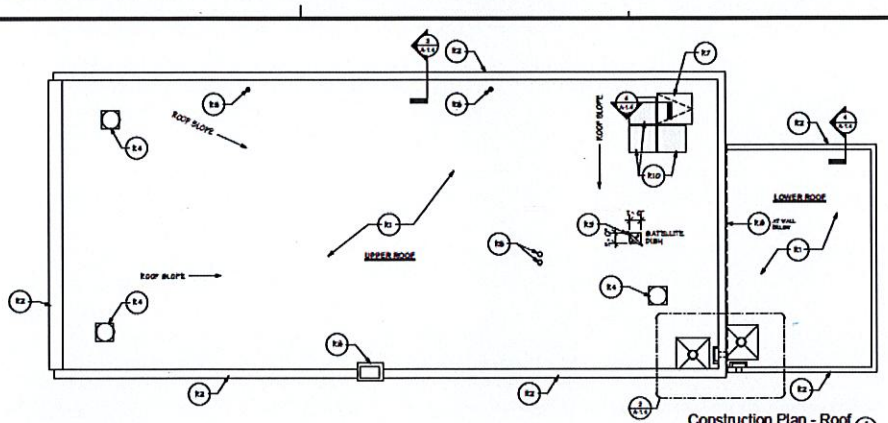
K10 New walkway pads at roof hatch. See: 6/A-5.2.

K11 New rigid insulation roof dam, (3) sides of overflow scupper. See also section 5/1A-1.4

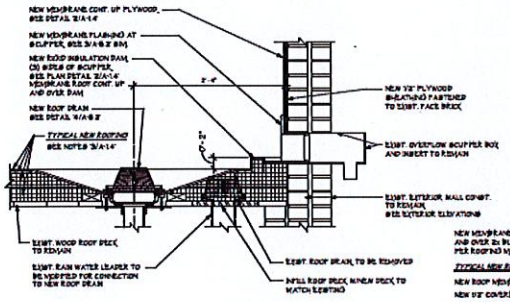
Symbols Legend:

Callout — Drwg #, Sheet #, Elevation, Section, Name, Level Elevation

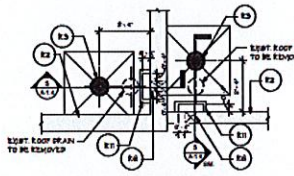
Window Tag — Revision Tag



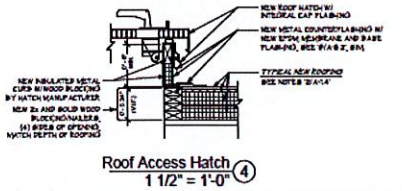
Construction Plan - Roof 1
1/4" = 1'-0"



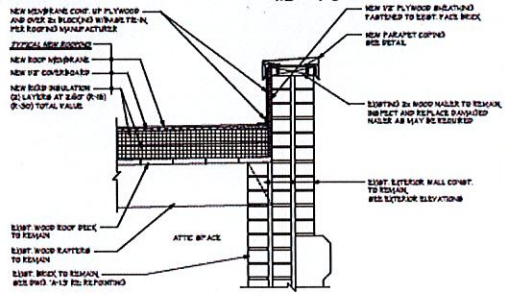
Detail - Roof Drain and Scupper 5
1 1/2" = 1'-0"



Plan at Roof Drains 2
1/2" = 1'-0"



Roof Access Hatch 4
1 1/2" = 1'-0"



Detail - Roof Parapet 3
1 1/2" = 1'-0"

WATERBURY DEVELOPMENT CORPORATION

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN | RESTORE | BUILD

No.	Description	Date

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
8/1/2025

Construction Plan Roof

A-1.4

General Notes - Construction:

1. Contractor shall provide separate quot of all work and materials for work as follows and identify as "ALTERNATE #1":
   One Lump Sum - Interior Painting
   Painting of interior walls and ceiling(s) as noted on drawings.
   Colors: as selected by owner/Architect.
   See specifications.
2. See also, Project Phasing/Key Plans and Project General Notes on drawing 'A-0.0'.
3. All dimensions are measured from finished face of wall, (gypsum board, paneling, brick, cmu and concrete) unless noted otherwise.
   Existing dimensions shall be verified in field.
4. Drawings are based on limited field observations. Discrepancies with actual building conditions, as impact new construction as discovered by contractor shall be reported to owner and architect/engineer.
5. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning construction.
6. Contractor shall be responsible for the safety of building occupants and property during all stages of construction, protecting building occupants from ongoing work and maintaining egress ways and exterior doors clear of obstructions.
7. Contractor to coordinate work, schedule, delivery schedule and product/material storage area(s) with building owner.
8. Patch and repair or replace existing materials and construction to like new where removed or damaged due to demolition, new construction or mechanical, electrical or plumbing repairs.
9. New materials and construction to match existing.
10. Existing substrates to receive new finishes shall be patched, repaired or replaced to like new condition and prepped per finish manufacturer's direction prior to application/installation of new finishes.
11. Contractor shall take appropriate measures and provide appropriate protection from inhalation of silica dust with regard to existing mortar joint removal, cleaning and repointing. Such work shall be performed in accordance with federal, state and local regulations.
12. Painted materials are presumed to contain PCBs (>50ppm). Materials should be removed within negative pressure polyethylene sheeting containments. Debris to be disposed of as PCB R.A. Product Waste."

Key Notes - Construction:

(C1) Indicates existing window type. Existing exterior trim to be removed and replaced to achieve weathertight seal. Typical all window types as indicated on drawing 'A-0.1'. See also: 'Exterior Elevations' drawings 'A-2.1' and 'A-2.2'.
Window Elevations' drawing 'A-0.1'
Section details 'A-6.2' and '2.A-6.2'.
New window trim to be painted. See note #1.

(C2) Face brick and mortar and stone foundation and mortar to receive application of water based penetrating sealer. Typical - exterior face of building and chimney. See Exterior Elevations dwgs. 'A-2.1' and 'A-2.2'. See specifications.

(C3) Surrounding indicates rough area of required repair to existing failing or missing mortar joint(s) in face brick, stone face or stone column abutment. Failing or missing mortar to be replaced/re-pointed to like new condition. Match existing mortar color and jointing. See specifications.

(C4) Surrounding indicates approximate areas of existing paint (graffiti) or tar residue to be removed from face of existing brick.

(C5) Existing brackets to be removed and steel holes to be cut off flush with exterior face of brick. Typical of (24). Verify in field.

(C6) Aluminum parapet coping. Existing to be removed and replaced. See drawing 'AD-1.1' and 'A-1.4'.
Patch and repair or replace existing damaged wall construction as exists to like new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.)
See also General Notes #9, #10 and #12.

(C7) Patch and repair or replace existing damaged ceiling construction as exists to like new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.)
See also General Note #9, #10 and #12.

(C8) Clean and disinfect existing walls and ceiling. Entire room.

(C9) Replace existing exhaust hood at stove, including venting to exterior. Provide thru wall venting, exterior vent cap and seal weathertight. Repoint mortar joints adjacent.
Basis of Design - 'Zephyr' - Duct exhaust hood (stainless steel) model #AKT36SS230-BF 120-230 (min-max) blower CFM with horizontal internal blower (3 1/4"x10") rear discharge, LumiLight LED, 6W x2, 120 Volt 60Hz max 1.56A
Note - Unit to be wall mounted. Not cabinet mounted. Provide mounting hardware as required.

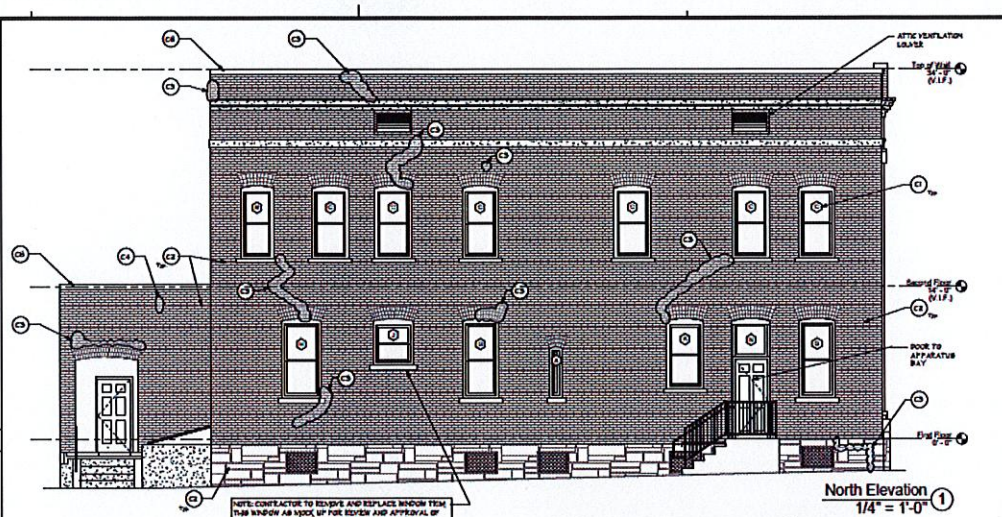
(C10) Upon completion of room repairs, cleaning and/or disinfection, paint walls and ceiling complete. See General Note #1, and #10.

(C11) Existing interior brick, mortar joints to be cleaned and repointed to like new for entire perimeter of attic space.
Typical - top of wall to 24" below bottom of rafters.

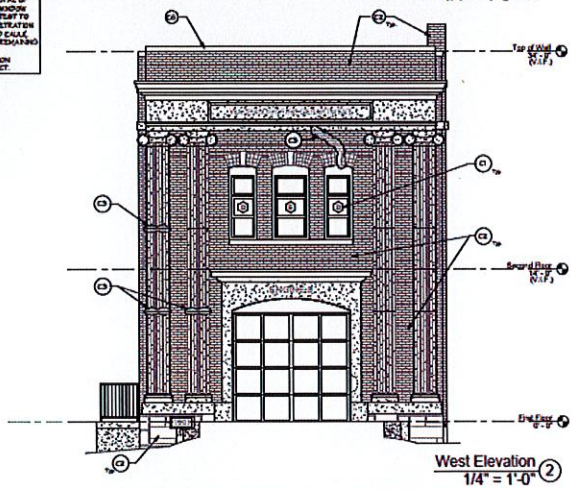
(C12) New steel ladder to roof at roof hatch.
(Remove and dispose of existing wood ladder.)
Basis of Design - 'Ottaiflo Inc.' - Aluminum Ship Ladder (mill finish) model #S23A with extruded aluminum stringers, 4"x1 1/4" serrated aluminum treads and aluminum handrails 1.67" dia. outside. 60 Ladder size (height and width) and angle from level to be determined in field. Coordinate ladder location, size and angle from level for accessible access from existing egress into attic from second floor and available landing space below.

Symbols Legend:

Callout — Detail # / Sheet # / Enlarged Plan
Elevation — Detail # / Sheet # / Elevation
Section — Detail # / Sheet #
Level Elevation — Name / Elevation
Window Tag
Revision Tag



North Elevation
1/4" = 1'-0" (1)



West Elevation
1/4" = 1'-0" (2)

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD
100 Kingston Park, Suite 204
Middletown, CT 06457
phone: 860.346.1300
www.landmarkarch.com

No.	Description	Date

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE AND CAN BE THE EXCLUSIVE STATE THAT THEY WERE CREATED FOR THIS PROJECT AND SHALL NOT BE USED ON ANY OTHER PROJECT OR DISTRIBUTED

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Exterior Elevations

A-2.1

General Notes - Construction:

1. Contractor shall provide separate cost of all work and materials for work as follows and identify as "ALTERNATE #2":
   One Lump Sum - Interior Painting:
   Painting of interior walls and ceiling(s) as noted on drawings.
   Colors: as selected by owner/Architect.
   See specifications.
2. See also, Project Phasing/Key Plans and Project General Notes on drawing 'A-0.0'.
3. All dimensions are measured from finished face of wall, (gypsum board, paneling, brick, stone and concrete) unless noted otherwise. Existing dimensions shall be verified in field.
4. Drawings are based on limited field observations. Discrepancies with actual building conditions, as impact new construction as discovered by contractor shall be reported to owner and architect/engineer.
5. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning construction.
6. Contractor shall be responsible for the safety of building occupants and property during all stages of construction, protecting building occupants from ongoing work and maintaining egress ways and exterior doors clear of obstructions.
7. Contractor to coordinate work schedule, delivery schedule and product/material storage area(s) with building owner.
8. Patch and repair or replace existing materials and construction to like new where removed or damaged due to demolition, new construction or mechanical, electrical or plumbing repairs.
9. New materials and construction to match existing.
10. Existing substrates to receive new finishes shall be patched, repaired or replaced to like new condition and prepped per finish manufacturer's direction prior to application/installation of new finishes.
11. Contractor shall take appropriate measures and provide appropriate protection from inhalation of silica dust with regard to existing mortar joint removal, cleaning and repointing. Such work shall be performed in accordance with federal, state and local regulations.
12. Painted materials are presumed to contain PCBs (>50ppm). Materials should be removed within negative pressure polycarbonate shooting containments. Debris to be disposed of as PCB B.S. Product Waste."

Key Notes - Construction:

C1 Indicates existing window type. Existing exterior trim to be removed and replaced to maintain weathertight seal. Typical all window types as indicated on drawing 'A-0.1'. See also: 'Exterior Elevations' drawings 'A-2.1' and 'A-2.2'. Window Elevations' drawing 'A-0.1'. Location: Units '1/A-0.2' and '2/A-0.2'. New window trim to be painted. See note #1.

C2 Face brick and mortar and stone foundation and mortar to receive application of water based penetrating sealer. Typical - exterior face of building and chimney. See 'Exterior Elevations' dwgs. 'A-2.1' and 'A-2.2'. See specifications.

C3 Surrounding indicates rough area of required repair to existing failing or missing mortar joint(s) in face brick, stone face or stone column abutment. Failing or missing mortar to be replaced/repointed to like new condition. Match existing mortar color and jointing. See specifications.

C4 Surrounding indicates approximate area of existing paint (graffiti) or tar residue to be removed from face of existing brick.

C5 Existing brackets to be removed and steel below to be cut off flush with exterior face of brick. Typical of (24). Verify in field.

C6 Aluminum parapet coping. Existing to be removed and replaced. See drawing 'AD-1.1' and 'A-1.4'. Patch and repair or replace existing damaged wall construction as exists to like new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.) See also General Notes #9, #10 and #12.

C7 Patch and repair or replace existing damaged soffit construction as exists to like new. Inclusive of but not limited to failing substrates. (Plaster, lath, wallboard, framing, etc.) See also General Note #8, #10 and #12.

C8 Clean and disinfect existing walls and ceiling. Entire room.

C9 Replace existing exhaust hood at stove including venting to exterior. Provide thru wall venting, exterior vent cap and seal weathertight. Repoint mortar joints adjacent.
Basis of Design - 'Zephyr' - Duct exhaust hood (stainless steel) model ZAK730SS8230-BF 820-2360 (min-max) Hoover CFM with horizontal internal blower (3 1/4"x10") rear discharge, LumiLight LED, 6W x2, 120 Volt 60Hz max 1.56A
Note - Unit to be wall mounted. Not cabinet mounted. Provide mounting hardware as required.

C10 Upon completion of room repairs, cleaning and/or disinfection, paint walls and ceiling complete. See General Notes #1, and #10.

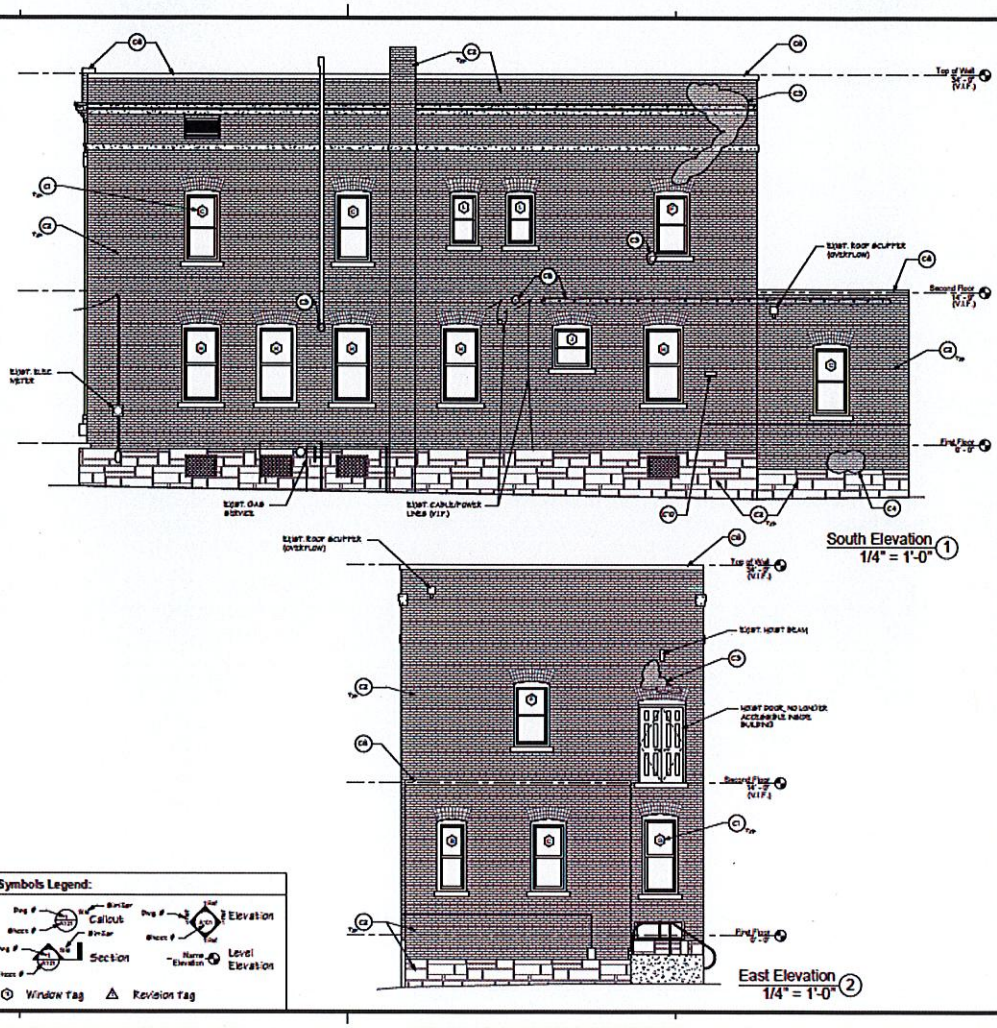
C11 Existing interior brick mortar joints to be cleaned and repointed to like new for entire perimeter of attic space. Typical - top of wall to 24" below bottom of rafters.

C12 New steel ladder to roof at roof hatch (Remove and dispose of existing wood ladder.)
Basis of Design - 'Ottaco Inc' - Aluminum Ship Ladder (mill finish) model #S23A with extruded aluminum stringers, 4"x1 1/4" serrated aluminum treads and aluminum handrails 1.67" dia. w/code 40 Ladder size (height and width) and angle from level to be determined in field. Coordinate ladder location, size and angle from level to accommodate egress from existing opening into attic from second floor and available landing space behind.

Symbols Legend:

Callout · Elevation · Section · Level Elevation

Window Tag · Revision Tag



South Elevation 1
1/4" = 1'-0"

East Elevation 2
1/4" = 1'-0"

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

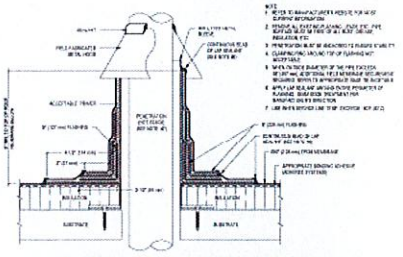
431 Willow Street
Waterbury, CT.

Fire Station #6

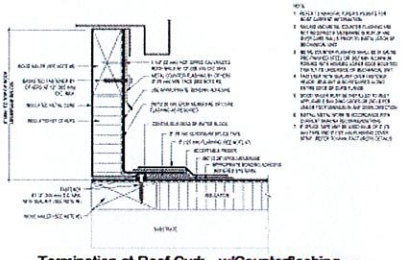
Issued For Bid
6/10/2009

Exterior Elevations

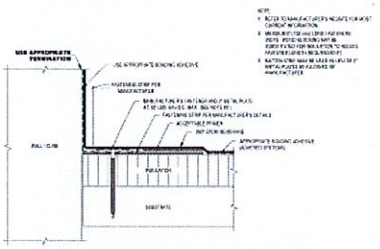
A-2.2



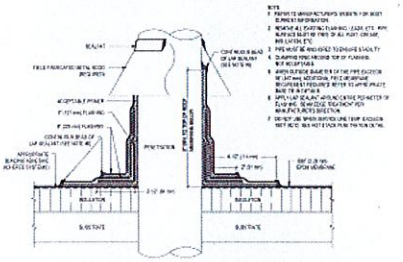
Penetration w/Field Fabricated Flashing (Hot Stack) N.T.S. ⑨



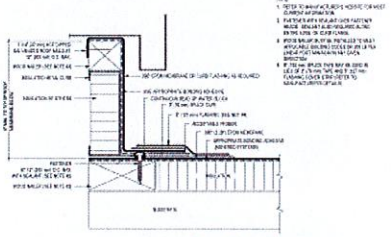
Termination at Roof Curb - w/Counterflashing N.T.S. ⑥



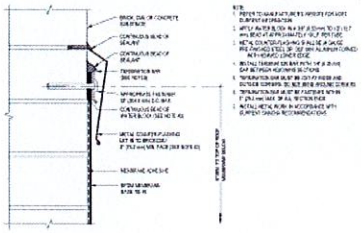
Base Tie-In Fastened to Deck N.T.S. ③



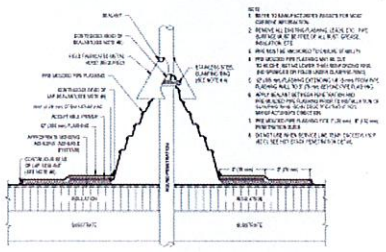
Penetration w/Field Fabricated Flashing N.T.S. ⑧



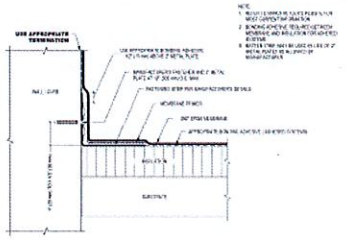
Termination at Roof Curb N.T.S. ⑤



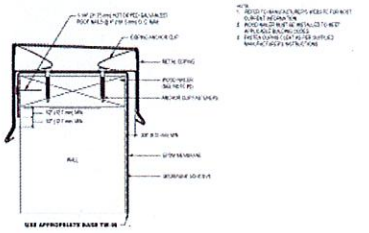
Counterflashing & Termination Bar N.T.S. ②



Penetration Pipe Flashing N.T.S. ⑦



Base Tie-In Fastened to Wall/Curb N.T.S. ④



Parapet Coping N.T.S. ①

WATERBURY DEVELOPMENT CORPORATION

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

No.	Description	Date

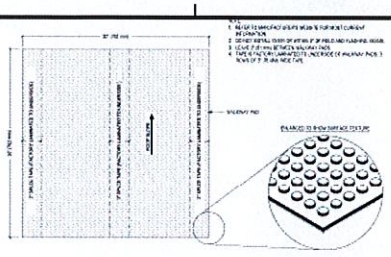
431 Willow Street
Waterbury, CT.

Fire Station #6

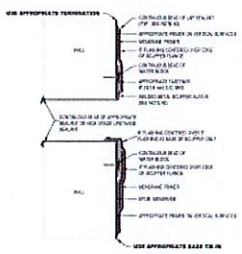
Issued For Bid
6/1/2026

Roof Details

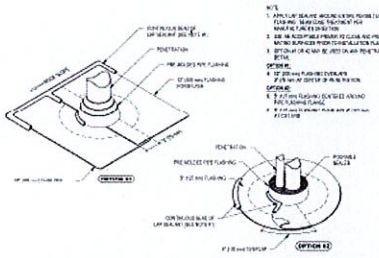
A-5.1



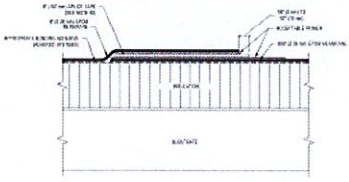
Walkway Pad ⑥
N.T.S.



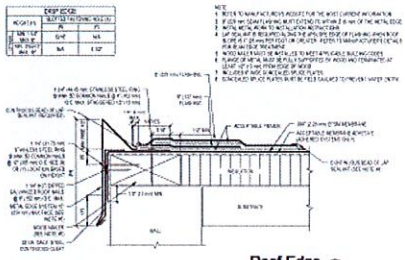
Overflow Thru-Wall Scupper ③
N.T.S.



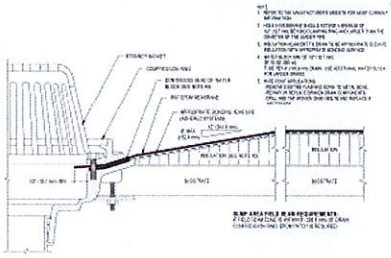
Penetration Details: Pre-Molded & Pourable Sealer ⑤
N.T.S.



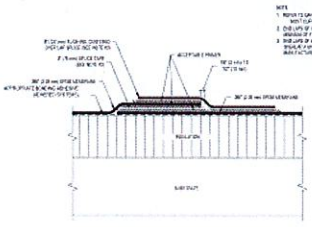
Lap Splice ②
N.T.S.



Roof Edge ⑦
N.T.S.



Roof Drain - New ④
N.T.S.



Lap Splice ①
N.T.S.

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

No.	Description	Date

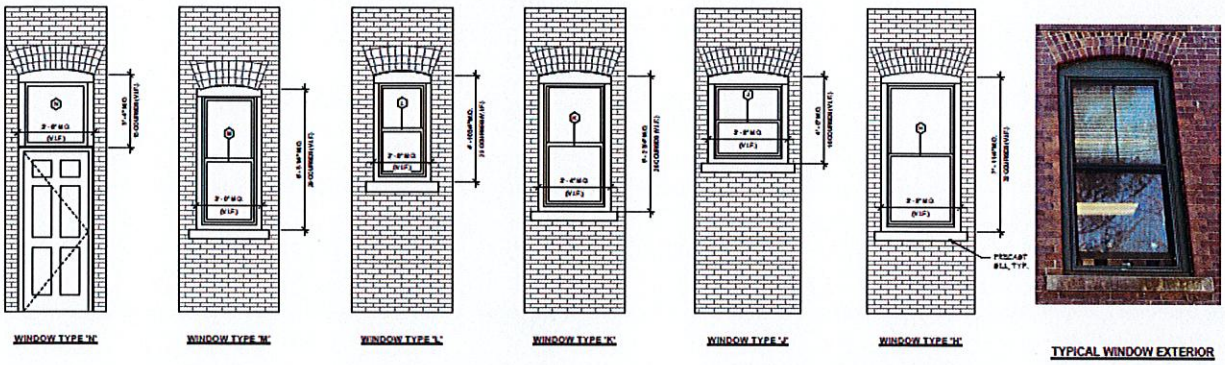
431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

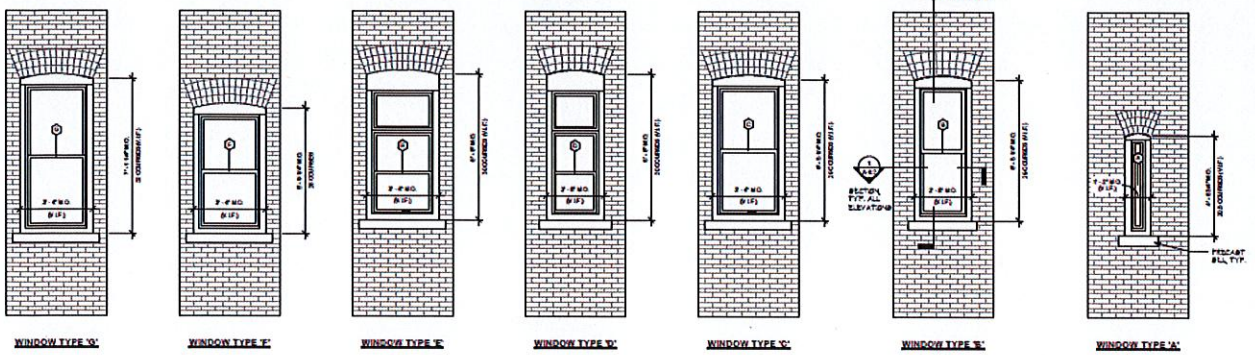
Roof Details

A-5.2



TYPICAL WINDOW EXTERIOR

Elevation - Masonry Openings (H-N)
1/2" = 1'-0" ②



Elevation - Masonry Openings (A-G)
1/2" = 1'-0" ①

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Window Elevations

A-6.1

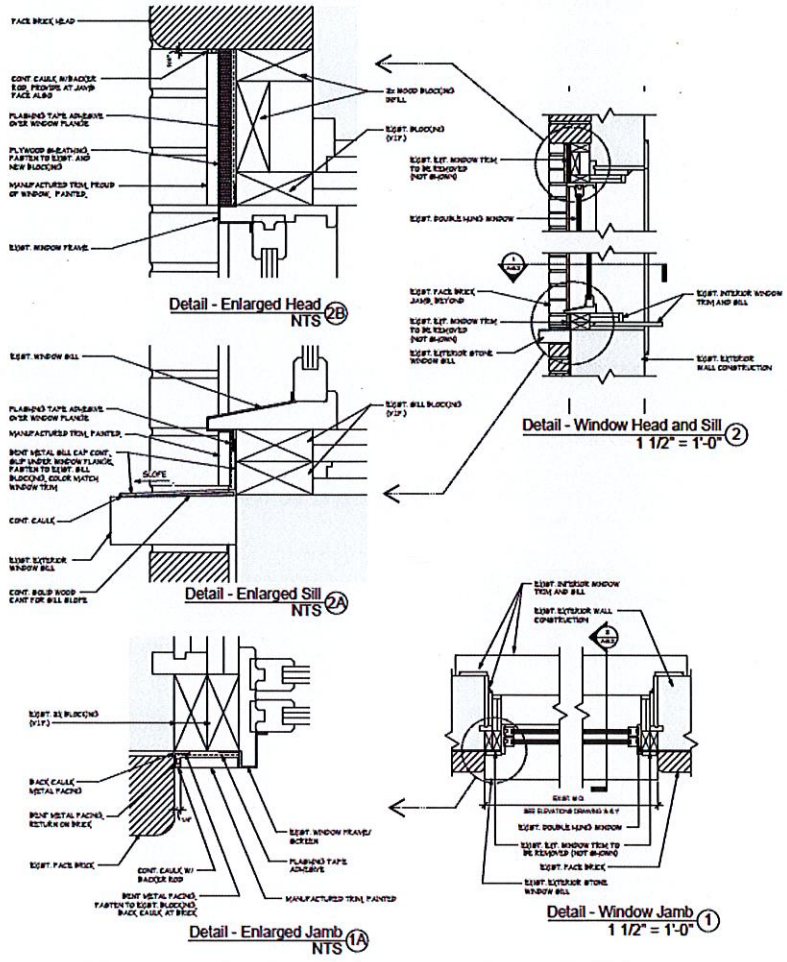
General Notes - Construction:

1. Contractor shall provide separate cost of all work and materials for work as follows and identify as "ALTERNATE #1":
   One Lump Sum - Interior Painting:
   Painting of interior walls and ceiling(s) as noted on drawings.
   Colors: as selected by owner/architect.
   See specifications.
2. See also, Project Phasing/Key Plans and Project General Notes on drawing 'A-0.0'.
3. All dimensions are measured from finished face of wall, (gypsum board, paneling, brick, area and concrete) unless noted otherwise.
   Existing dimensions shall be verified in field.
4. Drawings are based on limited field observations. Discrepancies with actual building conditions, as impact new construction as discovered by contractor shall be reported to owner and architect/engineer.
5. Contractor shall coordinate with owner and appropriate utilities for service shutoffs and relocation as may be required prior to beginning construction.
6. Contractor shall be responsible for the safety of building occupants and property during all stages of construction, protecting building occupants from ongoing work and maintaining egress ways and exterior doors clear of obstructions.
7. Contractor to coordinate work schedule, delivery schedule and product/material storage area(s) with building owner.
8. Patch and repair or replace existing materials and construction to like new where removed or damaged due to demolition, new construction or mechanical, electrical or plumbing repairs.
9. New materials and construction to match existing.
10. Existing substrates to receive new finishes shall be patched, repaired or replaced to like new condition and prepped per finish manufacturer's direction prior to application/installation of new finishes.
11. Contractor shall take appropriate measures and provide appropriate protection from inhalation of silica dust with regard to existing mortar joint removal, cleaning and repointing. Such work shall be performed in accordance with federal, state and local regulations.
12. Painted materials are presumed to contain PCBs (>50ppm). Materials should be removed within negative pressure polyethylene sheeting containments. Debris to be disposed of as PCB Bulk Product Waste."

Symbols Legend:

Callout — Section — Elevation — Level Elevation

Window Tag — Revision Tag



Detail - Enlarged Head 2B NTS

Detail - Window Head and Sill 1 1/2" = 1'-0" 2

Detail - Enlarged Sill 2A NTS

Detail - Enlarged Jamb 1A NTS

Detail - Window Jamb 1 1/2" = 1'-0" 1

NOT FOR CONSTRUCTION

LANDMARK ARCHITECTS, P.C.
DESIGN / RESTORE / BUILD

No.	Description	Date

431 Willow Street
Waterbury, CT.

Fire Station #6

Issued For Bid
6/1/2026

Window Details

A-6.2

GENERAL CONDITIONS

Draft - City Reserves the Right to Revise

RFP NO. 8801

ATTACHMENT A-1.1

GENERAL CONDITIONS

Draft - City Reserves the Right to Revise

INTRODUCTORY NOTE:

These General Conditions supplement the provisions and requirements of Contract and modify all Contract Documents which follow it numerically, as set forth in Section 1.2 of the Contract. The General Conditions may be amended, revised or supplemented by the Special Conditions, which are project specific. The Contractor's attention is directed to the attached Special Conditions for any amendments, revisions or supplements to the General Conditions for this project. The terms used in these General Conditions which are defined in the Contract have the meanings assigned to them in said Contract.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project and all drawings, specifications and general provisions of the Contract apply to these General Conditions. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise in the Contract Documents, all costs associated with any work/services required or necessary under the General Conditions shall be considered as included in the Contract Amount (also referred to as Total Compensation). No separate or additional payment will be made for this work and/or services.

In the event the Waterbury Development Corporation ("WDC") is the contracting party, where appropriate by context, references to the "City" shall also refer to WDC.

ARTICLE 1. PLANS AND SPECIFICATIONS AT THE SITE / AS-BUILTS

1.01 The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications, Schedules and Instructions, in good order. One copy is to be marked to record all changes made during construction. These shall always be available to the Project Engineer and the City or their authorized representatives. At the conclusion of construction, the Contractor is to turn one (1) corrected set of all documents over to the Project Engineer.

ARTICLE 2. CONSTRUCTION PROGRESS SCHEDULE

2.01 Within seven (7) consecutive calendar days of the written Notice to Proceed, and prior to commencement of any work on site, the Contractor shall prepare and submit for the approval of the City three(3) copies of a complete Construction Progress Schedule which shall be comprised of a critical path method network. (At the same time, the Contractor shall submit the Schedule of Values, Sedimentation and Erosion Control Measures, Water Control Plan and Environmental Protection Plan, as outlined in the various Articles of these General Conditions).

2.02 The critical path of the Project must be identified on the Construction Progress Schedule which shall provide a workable plan for monitoring the progress of all the elements of the Project, establish and clearly display the critical elements of the Work, on which each part or division of the Work is expected to be started and completed, forecast completion of the elements of the Project, and match the Contract duration in time. The Construction Progress Schedule shall also indicate the logic of the work for the major elements and components of work under the Contract, such as the planned mobilization of plant and equipment, sequences of operations, procurement of materials and equipment, duration of activities, type of relationship, lag time (if any), and such other information as it is necessary to present a clear statement of the intended activities.

2.03 The Construction Progress Schedule shall, at a minimum, indicate the proposed scheduling of all major items of work and Project components. The schedule shall state the methods for doing each portion of the work and show the significant on-site construction activities with planned early/late start early/late completion dates and total float for each activity, including activities of the Contractor, subcontractors, fabricators, and suppliers to ensure adequate planning and communication. Activities shall include, the following items, as applicable: (a) milestone events; (b) seasonal weather limitations (c) the procurement and fabrication of materials, plant and equipment and any associated submittals; (d) the order in which the Contractor proposes to complete activities; (e) temporary structures or systems; (f) major construction or work zone traffic control stages; (g) activities assigned to Utilities, railroads and other parties; (h) activities assigned to the City and other State or municipal entities; (i) sampling and testing of materials; (j) settlement, surcharge or cure periods; (k) punch list work, (l) inspection activities assigned to the City, including final inspection and (m) all project closeout activities and requirements. The Contractor shall evaluate the status of the Project at least monthly, comparing it to the original schedule, which shall be revised as required herein. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the current schedule.

2.04 Upon approval of the initial Construction Progress Schedule by the Project Engineer, this schedule shall also be referred to as the "Baseline Construction Progress Schedule" or "Baseline Schedule."

2.05 The Contractor shall perform the work of this Contract to satisfy the approved Construction Progress Schedule; however, the Project Engineer and City reserve the right to amend and alter the Construction Progress Schedule, as approved, at any time and in a manner which the Project Engineer deems to be in the best interests of the City. The latest version of the Construction Progress Schedule, as amended and approved by the Project Engineer, shall also be referred to as the "Current Construction Progress Schedule" or "Current Schedule." The approval of the Construction Progress Schedule, or any revision thereof, shall in no way waive the requirements of the Contract nor shall it excuse the Contractor from any obligations under the Contract.

2.06 The Contractor shall be required to execute his work in accordance with the Construction Progress and in accordance with any additional requirements specified herein and/or revisions approved by the Project Engineer.

2.07 The Construction Progress Schedule shall forecast the times for doing each portion of the work. The Contractor shall arrange the work under this Contract to conform with the Construction Progress Schedule, as it may be revised by the Project Engineer from time to time, at no additional expense to the City.

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2.08 Contractor shall provide, at a minimum, the following:

a. Monthly Updates: Each month, as of a calendar date mutually acceptable to the Contractor and to the Project Engineer, the Contractor shall deliver to the Engineer three (3) prints of all required schedule diagrams and tabulations. Until Final Completion of the work, Contractor shall continually evaluate the status of the Project, comparing it to the current Construction Progress Schedule, or approved revision thereof. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the Current Schedule, or any component thereof.

b. Biweekly Schedules: Each week, the Contractor shall be required to produce and submit to the Project Engineer a biweekly schedule showing all activities planned for the following two-week period. This short-term schedule may be handwritten; however, a two week "look ahead" filter from the Construction Progress Schedule is preferred. The biweekly schedule shall clearly indicate all work planned on a crew basis for the two-week period.

c. Recovery Schedules: If completion of any part of the work, delivery of equipment or materials, or submission of submittals or required documentation is behind the approved Construction Progress Schedule and will impact the end date of the work past the Contract completion dates (create negative float), the Contractor shall submit in writing, a revised Construction Project Schedule acceptable to the City for completing the work on or before the current Contract completion dates.

d. The revised Construction Project Schedule shall take some or all the following actions to demonstrate the manner in which an acceptable rate of progress will be regained, by the following methods:

i. Increase construction manpower in such quantities and crafts as shall substantially eliminate the backlog of work and meet the current Contract completion date.
ii. Increase the number of working hours per shift, the number of shifts per day, the number of workdays per week, or the amount of construction equipment, or any combination of the foregoing.
iii. Reschedule work items to achieve concurrent accomplishment of work activities.

e. Under no circumstances will the adding of equipment or construction forces, increasing the working hours, or employing any other method, manner, or procedure to return to the contractually required completion dates be a justification for additional compensation to the Contractor.

ARTICLE 3. ESTIMATED QUANTITIES

3.01 Any Estimated Quantities for the Project furnished by the City, including those provided on the Bid Form, are approximate only and are: (a) for procurement related comparison purposes only; (b) given as a basis for the pricing; and (c) are not represented to be actual quantities for completion of the Work. Within the limits of available funds, the Contractor will be required to complete the Work at the unit prices provided in the Bid Form/or Price Proposal whether it involves quantities greater or lesser than the estimate. The Contractor will be compensated only for the actual quantity of authorized, and performed, and/or materials furnished.

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ARTICLE 4. SCHEDULE OF VALUES; APPLICATION FOR PAYMENT

4.01 Within seven (7) consecutive calendar days after the Notice to Proceed, as a basis for estimating partial payments, the Contractor shall submit for the approval of the City a certified Schedule of Values, broken down into quantities and unit costs for the various parts of the work, divided as may be directed and aggregating the total sum of the Contract; and if required, he shall submit evidence supporting this schedule.

4.02 The Contractor's requisition for payment shall be submitted on forms supplied by the Contractor and approved by the City and shall be in such numbers of copies as may be designated by the City. Sample forms are included in the Bid Documents. Alternate payment application forms may be utilized provided they are approved by the City, in writing, prior to submission by the Contractor

4.03 If the Project is funded by multiple funding sources, the Contractor may be required to submit separate requisitions for payment to each source, on the forms provided by each source and in accord with all requirements of each individual funding source.

4.04 For Lump Sum projects, the requirements for the Schedule of Values are further defined as follows: a) the Schedule of Values shall delineate the various tasks that comprise the lump sum items. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, when accepted by the Project Engineer, shall only be used as a basis for Contractor's periodic payment applications. No payment will be made to Contractor until such Schedule has been submitted and accepted by Project Engineer, and b) the lump sum item shall be broken down sufficiently to provide a convenient and realistic means for determining the amount of work done during various stages of progress.

ARTICLE 5. PARTIAL PAYMENTS

5.01 The City will review the Contractor's monthly requisitions for Partial Payments to arrive at what is, in its opinion, a fair and just estimate of the materials suitably stored on the site and the amount of work performed on the Contract. At its discretion, the City may allow those materials stored off-site to be included in the monthly requisitions. In the event the City allows the Contractor to include in its requisitions payments for materials stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored material and follow such other procedures as may be required by the City.

5.02 In making such Partial Payments for the Project, retainage shall be held in the amount of 5% of the value of work completed to date. The Retainage does not include additional sums that the City may withhold due to the Contractors failure to comply with construction plans, specifications etc. deemed provisions of this contract.

5.03 Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Project Engineer will estimate the value of work completed and will deduct some amount to arrive at a conservative value which will allow City to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Project Engineer's determinations.

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ARTICLE 6. INSPECTION AND TESTS

6.01 All material and workmanship shall be subject to inspection, examination and testing by the City and/or Project Engineer (in addition to that required by the Specifications) all times during manufacture and/or construction and at all places where such manufacture and/or construction is carried on. Notice of the time of all tests to be made at the site shall be given to all interested parties.

6.02 Contractor must obtain the Engineer's approval of any sources of materials to be incorporated into the Project before beginning to use them for the Project.

6.03 If, at any time before final acceptance of the Project, the City and/or Project Engineer considers it necessary or advisable to examine any portion of the Project already completed by removing or testing out the same, the Contractor shall upon request furnish promptly all necessary facilities, labor and materials. If such work is found to be defective in any material respect because of a fault of the Contractor or any of its subcontractors, or if any work shall have been covered over without the approval or consent of the City (whether it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including labor, material, services of required consultants, additional supervision and administrative costs.

6.04 Testing of materials and inspection will be performed by the City's third party testing agency. The Contractor shall give the Engineer or his representative timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests. The City shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the contract documents.

6.05 Without additional charge, the Contractor shall promptly furnish all reasonable facilities, labor and materials necessary to make tests safe and convenient. Special, full size and performance tests shall be as described in the Specifications.

ARTICLE 7. UTILITIES

7.01 The accuracy and completeness of the utility information shown on the Plans and/or otherwise provided by the City is not guaranteed. The Contractor shall make its own investigation of the extent and location of utilities and of the possibility of relocation work by the utility companies and shall plan its operations accordingly. No claim for any delays, damage or extra work occasioned thereby will be allowed.

7.02 The Contractor shall allow others access to the Project for the purpose of placing, relocating or maintaining utilities, and he shall cooperate in every way in the performance of this Project.

7.03 The Contractor shall notify the utility owners well in advance of the time the Contractor proposes to perform any work which would endanger utility installations, and the Contractor shall cooperate with the utility owners in relocating and/or protecting such installations during construction operations.

7.04 No payment will be made to the Contractor for locating, protecting and making arrangements for relocating public utilities or for any delays caused thereby. The Contractor shall include

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all the costs of this Project in the other scheduled items of the Contract.

ARTICLE 8. SEDIMENTATION AND EROSION CONTROL

8.01 All watercourses shall be protected from sedimentation, both during and after construction. The Contractor shall control erosion and sedimentation problems in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control prepared by the Connecticut Council on Soil and Water Conservation, dated 2002, as amended.

8.02 The Contractor shall submit the Sedimentation and Erosion Control Plan for the approval of the Project Engineer within seven (7) consecutive calendar days after the Notice to Proceed.

8.03 The Contractor shall be responsible for providing silt fences, staked haybales and other temporary erosion control measures which may be required to properly complete this Project. No extra compensation will be allowed, due to water or precipitation levels fluctuation.

ARTICLE 9. PROTECTION OF ENVIRONMENTAL RESOURCES

9.01 The environmental resources within the Project boundaries and those affected outside the limits of permanent work under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine its activities to areas defined by the Plans and Specifications. Environmental protection shall be as stated in the following subparagraphs:

a. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure or destroy land resources including trees, shrubs, vines, grasses, topsoil and landforms without special written permission from the property owner. No ropes, cables or guys shall be fastened or attached to any trees for anchorage unless specifically authorized in writing by the Project Engineer. Where such special emergency use is permitted, the Contractor shall always provide effective protection for land and vegetation resources as defined in the following subparagraphs.

b. Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under the Contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to its personnel the purpose of marking and/or protection of all necessary objects.

c. Trees, shrubs, vines, grasses, landforms and other landscape features indicated and defined on the Plans to be preserved shall be clearly identified by marking, fencing or wrapping with boards, or any other approved techniques.

d. Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earth work shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the City and/or Project Engineer.

e. Runoff from the construction site shall be controlled by the construction of diversion

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ditches, benches and berms to retard and divert runoff to protected drainage courses, and any measures required by area wide plans approved under Paragraph 208 of the Clean Water Act, as amended.

f. The Contractor shall construct or install all temporary erosion control features as indicated in the submitted Sedimentation and Erosion Control Plans or directed by the City and/or Project Engineer. Temporary erosion control measures such as berms, dikes, drains, grass and mulching shall be maintained until construction of the Project is completed.

g. The Contractor's field offices, staging areas, stockpile storage and temporary buildings shall be placed in areas designated on the submitted Plan. A temporary move or relocation of the Contractor's facilities shall be made only on approval by the City and/or Project Engineer.

h. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby watercourses.

i. Spoil areas shall be managed and controlled to limit spoil areas and to prevent erosion of soil or sediment from entering nearby watercourses. Spoil areas shall be developed in accordance with the grading plan indicated on the Plans.

ARTICLE 10. ENVIRONMENTAL PROTECTION PLAN

10.01 Within seven (7) consecutive calendar days after the Notice to Proceed, and prior to commencement of any work on site, the Contractor shall submit an Environmental Protection Plan for the approval of the City in accordance with the provisions herein specified. The plan shall include but not be limited to the following:

a. A list of Federal, State and Local laws and regulations concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws and regulations.

b. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and groundcover, landscape features, air and water quality, fish and wildlife, soil, historical, archeological and cultural resources.

c. Procedures to be implemented by the Contractor to provide the required environmental protection and to comply with applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the Environmental Protection Plan.

d. The location of the nearest suitable solid waste disposal area and a permit allowing the Contractor to use those facilities.

e. Drawing showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess' or spoil materials.

f. Environmental monitoring plans for the job site, including land, water, air and noise monitoring as necessary, and as required by the Project Engineer.

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g. Environmental monitoring and management plans for the any endangered wildlife or plant species as determined by CT DEEP, City or Project Engineer.

h. Traffic control plan when necessary.

i. Methods of protecting surface and ground water during construction activities.

j. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan should include measures for marking the limits of use areas.

ARTICLE 11. TEMPORARY UTILITIES

11.01 Unless expressly otherwise provided for in the Contract Documents the Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities of any nature whatsoever needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 12. ABBREVIATIONS

12.01 Where one of the following abbreviations are used in the Contract Documents, it shall have the meaning set forth opposite each below:

AASHTO American Association of State Highway and Transportation Officials

ACI	American Concrete Institute
AGA	American Gas Association
AIEE	American Institute of Electrical Project Engineers
AISC	American Institute of Steel Construction
API	American Petroleum Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWG	American (or Brown and Sharpe) Wire Gauge
AWWA	American Water Works Association

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CONNDOT	Connecticut Department of Transportation
DEP	Department of Environmental Protection
EDR	Equivalent Direct Radiation
EPA	Environmental Protection Agency
FWQA	Federal Water Quality Administration
IBR	Institute of Radiator and Boiler Manufacturers
MCB	Master Car Builders
NBS	National Bureau of Standards
NEC	National Electrical Code (latest edition)
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NFPA	National Fire Protection Agency
NPT	National Pipe Thread
SMACNA	Sheet Metal and Air Conditioning Association
OS&Y	Outside Screw and Yoke
STLWG	United States Steel Wire, Washburn and Moen, American Steel And Wire Companies and Roebling Gauge
USS GAUGE	United States Standard Gauge
WOG	Water, Oil, Gas
WSP	Water Steam Pressure

"Federal Specification" means a Federal specification issued by the Federal Supply Services Administration, Washington, D.C.

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ARTICLE 13. SUBSURFACE EXPLORATION

13.01 Where applicable, boring logs, probes and related information contain data regarding subsurface conditions at the dates and location indicated. This information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true or approximately true picture of the actual subsurface conditions to be encountered. The boring log data is contained within the Appendices of the Technical Specifications.

ARTICLE 14. CONTRACT AND CONTRACT DOCUMENTS

14.01 The City shall interpret its own requirements. In case of any conflict or inconsistency between the provisions of this signed portion of the Contract and those of the Specifications, the provisions of the signed portion of the Contract shall govern.

14.02 The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the priority of the documents shall be in accordance with Section 1.2 of the Contract.

ARTICLE 15. SHOP DRAWINGS, CATALOG CUTS AND SAMPLES

15.01 The Contractor shall promptly submit to the Project Engineer five copies of each submittal prepared in accordance with the approved schedule. After examination of such submittal by the Project Engineer and the return thereof, the Contractor shall make such corrections to the submittal as have been indicated and shall furnish the Project Engineer with five corrected copies. If requested by the Project Engineer, the Contractor must furnish additional copies. Regardless of corrections made on, or approvals given to, such submittal by the Project Engineer, the Contractor shall nevertheless be responsible for the accuracy of such submittal. The Contractor shall also be responsible for the submittal's conformity to the Submittal and Specifications unless the Contractor notifies the Project Engineer in writing of any deviations at the time of submission of the submittal.

15.02 Submittal of all fabricated work shall be submitted to the Project Engineer and no work shall be fabricated unless it is done at the Contractor's own risk until approval has been given by the Project Engineer and City.

15.03 The Contractor shall submit all submittals on dates sufficiently in advance of requirements to enable the Project Engineer and City to properly review them. This period shall include time to correct, resubmit and recheck, if necessary, and no claim for delay will be granted to the Contractor because of the Contractor's failure in this respect. The Project Engineer and City will be given a minimum of fourteen (14) consecutive calendar days for the initial review of each submitted submittal.

15.04 All submitted submittals must bear the approval stamp of the Contractor and reference conformance to the applicable provisions of the Specifications as evidence that the Contractor has checked the drawings. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for resubmission. If the submittals show variations from the requirements of the Contract Documents because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in the letter of submission to the Project Engineer. If the variation is acceptable to the Project Engineer and City, suitable action may be taken for proper adjustment. If not acceptable, the Contractor shall not be relieved from the responsibility for executing the work in accordance with the Contract Documents, although such submittals had been approved.

15.05 Where submittals are submitted by the Contractor that indicate a departure from the Contract Drawings which the Project Engineer deems to be a minor adjustment and in the City's interest and not involving a change in the Contract price or an extension in time, then the Project Engineer may

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approve the drawings. Such approval will contain, in substance the following:

The modification shown on the attached drawings is approved in the interest of the City to affect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time. The modification is generally subject to all Contract stipulations and covenants, and it is without prejudice to all rights of the City under the Contract.

The approval of submittals will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract nor of the responsibility for any errors that may exist.

15.06 The Contractor agrees to hold the Project Engineer and the City harmless and to defend them against damage or claims for damages arising out of injury to others or to property of third parties which result from errors on shop or working drawings, whether they have been approved by the Project Engineer and/or the City.

15.07 Working Drawings. When required by the Contract or when ordered to do so by the City Representative, the Contractor shall prepare and submit 4 copies of the working drawings to the City Representative for review. These drawings shall be submitted sufficiently (at least 15 consecutive calendar days) in advance of the proposed use, to allow for their review, and any necessary revisions, without delay of the Project. No work covered by these working drawings shall be done until the drawings have been submitted to the City Representative for review and the City Representative's comments have been appropriately taken into account and implemented. The furnishing of the working drawings shall not serve to relieve the Contractor of any part of its responsibilities under the Contract.

ARTICLE 16. CONTRACTOR'S TITLE TO MATERIALS

16.01 No material, supplies or equipment for the work shall be purchased by the Contractor, or by any Subcontractor, subject to any chattel mortgage or under any conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work. The Contractor further warrants that, upon completion of all work, he will deliver the premises, together with all improvements and appurtenances constructed thereon, to the City free of any claims, liens, charges or encumbrances. The Contractor further warrants that neither the Contractor nor any person, firm or corporation furnishing any material, labor or equipment for any work covered by this Contract shall have a right to lien upon the premises or any improvement or appurtenance thereon.

ARTICLE 17. "OR EQUAL" CLAUSES

17.01 Unless otherwise provided for in the Bid Documents, the Contract will be based on material and equipment described on the Bid Documents without consideration of possible substitute or "equal" items. However, after award of the Work, whenever a material or article required is specified or shown on the plans by using the name of a proprietary product or of a particular vendor or manufacturer, any materials or article which, in the sole discretion of the Project Engineer, is equal or superior to the specified item to material, may be considered an "equal." Requests for substitutions must be supported by evidence such as technical data, test results, or other pertinent information that demonstrates that the substitute offered is equal to or better than the specification's requirements. Such items shall not be purchased or installed without the written approval of the Project Engineer. In all cases, only new materials shall be used for the work.

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ARTICLE 18. REPRESENTATIONS OF THE CONTRACTOR

18.01 The Contractor represents and warrants:

(a) That he is financially solvent and that he is experienced and competent to perform the type of work or to furnish the plant, material or equipment to be performed or furnished by him; and

(b) That he is familiar with all Federal, State and municipal laws, ordinances, orders and regulations which may in any way affect the work of those employed therein, including but not limited to any special acts relating to the work or to the project of which it is a part; and

(c) That such permanent and temporary work required by the Contract Documents to be done can be satisfactorily constructed and be used for the purpose for which it is intended, and that such construction will not injure any person nor damage any property; and

(d) That he has carefully examined the drawings, specifications and addendum (or addenda) if any, and the site of the work, and that, from his own investigations, he has satisfied himself as to the nature, quality and quantity of surface and subsurface materials likely to be encountered; of the character of equipment required for the work; of other facilities needed for the performance of the work; of the general and local conditions and of all other materials which in any way may affect the work and its performance; and

(e) That he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without injury to persons or property; and that he can provide the necessary equipment, labor and materials to complete the contract work within the specified contract duration.

ARTICLE 19. PROTECTION OF WORK AND PROPERTY (EMERGENCY)

19.01 The Contractor shall always safely guard and protect the City's property from injury or loss in connection with this contract. He shall always safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in the Contract or by the City or its duly authorized representatives.

19.02 In case of an emergency that threatens the loss or injury of property and/or safety of life, the Contractor will be allowed to act in a diligent manner without previous instructions from the City. He shall notify the City immediately thereafter.

19.03 Where the Contractor has not acted but has notified the City of an emergency threatening injury to persons or damage to the work or to any adjoining property, he shall act as instructed or as authorized by the City.

19.04 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided elsewhere in the Contract Documents.

ARTICLE 20. WEATHER CONDITIONS

20.01 In the event of temporary suspension of the work, or during inclement weather, or

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whenever the City shall direct, the Contractor shall carefully protect his work and materials against damage or injury from the weather. The Contractor shall cause all his subcontractors to provide the same protection for their portion of the work. If, in the opinion of the City, any work or material was damaged or injured by reason of failure on the part of the Contractor, or any of his subcontractors, so to protect his work, or otherwise damaged by the negligence of the Contractor or any of his subcontractors or their agents or servants, or is otherwise defective, such materials shall be removed and replaced at the expense of the Contractor.

20.02 For projects involving asphalt paving, all work shall be temporarily suspended, upon direction of the City, when the Contractor can no longer properly pave exposed areas in accordance with the plans and specifications during inclement weather or during winter months.

ARTICLE 21. SUBLETTING

21.01 The Contractor is not to assign, transfer or sublet the Contract in whole or in part to any other person or persons without written permission from the City. The Contractor cannot abridge the terms of the Contract in any way without written permission of the City. The Contractor must keep the Contract in his name and control until all work is completed and finally accepted by the City. The Contractor shall likewise not assign any of the money payable under this Contract. Approval by the City of the subletting of any part of the work shall not, under any circumstances, relieve the Contractor or his Surety of any liabilities or obligations under the terms of the Contract Documents.

21.02 The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of the persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Should any subcontractor violate any of the terms of these specifications, the City may, at its option, require the Contractor to end and terminate such subcontract.

21.03 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract and the General Conditions and other provisions of the Contract Documents. This language is to be applicable insofar as necessary to the work and is to give the Contractor the same power over as regards terminating any subcontract as the City may exercise over the Contractor under any provisions of the Contract Documents.

21.04 Nothing contained in this Contract shall create any contractual relation between the City and any subcontractor.

ARTICLE 22. SUBSTITUTE BOND

22.01 If, at any time, the Contractor's Surety or Sureties, or the carriers of other insurance herein specified to be written, become insolvent or, in a reasonable judgment of the City, become unsafe or unsound then, upon five days written notice from the City to the Contractor, the Contractor shall substitute such Performance and Labor and Material Bond or insurance with such other Surety or carrier in such form as shall be acceptable to the City. Any additional premium caused by such a substitution shall be paid for by the Contractor. No further payments will be deemed due nor will be made until the new Surety or Sureties have furnished such an acceptable bond to the City.

ARTICLE 23. RIGHT TO WITHHOLD PAYMENTS

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23.01 The City may withhold from the Contractor so much of any approved payments due as may in the judgment of the City be necessary to:

a. Assure the payment of any lien, stop notice or claim, filed with the City for work, labor, or materials done, performed or delivered and used in the prosecution of the work herein provided for (whether in strictly legal form or otherwise)

b. Protect the City from loss due to defective work not remedied or through any improper or defective machinery, implements or appliances used by the Contractor or for failure of the Contractor to fully comply with any requirements of the Contract.

c. Protect the City from loss due to injury to persons or damage to the work or property of other contractors, subcontractors or others caused by the act' or neglect of the Contactor or any subcontractors.

23.02 The City shall have the right, as agent for the Contractor, to apply any amounts so withheld in such manner as the City may deem proper to satisfy such claims or to secure such protection. Such applications of such money shall be deemed payments to the account of the Contractor.

23.03 Notwithstanding the above, the Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials furnished.

ARTICLE 24. PAYMENTS BY CONTRACTOR

24.01 The Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials.

ARTICLE 25. NOTICE OF WARNING

25.01 If the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work; or refuse or fail to supply enough properly skilled workmen or proper materials; or refuse or fail to prosecute the work or any part thereof in accordance with the Contract Documents or with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof); or fail to complete the work within said period; or refuse to regard laws ordinances, codes or instructions of the City then the City shall forward A Notice of Warning to the Contractor by registered mail at the address given in the Contract. In the event the Contractor fails to comply with said Notice of Warning within five (5) consecutive calendar days from receipt thereof, the City shall have the right to terminate the Contract.

ARTICLE 26. PROGRESS MEETINGS

26.01 Progress meetings will be held weekly at locations, dates and times selected by the City for the purpose of reviewing, scheduling and coordinating the Project's progress as well as other matters.

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ARTICLE 27. PERMITS

27.01 The Contractor shall keep himself fully informed of all existing and current Municipal, State or Federal ordinances, regulations or laws in any way limiting or controlling the operations or actions of those engaged in the work or affecting the materials supplied to or by them. The Contractor shall always observe and comply with all such valid and binding ordinances, laws or regulations. The Contractor shall protect and indemnify the City and its representatives against any claims arising from, or based upon, any violation of the same.

ARTICLE 28. RIGHT TO USE THE WORK

28.01 The City may enter upon the use of the whole or of any portion of the work, which may be in condition to use, at any time before its final acceptance of the Project. Such use shall not constitute, or be evidence of, acceptance by the City or by the Project Engineer of the whole or any part of the material furnished, or work performed under the Contract.

ARTICLE 29. PROVISIONS REQUIRED BY LAW

29.01 Every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If, through mistake or otherwise, any such provision is not inserted, then, upon application of either party, the Contract shall forthwith be physically amended to make such insertion.

29.02 If this Contract contains any unlawful provisions not an essential part of the general structure of the Contract, and which shall not appear to have been a controlling or material inducement in the making thereof, the same shall be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 30. WAIVER

30.01 Neither the inspection by the City or Project Engineer or by any of their employees; nor any order, measurement or certificate by the Project Engineer; nor any order by the City for the payment of any money; nor any payment for or acceptance of the whole or any of the work by the Project Engineer for the City; nor any extension of time; nor any possession taken by the City or its employees shall operate as a waiver of any provision of this Contract or of any power herein reserved to the City; nor shall such action waive any right to damages herein provided. Nor shall any waiver of any breach of the Contract constitute a waiver of any other or subsequent breach. Any remedy provided in this Contract shall be construed as cumulative - i.e., in addition to each and every other remedy herein provided.

ARTICLE 31. USE OF PREMISES AND REMOVAL OF DEBRIS

31.01 The Contractor expressly undertakes at his/her own expense:

a. To take every precaution against injuries to persons or damage to property;

b. To store apparatus, materials, supplies and equipment in such orderly fashion at the site so as to not unduly interfere with the progress of the work or the work of any other contractor;

c. To place upon the work or any portion thereof only such loads as are consistent with the

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safety of that portion of the work;

d. To frequently clean up all refuse, rubbish, scrap materials and debris caused by the Contractor's operations to the end that at all times the site of the work shall present a neat, orderly and work manlike appearance;

e. To remove all surplus material; falsework; temporary structures including foundations thereof; plant of any description and debris of any nature resulting from the Contractor's operations before final payment is

f. To put the site in a neat orderly condition, to remove all clean-up materials, to remove such materials from the construction site, and to deposit them in a refuse disposal site at his/her expense; and

g. To affect all cutting, fitting or patching of work required to make the same conform to the Drawings and Specifications and, except with the consent of the City, not to cut or otherwise alter the work of any other contractor.

ARTICLE 32. RIGHT-OF-WAY AND SUSPENSION OF WORK

32.01 Land and rights-of-way for the purposes of this Contract will be furnished by the City to the extent shown on the Drawings. The City will use diligence in acquiring said land and rights-of-way as speedily as possible. However, it is possible that not all land and rights-of-way will be obtained as herein contemplated before construction commences. In such case the Contractor shall begin the work upon such land and rights of-way as the City may have previously acquired. No claim for damages whatsoever will be allowed by reasons of the delay in obtaining the remaining lands and/or rights-of-way. Should the City be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of litigation or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to withdraw from the Contract because of these occurrences. In the event of any of the above occurrences, the time for completion of the work may be extended in the manner provided elsewhere in the Contract Documents.

ARTICLE 33. CONSTRUCTION EQUIPMENT AND MACHINERY

33.01 The Contractor shall furnish and maintain, at its own cost and risk, all tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and all other similar work or material necessary to insure speed, convenience and safety in the execution of its Contract. All such items shall be subject to approval of the City, upon the Project Engineer's recommendation, as to general stability, type and location, but the responsibility for proper design, strength and safety shall remain with the Contractor. All such items shall comply with OSHA regulations and all other applicable codes, statutes, rules and regulations.

33.02 The Contractor shall provide all drains, drainage, ditches and pumping apparatus (including power and attendance for same) that may be necessary to keep all excavations and sub-grade work free from water.

33.03 All machines, equipment, trucks and vehicles used in the prosecution of the work, or in connection therewith, shall always be in proper working condition. Only gasoline, electric or diesel

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engines shall be used for the power in operating equipment.

33.04 The Contractor shall be responsible for curtailing noise, smoke, fumes or other nuisances resulting from the operations. Contractor shall, upon written notification from the City or Project Engineer, make any repairs, replacements, adjustments or additions and furnish mufflers when necessary to fulfill requirements. No oil tanks for fueling equipment shall be stored less than one hundred (100) feet from any watercourse.

33.05 All costs involved in complying with the stipulations outlined shall be included in the various prices set in the proposal.

ARTICLE 34. CONTRACTOR'S GENERAL WARRANTY PERIOD

34.01 The One Year General Warranty Period shall commence on the date of the written notice of final acceptance of the Project by the City and during such time Contractor shall guarantee his work is free from faulty materials and lack of workmanship. Within the One Year General Warranty Period, if any portion of the Work in the City's opinion require repairing, replacing or rebuilding, the Contractor shall start such repairs within five (5) consecutive calendar days after receipt of notice from the City. If the Contractor fails to or neglects to start the repairs within five consecutive calendar days, the City may employ such other person or persons as it may deem proper to make such repairs. The City will charge the Contractor the cost thereby incurred. Nothing herein provided shall limit the liability of the Contractor or Surety to the City for non-performance of the Contractor's obligations at any time.

34.02 The Payment and Performance Bonds, and Material Bond, if required, shall remain in full force and effect through the one-year General Warranty Period.

34.03 Deficiencies in the Work discovered after the date of the written notice of final acceptance of the Project by the City shall be deemed General Warranty Work. Such deficiencies shall be corrected by Contractor under this Article.

34.04 The Contractor shall remedy any defects due to faulty materials or workmanship within thirty (30) consecutive calendar days of receiving notice thereof by the City. Should the Contractor fail to correct the deficiency within thirty (30) consecutive calendar days, the City may perform the corrective work and Contractor shall be responsible for all reasonable costs incurred by the City in performing such correction.

ARTICLE 35. PROCEDURE IN CONSTRUCTION

35.01 The Contractor shall start work and carry it on at such point or points and in such order of precedence and at times and seasons as may be determined by the City. The Contractor shall complete the various portions of the work in accordance with the schedule approved by the City.

35.02 Complete organization, complement of equipment and ample materials shall be on hand before actual work commences. The Contractor shall arrange his/her organization, plant, equipment and materials so that construction operations will be carried on continuously. The Contractor will not be permitted to reduce the force of workers or remove any equipment from the work if such reduction or removal impairs the progress of the work.

35.03 If the City awards more than one contract to the Contractor, the Contractor shall be

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required to prosecute the work on each contract simultaneously. The Contractor will be required to maintain a separate and independent organization and staff, labor forces and machinery on each contract to complete the work within the time set forth for the respective contracts.

ARTICLE 36. APPRENTICES

36.01 Apprentices shall be permitted to work only under a bona fide apprenticeship program registered either with the State Apprenticeship Council or with the Bureau of Apprenticeship, United States Department of Labor.

ARTICLE 37. CONTROL OF WORK

37.01 The Contractor shall abide by all orders, directions and requirements of the Project Engineer in the performance of the work.

37.02 In the event the Contractor is not personally present at the project site, he/she shall have a superintendent present at the site that possesses more than adequate communication skills. The superintendent must have proper knowledge of all applicable project requirements and conditions and must have authority to fully represent the Contractor with power to act and to be the recipient of orders and to obey all the instructions of the Project Engineer and/or the City. If proper provision for the carrying out of this stipulation is not made, then the Contractor shall be held responsible for the execution of such orders and instructions which the Project Engineer and/or City may deem necessary to issue to any employee regarding the work. The City or Project Engineer may order the work stopped until a duly authorized representative of the Contractor appears and receives instructions; no claims for damages or for an extension time in which to complete the work because of such delay will be allowed by the Contractor.

37.03 In all cases, the Project Engineer shall determine classifications, quantities, quality, acceptability and fitness of the several kinds of work that are to be paid for under the Contract. The Project Engineer and/or City shall interpret the Plans and Specifications and any extra work orders and shall determine all questions in relation to said work and to the construction thereof.

37.04 The Contractor shall not employ any plant, equipment, material, methods or workers to which the City objects. The Contractor shall not remove any plant, materials, equipment or other facilities from the site of the work without the City's permission.

ARTICLE 38. CITY'S CONTROL NOT LIMITED

38.01 The enumeration in this Contract of particular instances in which the opinion, judgment, discretion or determination of the City shall control, and in which work shall be performed to the City's satisfaction and approval or inspection, shall not imply that only matters similar to those enumerated shall be so governed; without exception all the work shall be so governed and performed.

ARTICLE 39. AUTHORITY AND DUTIES OF INSPECTORS

39.01 Inspectors shall be authorized to inspect all work done and all materials furnished. Such an inspection may extend to all parts of the work and to the preparation or manufacture of the materials to be used. In the case of any dispute arising between the Contractor and an Inspector as to materials

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furnished, or as to the manner of performing the work, the Inspector shall have the authority to reject material or to suspend the work until the question at issue can be referred to, and decided by, the City.

39.02 The Inspector shall not be authorized to revoke, enlarge, relax or release any requirements of these Specifications nor approve or accept any of the provisions of the Contract Documents. The Inspector shall in no case act as a foreman or perform other duties for the Contractor.

The Inspector shall not interfere with the management of the work by the Contractor. Any advice which the Inspector may give the Contractor shall not be binding on the City or the Project Engineer in any way. Such advice will not release the Contractor from the fulfillment of the terms of the Contract.

ARTICLE 40. INSPECTION AND CORRECTION OF WORK

40.01 All material furnished and work done will be inspected by the Project Engineer. The Project Engineer shall condemn any work or materials not in accordance with the Contract Documents. All condemned work and materials shall be removed, and other work and materials furnished in accordance therewith. All materials rejected by the Project Engineer as being unfit for the clause in the Specifications to which they refer shall be removed from the site. Removal shall be within twenty-four (24) hours or shorter if the Project Engineer so directs. Should the Contractor refuse to remove the work and materials as ordered, then the Project Engineer may stop the Contractor from proceeding with the work. The City may supply workers and materials to remove the condemned work and materials at the expense of the Contractor.

40.02 Failure on the part of the Project Engineer, or any authorized Inspectors, to detect inferior work or materials, and to condemn the same, shall not be construed to imply an acceptance of such work or materials. Such failure shall not be construed as barring the City, at any subsequent time, from the recovery of such sum of money from the Contractor which may be required to construct or to build anew all portions of the work in which fraud was practiced, improper work executed, or improper material furnished and built into the work. The Contractor shall furnish all necessary facilities should it be desirable at any time to make an examination of the work already completed.

40.03 If any work is found defective in any respect, the expense of the examination must be borne by the Contractor. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided for elsewhere in the Contract Documents. If all work is found satisfactory, the expense of the examination will be paid for as Extra Work.

40.04 If, in the opinion of the City, it is undesirable to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the Contractor's compensation hereunder shall be reduced by such amount as may be equitable under all circumstances.

ARTICLE 41. CONTRACTOR'S OBLIGATIONS

41.01 The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and material, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by this Contract. All to be accomplished within the time specified; in accordance with the provisions of this Contract and Specifications; in accordance with the Plans and Drawings pertaining to this Contract; in accordance with any and all supplemental Plans and Specifications and in accordance with the directions of the City as given from time to time during the progress of the work. The Contractor shall furnish,

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erect, maintain and remove such construction plant and such temporary work as may be required. The Contractor alone shall be responsible for the safety, efficiency and adequacy of the plant, appliances and methods. The Contractor shall be responsible for any damage, which may result from their failure or from their improper construction, maintenance or operation. The Contractor shall observe, comply with and be subject to all terms, conditions, requirements and limitations of the Contract and the Specifications. The Contractor shall do, carry on and complete the entire work to the satisfaction of the City.

41.02 The Contractor shall be solely responsible for all the work and shall provide all precautionary measures necessary for preventing injury to persons or damage to property. All injury or damage, of whatever nature, resulting from the work, or resulting to persons, from whatever cause, shall be the responsibility of, and shall be borne and sustained by, the Contractor. The Contractor shall hold the City and Project Engineer, or their agents, harmless and shall defend and indemnify the City and Project Engineer, or their agents, against damages, or claims for damages, due to injury to .persons or to property arising out of the execution of work and for damages to material furnished for the work; for infringement of inventions, patents and patent rights used in doing the work; for damages arising out of the use of any improper material, equipment or labor used in the work and for any act of omission by any subcontractors therein. The Contractor shall bear all losses including, but not limited to, losses sustained on account of the character, quality or quantity of any part or all of th e work, or because the nature of the land in or on which the work is done being different from what may have been estimated or indicated, or on account of the weather, elements or other causes, except for acts beyond the reasonable control of the Contractor.

ARTICLE 42. TOILET ACCOMMODATIONS AND DRINKING WATER

42.01 The Contractor shall provide necessary sanitary toilet accommodations and drinking water for the workers. Separate facilities shall be provided for female workers.

ARTICLE 43. SAFETY AND HEALTH REGULATIONS

43.01 These documents, and the joint and several phases of construction hereby contemplated are to be always governed by applicable provisions of the Federal law(s), including, but not limited to, the latest amendments of the following:

a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956.

b. Part 1910 - Occupational Safety and Health Standards; Chapter XVII of Title 29, Code of Federal Regulations.

c. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

43.02 This project is subject to all the Safety and Health Regulations (see 29 CFR 1926m as amended) as promulgated by the U. S. Department of Labor on June 24, 1974. The Contractor shall thoroughly familiarize him/herself with the requirements of these regulations.

ARTICLE 44. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

44.01 Subsequent to award of the contract, except for the Contractor's executed set, all drawings and specifications are the property of the City. The City shall furnish one (1) paper and one electronic

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set, in PDF Format, of the construction drawings and specifications to the Contractor without charge. No additional sets will be furnished by the City. Such drawings and specifications are not to be used in other work.

ARTICLE 45. RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

45.01 Except to the extent prohibited by Federal or State statute, the Contractor shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

Section 2(b) each contract for any such project covered by this section under the supervision of the State or any of its agents shall contain the following provision:

"In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the State who are and, continuously for at least six months prior to the date hereof, have been residents of the State, and if no such person is available, then to residents of other states."

ARTICLE 46. LISTING OF EMPLOYMENT OPENING

46.01 This Contract is executed subject to the Governor's Executive Orders No. 3 and No. 17, which are hereby made a part of this agreement. The Governor's Executive Order No, 17 requires, inter alia, that all contractors and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area in which the work is to be performed or where the services are to be rendered. Failure of the Contractor to conform to the requirements of the Governor's Executive Orders No. 3 and No. 17, and any orders, rules, or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the City.

ARTICLE 47. SERVICE OF PROCESS

47.01 The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoint(s) the Secretary of State of the State of Connecticut, and successors in office, agent for service of process. Such service, as arising out of, or because of, this Contract. Such appointment shall in effect throughout the life of this Contract and for a period of six (6) years thereafter.

ARTICLE 48. CITY OF WATERBURY ORDINANCE CHAPTER 34

48.01 For projects subject to the City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34), the provisions thereof are in addition to any requirements of these General Conditions, and to any requirements of other funding sources for the Project, but only to the extent permitted by federal and state law.

ARTICLE 49. WAGE RATES

49.01 The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein, contracted to be done shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. The amount of payment or

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contribution paid or payable on behalf of each such employee to any employee welfare fund (as defined in Section 31-53 of the Connecticut General Statutes) shall also be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. If the Contractor is not obligated by agreement to make such payment or contribution on behalf of such employees to any such welfare fund, the Contractor shall pay to each employee the amount of payment of contribution for his classification on each payday as part of his wages.

49.02 For Prevailing Wage Rate projects, the Contractor shall furnish to the Project Engineer certified copies of payrolls showing the names of its employees working on the Project, the specific days and hours and number of hours that each of them has spent in doing so, and the amount paid to each person for said work.

ARTICLE 50. SCHEDULE AND POSTING OF MINIMUM WAGE RATES

50.01 Where applicable, the Contractor, and every subcontractor, shall post a legible copy of the Minimum Wage Rates and Classifications included in the Contract Documents. This posting shall be in a prominent and accessible place at the site of the work (See ARTICLE 49). The schedule shall show all determined minimum wage rates for the various classes of laborers and mechanics to be engaged to work on the project. The schedule shall also show all deductions, if any, required by law to be made from wages earned by the laborers and mechanics so engaged.

50.02 The rates established by each schedule are the minimum and all employees shall be paid no less than the established rate for each trade or occupation. In the case of a conflict between schedules in anyone trade or occupation, the higher rate listed shall control and such higher rate shall be the minimum.

50.03 State: Where applicable, the minimum rates of wages and schedule of supplements to be provided for the various trades shall be in accordance with the Prevailing Wage rate Schedule included herein. The rate of wages and schedule of supplements for any trade not appearing or mentioned in this schedule shall be in accordance with the prevailing rates established for that trade by the Connecticut Department of Labor or by the Comptroller or other analogous officer of the City of Waterbury. The minimum wages required to be paid shall include supplements for hospital, surgical, medical or other benefits as determined by all applicable sections of the General Statutes of the State of Connecticut. The Contractor shall file a Wage Certification Form with the Labor Department of the State of Connecticut prior to beginning work on the site.

50.04 If for any reason and at any time, the Federal Government, the State of Connecticut, or the City of Waterbury, shall in any way supplement, change or amend the Prevailing Wage Rates Schedule, then the Contractor or subcontractor shall follow such Schedule as supplemented, changed or amended. In no case shall the Contractor or subcontractor be entitled to any additions, compensations or extras because of any supplement, change, amendment or predetermination of the Prevailing Wage Rate Schedule.

50.05 Federal Wage Rates, where applicable, shall be applied in any case where they exceed the State of Connecticut Minimum Wage rates or in any case where a rate has not been established by the State.

ARTICLE 51. COMPUTATION OF WAGES AND OVERTIME COMPENSATION

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51.01 The Contractor and each subcontractor shall comply with all applicable Federal, State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project. The Contractor and all subcontractors shall also comply with all applicable Federal, State and local ordinances with respect to compensation for overtime hours worked by laborers and mechanics engaged in work on the project.

ARTICLE 52. WAGE UNDERPAYMENTS AND ADJUSTMENTS

52.01 in addition to any applicable Federal or State regulations, the City may, in the case of underpayment of wages to any worker on the project under this Contract by the Contractor or by any subcontractor, withhold an amount from payments due the Contractor. Said amount to be sufficient to pay such worker the difference between the wages required to be paid the worker under this Contract and the amount actually paid the worker for the total number of hours worked. The City will disburse the amount so withheld by it for, and on behalf of, the Contractor to the employee to whom the amount is due. Such monies withheld pursuant to this article will be in addition to percentages to be retained pursuant to other provisions of the Contract.

ARTICLE 53. CONFORMANCE OF WORK

53.01 The work, during its progress and at its completion, shall conform to the work as shown on the drawings and to the directions given by the Project Engineer from time to time. The work shall be subject to such modifications or additions as the Project Engineer may deem necessary during the execution of the work. In no case will any work be paid for which is performed in excess of such requirements. The work shall also be accomplished in accordance with the Specifications.

ARTICLE 54. DIMENSIONS AND SCHEDULES

54.01 The Contractor will be required to check all dimensions and quantities shown on the drawings or schedules given to him by the Project Engineer. The Contractor shall notify the Project Engineer of all errors therein which he may discover by examining and checking the same. The Contractor shall not take advantage of any error or omission in these specifications, drawings and schedules. The Project Engineer will furnish all instructions should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

ARTICLE 55. PROTECTION FROM STORM

55.01 Should storm warnings be issued, the Contractor shall take every practicable precaution to minimize danger to persons, to the work and to adjacent property. These precautions shall include closing all openings; removing all loose materials, tools and/or equipment from exposed locations; and removing or securing scaffolding and other temporary work.

55.02 The Contractor shall provide measures to prevent stormwater runoff from entering excavation areas.

ARTICLE 56. PROTECTION OF WORK AND MATERIALS

56.01 The Contractor shall assume full responsibility for the protection of the work and materials during the progress of construction, and until final acceptance of the Project by the City, against loss or damage by any cause or agency. The Contractor shall, at his own expense, provide efficient means

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for such protection.

ARTICLE 57. FURTHER SAFEGUARDS

57.01 In case the City or the Project Engineer shall at any time be dissatisfied with the means provided by the Contractor for any aforesaid protection of the work or of any other properties, the City or the Project Engineer may order additional measures and precautions for that purpose. The Contractor, at his own expense, shall immediately comply with such orders and carry them out.

ARTICLE 58. FIRST AID TO INJURED

58.01 The Contractor shall keep on site, ready for immediate use, all articles necessary for giving first aid to injured employees. He shall also provide arrangements for the immediate removal and hospital treatment of any injured employee who may require such treatment.

ARTICLE 59. CONFORMANCE WITH DIRECTIONS

59.01 The Project Engineer may make alterations in the lines, grades, forms, dimensions or materials to be used in the project, or any part thereof, either before or after the commencement of construction. If such alterations diminish the quantity included in any item of work to be done and paid for at a unit price, the Contractor shall have no claim for damages or for anticipated profits on the work thus dispensed with. If the changes increase the quantity included in any such item, such an increase shall be paid for at the stipulated unit price.

ARTICLE 60. COMPETENT HELP TO BE EMPLOYED

60.1 The Contractor shall employ an experienced foreman, craftsmen and other workmen competent in the work in which they are to be engaged. All work shall be accomplished by able, skilled and competent personnel. If any person employed on the work by the Contractor appears to be incompetent or unreliable in any way, he shall be discharged immediately upon the request of the Project Engineer and shall not be employed again upon the work.

ARTICLE 61. STREETS AND SIDEWALKS TO BE KEPT OPEN

61.01 The Contractor shall keep the street and sidewalks in which he may be always working open to pedestrian and vehicular traffic. If, in the opinion of the City or the Project Engineer, the interest of abutters and the public requires it, the Contractor shall bridge or construct plank crossings over trenches at street crossings, roads or private ways. The Contractor shall conduct his work for this project in such manner as the City or the Project Engineer may direct from time to time. No sidewalk shall be obstructed where it is possible to avoid it. No additional payment shall be made to the Contractor for such work.

61.02 The Contractor shall provide all necessary fire crossings at principal intersections or ways usually traveled by fire apparatus. The Contractor shall make provision for the passage of fire apparatus to the work area, including along the line of pipeline installations.

61.03 All work shall be conducted in such a manner as to create minimum interference with existing businesses and commercial establishments. Such establishments shall be allowed to always

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conduct business during the construction.

61.04 The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the streets free of the accumulation of sand and other similar materials.

ARTICLE 62. LIGHTS, BARRIERS, FENCES, WATCHMEN AND INDEMNITY

62.01 The Contractor shall put up and maintain such barriers, fences, lighting, and warning lights, danger warning signals and signs as will prevent accidents during the construction. The Contractor will protect the work and will always ensure the safety of the personnel and of the public and places. The Contractor shall defend, indemnify and save harmless the City and its agents in every respect from any injury or damage whatsoever caused by any act, omission or neglect of the Contractor or his subcontractor, or their servants or agents. Such indemnification shall also include any claims arising out of failure to erect and maintain sufficient railing or fencing as required by Section 13a-111 of the Connecticut General Statutes. The fact that the City may retain control of the premises, or that the City, or its agents, may take action to erect or maintain railings or fencing shall not relieve the Contractor's obligations hereunder.

62.02 The Contractor shall furnish, maintain and use all necessary safety devices; follow all such safety practices in the prosecution of the work and adopt, follow and maintain such additional safety measures as, in the opinion of the Project Engineer, are conducive to safe operation by the Contractor. The Contractor shall cause his subcontractor(s) to also adopt, follow and maintain these measures. All of this shall be done at the Contractor's or subcontractor's own expense. The City shall have the right to order any or all work suspended where, in the opinion of the City, such work is not being carried out in a safe and proper manner or where persons or property are not being properly protected or safeguarded. Such work shall not be resumed until the City's requirements have been met and the City or Project Engineer has directed that work be resumed. Any work so suspended shall be at the Contractor's expense.

62.03 In addition to the above, when as is necessary or when required by the City and/or the Project Engineer, the Contractor shall post signs and shall employ watchmen or flagmen for the direction of the traffic at the site and to always exclude unauthorized persons from the site. The Contractor will not be paid additional compensation for this work.

62.04 At all times the Contractor shall be responsible for excluding all persons from land within easement areas and all persons not directly connected with the work or authorized by the City and/or the Project Engineer to be within the project limits.

ARTICLE 63. WORK OUTSIDE REGULAR HOURS

63.01 Night work or work on Saturdays, Sundays or legal holidays requiring the presence of the City, Project Engineer or an Inspector will not be permissible except in the case of emergency and then only upon approval of the Project Engineer. Should it be desired or required for by the City or Project Engineer to operate an organization for continuous night work, the lighting, safety and other facilities that are deemed necessary for performing such night work shall be provided by the Contractor. For night work on Saturdays, Sundays or legal holidays, if any be performed, the Contractor will receive no extra payment. Compensation for such work shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.

ARTICLE 64. BUS LINE INTERFERENCE

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64.01 Whenever it may be necessary to interfere with any bus lines, notice shall be given to the corporation or agency owning the same. A reasonable amount of time shall be given to said organization to rearrange their schedule(s) as may be necessary.

ARTICLE 65. COLD WEATHER WORK

65.01 The Project Engineer will determine when low temperature conditions are unfavorable for work and may order the work, or any portions of it, suspended whenever, in his opinion, the conditions are not such as will ensure first class work.

65.02 All methods and materials used in the performance and for the protection of the work in cold weather shall be subject to the approval of the Project Engineer. The Contractor shall take the necessary precautions to protect the work from damage and to remove ice and frost from materials. The removal shall include all necessary heating and the additional removal of any resultant water. The Contractor shall also supply any required sand and/or coarse aggregate required to prevent slipping on ice.

65.03 Except for specific work for which the City has issued a Certificate of Partial Acceptance, the Contractor shall be responsible for maintaining the project roadways, sidewalks, ramps, driveway aprons and asphalt pathways from the time of contract signing until final acceptance of the Project by the City. This responsibility will include snow and ice removal, sanding and mechanical sweeping, and patching with materials approved by the Project Engineer for all roadways, sidewalks, ramps, driveway aprons and asphalt pathways, etc. within the project limits.

65.04 The Contractor shall not continue road excavation after bituminous concrete plants have shut down for the winter. At that time, the Contractor shall request a "winter shutdown". The Contractor shall receive no extra payment for any labor, apparatus, tools or materials necessary to comply with the above requirements, but compensation shall be construed items of work as listed in the bid proposal/form.

ARTICLE 66. BLASTING AND EXPLOSIVES

66.01 No blasting shall be allowed without the Contractor securing a permit and permission from the office of the Waterbury Fire Marshall. The Marshall's office is located at 185 South Main Street, Garden Level, (1 Jefferson Square), Waterbury, CT 06702 Phone: (203) 597-3452. The Marshall's office must be advised between 7:00 AM and 10:30 AM of each day's blasting schedule.

66.02 Explosives for blasting shall be stored, handled and used in accordance with the laws, ordinances and regulations of the State of Connecticut; with all local regulations and with such other additional regulations as the City Representative may require. Blasting shall be conducted so as not to endanger persons or property. The Contractor shall be responsible for and shall make good any damages of whatever nature caused by blasting or accidental explosions.

66.03 The Contractor shall also adhere to any additional conditions imposed by the Fire Marshall's office.

Additionally, the Contractor shall have a pre-blast survey conducted of the adjacent area(s) at no cost to the City.

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66.04 Steel or rubber matting shall be used at all blast sites where required by the Bureau of Fire Prevention. Any blast or shot involving more than 99 pounds of explosives must be monitored using seismographs. All seismographs are at the expense of the Contractor. Wire and debris must be cleared from all areas.

66.05 The Contractor shall notify each utility with facilities in proximity to the site of such blasting operations, and any other individuals and entities that may be affected thereby of the Contractor's intention to use explosives; and such notice shall be given sufficiently in advance of any blasting to enable such affected parties to take steps to prevent such blasting from injuring persons or property. Such notice shall not relieve the Contractor of responsibility for damage resulting from its blasting operations.

66.06 Where blasting is required after commencement of construction, insurance, as required by the City's Risk Manager, shall be obtained by the Contractor and approved by the City's Risk Manager.

ARTICLE 67. TUNNELING

67.01 Tunneling will not be permitted without the express written consent of the City.

ARTICLE 68. RESERVED MATERIALS/EXCAVATED MATERIALS

68.01 Materials excavated from trenches and excavations and those used in the construction of the work shall be deposited in such a manner so that they do not endanger persons or the work. Materials shall also be deposited in such a manner that free access may be had at any time to all hydrants and gates near the work. The materials shall be kept trimmed-up so to be of as little inconvenience as possible to public travel or to adjoining tenants. All excavated materials not approved for backfill and/or fill; all surplus material; all rock and all boulders resulting from excavations shall be removed and satisfactorily disposed of off the site by the Contractor at no additional cost to the City.

68.02 Any excavated material not used in the installation of contracted items shall be removed from the site and legally disposed of by the contractor.

ARTICLE 69. OBSTRUCTIONS AND CROSSOVERS

69.01 Whenever any trench or other excavation obstructs pedestrian and/or vehicular traffic in or to any public street, private driveway or property entrance or to private property, the Contractor shall employ such means as may be necessary to maintain pedestrian and vehicular traffic and access. The Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway or property in question as specified or as directed. These crossings shall be maintained for as long as it is not expedient to backfill the excavation or until such time as sufficient, supportive backfill may be placed. No additional payment will be made for this work.

69.02 Movement of construction equipment and all other vehicles and loads over and adjacent to any slotted drainpipe shall be done at the Contractor's risk. Any pipe or backfill which becomes damaged or disturbed through any cause shall be replaced or repaired as directed by the City Representative at the expense of the Contractor and at no cost to the State. Suitable temporary crossovers

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consisting of steel plate or other materials approved by the City Representative shall be employed for a minimum of 7 consecutive calendar days following concrete backfill operations in all areas where vehicular traffic must be maintained or until such time as the pipe installation will withstand loading without damage. All concrete surfaces shall receive a protective coating. End cap installation shall be as recommended by the manufacturer.

ARTICLE 70. DIRECTIONAL SIGNS AND LIGHTS

70.01 Suitable signs, lights and such required items for direct traffic shall be furnished and maintained by the Contractor. No additional payment shall be made for this work.

ARTICLE 71. MAINTENANCE OF WORKPLACE

71.01 The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials. The City or Project Engineer may, at any time, order all equipment, materials and surplus from excavations to be removed from the work area. Debris and all other materials lying outside of the working area shall be promptly removed. Should the Contractor fail to remove such material within 24 hours of notice to remove it, the City or Project Engineer may cause any or all of said materials to be removed by others. The cost of this removal shall be deducted from any monies, which may be, or may become, due to the Contractor under the Contract. In special cases, the City or Project Engineer may cause such materials to be removed without prior notice.

ARTICLE 72. OPERATIONS AT SEVERAL POINTS

72.01 The Contractor may carry on the work simultaneously at more than on point only if, in the opinion of the City or Project Engineer, such action is acceptable and is necessary to insure completion of the work within the specified time.

72.02 The Contractor's Construction Progress Schedule shall be adjusted to provide for work being simultaneously conducted at more than one point (location) at the site or sites.

ARTICLE 73. INTERFERENCE WITH EXISTING STRUCTURES

73.01 Whenever it may be necessary to cross or to interfere with existing culverts, drains, sewers, water pipes or fixtures, guard rails, fences, gas pipes or fixtures or other structures needing special care, due notice shall be given to the City or Project Engineer. Work involving these items shall be done according to the City's or Project Engineer's directions. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it. Any damage that may occur shall be thoroughly repaired. If so directed by the City or Project Engineer, the location of any existing work shall be changed to meet the requirements of the proposed work, if necessary, to leave all in good working order. The entire work shall be the responsibility of the Contractor and the work shall be done at no additional expense to the City.

73.02 The Contractor shall be responsible for repairing all broken or damaged mains or utilities, property markers, monitoring wells, and other existing structures to remain, or outside the Limit of Work, during the progress of the Work. The Contractor shall repair and shall be responsible for all damages to existing utilities and structures with no additional expense to the City. The Contractor shall contact the

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proper utility or authority to correct or make any changes due to utility or other obstructions during the prosecution of the work, but the entire responsibility and expense shall be with the Contractor.

73.03 All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the City and/or utility at no additional expense to the City.

ARTICLE 74. TURF, TOPSOIL AND OTHER REPLACEMENT ITEMS

74.01 Where the construction runs through cultivated or sodded lands, the Contractor shall stockpile the turf and topsoil separately and replace the same after the excavation is filled. The Contractor shall leave the land as nearly as possible in its original condition. Trees, fences, walls, walkways and other items must not be damaged.

ARTICLE 75. MATERIALS

75.01 All materials furnished and used in the completed work shall be new, of the best quality, workmanship, and design and shall be recognized as standard in good construction practices. Whenever a specification number or reference is given, the subsequent amendments (if any) shall be included. The standards set forth in the selection of materials and supplies are intended to conform to those standards adopted by the City. Preference to manufacture shall be given to familiarize the Contractor with the requirements of the Project Engineer when the occasion or choice of materials or supplies so demands.

ARTICLE 76. DEFECTIVE MATERIALS

76.01 No materials shall be laid, installed or used which are known to be, or which may be found to be, in any way defective. Notice shall be given to the Project Engineer of any defective or imperfect material. Defective or unfit material found to have been laid, installed or used shall be removed and replaced by the Contractor with unobjectionable material. This removal and replacement shall be done without additional expense to the City.

ARTICLE 77. INSPECTION AND TESTING OF FURNISHED MATERIALS

77.01 Unless herein provided otherwise, all materials furnished by the Contractor are subject to thorough inspections and tests by the Project Engineer. Any materials condemned or rejected by the Project Engineer as not conforming to the specifications may be branded or otherwise marked. Branded or marked material shall be, on demand, at once removed by the Contractor to a satisfactory distance from the site. Removed materials shall not again be brought upon or near to the work.

ARTICLE 78. SAMPLES AND ORDERING LISTS

78.01 Unless herein provided otherwise, the Contractor shall submit samples of the various materials used on the contract as required by the specifications for testing purposes. Testing of materials and inspection will be conducted by the City's third-party testing agency. The Contractor shall give the Engineer or his representative timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests. The City shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the contract documents. All ordering lists shall be submitted by the Contractor to the Project Engineer for approval and must be approved before the

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ordering of the materials.

ARTICLE 79. SANITARY CONVENIENCES

79.01 Adequate sanitary conveniences, properly secluded from public observation, for the use of workmen on the premises shall be provided and maintained by the Contractor in accordance with the requirements of local and State health authorities. These conveniences shall be maintained in such manner and at such points as shall be approved and their use shall be strictly enforced. Sanitary waste shall be treated and disposed of in a manner satisfactory to, and as directed by, the City and/or the local and State health authorities. Under no circumstances shall sanitary waste be allowed to flow on the surface of the ground or in the work area.

79.02 The cost of sanitary conveniences and the maintenance of same will not be paid for separately, but compensation will be included in the prices stipulated for the items of work as listed in the bid form.

ARTICLE 80. FINISHING AND CLEANING UP

80.01 In completing any backfilling operation, the Contractor shall replace all surface material to the satisfaction of the City. The Contractor shall then immediately remove all surplus material, all tools, and other property belonging to him. The Contractor shall leave the entire street or surrounding area free and clean, in good order and at no additional expense to the City. Backfilling and removal of surplus materials shall follow closely upon the completion of the work. The Contractor shall exercise special care in keeping rights-of-way and private and public lands, upon which work is being performed, clean and free of debris at all times. The Contractor will remove tools and other property belonging to him when they are not being used.

80.02 In case the Contractor fails or neglects to promptly remove all surplus materials, tools and other incidentals after backfilling, or shall neglect to do required paving promptly, the City or Project Engineer may, after 24 hours' notice, cause the work to be done and the cost thereof shall be deducted from any monies then or thereafter due the Contractor.

ARTICLE 81. RIGHTS OF ACCESS

81.01 Nothing herein contained or shown in the drawings shall be construed as giving the Contractor exclusive occupancy of the work area involved. The City or any other Contractor employed by the City, the various utility companies, contractors or sub-contractors employed by Federal, State or local government agencies involved in the general project or upon public rights-of-way, may enter upon or cross the area of work or occupy portions of it as directed or permitted. When the territory of one contract is the convenient means of access to the other, each contractor shall arrange his work in such a manner as to permit such access and to prevent unnecessary delays in the work as a whole. Said access rights shall also include all Federal and State agencies and their representatives that have an interest in said project.

ARTICLE 82. WORK BY OTHERS

82.01 The City reserves the right to do any other work which may connect with, or become a part of, or be adjacent to the work embraced by this Contract, at any time, by contract work or otherwise. The Contractor shall not interfere with, nor obstruct in any way, the work of such other persons as the City

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may employ. The Contractor shall execute his own work in such a manner as to aid in the execution of work by others as may be required. No excavations or backfilling will be permitted if other work by the City is affected.

ARTICLE 83. WORK WITHIN THE LIMITS OF PRIVATE PROPERTY

83.01 Particular attention is hereby directed to the fact that some of the work included under this Contract may have to be done within the limits of properties that are publicly or privately owned. The City, where necessary has, or will have, secured the necessary easements to these properties for construction purposes. The Contractor will be permitted to utilize the areas of the City's easements, subject to all of the conditions and requirements as they may affect the Contractor's operations. The Contractor shall conduct his operations and activities in the performance of the work with all such conditions and requirements as may be imposed by the City or Project Engineer.

83.02 All means and rights of ingress and egress to the work areas and all other areas required for workspace, in addition to the City's easements, shall be the entire responsibility of the Contractor, All costs in connection therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

83.03 The Contractor shall neither use nor occupy public or private lands outside the limits of the City's easements and rights-of-way unless written permission from the owner of the public or private lands has first been obtained. Copies of the written agreements shall be submitted to the Project Engineer prior to entering upon such lands. The Contractor shall be responsible for cooperating with, and for coordinating the prosecution of, the work of this Contract with the public and private property owner. Any abuse to the lands of the public and private property owner shall be immediately corrected by the Contractor, at the Contractor's expense, to the complete satisfaction of the property owner. The Contractor shall take such precautionary measures, as required by the City, to prevent further nuisances, interference or inconvenience to abutting property owners.

83.04 It shall be the Contractor's full responsibility to be familiar with the limitations imposed upon the work of construction within the various properties of public or private ownership and rights-of-way by existing occupancy or use. The Contractor will be required to make every effort to protect trees, shrubs, lawns, gardens, fences, walks, driveways, structures and all and any other appurtenances of the property owners fully and satisfactorily.

83.05 The Contractor shall provide adequate access to all walks, driveways, yards or structures: shall protect all work by the erection or placement of safety guards or barriers, lights and such other incidentals; and where required, shall construct temporary plank crossings or timbers to always permit full use of private facilities. All these actions are to be performed at no additional expense to the City. All other applicable provisions for control of work within the areas of public travel set forth elsewhere herein shall also apply to work within the limits of private ownership.

83.06 The Contractor shall cooperate with the public and private property owners and shall also contact the City and Project Engineer for additional information regarding the requested (or required) length of time needed as a notice to be given to the public or private property owner before the Contractor enters their property to start the construction. In some cases, a certain time to start the work and a certain limited length of time may be required to complete the work on public and private property owners. Furthermore, the Contactor may be required to shutdown construction operations as necessary to prevent undo interference with the operation of private and public business within the project area.

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83.07 Before proceeding with construction operations, the Contractor shall provide suitable and substantial gates or other approved forms of closing gap devices in every fence within the limits of the owner's easements through which the Contractor intends to move or pass equipment and materials. It is the responsibility of the Contractor to negotiate with the owner of each fence all of that owner's comply requirements, in addition to those specified above. It shall also be the responsibility of the Contractor to with all requirements as specified herein and as agreed to with the owner in a manner satisfactory to the owner.

83.08No separate payment will be made for the requirements specified under **"WORK WITHIN THE LIMITS OF PRIVATE PROPERTY"** and all costs in conjunction there with shall be included in the prices stipulated for appropriate items of work as listed in the bid form.

ARTICLE 84. LOADING

84.01 No part of the structures involved in this Contract shall be loaded during construction with a load greater than that calculated for the safety of the structure. Should any accidents or damage occur through any violation of this requirement, the Contractor will be held responsible. If necessary, the Contractor shall request, in writing, the allowable loading from the Project Engineer.

ARTICLE 85. COMPLETION OF WORK

85.01 In addition to the specified or described portions, all other work and all materials, equipment and labor of whatever description which are necessary or required to complete the work, or for carrying out the full intent of the drawings and specifications, as interpreted by the Project Engineer, shall be provided by the Contractor. Payment therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 86. DUST AND SPILLAGE CONTROL

86.01 The Contractor shall exercise every precaution to prevent and to control dust arising out of all construction operations from becoming a nuisance. Water shall be provided and applied as required or as ordered by the Project Engineer to allay dust conditions. Pavements adjoining excavations shall be kept swept and/or washed clean of excess excavated material wherever and whenever directed. Earth piles adjacent to excavations, earth stockpiles and surfaces of refilled excavations shall be always kept moist as directed. No extra payment will be made for providing the dust control measures and for conforming to the requirements specified above. Compensation therefore shall be considered included in the prices stipulated for the appropriate items of work as listed in the bid form.

86.02 The Contractor shall take appropriate measures to control the generation of dust from its activities. Water shall be provided and applied as required or as ordered by the Project Engineer to allay dust conditions.

86.03 All vehicles utilized by the Contractor for delivery or removal of materials shall have appropriate covers to prevent spillage of material during transit.

ARTICLE 87. CARE OF THE WORK

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87.01 The Contractor shall be responsible for all damage to persons or property that occurs because of the Contractor's fault or negligence concerning the prosecution of the work. The Contractor shall also be responsible for the proper care and protection of all material delivered and of all work performed until completion and final acceptance of the Project by the City, whether the same has been covered by partial payments authorized by the Project Engineer.

ARTICLE 88. EMERGENCY WORK

88.01 The Contractor shall file, with the City Engineer and the Project Engineer, if any, the name number of a person authorized by him who may be contacted regarding emergency work at the job site that may be required during non-working hours for reasons of public safety. This person shall be readily available and shall have full Authority to deal with any emergency that may occur.

ARTICLE 89. FIRE PREVENTION AND PROTECTION

89.01. All Federal laws (Occupational Safety and Health Act) and all state and municipal rules and regulations with respect to fire prevention, fire-resistant construction and fire protection shall be strictly adhered to by the Contractor. All work and facilities necessary therefore shall be provided and maintained by the Contractor in an approved manner.

89.02. All fire protection equipment (as per 89.01 above) shall be provided by the Contractor for the protection of the contract work including temporary work and adjacent property. Personnel experienced in the operation of the fire protection equipment and apparatus shall be available whenever work is in progress and at such other times as may be necessary for the safety of the public and of the work.

89.03. Open fires will not be permitted.

ARTICLE 90. PLANIMETER

90.01 For estimating quantities, where the computations of areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas, as utilized by an engineer.

ARTICLE 91. SUPERINTENDENT

91.01 During the entire duration of the project, the Contractor shall employ a competent superintendent in personal charge of the work. The superintendent shall be present during all phases of construction and shall have full authority to act for the Contractor. The superintendent shall continue in this capacity full time for this project, unless: (1) the person ceases to be on the Contractor's payroll; or (2) the person proves to be unacceptable to the City or Project Engineer. Instructions given to the superintendent and/or supervisory subordinates shall be considered as given to the Contractor. A chain-of-command listing shall be submitted by the Contractor to the City and Project Engineer and shall be adhered to in the temporary absence of the superintendent.

ARTICLE 92. CONTRACT ADMINISTRATION COSTS - OUTSIDE REGULAR HOURS

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92.01 The working schedule shall be confined to a five (5) day week ending on Friday. The working day shall be any eight-hour period beginning no earlier than 7:00 AM and ending no later than 7:00 PM. Whenever the Contractor elects to perform work on Saturdays, Sundays or legal holidays observed by the City or to work more than the normal working hours stated above, the Contractor shall pay to the City the extra cost incurred by the City due to the increased cost of contract administration. Payment shall include all cost of inspection and administration for such Saturday, Sunday or legal holiday work or for work more than the normal working day, which the City is obligated to incur and for the extra expense involved in overtime work resulting from the performance of work on these days.

92.02 No work outside regular hours or overtime work shall be planned or executed without the approval of the City.

ARTICLE 93. DAILY REPORTS

93.01 The Contractor shall submit daily activity reports on an approved form for the duration of the project. The report shall indicate all personnel currently employed on the work, including each trade and every sub-contractor; all equipment and whether that equipment was idle for the day; a general description of all work accomplished and any authorized extra work (time and material reports shall be submitted on separate forms).

ARTICLE 94. MATERIAL AND WORKMANSHIP

94.01 All materials and workmanship incorporated in the work covered by this Contract are to be of the highest grade of their respective kinds for the purpose intended. The Contractor shall furnish to the Project Engineer for approval the name of the manufacturer of machinery and mechanical or other equipment that the Contractor contemplates incorporating in the project together with their respective performance capacities and other pertinent information.

94.02 When required by the Specifications, or when called for by the City or Project Engineer, the Contractor shall furnish the required information for approval of all material that the Contractor contemplates incorporating in the work. Samples of material shall be submitted for approval to the Project Engineer when and as directed. Machinery, equipment and material installed or used without approval shall be at risk of subsequent rejection.

ARTICLE 95. TEMPORARY WATER SUPPLY

95.01 In the event temporary water supply work is required, it shall be provided in accordance with the requirements of the Waterbury Water Bureau and all local and state health authorities. The Contractor shall provide and maintain facilities for an adequate supply of water suitable for use for construction purposes and for domestic use as required for the work of this Contract. The cost of all work, materials, equipment, appurtenances and accessories necessary for providing supplies of water at the site, including the cost of all water consumed, shall be borne by the Contractor.

95.02 Upon completion to the work of this Contract, and before final acceptance of the Project, the Contractor shall remove all temporary piping and appurtenant work used for the temporary water supply.

ARTICLE 96. FITTING AND COORDINATION OF WORK

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96.01 The Contractor shall be responsible for the proper fitting of all work and for the coordination of operations of all trades, subcontractors or material suppliers engaged in the work. The Contractor shall be prepared to guarantee to each of his subcontractors the dimensions for which they may require for the fitting of their work to all surrounding work. The Contractor shall do, or shall cause his agents to do, all cutting, fitting, adjusting and patching necessary to make the several parts of the work come together satisfactorily and properly and to fit the work to receive, or to be received by, the work of other contractors.

ARTICLE 97. ARCHEOLOGICAL FINDS

97.01 During the life of this Contract, if any articles such as "charcoal", "bone", "shell", "cultural objects", "fire-cracked stones", "stone flaking material." or any other such related items of historical significance are discovered on the project, the Contractor is required to notify:

(1) The City; and

(2) Project Engineer or Inspector.

ARTICLE 98. EXCAVATIONS NEAR UNDERGROUND UTILITIES

98.01 In conformance with Section 16-345 of the Regulations of the Department of Public Utility Control, the Contractor shall not start any excavation and/or blasting of rock activity without first having ascertained the location of all such utilities in the area. The Contractor shall notify the Public Utilities Regulatory Authority (PURA) "CALL BEFORE YOU DIG" (Toll Free 1- 800-922-4455) at least two (2) full days in advance (excluding Saturday, Sunday and legal holidays), but no more than thirty (30) days before starting any such work. Such notice shall include the name, address and telephone number of the persons/agency performing the work, the date, location and type of excavation.

98.02 The PURA should immediately transmit such information to the utility companies whose facilities may be affected. Utility companies receiving notice should mark up the locations of their facilities on the work site. If they have no facilities in the area, they shall so inform the Contractor. If the Contractor does not receive any information or marked-up locations on the work sites, the Contractor shall contact PURA again to verify that the utility companies have responded to the initial call. Under no circumstances will the Contractor be allowed to start any excavation and/or blasting work prior to obtaining all necessary information regarding the location of underground utilities at the site. It is the Contractor's responsibility to have all utilities marked on the work sites prior to starting the work.

ARTICLE 99. WATER QUALITY OF WELLS

99.01 The Contractor shall perform all tests required by the State Health Department on all water supply wells and reservoirs as directed by the City or Project Engineer before and after construction. All labor, materials and testing shall be paid by the Contractor at no cost to the City.

ARTICLE 100. WORK IN STATE HIGHWAYS

100.01 If any of the work under this Contract is in a state highway the Contractor shall obtain all required permits at his own expense. The Contractor shall perform the work in accordance with the terms and conditions stipulated by the Connecticut Department of Transportation (CONNDOT) and/or as

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required by CONNDOT inspectors. The Contractor must provide such bonds, security and insurance as may be required to obtain such permits.

100.02 In the event the City, or the City and the Contractor jointly, are required to obtain any permits, including detour permits, the Contractor shall be familiar with the conditions of the permits and shall be held responsible for compliance with all the requirements of the permits and all specifications attached thereto, as if the permits were held solely by the Contractor.

100.03 Whenever State inspectors, flagmen or other costs are incurred as a condition to obtaining permits, the Contractor shall be responsible for payment of these costs with no reimbursement from the City.

100.04 The Contractor shall conform to all CONNDOT requirements for materials and construction methods for all work within state highways. Sheeting or an adequate trench box may be required in all trenching operations to confine trench widths and to protect State facilities. Additional pavement replacement may be required to properly restore the roadway surface.

100.05 The cost of all labor, materials and equipment necessary to conform to CONNDOT requirements for work in, or adjacent to, state highways, including work not specifically stated in the Contract Plans and Specifications, shall be the sole responsibility of the Contractor and shall not be reimbursed by the City. Therefore, the Contractor is informed to evaluate all CONNDOT requirements for the project prior to submitting the Bid for the project and to include these costs in his bid prices.

ARTICLE 101. EXISTING INSPECTION REPORTS

101.01 Any existing inspection reports concerning the project which have been prepared by or for the City or Project Engineer will be made available for the Contractor's information.

ARTICLE 102. TEST REPORTS, CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS

102.01 Except where expressly provided otherwise in the Contract Documents, the Contractor shall furnish to the Project Engineer the material manufacturer's notarized test reports and methods of testing by an approved independent laboratory in order to show compliance of all materials furnished with all specification requirements, the reports shall also contain manufacturer's notarized certificates of conformance stating that all materials furnished under these Specifications conform with all specification requirements; that each shipment of materials shall be accompanied by the manufacturer's notarized certificate of conformance and that a shipping list itemizing the amounts of each shipment shall accompany each shipment.

ARTICLE 103. CLEANING FINISHED WORK

103.01 After the work is completed, the sewers, manholes and structures shall be carefully cleaned free of dirt, broken masonry, mortar, construction and other debris and shall be left in first class condition, ready for use. All temporary or excess material shall be disposed of and the work left broom-clean to the satisfaction of the Project Engineer.

ARTICLE 104. COMPLIANCE TO ACTS AND EXECUTIVE ORDERS

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104.01 If this Contract is federally assisted and the Contractor must comply with all applicable statutes, acts, executive orders and regulations, including without limitation:

(a) **SECTION 3, HUD ACT OF 1968,** which provides that, to the greatest extent feasible, opportunities for training and employment shall be given to lower income residents of HUD-assisted project areas, and that contracts for work in connection with such projects be awarded to business concerns which are located in or are owned in substantial part by persons residing in the area of the project.

(b) **LABOR STANDARDS** compliance with Davis Bacon Act, as amended (40 U.S.C. 267a-5) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) 13.0.

ARTICLE 105 SEMI-FINAL INSPECTION / SUBSTANTIAL COMPLETION

105.1 Contractor shall notify the Project Engineer when it believes the work (or a portion thereof) is Substantially Complete and shall file with the City a written, notarized "Contractor's Affidavit of Substantial Completion" and request a Semi- Final Inspection of the work.

105.2 Contractor, prior to requesting Semi-Final Inspection, shall complete and submit the following, listing known exceptions in its Affidavit of Substantial Completion:

i. Include supporting documentation for Substantial Completion as indicated in these Contract Documents;

ii. Advise City of outstanding permit closure requirements. Submit certificates of inspections conducted, reports, and other documentation required by local or state authorities;

iii. Where required, submit photographs, specific warranties, final certifications, and similar documents; and

iv. Provide Partial Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers may be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

105.3 After the City's receipt of Contractor's Affidavit of Substantial Completion, the Project Engineer will either proceed with Semi-Final Inspection or advise Contractor of prerequisites not fulfilled.

105.4 Following Semi-Final Inspection, Project Engineer will either inform the City to prepare a Certificate of Substantial Completion or advise Contractor of work that must be performed prior to issuance of said certificate and repeat the inspection when requested and assured that the work has been substantially completed in accordance with the Contract Documents.

105.5 Contractor's payment requisition coincident with, or first following the date claimed as Substantially Complete, shall be processed in the same manner as a partial payment requisition and shall show either 100% completion for the work claimed as Substantially Complete, and/or list incomplete items, value of incompletion, and reasons for being incomplete.

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ARTICLE 106. CITY'S CERTIFICATE OF SUBSTANTIAL COMPLETION

106.1 For the portion of the work determined to be Substantially Complete, the City shall issue "City's Certificate of Substantial Completion" which shall establish the date of Substantial Completion by the Contractor.

106.2 Concurrently, the Project Engineer shall prepare a list (the "punch list") of remaining items of work to be completed and/or deficiencies to be addressed.

106.3 Prior to Final Inspection, the Contractor shall address and complete all "punch list" items.

ARTICLE 107. FINAL INSPECTION / FINAL COMPLETION

107.1 The Contractor shall notify the Project Engineer when it believes the Work is Finally Complete and shall file with the City a written, notarized "Contractor's Affidavit of Final Completion" and request a Final Inspection of the work by the Project Engineer.

107.2 After receipt of Contractor's Affidavit of Final Completion, Project Engineer will either proceed with Final Inspection or advise Contractor of prerequisites not fulfilled.

107.3 At the time of submission of its Affidavit of Final Completion, Contractor, as required by the Contract Documents and/or required for completion of the Project as determined by the City, shall also provide and/or submit the following, listing known exceptions (if any), in its Affidavit of Final Completion:

a. Supporting documentation not previously submitted and accepted;

b. Discontinue and remove, as appropriate, temporary facilities and services, along with construction tools and facilities, and similar elements;

c. Evidence of final, continuing insurance coverage complying with insurance requirements, including certificates of insurance for products and completed operations where required;

d. Reports and forms required by Federal and/or State funding sources, as required thereby;

e. A copy of City's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by City Representative;

f. Any final documents requested by City Representative;

g. If applicable, submit final liquidated damages settlement statement, acceptable to City;

h. Photographs, specific warranties, final certifications, and similar documents;

i. All required As-Builts, Record Drawings and Documents and Surveys, in number and formats specified; and

j. Provide Final Waiver of Lien from each Subcontractor, supplier and the Contractor. All

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money due to Subcontractors and suppliers shall be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

k. Contractor furnishes and installs (4) four City of Waterbury monuments in accordance with City of Waterbury standards.

107.4 Following Final Inspection, Project Engineer will either inform the City to a prepare the "City's Certificate of Final Completion" or advise Contractor of work that must be performed prior to issuance of said certificate and repeat the inspection when requested and assured that the work has been finally completed in accordance with the Contract Documents.

ARTICLE 108. CITY'S CERTIFICATE OF FINAL COMPLETION

108.1 If, following final inspection, the work is not determined to be Finally Complete, the City Representative will advise the Contractor accordingly, in writing, and the process will be repeated when Final Inspection is again requested by Contractor.

108.2 Upon determination that the work is Finally Complete, the City shall issue the "City's Certificate of Final Completion" that shall establish the date of Final Completion by the Contractor.

ARTICLE 109. SEMI-FINAL PAYMENT APPLICATION

109.01 After the issuance of the City's Certificate of Final Completion, the Contractor shall prepare a Semi- Final Payment Application showing the final estimate of quantities, as confirmed by the Project Engineer. Should the final estimate of quantities show either an increase or decrease from the approximate estimate of quantities, then such variations will be computed at the contract unit prices and reflected in the Final Estimate by adding or deducting said amounts from the Contract amount.

109.02 If use of the Owner Controlled Contingency Allowance or any other allowance(s) is required for this Semi-Final Payment Application, all required paperwork shall be processed prior to execution of the Semi-Final Payment Application.

109.03 All certificates of payments and estimates, upon which partial payments may have been made being merely estimates, shall be subject to correction in the Semi-Final Payment Application.

109.04 The Semi-Final Payment Application shall be processed in the same manner as a partial payment requisition.

ARTICLE 110. FIAL ACCEPTANCE OF PROJECT

110. Final Acceptance of the Project shall occur when:

(a) All Project work has been completed to the satisfaction of the City and the following have been submitted to the satisfaction of the Project Engineer and the City:

i. All documentation and supporting information required by the Contract Documents; including but not limited to: Final Waiver of Lien from each Subcontractor, supplier and the Contractor;

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ii. Reports and forms required on all Federal Aid Projects;

iii. Warranties, guarantees, final operation and maintenance manuals, and documentation to the effect that training, and start-up support required by the Contract have been completed;

iv. After Final Inspection has been held, all required additional work and final cleaning-up have been completed, and all the Contractor's equipment and construction signs have been removed from the Project site;

(b) City has issued Semi-Final Payment to the Contractor; and

(c) Upon delivery to the Contractor by City of its written notice of Final Acceptance of the Project.

ARTICLE 111. FINAL ESTIMATE

111.01 Subsequent to Final Acceptance of the Project, the Project Engineer shall prepare a Final Estimate which shall state the final Contract amount, any liquidated damage amounts, all City payments to Contractor, the final amount of any holdback(s) by the City, plus any other credits from Contractor to the City as well as retainage to be released to Contractor with Final Payment. The Final Estimate shall be signed by the Contractor and by the Project Engineer.

ARTICLE 112. CERTIFICATION OF FINAL PAYMENT

112.01 Based on amounts set forth in the Final Estimate, the Contractor shall prepare and submit its Final Payment Application.

112.02 Final Payment to the Contractor shall be based on City's Certification of Contractor's Final Payment Application.

ARTICLE 113. ACCEPTANCE OF FINAL PAYMENT

113.01 The acceptance by the Contractor, or by anyone claiming by or through the Contractor, of Final Payment shall constitute and operate as a release for the City from any and all claims of any liability to the Contractor for anything, theretofore done or furnished for or relating to or arising out of the work done thereunder, and for any prior act of neglect, default on the part of the City or any of its officers, agents, or employees unless the Contactor serves a detailed and verified statement of claim upon the City not later than forty (40) consecutive calendar days after mailing of such Final Payment. Such a statement shall specify the items claimed. Should the Contractor refuse to accept the Final Payment as tendered, it shall constitute a waiver of any right of interest thereon.

END OF SECTION

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SPECIAL CONDITIONS

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RFP NO. 8801

ATTACHMENT A-1.2

SPECIAL CONDITIONS

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SPECIAL CONDITIONS

ARTICLE 1. SPECIAL NOTE

These Special Conditions shall be subject to all requirements of the Contract, amend or supplement the General Conditions, and modify all Contract Documents which follow them numerically, as set forth in Section 1.2 of the Contract. The terms used in these Special Conditions which are defined in the Contract or General Conditions have the meanings assigned to them in said documents. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project; and to all the Contract Documents. All Contract Documents apply to this Section. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided otherwise, the costs associated with all work and/or services required under the Special Conditions shall be included in the Contract Amount (also referred to as Contract Total Compensation amount). No separate or additional payment will be made for this work and/or services.

In the event the Waterbury Development Corporation ("WDC") is the contracting party, where appropriate by context, references to the "City" shall also refer to WDC.

ARTICLE 2. PERMITS

The Contractor shall obtain all applicable Federal, State and local permits and registrations necessary to complete the project at no additional cost to the City. The cost of obtaining and maintaining the permits shall be included in the Contract Amount.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

ARTICLE 3. DEWATERING AND WATER CONTROL

The Contractor shall be responsible for all dewatering required to complete the Contract including, but not limited to, pumping, well points, trenches, excavations, water control structures and cofferdams, which may be required to properly complete this Project. Particular attention is called for regarding fluctuation in water levels due to precipitation. No extra compensation will be allowed due to water level fluctuation. Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 4. SITE RESTORATION

The Contractor will blend the new work into the existing ground surface and replace any

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adjacent disturbed materials that may have been damaged or irregular do to construction and/or new installations.

ARTICLE 5. CITY NOTIFICATION - BACKFILLING

Before backfilling any excavated area and after an improvement has been installed the contractor shall notify the City when a backfill operation is to occur. A City representative will make one observation for each excavated area.

ARTICLE 6. LENGTH OF WORK TO BE EXCAVATED

The length of trench to be opened at any time, from the point where ground is being broken to completed backfill, shall not exceed 200 feet. Additionally, the amount of space in streets and public and private lands occupied by equipment, trenches and supplies shall not exceed the length or space considered reasonably necessary and expedient by the Engineer. In determining the length of open trench or of spaces for equipment, materials, supplies and other necessities, the Engineer will consider the nature of the lands or streets where the work is being done; types and methods of construction; the equipment being used; possible inconvenience to the public and/or private parties; possible dangers and other proper matters. All work must be constructed with a minimum of inconvenience and danger to the public and to all other parties concerned. No additional payment will be made for this work.

ARTICLE 7. WINTER EROSION CONTROL MEASURES

Seeding and planting shall be performed March 15 to June 15 or August 15 to October 15. The Contractor shall submit a Winter Erosion Control Plan to the Project Engineer for approval prior to the start of construction. This plan shall indicate, in sufficient detail, the methods and materials which shall be used during the winter months to prevent erosion, scour and general deterioration of the Project and adjacent flora and fauna.

ARTICLE 8. PUBLIC USE OF EXISTING PUBLIC FACILITIES

The Contractor shall limit his work area to the site of the construction and its immediate vicinity. No equipment or construction activities are allowed on the existing public facilities, such as athletic fields, without prior written approval by the City. No equipment or storage is allowed outside of the designated construction area without prior written approval by the City. The number and location(s) of storage containers shall be approved by the City.

ARTICLE 9. ACCESS TO PRIVATE & PUBLIC PROPERTY

Throughout the duration of Construction, the Contractor shall maintain access to all businesses, places of worship, schools and private residences, etc. in the project area. Particular attention is paid for funeral processions, wedding processions, and other similar activities. Where required by the City, Contractor shall also conduct regular coordination meetings with Owners and Operators of businesses and other operations to coordinate active work periods.

ARTICLE 10. GENERAL INTENT OF DRAWINGS

It is the intent of the Solicitation Documents and the Contract Documents, including but not limited to the Drawings and Specifications, to call for finished, completed work. Any material or work not shown on the Drawings but mentioned in the Specifications, or vice versa, or any

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incidental accessories necessary to make the work complete and perfect in all respects, even if not particularly specified, shall be furnished, delivered and installed without additional expense to the City. Where discrepancies or variances occur between the Drawings and Specifications or within either of the Documents, or with any of the Contract Documents, the item or arrangement of better quality, greater quantity or higher cost shall be included in the Contract Amount. The City shall decide on the item(s) and the way the item(s) and/or work shall be performed or installed.

ARTICLE 11. ADDENDUM TO GENERAL CONDITION 31

Reference is made to General Condition Article 31 – Use of Premises and Removal of Debris. During the progress of the work, the Contractor shall keep the construction areas in a neat condition, free from accumulations of waste materials and rubbish. Lunch papers, bottles, lumber cut-offs, drinking cups and the like rubbish shall be removed from the site daily. No alcoholic beverages will be permitted at the construction site(s).

On or before the completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the site and adjacent property all surplus and discarded materials, rubbish, and temporary structures and restore, in an acceptable manner, all property and leave the whole area in a neat and presentable condition.

ARTICLE 12. SUBSURFACE EXPLORATION

Boring logs, probes, etc., and related information appended to the Solicitation Documents contain data regarding subsurface conditions for the dates and locations indicated. The information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true picture of the actual subsurface conditions to be encountered.

ARTICLE 13. ADJUSTMENT OF EXISTING UTILITIES

The contactor shall raise or lower as necessary the top of all utility valve boxes, gas service curb boxes, handholds, parking meter kiosks, cleanouts, traffic boxes, and any other utility access structures within the work area to match the finished grade. No extra compensation will be allowed, for adjustment of existing utilities.

ARTICLE 14. WINTER SHUTDOWN

There is no winter shutdown.

ARTICLE 15. ADDENDUM TO GENERAL CONDITION 2

Reference is made to General Condition Article 2 – Construction Progress Schedule. For this project, Contractor shall not be required to provide a Water Control Plan or Environmental Protection Plan as may be outlined or referenced in the General Conditions. However, the Contractor shall be responsible for any such requirements set forth in the Technical Specifications or elsewhere in the Solicitation Documents.

ARTICLE 16 ADDENDUM TO GENERAL CONDITION 10

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Reference is made to General Condition Article 10 – Environmental Protection Plan. An Environmental Protection Plan in accordance with General Conditions Article 10 will not be required for this Project. However, the Contractor shall be responsible for any such requirements set forth in the Technical Specifications or elsewhere in the Bid Documents. Additionally, the Contractor shall be responsible for protecting the Environmental Resources as described in General Condition Article 9

ARTICLE 17. ADDENDUM TO GENERAL CONDITIONS ARTICLE 92

Reference is made to General Condition Article 92 – Contract Administration Costs – Outside Regular Hours. Compensation to the City for the extra cost incurred when the Contractor elects to perform work more than the normal working hours set forth in General Conditions Article 92 shall at the rate of $150 per hour and shall be deducted from the amount due the Contractor.

ARTICLE 18. ADDENDUM TO GENERAL CONDITION ARTICLE 4 – PARTIAL PAYMENTS

Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Engineer will estimate the value of work completed and will deduct some amount to arrive at a conservative value which will allow Owner to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Engineer's determinations.

ARTICLE 19. ADDENDUM TO GENERAL CONDITION 5 – INSPECTION AND TESTS

Reference is made to General Condition Article 5 – Inspection and Tests. The Project includes a variety of materials testing to ensure compliance with the Technical Specifications and disposal facilities to be identified by the Contractor. The Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

ARTICLE 20. ADDENDUM TO GENERAL CONDITION ARTICLE 39 – RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

Reference is made to General Condition Article 39 – Residents' Preference in Work on Other Public Facilities. In addition to the requirements of the State laws and regulations, the Contractor shall comply with the City of Waterbury Ordinance Chapter 34 as stated in Special Condition 14.

ARTICLE 21. ADDENDUM TO GENERAL CONDITION ARTICLE 40 – LISTING OF EMPLOYMENT OPENINGS

Reference is made to General Condition Article 40 – Listing of Employment Openings. In addition to the requirements of the Governor's Executive Order, the Contractor shall comply with the City of Waterbury Ordinance Chapter 34 as stated in Special Condition 14.

ARTICLE 22. PREVAILING WAGES

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Davis Bacon and State Prevailing wage rates apply to this Project. The minimum rates to be paid for labor of the various classifications shall be in accordance with the prevailing rate of wages established by the Connecticut Department of Labor. Because of the application of state wage laws to this Project, the Contractor should be aware that the Contractor will be obligated to certify payrolls and issue compliance statements in accordance with both state procedural requirements. Furthermore, the Contractor and all Subcontractors shall be responsible for paying the applicable state prevailing wages.

ARTICLE 23. PLACE HOLDER ARTICLE 24. CHANGES TO THE WORK

The cost and/or payment calculations for changes to the work shall be either on a firm proposal agreed to by the City or based on the provisions set forth herein.

Any changes in the work agreed to by the parties, or as directed by the Project Engineer, shall be evidenced by a Change Order authorized in accordance with Section 27 of the Contract and this Article. In no instance shall payments made pursuant to this Article result in an increase in the Contract Total Compensation or extension of Contract Time. Any increase above the Contract Total Compensation or Contract Time resulting from utilization of this Article must be by a duly authorized and executed Contract amendment in accordance with Section 27 of the Contract.

A. Differing Site Conditions

(1) During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and the Contractor shall thereafter wait for written instructions from the Project Engineer before proceeding with regard to such conditions.

(2) Upon written notification from the Contractor, the Project Engineer will investigate the conditions to determine if differing conditions exist. The Project Engineer will notify the Contractor of his/her determination whether differing conditions exist. If it is determined that the conditions materially differ and cause an increase in the Total Compensation or Contract Time required for performance of any work under the Contract, the City, with the Project Engineer's recommendation, will make an adjustment (excluding anticipated profits) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether an adjustment of the Contract is warranted.

(3) No use of this Article will be allowed unless the Contractor has provided the required written notice.

B. Significant Change in the Character of Work

(1) The Project Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the Project. Such changes in quantities and alterations shall not invalidate the Contract nor release the surety, and the Contractor agrees to perform the work as altered.

(2) If the alterations or changes in quantities significantly change the character of the

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work under the Contract, whether changed by any such different quantities or alterations, the cost for changes to the work shall be either on a firm proposal agreed to by the City or as calculated herein, and such costs shall not include loss of anticipated profits. If a cost cannot be agreed upon, then the cost calculation shall be in such amount as the Project Engineer may determine to be fair and equitable.

(3) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the cost calculations for the altered work will be at the prices bid.

(4) The term "significant change" shall be construed to apply:

(a) when the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or

(b) when an item of work, as defined elsewhere in the Contract, is increased in excess of 125% or decreased below 75% of the original Contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125% of original Contract item quantity, or in case of a decrease below 75%, to the actual amount of work performed.

C. Extra Work

Unforeseen work made necessary by the Project Engineer's changes as previously described, or work that is necessary for completion of the Project, but for which no price is provided in the Contract, shall be done in accordance with the requirements of the specifications and as directed by the Project Engineer. The Project Engineer shall notify the Contractor of the necessity for such extra work, stipulating its character and extent, and shall notify the Contractor as to whether the Project Engineer wants the Contractor to propose a unit price or, instead, a lump sum, for the extra work. Within 5 calendar days of receipt of such notification, the Contractor shall advise the Project Engineer, in writing, of the proposed compensation (as a unit price or lump sum, whichever has been requested by the Project Engineer) that the Contractor requests as compensation for the required extra work. The Contractor's request shall be itemized and reasonably detailed and shall include all known or anticipated direct and indirect costs of the work, including but not limited to, the costs of all safety and other equipment, small tools, labor, subcontractor quotes, consumables, field office overhead, home office overhead, insurance, bonding, and profit. The character and extent of the extra work, together with the basis of compensation, shall be communicated in a letter to the Contractor by the Project Engineer. If the Contractor objects to any portion of the defined extra work and/or basis of compensation, and if the Contractor is not willing to agree to the extra work, the Contractor must, within 15 calendar days of its receipt of said letter, respond in writing describing specifically what portions of the extra work the Contractor finds objectionable, the nature of its objections, and the basis for its objections. If the Contractor does not do so, it shall be deemed to have accepted the terms of the extra work as set forth in the Project Engineer's letter.

D. Cost Plus Work

The Contractor's compensation for all work done on a cost-plus basis shall be determined in accordance with the following:

(1) Labor: For all labor, payment calculations shall be based on the wage rate actually paid by Contractor as shown by its certified payroll, which shall be at least the minimum rate

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established for the Project by the State Labor Department or the U.S. Department of Labor. For all foremen in direct charge of Project work, payment calculations shall be based the actual wage paid by Contractor to the foremen as shown on the Contractor's certified payroll.

(2) The payment calculations shall the actual costs paid to, or on behalf of, workers by reason of allowances, health and welfare benefits, pension fund benefits and other such benefits, when such amounts are required by a collective bargaining agreement or another employment contract generally applicable to the classes of labor employed on the Project. The Contractor shall certify all such costs.

(3) For property damage, bonding, liability and workmen's compensation insurance premiums, unemployment insurance contributions and social security taxes on Project cost-plus work, the payment calculations shall include Contractor's actual Project costs. The Contractor shall provide to the Project Engineer documentation satisfactory to the Project Engineer in form and substance, of all such costs.

(4) The payment calculations shall also include an amount equal to 20% (15% for overhead, 5% for profit) of the total sums described in (a) (1) through (3) above.

No part of the salary or expenses of anyone connected with the Contractor's forces above the grade of foreman, who provides general supervision of Project work, will be included in the above cost calculations, except when the Contractor's organization is entirely occupied with cost-plus work, in which case the salary of a superintendent may be included in said labor item when the nature of the pertinent Project work is such that, in the opinion of the Project Engineer, a superintendent is required for that work. The allowable rate of pay for such superintendent shall be agreed upon before the Contractor begins the pertinent work. If no agreement on the rate can be reached, the Project Engineer will decide on such rate as he deems reasonable.

The Project Engineer reserves the right to determine the number and type of personnel to be employed for the cost-plus Project work.

(b) Specialized Work: When the Project Engineer directs the Contractor to perform specialized work requiring skills, tools and equipment substantially unlike those ordinarily used by the Contractor or its authorized Project subcontractors, the payment calculations for such work shall include the cost for the use of a specialist to perform the specialized work. For such specialized services, including materials incorporated into the Project, the payment calculations for such work shall include Contractor's actual costs, plus additional compensation in accordance with subparagraph (e) below. Prior to performing such specialized work, the Contractor shall obtain and submit to the Project Engineer a minimum of three price quotes for the work, if requested by the Project Engineer.

(c) Materials: For all materials necessary for cost-plus Project work, the payment calculations shall include Contractor's actual cost for such materials as delivered to the Project site, including delivery charges as shown by original receipted bills, plus 15% of the sum of said cost and charges. In lieu of receipted bills for materials used which were not specifically purchased for the Project, but were taken from the Contractor's stock, the Contractor shall provide to the Project Engineer an affidavit certifying that such materials were not purchased for the Project, that the materials were taken from the Contractor's stock, that the quantity claimed to have been used on the Project was so used, and that the payment calculations shall not include any penalty or charge incurred due to the Contractor's late or delayed payment for

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the pertinent materials.

(d) Equipment: All equipment used for cost-plus Project work must, in the judgment of the Project Engineer, be in good working condition and suitable for the purpose intended; and the Project Engineer reserves the right to determine the size and number of units of equipment to be used for such work. The manufacturer's ratings shall be the basis for all Rental Rate Blue Book classifications used for payment purposes. ("Rental Rate Blue Book" as used in these specifications refers to the current edition of the Rental Rate Blue Book, considering all current Rate Adjustment Tables, and amendments thereof, which is published by K III Directory Corporation of San Jose, California, including all current Rate Adjustment Tables and amendments thereof.) Trucks will be classified by cubic-yard capacity.

Amounts claimed by the Contractor based on equipment rental rates shall not include any percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be included in the payment calculation in connection with amounts claimed by the Contractor based on equipment rental rates.

The payment calculations shall not include rental rates for small tools needed to complete the cost-plus Project work.

For payment calculations purposes, estimated operating costs per hour from the Rental Rate Blue Book will apply only to the actual time during which the equipment is actively being used to perform cost-plus Project work.

For equipment that is also being used for non-cost-plus Project work, the payment calculations shall include the applicable hourly rate only for the actual time that the equipment is assigned to cost-plus Project work. The applicable period of assignment for each piece of equipment shall start when the equipment commences to be used for cost-plus Project work ordered by the Project Engineer and shall end at the time designated by the Project Engineer.

For equipment brought to the Project site exclusively for cost-plus work, the payment calculations shall include Contractor's loading and unloading costs and costs of transporting such equipment to and from the Project site; provided, however, that cost claimed for return transportation from the Project site shall not exceed the cost of moving the equipment to that site. If such a piece of equipment is self-propelled and is driven to the Project site under its own power, then the payment calculation shall include only operating costs and labor costs for its transport to and from the Project site. The payment calculations will not, however, include any loading, unloading and transportation costs if the equipment is used for any Project work on the site other than cost-plus work.

1) Owned Equipment: The payment calculation shall include the applicable rental rate set forth in the Rental Rate Blue Book for any equipment (1) which the Contractor uses, with the Project Engineer's authorization, to perform cost-plus Project work, and (2) which is owned by the Contractor or a subsidiary, affiliate, or parent company of the Contractor (no matter how far up or down the chain of ownership from the Contractor).The maximum hourly rate to be used in payment calculations for Contractor-owned equipment assigned to cost-plus work shall be the applicable monthly rate in the Rental Rate Blue Book, divided by 176 (176 working hours per

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month).

Should the proper completion of the cost-plus Project work require equipment of a type not covered by the Rental Rate Blue Book, the Project Engineer will determine, and the payment calculation shall include a reasonable rental rate based on rates prevailing in the area of the Project. If practicable, such rates shall be determined by the Project Engineer before the affected work is begun. If the Contractor proposes that the Project Engineer use a particular rate in such an instance, the Contractor must disclose to the Project Engineer the specific sources of, or support for, said rate.

If a piece of equipment owned by the Contractor is assigned to cost-plus Project work but remains idle for some portion of the period of the cost-plus work, the payment calculation shall include for that idle time 50% of the applicable rental rate (exclusive of operating costs) in the Rental Rate Blue Book.

For payment calculation purposes, the period of equipment usage shall be deemed to start when the Contractor begins to use the equipment for cost-plus Project work and shall be deemed to end when the equipment is released by the Project Engineer from use for such work. Any hours during which the equipment is used for work other than cost-plus Project work will be deducted from the payment calculation. For any piece of Contractor-owned equipment assigned to cost-plus Project work, the payment calculation shall include aggregate minimum of 8 hours (of use time, idle time, or a combination thereof) in each 24-hour day (measured from one midnight to the following midnight) during the assignment period. The payment calculation shall not include Saturdays, Sundays and legal holidays during which the Contractor does no Project work, or for any other day on which the Project Engineer orders the Contractor to do no Project work. If the equipment is used to perform cost-plus Project work for more than 8 hours in a day, the payment calculation shall include the applicable hourly rate computed on a monthly basis for the actual time of use; however, the payment calculation shall not include any claim for more than 8 hours of idle time for a piece of equipment during a given day.

The City shall have the right to limit its aggregate payment calculations for idle time for a given piece of equipment to the replacement value of that equipment.

(2) Rented Equipment: If the Project Engineer determines that to perform the cost-plus Project work the Contractor must rent certain machinery, trucks or other equipment not owned by the Contractor or a subsidiary, affiliate, or parent company

of the Contractor (no matter how far up or down the chain of ownership from the Contractor), the Contractor shall inform the Project Engineer, in advance of such rental, (a) of the specific nature of the rental(s), (b) the reasons for its need for such rental(s), (c) the anticipated or proposed rental rate(s), and (d) the estimated duration for the use of the equipment. Rates for such rented equipment must be provided based on the following:

— A daily rate per hour when the equipment is to be specifically assigned to Project work by the Project Engineer for a period of 7 consecutive calendar days or less.

— A weekly rate per hour when such assigned time exceeds 7 consecutive calendar days but does not exceed 21 consecutive calendar days.

— A monthly rate per hour when such assigned time exceeds 21 consecutive calendar days.

The applicable daily, weekly, or monthly rate will be determined at the expiration of 21

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calendar days or upon release of the equipment by the Project Engineer, whichever occurs first. Interruptions of the rental period, when equipment is used on other than assigned cost-plus work, will not entitle the Contractor to payment at a rental rate that would be applicable to the shorter periods arguably occasioned by such interruptions.

Prior to renting such equipment, the Contractor shall obtain and submit to the Project Engineer a minimum of three quotes, if requested by the Project Engineer.

The payment calculation shall include such rental rates actually paid by the Contractor, provided that the given use and rental rate are acceptable to the Project Engineer. For any such costs to be considered, the Contractor must provide the Project Engineer with a copy of the original receipted bill for the rental expenses incurred.

(e) Administrative Expense: When extra work on a cost-plus basis is performed by an authorized subcontractor, the payment calculation shall include an additional 7.5% for that work; and such amount will be in addition to the percentage payments described in (a), (b), (c) and (d) above, as a reimbursement for the Contractor's administrative expense in connection with such work. Approval of such additional amounts will be given only after the Contractor provides the Project Engineer receipted invoices for all relevant costs.

(f) Bonding Costs: For bonding on the total cost of the cost-plus work including administrative expenses as outlined in (e) above, the payment calculation shall include Contractor‘s actual cost. The Contractor shall provide the Project Engineer documentation satisfactory to the Project Engineer in form and substance, of all such costs.

(g) Miscellaneous: Any compensation associated with (a), (b), (c), (d) and (e) above shall be deemed to be payment in full for the extra work and shall be deemed as full compensation for same, including costs of superintendence, use of small tools, equipment for which no rental is allowed, safety equipment, consumables, field office overhead, home office overhead, bonding, other insurance, and profit. The Contractor's representative and the Project Engineer shall compare their respective

records of the extra work done on a cost-plus basis at the end of each day. Copies of these records shall be signed by both the Project Engineer and the Contractor's representative. The Project Engineer will then forward a copy of same to the Contractor and to any affected subcontractor in accordance with City procedures. Upon payment of such costs by the Contractor, the Contractor shall immediately furnish the Project Engineer with original receipted bills covering the costs, including transportation charges, for all materials used for such work.

ARTICLE 25. PLACEHOLDER

ARTICLE 26. SBE/MBE SET-ASIDES/CHRO COMPLIANCE REQUIREMENTS

The SBE/MBE set aside and contract compliance requirements under the Connecticut General statutes **does not apply** to this project.

ARTICLE 27. CITY OF WATERBURY ORDINANCE CHAPTER 34

The City’s GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34) applies to “Covered Projects” as defined in the ordinance and the requirements set forth therein are in addition to

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any requirements of other funding sources for the Project. The bidder's attention is directed to the attached copy of the ordinance and to Sections 14.1 and 14.2 of the attached Sample Construction Contract for additional information regarding the requirements and application of the City's GOOD JOBS ORDINANCE.

"Covered Projects" are City projects with a value of $500,000.00 or greater.

The City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34) **does** apply to this Project.

ARTICLE 28. PHOTOGRAPHIC AND VIDEO DOCUMENTATION

Drawings and general provisions of the Contract, including General and Special Conditions apply to this Section.

This Section includes administrative and procedural requirements for a professional photographer to perform the following services:

1. Preconstruction Video;
2. Periodic construction photographs; and
3. Final completion of construction photographs.
4. Video training any systems in the building.

Qualification Data: For firms and people to demonstrate their capabilities and experience. Submit lists of completed projects with project names, contract value and addresses, names and addresses of engineers and owners with work performed. The firm or individual shall be of established reputation who has been regularly engaged as a professional photographer for not less than three years.

Preconstruction Video-Within 14 days following the award of the Contract the Contractor's approved Photographer shall document the entire Project existing site conditions, in the presence of the Engineer's Representative, by use of a video camcorder. Camcorder shall, as a minimum, be Sony Handy Cam HDR-XR160- camcorder-hard disc drive- flash card or approved equal with 1920x1080 Full HD video and sound. The Photographer shall always clearly identify the location of the video as it progresses and document the condition and site features of the existing road and elements and all adjacent and affected properties. Aerial angles shall be included to record the location of the existing pole mounted overhead wire and facilities.

The Contractor shall submit two (2) copies of the video no later than 14 days prior to the start of construction so it can be reviewed for clarity and content. Any areas that are missing, incomplete or unclear shall be repeated and re-submitted to the satisfaction of the Engineer.

Periodic Construction Photographs- Once a month, and at regular intervals designated by the Engineer, the Contractor's Photographer shall provide a maximum of twenty-four (24) 8x10 inch smooth-surface matte prints on single weight commercial –grade stock photo paper, enclosed back-to-back in clear plastic sleeves that are punched for standard 3-ring binder. Two (2) copies of each photograph shall be submitted to the Engineer no later than 14 days after being taken.

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On the back of each print provide an applied label or rubber-stamped impression with the following information:

a. Name of Project and Owner;
b. Name and address of photographer;
c. Name of Engineer;
d. Name of Contractor;
e. Date photograph was taken; and
f. Description of vantage point, indicating location of camera, and direction of view.

Final Completion Photographs- Take a minimum of 48 photographs after the date of substantial completion for submission with Project Record Documents. The Engineer will direct the photographer for desired vantage points. Submit two (2) copies of final completion photographs.

Measurement and Payment- The work under this section will not be measured for payment. The Contractor's cost in connection therewith will be considered incidental to, and included in, the general cost of the Contract.

ARTICLE 29. LAYDOWN AREAS / MATERIAL STORAGE

A Laydown Area shall not impede traffic flow within the City streets. The Contractor may use these areas during construction and shall be required to restore any disturbed areas to a condition as good as or better than existing conditions.

Contractor shall also be required to clean up, restore, and make all Laydown Areas safe and usable as directed by the Engineer. This may include removing equipment, materials, tools, etc., from any Laydown Area for a period to be determined by the City of Waterbury.

The City will not provide any staging area for Construction. The Contractor shall provide its own staging/storage area. Lay down areas within the project's limits are allowed but require pre-approval from the City (see also General Conditions Article 31). In all cases, the Contractor shall be responsible for the protection of all materials, tools, etc. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public, adjacent property owners and tenants or the City.

The Contractor shall provide its own storage facilities and in all cases be responsible for the protection of all materials, tools, etc. The number and location(s) of storage containers shall be approved by the City. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public or the City or City's employees or tenants. All deliveries of material, equipment, etc., shall be made to the Contractor and accepted only by him/her and only during working hours. City personnel will not receive or accept any materials or equipment, etc. at any time.

ARTICLE 30. PROJECT RECORDS.

Records. Contractor shall keep full and detailed records and exercise such controls as may be necessary for proper management under this Agreement including but not limited to drawings,

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specifications, reports, maps, correspondence, instructions, books, receipts, trade contracts, purchase orders, vouchers, memoranda and other data relating to this Agreement. Accounting systems shall be capable of demonstrating satisfactory financial controls to the City.

Access to Records. The City or its designee shall be afforded access to Contractor's records, during normal working hours, for the purpose of inspection and audit, whether such records are held on-site or at Contractor's branch and home offices.

Records Retention and Preservation. Prior to final payment, Contractor shall furnish the City with a detailed inventory of the records maintained and thereafter shall preserve these records for a minimum of four (4) years after the final payment for the Work or for such longer period as may be required by law. If, after the end of this period, Contractor wishes to destroy or dispose of said records, the City shall be given the option to take possession of such records prior to destruction or disposal.

Public Access to Documentation. Contractor shall allow Governmental Entities access to Project documentation and accounting records as required by Law.

ARTICLE 31. SOLICITATION DOCUMENTS REFERENCES

All references in the General and/or Special Conditions to "Invitation to Bid," "ITB," "Bid Documents" or words/terms of similar import shall, for the purposes of this solicitation, mean "Request for Proposal" and/or "ITB" as the context so requires.

All references in the General and/or Special Conditions to "Bid" or "Bid Form" shall mean "Price Proposal "as the context so requires.

All references in the General and/or Special Conditions to "Contractor", Vendor" and/or "Consultant" shall mean "Proposer" or "Successful Proposer" as the context so requires.

ARTICLE 32. OFF-SITE WASTE STORAGE AREAS

The City does not provide offsite Waste Storage Areas ("WSA") locations for City projects. All WSA's shall be located within project limits and/or at properly permitted locations. Additionally, all WSA's and all associated activities, including testing, transportation and disposal, are to be the sole responsibility of the Contractor. No separate or additional payment will be made for this work, services and/or activities.

ARTICLE 33. PROJECT ENGINEERING CONSULTANT/OWNER'S REPRESENTATIVE

Friar Architecture is the Project Architect and **WDC** is the Owner's Representative for the Project.

ARTICLE 34. ADDENDUM TO GENERAL CONDITIONS 11 AND 95

Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities needed to maintain utility service to all adjacent property owners/tenants.

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ARTICLE 35. AS-BUILT IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY

Upon completion of all work and prior to final payment the Contractor shall provide an As-Built Improvement Location and Topographical Survey of all above ground and below ground improvements within the Limit of work. The survey shall include property lines, dimensions, stretch distances, vertical certification or datum and should be an A2 as built completed by a licensed land surveyor. Said survey(ies) shall be signed and sealed by a State of Connecticut Licensed Surveyor and shall be in accordance with the requirements of Connecticut General Statues, Section 20- 300b. The contractor shall provide one stamped mylar copy and one electronic AutoCAD copy of the As-Built Improvement Location and Topographical Survey. All AutoCAD submissions to the City shall be made in the version required by the City's Public Works Department. No separate payment shall be made for an As-Built Improvement Location Survey, as the cost for such shall be included in the general cost of the project. Final payment will not be made to the Contractor until the As-Built Improvement Location and Topographical Survey is spot checked and approved by the City. Corrections, if any, shall be made to the AutoCAD, and to the mylar reproducible.

ARTICLE 36. ADDENDUM TO GENERAL CONDITION 1

Reference is made to General Condition Article 1 – Plans and Specifications at the Site; Record Documents.

a. The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings and other supplemental drawings, Change Orders, Change Directives, Addenda, Submittals, etc. and other modifications, schedules and instructions in good order.

b. One copy of all documents is to be marked daily to record all approved changes made during construction, including, but not limited to, field changes. At the conclusion of construction, the Contractor shall turn one (1) complete set of As-Built Documents over to the Project Engineer. Both sets shall always be available to the Project Engineer and the City or their authorized representatives. Every sheet of the Plans and Specifications which differs from the actual construction shall be marked, and sheets so changed shall be noted on the title sheets of the Plans and Specifications.

c. Where supplementary drawings are used, including, but not limited to, Change Order Drawings Working Drawings, Shop Drawings or Coordination Drawings, the Contractor shall create an appendix to the As-Built Plans and record a cross-reference to the appendix at the corresponding location on the Plans.

d. As-Built Plan sheets shall document as-built details for the plans, profiles, cross-sections and shall note exact dimensions and actual locations of all elements changed or modified during construction.

e. As-Built Documents shall also reflect details of changes or additional information, including, but not limited to, fabrication, erection, installation, sizing, material, and dimensions, etc. and, for underground utilities and improvements shall also show exact elevations, grade modifications, materials used and related information on piping utilities, earthwork, etc.

f. The Contractor shall mark the As-Built Documents with red erasable pencil, or where

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directed by the Project Engineer As-Built Documents shall be recorded with three base colors using a standard legend: RED = deleted items, GREEN = added items, BLUE = special information or details.

g. The Contractor shall also maintain one binder of all miscellaneous records such as diaries, field books, manufacturer startup reports, test reports, and Building and Fire Code inspection reports required by other Contract Provisions. The miscellaneous records shall be arranged systematically according to the organization of the Contract provisions.

ARTICLE 37. CONSTRUCTION STAKE OUT

The City will not provide control points, benchmarks or construction stake out. The Contractor shall be solely responsible for the actual construction stakeout. The work shall be included in the Contract Amount. No separate or additional payment will be made for this work and/or services.

END OF SECTION

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The City of Waterbury
DEPARTMENT OF INSPECTION
185 South Main Street, 5th floor
Waterbury, CT 06706
(203) 574-6832

September 8, 2026

Honorable Board of Aldermen
c/o City Clerk
235 Grand Street
Waterbury, CT 06702

Dear Honorable Board of Aldermen:

Attached, please find a request for refund from TRINITY SOLAR, 611 WEST JOHNSON AVE, CHESHIRE, CT 06410 regarding the permit noted below. No work has been done and this permit has been cancelled.

I respectfully request that the Board of Aldermen refund the cost of the permit minus a 10% processing fee.

172 EASTON AVE	PR20260000287	ELECTRICAL FEE	$	1,225.00
		CA FEE	$	50.00
			$	1,275.00
172 EASTON AVE	PR20260000287	ROOFING FEE	$	550.00
		CA FEE	$	50.00
TOTAL			$	600.00
MINUS 10% PROCESSING FEE			$	182.50
TOTAL REFUND DUE			**$**	**1,692.50**

Attached please find the voucher and supporting documents which are necessary for Finance to process this refund. Please forward these documents to Finance along with your letter of approval if this requst is granted so

Sincerely,

FAB 9/11/26

Frank Baker
Building Official

Trinity SOLAR

Phone: (203) 701-3724
Fax: (203) 687-4205

611 West Johnson Avenue
Cheshire, Connecticut 06410

Date: 9/8/2026

To Whom it May Concern,

This letter is to request a refund for Permit # 2026-0287 : 2026-0310.

The Permit was applied for the installation of a PV Solar System at the address of,

172 Easton Avenue,

Payment was completed online _____ or via check # 1230:1252, in the amount of $1,892.94.

This project has been cancelled, and no work has been started.

For any questions, please reach out to Ashley.Hill@trinity-solar.com (203)701-3724 Ext. 1196.

Please mail refund checks to:

Trinity Solar

Attn: Ashley Hill

611 West Johnson Ave, Cheshire, CT 06410

Thank you,

Richard Pypec

Regional Vice President

Trinity Solar

FORM A

City of Waterbury

Vendor #: _____ Ship to: _____

Vendor name: **TRINITY SOLAR**

Address 1: **ASHLEY HILL**

Address 2: **611 WEST JOHNSON AVE**

City: **CHESHIRE, CT 06410.**

Finance Office Use Only
Voucher #:
Date Entered:
By:

WPC Office use Only

PLEASE MAIL REFUND TO:

TRINITY SOLAR
ASHLEY HILL
611 WEST JOHNSON AVE
CHESHIRE, CT 06410.

Invoice #: _____ Invoice Date: ___/___/___ Handling Code No PO Invoice Amount $: _____

Description: Refund of Permit Fees

	Process level (Fund)	Accounting Unit	Account	Activity	Category	Distribution Amount
1	10	50400001	441047			$ 1,102.50
2	10	50400001	441054			$ 45.00
3	10	50400001	441047			$ 495.00
4	10	50400001	441054			$ 45.00
5						
6						
7						

Comments: Totals: **$ 1,687.50**

Reimbursement for cancelled permits

Electrical PR2026-0287 AND Roofing PR2026-0310 regarding 172 easton ave

Date received in Finance

Department: Inspection

Date Submitted: September 8, 2026

Approval (Dept Head): 9/11/26

The City of Waterbury
236 Grand Street, Waterbury, Connecticut 06702
Inspections: (203) 574-6832 Public Works: (203) 574-6851
City Planning: (203) 574-6817 Fire Marshal: (203) 597 3452

Bureau of Water
21 East Aurora Street, Waterbury, Connecticut 06702
Phone: (203) 574-8251 Fax: (203) 574-2382

Water Pollution Control
210 Municipal Road, Waterbury, Connecticut 06708
Phone: (203) 574-8265 Fax: (203) 574-8269

RECEIPT OF PAYMENT

Receipt Number: 2026069366
Receipt Date: 02/25/2026
Date Paid: 02/25/2026
Full Amount: $605.46

Payment Details:	Payment Method	Amount Tendered	Check Number
	Check	$605.46	1252

Amount Tendered: $605.46
Change / Overage: $0.00
Contact: Trinity Solar Inc., Address:7 McKee Place, Phone:(203) 701-3724

FEE DETAILS: 172 Easton Ave

Fee Description	Reference Number	Amount Owing	Amount Paid
State Education Fee (Roof)	PR20260000310	$5.46	$5.46
BD - Roofing Permit	PR20260000310	$550.00	$550.00
BD - CA Fee	PR20260000310	$50.00	$50.00

Shenesa Bell

The City of Waterbury
236 Grand Street, Waterbury, Connecticut 06702
Inspections: (203) 574-6832 Public Works: (203) 574-6851
City Planning: (203) 574-6817 Fire Marshal: (203) 597 3452

Bureau of Water
21 East Aurora Street, Waterbury, Connecticut 06702
Phone: (203) 574-8251 Fax: (203) 574-2382

Water Pollution Control
210 Municipal Road, Waterbury, Connecticut 06708
Phone: (203) 574-8265 Fax: (203) 574-8269

RECEIPT OF PAYMENT

Receipt Number: 2026069274
Receipt Date: 02/12/2026
Date Paid: 02/12/2026
Full Amount: $1,287.48

Payment Details:

Payment Method	Amount Tendered	Check Number
Check	$1,287.48	1230

Amount Tendered: $1,287.48
Change / Overage: $0.00
Contact: Trinity Solar Inc., Address:7 McKee Place, Phone:(203) 701-3724

FEE DETAILS: 172 Easton Ave

Fee Description	Reference Number	Amount Owing	Amount Paid
State Education Fee (Electrical)	PR20260000287	$12.48	$12.48
BD - Electrical Permit	PR20260000287	$1,225.00	$1,225.00
BD - CA Fee	PR20260000287	$50.00	$50.00

Shenesa Bell

DEPARTMENT OF POLICE SERVICES
255 EAST MAIN STREET
WATERBURY, CONNECTICUT 06702

Fernando Spagnolo
Chief of Police

Michael Ponzillo
Deputy Chief of Police

Robert Davis
Deputy Chief of Police

Nadine Amatruda
Deputy Chief of Police

Executive Summary

To: Board of Alderman
From: Lieutenant Lee Farley, Waterbury Police Department
Subject: BJA FY26 Justice Assistance Grant (JAG) Program
Date: September 16, 2026

The Police Department respectfully requests your approval to submit an application for grant funding in the amount of $90,006 under the BJA FY26 Justice Assistance Grant (JAG) Program for the grant period of 10/01/2025 - 09/30/2029. This grant funded project will fund overtime costs for investigations and enforcement of drug related crimes, gang activity, violent crimes and/or other related criminal activity in an effort to combat violent crime through traffic enforcement and proactive investigations at both the patrol and investigative levels. This grant funding opportunity requires no match from the city.

A representative from the Police Department will be at the next Board of Alderman meeting to answer any questions you may have.

Respectfully Submitted,
Lee Farley #838
Lieutenant Lee Farley #838

Standard Applicant Information

Project Information

Project Title
Waterbury's Combat Against Violent Crime

Proposed Project Start Date
10/1/25

Proposed Project End Date
9/30/29

Federal Estimated Funding (Federal Share)
90006.0

Applicant Estimated Funding (Non-Federal Share)
0.0

Program Income Estimated Funding
0.0

Total Estimated Funding
90006.0

Areas Affected by Project (Cities, Counties, States, etc.)

Waterbury, CY

Type Of Applicant

Type of Applicant 1: Select Applicant Type:

C: City or Township Government

Type of Applicant 2: Select Applicant Type:

—

Type of Applicant 3: Select Applicant Type:

—

Other (specify):

—

Application Submitter Contact Information

Application POC Prefix Name

—

Application POC First Name	Application POC Middle Name	Application POC Last Name
Lee	—	Farley

Application POC Suffix Name

—

Organizational Affiliation	Title	Email ID
—	Lieutenant	lfarley@wtbypd.org

Phone Number	Fax Number
203-574-6906	203-574-8334

ORINumber

Executive Order and Delinquent Debt Information

Is Application Subject to Review by State Under Executive Order 12372? *

b. Program is subject to E.O. 12372 but has not been selected by the State for review

---

Is the Applicant Delinquent on Federal Debt?

No

SF424 Attachments (3)

Name	Date Added
manifest.txt	9/16/26
Form SF424_4_0-V4.0.pdf	9/16/26
GrantApplication.xml	9/16/26

Authorized Representative

Authorized Representative Information

Prefix Name

—

First Name	Middle Name	Last Name	Suffix Name
Paul	K.	Pernerewski	Jr.

Title

Mayor

Verify Legal Name, Doing Business As, and Legal Address

Legal Name

CITY OF WATERBURY

Doing Business As

UEI

VF8HWQF5HSN3

Legal Address

Street 1

235 GRAND ST STE 3

Street 2

City	State	Zip/Postal Code
WATERBURY	CT	06702

CongressionalDistrict	Country
05	USA

Certification

The legal name + Doing Business As (DBA) and legal address define a unique entity in the system as represented in its entity profile. The profile legal name and address is applicable to ALL applications and awards associated to this fiscal agent.

1. If this information is correct confirm/acknowledge to continue with completion of this application.

I confirm this is the correct entity.

Signer Name

Lee Farley

Certification Date / Time

09/16/2026 07:50 AM

2. If the information displayed does not accurately represent the legal entity applying for federal assistance:

a. Contact your Entity Administrator.

b. Contact the System for Award Management (SAM.gov) to update the entity legal name/address.

3. If the above information is not the entity for which this application is being submitted, Withdraw/Delete this application. Please initiate a new application in Grants.gov with using the correct UEI/SAM profile.

Proposal Abstract *

The City of Waterbury Police Department will use this grant funded project to fund overtime costs for investigations and enforcement of violent crime and/or other related criminal activitry such as drug related crimes & gang activity. This effort is to combat violent crime through traffic enforcement and proactive investigations at both the patrol and investigative levels.

Data Requested with Application *

⌄ Financial Management and System of Internal Controls

Background

Unique Entity Identifier (UEI) Number:

VF8HWQF5HSN3

Is the applicant entity a nonprofit organization (including a nonprofit institution of higher

education) as described in 26 U.S.C. 501(c)(3) and exempt from taxation under 26 U.S.C. 501(a)?

No

Audit Information

Does the applicant nonprofit organization maintain offshore accounts for the purpose of avoiding paying the tax described in 26 U.S.C. 511(a)?

If the answer to the question below is "Yes", refer to "Additional Attachments" under "What An Application Should Include" in the OJP solicitation (or application guidance) under which the applicant is submitting its application. If the solicitation/guidance describes the "Disclosure of Process related to Executive Compensation," the applicant nonprofit organization must provide -- as an attachment to its application -- a disclosure that satisfies the minimum requirements as described by OJP.

With respect to the most recent year in which the applicant nonprofit organization was required to file a tax return, does the applicant nonprofit organization believe (or assert) that it satisfies the requirements of 26 C.F.R. 53.4958-6 (which relate to the reasonableness of compensation of certain individuals)?

For purposes of this questionnaire, an "audit" is conducted by an independent, external auditor using generally accepted auditing standards (GAAS) or Generally Governmental Auditing Standards (GAGAS), and results in an audit report with an opinion.

Has the applicant entity undergone any of the following types of audit(s)? Please check all that apply:

"Single Audit" under OMB A-133 or Subpart F of 2 C.F.R. Part 200

Yes

Financial Statement Audit

Yes

Defense Contract Agency Audit (DCAA)

Other Audit and Agency

None

If Other Audit and Agency - list type of audit:

Most Recent Audit Report Issued:

Within the last 12 months

Name of Audit Agency/Firm:

CliftonLarsonAllen LLP

Auditor's Opinion

On the most recent audit, what was the auditor's opinion?

Unqualified Opinion

Enter the number of findings (if none, enter "0"):

0

Enter the dollar amount of questioned costs (if none, enter "0"):

0

Were material weaknesses noted in the report or opinion?

No

Accounting System

Which of the following best describes the applicant entity's accounting system:

Automated

Does the applicant entity's accounting system have the capability to identify the receipt and expenditure of award funds separately for each Federal award?

Yes

Does the applicant entity's accounting system have the capability to record expenditures for each Federal award by the budget cost categories shown in the approved budget?

Yes

Does the applicant entity's accounting system have the capability to record cost sharing ("match") separately for each Federal award, and maintain documentation to support recorded match or cost share?

Yes

Does the applicant entity's accounting system have the capability to accurately track employees actual time spent performing work for each federal award, and to accurately allocate charges for employee salaries and wages for each federal award, and maintain records to support the actual time spent and specific allocation of charges associated with each applicant employee?

Yes

Does the applicant entity's accounting system include budgetary controls to preclude the applicant entity from incurring obligations or costs that exceed the amount of funds available under a federal award (the total amount of the award, as well as the amount available in each budget cost category)?

Yes

Is applicant entity familiar with the "cost principles" that apply to recent and future federal awards, including the general and specific principles set out in 2 C.F.R Part 200?

Yes

Property Standards and Procurement Standards

Does the applicant entity's property management system(s) maintain the following information on property purchased with federal award fund (1) a description of the property; (2) an identification number; (3) the source of funding for the property, including the award number; (4) who holds title; (5) acquisition date; (6) acquisition cost; (7) federal share of the acquisition cost; (8) location and condition of the property; (9) ultimate disposition information?

Yes

Does the applicant entity maintain written policies and procedures for procurement transactions that -- (1) are designed to avoid unnecessary or duplicative purchases; (2) provide for analysis of lease versus purchase alternatives; (3) set out a process for soliciting goods and services, and (4) include standards of conduct that address conflicts of interest?

Yes

Are the applicant entity's procurement policies and procedures designed to ensure that procurements are conducted in a manner that provides full and open competition to the extent practicable, and to avoid practices that restrict competition?

Yes

Do the applicant entity's procurement policies and procedures require documentation of the history of a procurement, including the rationale for the method procurement, selection of contract type, selection or rejection of contractors, and basis for the contract price?

Yes

Does the applicant entity have written policies and procedures designed to prevent the applicant entity from entering into a procurement contract under a federal award with any entity/individual that is suspended/debarred from such contracts, including provisions for checking the "Excluded Parties List" system (www.sam.gov) for suspended/debarred sub-grantees and contractors, prior to award?

Yes

Travel Policy

Does the applicant entity maintain a standard travel policy?

Yes

Does the applicant entity adhere to the Federal Travel Regulation (FTR)?

Yes

Subrecipient Management and Monitoring

Does the applicant entity have written policies, procedures, and/or guidance designed to ensure that any subawards made by the applicant entity under a federal award -- (1) clearly document applicable federal requirements, (2) are appropriately monitored by the applicant, and (3) comply with the requirements in 2 CFR Part 200 (see 2 CFR 200.331)?

N/A - Applicant does not make subawards under any OJP awards

Is the applicant entity aware of the differences between subawards under federal awards and procurement contracts under federal awards, including the different roles and responsibilities associated with each?

N/A - Applicant does not make subawards under any OJP awards

Does the applicant entity have written policies and procedures designed to prevent the applicant entity from making a subaward under a federal award to any entity or individual is suspended or debarred from such subawards?

N/A - Applicant does not make subawards under any OJP awards

Designation as High Risk by Other Federal Agencies

Is the applicant entity designated "high risk" by a federal grant-making agency outside of DOJ?

No

Name(s) of the federal awarding agency:

Date(s) the agency notified the applicant entity of the "high risk" designation":

Enter in the contact information for the "high risk" point of contact at the federal agency:

Name:

Phone:

Email:

Reason for "high risk" status as set out by the federal agency:

Certification on Behalf of the Applicant Entity

This certification must be made by the chief executive, executive director, chief financial officer, designated authorized representative ("AOR"), or other official with the requisite knowledge and authority.

On behalf of the applicant entity, I certify to the U.S. Department of Justice that the information provided above is complete and correct to the best of my knowledge. I have the requisite authority to make this certification on behalf of the applicant entity.

—

Name:

Michael LeBlanc

Date:

20260923

Title:

Other

Please specify your title:

Director of Finance

Phone:

203-574-6840

FY2025 JAG NOFO

Statutory JAG Program Areas

Please select the program areas that you intend to fund with FY 2025 JAG funds (directly or through subawards). Please select all that apply.

Law enforcement programs

Yes

Prosecution and court programs

—

Prevention and education programs

—

Corrections and community corrections programs

—

Drug treatment and enforcement programs

___

Planning, evaluation, and technology improvement programs

___

Crime victim and witness programs (other than compensation)

___

Mental health programs and related law enforcement and corrections programs, including behavioral programs and crisis intervention teams

___

Implementation of state crisis intervention court proceedings and related programs or initiatives, including but not limited to mental health courts, drug courts, veterans courts, and extreme risk protection order programs

___

Programs to purchase and operate unmanned aircraft systems (as defined in section 44801 of title 49, United States Code) to benefit public safety.

___

Programs to purchase and operate counter-UAS systems (as defined in section 44801 of title 49, United States Code) included on the list of technologies established by subsection (d)(2)(A)(iii) section 210G of the Homeland Security Act of 2002 (6 U.S.C. 124n(d)(2)(A)(iii)) to exercise the authority granted under subsection (a)(2) of such section.

___

Proposal Narrative *

Name	Category	Created by	Date Added
JAG26- Program Narrative.pdf	Proposal Narrative	Lee Farley	9/23/2026 7:39 AM

Budget and Associated Documentation

Budget / Financial Attachments

Budget Worksheet and Budget Narrative *

Name	Category	Created by	Date Added
BJA2026- DOJ Budget Worksheet.XLSM	Budget Worksheet	Lee Farley	9/23/2026 7:59 AM

Pre-Agreement Cost

No documents have been uploaded for Pre-Agreement Cost

Indirect Cost Rate Agreement

No documents have been uploaded for Indirect Cost Rate Agreement

Consultant Rate Justification

No documents have been uploaded for Consultant Rate Justification

Employee Compensation Waiver

No documents have been uploaded for Employee Compensation Waiver

Financial Management Questionnaire (Including applicant disclosure of high-risk status)

No documents have been uploaded for Financial Management Questionnaire

Additional Attachments

No documents have been uploaded for Additional Attachments

Memoranda of Understanding (MOUs) and Other Supportive Documents

Memoranda of Understanding (MOUs) and Other Supportive Documents

Upload

The recommended files to upload are PDF, Microsoft Word and Excel.

No documents have been uploaded for Memoranda of Understanding (MOUs) and Other Supportive Documents

Additional Application Components

Documentation of Anticipated Benefit to Qualified Opportunity Zones (if applicable)

No documents have been uploaded for Documentation of Anticipated Benefit to Qualified Opportunity Zones (if applicable)

Research and Evaluation Independence and Integrity Statement

No documents have been uploaded for Research and Evaluation Independence and Integrity Statement

Additional Attachments

No documents have been uploaded for Additional Attachments

Disclosures and Assurances

No Lobbying Activities

The applicant is not required to submit a lobbying disclosure under 31 U.S.C. 1352 for this application.

No documents have been uploaded for Disclosure of Lobbying Activities

Disclosure of Duplication in Cost Items

No. [Applicant Name on SF-424] does not have (and is not proposed as a subrecipient under) any pending applications submitted within the last 12 months for federally funded grants or cooperative agreements (or for subawards under federal grants or cooperative agreements) that request funding to support the same project being proposed in this application to OJP and that would cover any identical cost items outlined in the budget submitted as part of this application.

DOJ Certified Standard Assurances *

CERTIFIED STANDARD ASSURANCES

On behalf of the Applicant, and in support of this application for a grant or cooperative agreement, I certify under penalty of perjury to the U.S. Department of Justice ("Department"), that all of the following are true and correct:

(1) I have the authority to make the following representations on behalf of myself and the Applicant. I understand that these representations will be relied upon as material in any Department decision to make an award to the Applicant based on its application.

(2) I certify that the Applicant has the legal authority to apply for the federal assistance sought by the application, and that it has the institutional, managerial, and financial capability (including funds sufficient to pay any required non-federal share of project costs) to plan, manage, and complete the project described in the application properly.

(3) I assure that, throughout the period of performance for the award (if any) made by the Department based on the application--

a. the Applicant will comply with all award requirements and all federal statutes and regulations applicable to the award;
b. the Applicant will require all subrecipients to comply with all applicable award requirements and all applicable federal statutes and regulations; and
c. the Applicant will maintain safeguards to address and prevent any organizational conflict of interest, and also to prohibit employees from using their positions in any manner that poses, or appears to pose, a personal or financial conflict of interest.

(4) The Applicant understands that the federal statutes and regulations applicable to the award (if any) made by the Department based on the application specifically include statutes and regulations pertaining to civil rights and nondiscrimination, and, in addition--

a. the Applicant understands that the applicable statutes pertaining to civil rights will include section 601 of the Civil Rights Act of 1964 (42 U.S.C. § 2000d); section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794); section 901 of the Education Amendments of 1972 (20 U.S.C. § 1681); and section 303 of the Age Discrimination Act of 1975 (42 U.S.C. § 6102);
b. the Applicant understands that the applicable statutes pertaining to nondiscrimination may include section 809(c) of Title I of the Omnibus Crime Control and Safe Streets Act of 1968 (34 U.S.C. § 10228(c)); section 1407(e) of the Victims of Crime Act of 1984 (34 U.S.C. § 20110(e)); section 299A(b) of the Juvenile Justice and Delinquency Prevention Act of 2002 (34 U.S.C. § 11182(b)); and that the grant condition set out at section 40002(b)(13) of the Violence Against Women Act (34 U.S.C. § 12291(b)(13)), which will apply

to all awards made by the Office on Violence Against Women, also may apply to an award made otherwise;

c. the Applicant understands that it must require any subrecipient to comply with all such applicable statutes (and associated regulations); and
d. on behalf of the Applicant, I make the specific assurances set out in 28 C.F.R. §§ 42.105 and 42.204.

(5) The Applicant also understands that (in addition to any applicable program-specific regulations and to applicable federal regulations that pertain to civil rights and nondiscrimination) the federal regulations applicable to the award (if any) made by the Department based on the application may include, but are not limited to, 2 C.F.R. Part 2800 (the DOJ "Part 200 Uniform Requirements") and 28 C.F.R. Parts 22 (confidentiality - research and statistical information), 23 (criminal intelligence systems), 38 (regarding faith-based or religious organizations participating in federal financial assistance programs), and 46 (human subjects protection).

(6) I assure that the Applicant will assist the Department as necessary (and will require subrecipients and contractors to assist as necessary) with the Department's compliance with section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108), the Archeological and Historical Preservation Act of 1974 (54 U.S.C. §§ 312501-312508), and the National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4335), and 28 C.F.R. Parts 61 (NEPA) and 63 (floodplains and wetlands).

(7) I assure that the Applicant will give the Department and the Government Accountability Office, through any authorized representative, access to, and opportunity to examine, all paper or electronic records related to the award (if any) made by the Department based on the application.

(8) If this application is for an award from the National Institute of Justice or the Bureau of Justice Statistics pursuant to which award funds may be made available (whether by the award directly or by any subaward at any tier) to an institution of higher education (as defined at 34 U.S.C. § 10251(a)(17)), I assure that, if any award funds actually are made available to such an institution, the Applicant will require that, throughout the period of performance--

a. each such institution comply with any requirements that are imposed on it by the First Amendment to the Constitution of the United States; and
b. subject to par. a, each such institution comply with its own representations, if any, concerning academic freedom, freedom of inquiry and debate, research independence, and research integrity, at the institution, that are included in promotional materials, in official statements, in formal policies, in applications for grants (including this award application), for accreditation, or for licensing, or in submissions relating to such grants, accreditation, or licensing, or that otherwise are made or disseminated to students, to faculty, or to the general public.

(9) I assure that, if the Applicant is a governmental entity, with respect to the award (if any) made by the Department based on the application--

a. it will comply with the requirements of the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§ 4601-4655), which govern the treatment of persons displaced as a result of federal and federally-assisted programs; and
b. it will comply with requirements of 5 U.S.C. §§ 1501-1508 and 7324-7328, which limit certain political activities of State or local government employees whose principal employment is in connection with an activity financed in whole or in part by federal assistance.

(10) If the Applicant applies for and receives an award from the Office of Community Oriented Policing Services (COPS Office), I assure that as required by 34 U.S.C. § 10382(c)(11), it will, to the extent practicable and consistent with applicable law--including, but not limited to, the Indian Self- Determination and Education Assistance Act--seek, recruit, and hire qualified members of racial and ethnic minority groups and qualified women in order to further effective law enforcement by increasing their ranks within the sworn positions, as provided under 34 U.S.C. § 10382(c)(11).

(11) If the Applicant applies for and receives a DOJ award under the STOP School Violence Act program, I assure as required by 34 U.S.C. § 10552(a)(3), that it will maintain and report such data, records, and information (programmatic and financial) as DOJ may reasonably require.

I acknowledge that a materially false, fictitious, or fraudulent statement (or concealment or omission of a material fact) in this certification, or in the application that it supports, may be the subject of criminal prosecution (including under 18 U.S.C. §§ 1001 and/or 1621, and/or 34 U.S.C. §§ 10271-10273), and also may subject me and the Applicant to civil penalties and administrative remedies for false claims or otherwise (including under 31 U.S.C. §§ 3729-3730 and 3801-3812). I also acknowledge that the Department's awards, including certifications provided in connection with such awards, are subject to review by the Department, including by its Office of the Inspector General.

Please Acknowledge *

Signed

SignerID

lfarley@wtbypd.org

Signing Date / Time

9/23/26 8:03 AM

DOJ Certifications Regarding Lobbying; Debarment, Suspension and Other Responsibility Matters; and Drug-Free Workplace Requirements; Law Enforcement and Community Policing

U.S. DEPARTMENT OF JUSTICE

CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; DRUG-FREE WORKPLACE REQUIREMENTS; COORDINATION WITH AFFECTED AGENCIES

Applicants should refer to the regulations and other requirements cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations or other cited requirements before completing this form. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the U.S. Department of Justice ("Department") determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

As required by 31 U.S.C. § 1352, as implemented by 28 C.F.R. Part 69, the Applicant certifies and assures (to the extent applicable) the following:

(a)No Federal appropriated funds have been paid or will be paid, by or on behalf of the Applicant, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant, the entering into of any cooperative agreement, or the extension, continuation, renewal, amendment, or modification of any Federal grant or cooperative agreement;

(b) If the Applicant's request for Federal funds is in excess of $100,000, and any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal grant or cooperative agreement, the Applicant shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities" in accordance with its (and any DOJ awarding agency's) instructions; and

(c) The Applicant shall require that the language of this certification be included in the award documents for all subgrants and procurement contracts (and their subcontracts) funded with Federal award funds and shall ensure that any certifications or lobbying disclosures required of recipients of such subgrants and procurement contracts (or their subcontractors) are made and filed in accordance with 31 U.S.C. § 1352.

2. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

A. Pursuant to Department regulations on nonprocurement debarment and suspension implemented at 2 C.F.R. Part 2867, and to other related requirements, the Applicant certifies, with respect to prospective participants in a primary tier "covered transaction," as defined at 2 C.F.R. § 2867.20(a), that neither it nor any of its principals--

(a) is presently debarred, suspended, proposed for debarment, declared ineligible, sentenced to a denial of Federal benefits by a State or Federal court, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) has within a three-year period preceding this application been convicted of a felony criminal violation under any Federal law, or been convicted or had a civil judgment rendered against it for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, tribal, or local) transaction or private agreement or transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion or receiving stolen property, making false claims, or obstruction of justice, or commission of any offense indicating a lack of business integrity or business honesty that seriously and directly affects its (or its principals') present responsibility;

(c) is presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, tribal, or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and/or

(d) has within a three-year period preceding this application had one or more public transactions (Federal, State, tribal, or local) terminated for cause or default.

B. Where the Applicant is unable to certify to any of the statements in this certification, it shall attach an explanation to this application. Where the Applicant or any of its principals was convicted, within a three-year period preceding this application, of a felony criminal violation under any Federal law, the Applicant also must disclose such felony criminal conviction in writing to the Department (for OJP Applicants, to OJP at Ojpcompliancereporting@usdoj.gov; for OVW Applicants, to OVW at OVW.GFMD@usdoj.gov; or for COPS Applicants, to COPS at AskCOPSRC@usdoj.gov), unless such disclosure has already been made.

3. FEDERAL TAXES

A. If the Applicant is a corporation, it certifies either that (1) the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, or (2) the corporation has provided written notice of such an unpaid tax liability (or liabilities) to the Department (for OJP Applicants, to OJP at Ojpcompliancereporting@usdoj.gov; for OVW Applicants, to OVW at OVW.GFMD@usdoj.gov; or for COPS Applicants, to COPS at AskCOPSRC@usdoj.gov).

B. Where the Applicant is unable to certify to any of the statements in this certification, it shall attach an explanation to this application.

4. DRUG-FREE WORKPLACE (GRANTEES OTHER THAN INDIVIDUALS)

As required by the Drug-Free Workplace Act of 1988, as implemented at 28 C.F.R. Part 83, Subpart F, for grantees, as defined at 28 C.F.R. §§ 83.620 and 83.650:

A. The Applicant certifies and assures that it will, or will continue to, provide a drug-free workplace by--

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in its workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an on-going drug-free awareness program to inform employees about--

(1) The dangers of drug abuse in the workplace;

(2) The Applicant's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the award be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the award, the employee will--

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of the employee's conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the Department, in writing, within 10 calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title of any such convicted employee to the Department, as follows:

For COPS award recipients - COPS Office, 145 N Street, NE, Washington, DC, 20530;

For OJP and OVW award recipients - U.S. Department of Justice, Office of Justice Programs, ATTN: Control Desk, 999 North

Capitol Street, NE Washington, DC 20531.

Notice shall include the identification number(s) of each affected award;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency; and

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

5. COORDINATION REQUIRED UNDER PUBLIC SAFETY AND COMMUNITY POLICING PROGRAMS

As required by the Public Safety Partnership and Community Policing Act of 1994, at 34 U.S.C. § 10382(c)(5), if this application is for a COPS award, the Applicant certifies that there has been appropriate coordination with all agencies that may be affected by its award. Affected agencies may include, among others, Offices of the United States Attorneys; State, local, or tribal prosecutors; or correctional agencies.

I acknowledge that a materially false, fictitious, or fraudulent statement (or concealment or omission of a material fact) in this certification, or in the application that it supports, may be the subject of criminal prosecution (including under 18 U.S.C. §§ 1001 and/or 1621, and/or 34 U.S.C. §§ 10271-10273), and also may subject me and the Applicant to civil penalties and administrative remedies for false claims or otherwise (including under 31 U.S.C. §§ 3729-3730 and 3801-3812). I also acknowledge that the Department's awards, including certifications provided in connection with such awards, are subject to review by the Department, including by its Office of the Inspector General.

Please Acknowledge *

Certified

SignerID

lfarley@wtbypd.org

Signing Date / Time

9/23/26 8:03 AM

Other Disclosures and Assurances

Applicant Disclosure and Justification - DOJ High Risk Grantees (if applicable)

No documents have been uploaded for Application Disclosure and Justification - DOJ High Risk Grantees

No documents have been uploaded for Other Disclosures and Assurances

Declaration and Certification to the U.S. Department of Justice as to this Application Submission

By [taking this action], I --

1. Declare the following to the U.S. Department of Justice (DOJ), under penalty of

1. Declare the following to the U.S. Department of Justice (DOJ), under penalty of perjury: (1) I have authority to make this declaration and certification on behalf of the applicant; (2) I have conducted or there was conducted (including by the applicant's legal counsel as appropriate, and made available to me) a diligent review of all requirements pertinent to and all matters encompassed by this declaration and certification.

2. Certify to DOJ, under penalty of perjury, on behalf of myself and the applicant, to the best of my knowledge and belief, that the following are true as of the date of this application submission: (1) I have reviewed this application and all supporting materials submitted in connection therewith (including anything submitted in support of this application by any person on behalf of the applicant before or at the time of the application submission and any materials that accompany this declaration and certification); (2) The information in this application and in all supporting materials is accurate, true, and complete information as of the date of this request; and (3) I have the authority to submit this application on behalf of the applicant.

3. Declare the following to DOJ, under penalty of perjury, on behalf of myself and the applicant: (1) I understand that, in taking (or not taking) any action pursuant to this declaration and certification, DOJ will rely upon this declaration and certification as a material representation; and (2) I understand that any materially false, fictitious, or fraudulent information or statement in this declaration and certification (or concealment or omission of a material fact as to either) may be the subject of criminal prosecution (including under 18 U.S.C. §§ 1001 and/or 1621, and/or 34 U.S.C. §§ 10271-10273), and also may subject me and the applicant to civil penalties and administrative remedies under the federal False Claims Act (including under 31 U.S.C. §§ 3729-3730 and/or §§ 3801-3812) or otherwise.

Please Acknowledge *

Signed

SignerID

lfarley@wtbypd.org

Signing Date / Time

9/23/26 8:03 AM

Other

No documents have been uploaded for Other

Not Certified

GRANTS.GOV™

WORKSPACE FORM

1-800-518-4726
SUPPORT@GRANTS.GOV

This Workspace form is one of the forms you need to complete prior to submitting your Application Package. This form can be completed in its entirety offline using Adobe Reader. You can save your form by clicking the "Save" button and see any errors by clicking the "Check For Errors" button. In-progress and completed forms can be uploaded at any time to Grants.gov using the Workspace feature.

When you open a form, required fields are highlighted in yellow with a red border. Optional fields and completed fields are displayed in white. If you enter invalid or incomplete information in a field, you will receive an error message. Additional instructions and FAQs about the Application Package can be found in the Grants.gov Applicants tab.

OPPORTUNITY & PACKAGE DETAILS:

Opportunity Number:	O-BJA-2026-172705
Opportunity Title:	BJA FY 2026 Edward Byrne Memorial Justice Assistance Grant (JAG) Program-Local Formula
Opportunity Package ID:	PKG00294057
Assistance Listing Number:	16.738
Assistance Listing Title:	Edward Byrne Memorial Justice Assistance Grant Program
Competition ID:	
Competition Title:	
Opening Date:	08/25/2026
Closing Date:	10/09/2026
Agency:	Bureau of Justice Assistance
Contact Information:	OJP Response Center

APPLICANT & WORKSPACE DETAILS:

Workspace ID:	WS01755850
Application Filing Name:	City of Waterbury
UEI:	VF8HWQF5HSN3
Organization:	CITY OF WATERBURY
Form Name:	Application for Federal Assistance (SF-424)
Form Version:	4.0
Requirement:	Mandatory
Download Date/Time:	Sep 09, 2026 08:18:27 AM EDT
Form State:	No Errors

FORM ACTIONS:

OMB Number: 4040-0004
Expiration Date: 03/31/2029

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: Completed by Grants.gov upon submission.

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: City of Waterbury

* b. Employer/Taxpayer Identification Number (EIN/TIN): 006001900

* c. UEI: VF8HWQF5HSN3

d. Address:

* Street1: 235 Grand St
Street2:
* City: Waterbury
County/Parish:
* State: CT: Connecticut
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 06702-1938

e. Organizational Unit:

Department Name: Waterbury Police Department

Division Name: Division of Police

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:
* First Name: Lee
Middle Name:
* Last Name: Farley
Suffix:

Title: Lieutenant

Organizational Affiliation:

* Telephone Number: 203-574-6906
Fax Number: 203-574-8334

* Email: lfarley@wtbypd.org

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

C: City or Township Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Bureau of Justice Assistance

11. Assistance Listing Number:

16.738

Assistance Listing Title:

Edward Byrne Memorial Justice Assistance Grant Program

*** 12. Funding Opportunity Number:**

O-BJA-2026-172705

* Title:

BJA FY 2026 Edward Byrne Memorial Justice Assistance Grant (JAG) Program-Local Formula

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Waterbury's Combat Against Violent Crime

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: CT-005 * b. Program/Project: CT-005

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 10/01/2025 * b. End Date: 09/30/2029

18. Estimated Funding ($):

* a. Federal	90,006.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	90,006.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on

☒ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☐ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: First Name: Paul

Middle Name:

* Last Name: Pernerewski

Suffix:

* Title: Mayor

* Telephone Number: 203-574-6712 Fax Number: 203-574-6804

* Email: authorizedrep@wtbypd.org

* Signature of Authorized Representative: Completed by Grants.gov upon submission. * Date Signed: Completed by Grants.gov upon submission.

PROGRAM NARRATIVE

2026 Edward Byrne Memorial Justice Assistance Grant (JAG) Program

Waterbury's Combat Against Violent Crime

City of Waterbury, Connecticut

The City of Waterbury is a smaller urban city with 28.96 square miles located along the Naugatuck River within the State of Connecticut. Waterbury lies 33 miles southwest of Hartford, the capital of Connecticut, and 77 miles northeast of New York City, New York. Waterbury is the largest city in the Central Naugatuck Valley Region, and is in the region's geographic center between Interstate 84 and State Route 8. According to the 2020 U.S. Census, Waterbury has a population of 114,403, which does not include the number of commuters coming into the city on a daily basis to work, go to school (i.e. Waterbury Arts Magnet School, Rotella Magnet School, UCONN, Post University, Naugatuck Valley Community College, Porter and Chester, etc.), enjoy leisure activities (i.e. Fulton Park, Hamilton Park, Brass City Brew Fest, Farmer's Market, etc.), and/or places (i.e. Brass Mill Mall, Palace Theater, etc.) the city has to offer. Further, Waterbury is a conglomerate of cultures including but not limited to Hispanic, Albanian, Lebanese, Caucasian, and African American.

The Waterbury Police Department (WPD) and the City of Waterbury have an equally large responsibility to provide citizens who reside in Waterbury, and those who visit a safe environment in order for them to be secure in their possessions and persons during their activities in the city. Unfortunately, the financial climate of the city is not as strong as the cultural and geographic landscape of the city. Subsequently, with the 2026 Edward Byrne Memorial Justice Assistance Grant (JAG), the Waterbury Police Department (WPD) will be diligent in making

certain to fund unmet needs of the police department, needs which could not be funded otherwise. Therefore, 2026 JAG funds will fund overtime costs for investigations and enforcement of drug related crimes, gang activity, violent crimes and/or other related criminal activity in an effort to combat violent crime through traffic enforcement and proactive investigations at both the patrol and investigative levels. Regardless of the type of officer conducting these investigations, efforts to address these crimes will involve ongoing collaboration and information-sharing across all levels. This ensures the efficient use of federal funding to reduce crime and strengthen community relationships.

Description of the Issues

The City of Waterbury's strategy for the 2026 JAG funds focuses on gathering and enhancing intelligence on violent crime and gun violence in and around the city. This will be achieved by leveraging crime reports collected by the Records Division on a monthly and weekly basis, as well as analyzing relevant data to determine where police efforts should be directed.

The Waterbury Police Department has our share of violent crime. Alongside our violent crime reports, the department recognizes that there is a nexus between drugs, stolen motor vehicles, gang activity and other related crimes to violent crime. "It is common place to see the theft of a motor vehicle connected to a violent crime such as car-jacking, robbery, shooting, home invasion, and so forth. These violent events also lead to increased hazards for responding officers and the public when they involve vehicles due to the dangers caused by offenders driving recklessly when going to or attempting escape from violent crime scenes" (Force, 2016). Efforts of investigating and enforcing these related crimes can aid in a reduction of violent crimes.

Unfortunately, the opioid overdose also continues to plague the city at an alarming rate. In 2025, there were 275 non-fatal overdoses and 47 fatal overdoses, compared to 296 non-fatal and 44 fatal overdoses in 2024; however, more funding allocated to investigations on the violent crime and associated activities impacts the opioid crisis, and can assist the police department with obtaining more intelligence on this type of activity in hopes of finding the main source, and a better understanding of the violent crime, gun violence and associated activities in and around the City of Waterbury. WPD continues to work diligently to reduce the number of non-fatal and fatal overdoes throughout the city. Although we observed a slight drop in non-fatal overdoses, there was slight increase in the number of fatal overdoses due to the fact that our police department is seeing "heroin" as being pure fentanyl.

It is important to note that the numbers presented on the number of overdoses does not include the number of individuals that may have gone directly to one of the two hospitals located within the city for treatment. Nor does this data capture that individuals are buying opioids within the city and bringing the opioids to surrounding towns and cities. Intelligence to date has found that many individuals are coming to Waterbury to buy opioids; therefore, JAG funds will be best utilized to conduct proactive investigations, and further track on sources of weapons, drugs including opioids, and other crimes having a nexus with violent crime, including gun violence.

Project Design and Implementation

Announcement of funding led to immediate planning sessions of the department's command staff. Planning sessions began and continued to ensure an understanding of the scope, nature, and timing of the grant opportunity. The planning process was decided upon by Command staff at WPD based upon current criminal activities, and determined needs to date.

Upon award of the JAG grant, the Waterbury Police Department will immediately convene planning sessions with command staff to design and implement the project utilizing current data and shared information. The following sources of information will continue to be analyzed and discussed on a weekly basis throughout the grant period to enhance community safety and reduce violent crime:

- Weekly and monthly crime statistics and trends,
- Weekly regional intelligence meeting,
- Established state and federal law enforcement partnerships, and
- Waterbury Project Safe Neighborhood and Project Longevity Program meetings.

This data driven approach ensures that strategies are responsive to identified hot spots and real-time crime trends. This project will employ a multi-prong approach to combat violent crime and related criminal activity. The Criminal Investigations Bureau will utilize real-time intelligence and data to conduct long-term, targeted investigations, while the Patrol Division will leverage grant funding to implement proactive patrol operations, focused enforcement actions, and traffic enforcement in high-crime areas.

Timeline

Upon notification of award, a grant budget will be set up in the City's financial system, including segregation of funding by the Office of the Quartermaster. Items will be procured following the City of Waterbury Procurement rules and regulations. Investigations will be coordinated by Command Staff to include that of the Criminal Investigation Bureau (CIB) which includes Youth Squad, Detective Division, Vice and Intelligence Division, Street Crimes Unit, Gang Task Force, Auto Theft Task Force (ATTF), Real Time Crime and Pandemic Center, Crime Prevention Unit (CPU), Forensic Division, and the Patrol Division consisting of all three

shifts. Command Staff from the various divisions will then share the information discussed and decided upon with personnel located in these divisions, who will carry out the strategic mission toward combatting violent crime and those criminal activities associated.

2026 JAG funded expenses will be monitored and reconciled to assure compliance with grant budget requests and allocations. At the end of each quarter, financial and progress reports will be prepared and electronically submitted by the Financial Point of Contact in collaboration with the Programmatic Point of Contact for WPD.

Investigations: CIB and Patrol

The Waterbury Police Department is seeking $90,006.00 for overtime as necessary for investigations and enforcement of drug related crimes, gang activity, violent crimes and/or other related criminal activity in an effort to combat violent crime through traffic enforcement and proactive investigations at both the patrol and investigative levels. Due to current budgetary constraints and uncertainty in future local funding, this grant support is essential. It will enable the department to sustain proactive enforcement, respond effectively to emerging threats, and continue reducing violent crime in the City of Waterbury.

Additionally, WPD is seeking to utilize these funds for proactive patrol investigations by using crime statistics compiled both weekly and monthly in order to know which areas of the city are experiencing what type of crime and leveraging the existing resources coupled with JAG funding to allow for police operations such as traffic enforcement to collect further intelligence to assist in combatting other types of violent crime. Sworn personnel will be hired on overtime to focus on investigations and activities focused on deterring violent crime, and gathering intelligence.

The CIB and Patrol Division share information and will continue to share information in order to properly leverage existing resources to effectively utilize 2026 JAG funding. Due to the long-term investigations and number of hours needed to effectively conduct investigations, overtime will be incurred. Without these funds, WPD would not be able to fund these operations due to financial restraints, and as such JAG funding is necessary to allow CIB and WPD combat violent crime, and related criminal activity. Related criminal activity to violent crime as known by the Waterbury Police Department includes but is not limited to stolen motor vehicles, drug activity, gang activity, etc. "Law enforcement's reports and investigations of auto theft should take the ability of the offender(s) to use the stolen vehicle in transitioning to other crimes into consideration, as offenders may use the stolen vehicle to preempt, complete, or otherwise conduct organized white collar crime or other crimes against persons (e.g., bank robberies, burglaries, drug trafficking, human trafficking)" (Force, 2016). Proactivity addressing, investigating and deterring these nexuses to violent crime will aid in the reduction of violent time.

The Waterbury Police Department will utilize the Patrol Division to respond to and investigate violent crimes and related criminal activity. These funds will allow the Patrol Division and their supervisors to investigate these crimes in coordination with the Criminal Investigation Bureau (CIB). Under the CIB, the Detectives and their supervisors can further investigate these violent crimes and related incidents by further canvassing for evidence, witnesses, video surveillance and other investigative methods to solve these crimes. The Real Time Crime Center staff can further utilize their video surveillance cameras, license plate readers and other resources to aid in investigative leads. The Computer Crimes Unit and Forensics Unit can also aid in further investigation of evidence and electronic evidence investigations. If these violent crimes are related to narcotics, gangs and/or stolen motor vehicles, the department will

utilize our Vice and Intelligence Division which contains the Auto Theft Task Force (ATTF), Gang Task Force (GTF), Crime Prevention Unit (CPU) and other resources to further assist these investigations.

A source of strength for WPD investigations to be conducted lies with partnerships this agency has with various federal, state, and local agencies, the U.S. Attorneys, and States Attorneys. These partnerships and funding opportunities will continue to assist WPD with combatting violent crime and associated activities that continue to negatively impact the City of Waterbury.

To sustain and build on this progress, the Waterbury Police Department has strengthened partnerships with state and federal agencies, including the FBI, ATF, DEA, and U.S. Marshals Service. The department also hosts a weekly regional intelligence meeting involving state and local law enforcement and judicial partners. Through Mutual Aid Agreements, the department has expanded staffing in its Real Time Crime Center to include representatives from the State of Connecticut Parole, the Department of Corrections, the Connecticut Intelligence Center Regional Intelligence Liaison Officer, the City of Waterbury Department of Education, and the National Guard. In 2024, the department signed a Memorandum of Understanding (MOU) with the ATF, becoming a designated NIBIN partner site. These enhanced forensic capabilities and improved information-sharing have already begun to drive down the violent crime rate.

Capabilities and Competencies

The Office of the Quartermaster and Grants Administration operates as a fully civilianized division of the police department, and is a vital resource for most internal functions of the department as a whole. In particular, this division is a key constituent of the department's

administration as the Quartermaster's Office is relied upon to extract and provide information relative to both the fiscal operations of the department's civilian and uniformed personnel. Responsibilities also include preparing requisitions and receiving goods and services that meet the standards outlined by the City of Waterbury for general funds and grant projects.

The division acts as a liaison to various City departments including Purchasing, Budget, Finance, Payroll, Corporation Counsel, Human Resources, and Pension & Benefits. Also, the division Internal Audit on behalf of the police department in regards to day to day operations. The division is currently comprised of an Administrative Officer, who is accountable for day-to-day operations pertaining to administering the annual operating budget, capital budget, and grant compliance—federal financial report, progress reports and performance measures, segregating funds, and preparing electronic draws on grants, while maintaining the highest level of internal controls for accounting functions.

Other staff that assist the division are an Accountant III, who assists the Administrative Officer in processing invoices, receiving on products, processing of overtime and tabulations of outcomes for the grant. Further, the division works with the Programmatic Point of Contact for grants, and will continue to be assisting in various parts of the grant process.

Plan for Collecting the Data Required

The Records Management System for WPD will be utilized to tabulate data regarding individuals (victim and perpetrator), location, type of violent crimes, and associated activities (i.e. gang, weapons, and drug/opioid) occurring during the various reporting periods. The Programmatic Point of Contact will follow up with the officers' working investigations on

violent crime and associated activities to assure accurate collection of data associated with these types of investigations.

Both the Programmatic and Financial Point of Contact will ensure that WPD meets all reporting necessary for the life of the 2026 JAG award should all funding be received. WPD appreciates the opportunities afforded by the federal government and will make impactful use of any and all JAG funds awarded by working to Reduce Violent crime and build positive relationships.

References

Force, R. (2016). "Motor Vehicle Theft: A Relationship to Other Crimes". The Police Chief. Retrieved From: https://www.policechiefmagazine.org/motor-vehicle-theft-a-relationship-to-other-crimes/

United States Census Bureau. (2025). U.S. Census Bureau QuickFacts: Waterbury city, Connecticut. Retrieved from: https://www.census.gov/quickfacts/fact/table/waterburycityconnecticut/PST045225

Waterbury Police Department. (2026). Records. Waterbury, CT

Budget Detail - Year 1

Does this budget contain conference costs which is defined broadly to include meetings, retreats, seminars, symposia, and training activities? - Y/N (DOJ Financial Guide, Section 3.10)	

A. Personnel

Name *List each name, if known.*	Position *List each position, if known.*	Computation *Show annual salary rate & amount of time devoted to the project for each name/position.*						
		Salary	*Rate*	*Time Worked (# of hours, days, months, years)*	*Percentage of Time*	*Total Cost*	*Non-Federal Contribution*	*Federal Request*
	Lieutenant	$84.46		75	100%	$6,335		$6,335
	Sergeant	$77.57		175	100%	$13,575		$13,575
	Detective	$72.88		504	100%	$36,732		$36,732
	Officer	$69.08		483	100%	$33,366		$33,366
					Total(s)	$90,008	$0	$90,008

Narrative

JAG funds will be utilized to support overtime costs for investigations and enforcement of drug related crimes, gang activity, violent crimes and/or other related criminal activity in an effort to combat violent crime through traffic enforcement and proactive investigations at both the patrol and investigative levels. It is estimated that there will be approximately 483 hours of patrolman overtime, 504 hours of Detective overtime, 175 hours of Sergeant overtime, and 75 hours of Lieutenant overtime. Sergeant and Lieutenant overtime is minimal and necessary due to the departmental requirement for the presence of supervisors in certain situations such as use of force, or other critical incident scenarios that may arise and need supervisory approval or direction. The greatest amounts of estimated overtime are for those doing majority of the investigation are patrol officers & detectives, and may in fact be less than what could be required through intelligence gathering on these types of police activities; however, the costs associated are reasonable and necessary.

PALACE
THEATER

100 EAST MAIN STREET | WATERBURY, CT 06702 | PALACETHEATERCT.ORG

September 23, 2026

Honorable Board of Aldermen
c/o Michael Dalton, City Clerk
235 Grand Street
Waterbury, CT 06702

Ladies & Gentlemen:

Per the Operating Management Agreement enclosed for your review please find the 2027 Operating Budget which was approved at the September 22, 2026 Board of Directors Meeting.

If you have any questions, please do not hesitate to contact our office at (203)346-2000.

Sincerely,

Frank Tavera
Chief Executive Officer

Enc.

Entertaining New Possibilities

THE PALACE THEATER GROUP, INC.
FY 2027 Operating Budget

	Approved Budget FY 2027
OPERATING MARGINS	
GROSS EVENT SALES	
LESS: EVENT EXPENSES	
EVENT MARGINS	**406,982**
ANCILLARY NET	**997,186**
SPECIAL EVENTS MARGINS	53,000
SPECIAL EVENTS MARGINS - Spotlight Series	675
NET BAR/CONCESSIONS	310,652
TOTAL MARGINS	**1,768,495**
OPERATING REVENUE	
GRANT INCOME-DECD	196,892
GRANT INCOME-OTHER	153,000
WAMS INCOME	250,000
CONTRIBUTED INCOME	958,000
OTHER OPERATING REVENUE	107,850
TRANSFER FROM BOARD ADVISORY FUND	185,744
INTEREST	45,000
TOTAL OPERATING REVENUE	**1,896,486**
TOTAL REVENUE FROM OPERATIONS	**3,664,981**
EXPENSES	
SALARIES & BENEFITS	1,825,096
FACILITIES MANAGEMENT	600,150
GENERAL & ADMINISTRATIVE	500,203
MARKETING & PROMOTION	325,137
OTHER EXPENSES	247,000
TOTAL EXPENSES	**3,497,586**
INCOME FROM OPERATIONS BEFORE DEPRECIATION AND LONG-TERM ITEMS	**167,395**

WATERBURY
DEVELOPMENT CORPORATION

Date: 23 September 2026

To: Michael Digiovancarlo
President, Board of Aldermen

Members, Board of Aldermen

Mayor Paul Pernerewski

From: Robert Dowd – Project Manager at WDC RJD
Thomas Favazzo - Project Manager at WDC

Subject: Construction Contract for RFP #8801 Waterbury Community Health Resource Center Renovation project

Dear Honorable Members of the Board of Aldermen,

I request approval of the attached Construction Contract for the Waterbury Community Health Resource Center Renovation project between the City of Waterbury and JA Rosa Construction LLC.
Four responses were received to RFP #8801: Construx Co., KBE Building Corporation, Millennium Builders, Inc., and J.A. Rosa Construction, LLC. The bid amounts, including allowances, were as follows:

Construx	$9,752,485.00
KBE	$7,476,686.00
Millennium	$7,343,572.03
J.A. Rosa	$6,904102.00

A Selection Committee was formed to review and evaluate the RFP responses. The Committee consisted of: Kevin McCaffrey, Director of Purchasing; Robert Dowd, Project Manager at WDC; Tom Favazzo, Project Manager at WDC, Dave Simpson, Director of Public Works, Aisling McGuckin, Director of Public Health and Michael LeBlanc, Director of Finance.

The Selection Committee discussed the project history and reviewed the four RFP responses. RFP respondents Millennium Builders, Inc, J.A. Rosa Construction, LLC, and KBE Building Corporation were invited to present their RFP responses and be interviewed by the Selection Committee. Interviews were held on 11 August 2026 in the Finance Conference Room on the second floor of City Hall.

As a result of the interviews, the Selection Committee requested that each firm revisit their bid amounts and submit their firm's best & final offer.

On 20 August 2026 each of the three firms submitted their best & final offers, including allowances, as follows:

KBE	$8,002,078.84
Millennium	$7,343,572.00
J.A. Rosa	$6,764,675.00

On 27 August 2026 the Selection Committee met again to review the best & final offers noted above. The Committee was unanimous in its decision to recommend awarding the project to J.A. Rosa Construction, LLC based upon the following reasons and other considerations:

1) J.A. Rosa submitted the lowest price in both initial and best & final proposals.
2) J.A. Rosa's relevant recent experience, such as their work at One Exchange.
3) J.A. Rosa's prior experience, such as the Municipal Stadium restrooms/locker rooms project.

The cost of this project will be J.A. Rosa's bid of $6,764,675, plus an Owner's Controlled Contingency in the amount of $85,325 for a project total of $6,850,000.

This project is being funded by a United States Health Resources & Services Administration (HRSA) grant in the amount of $5,000,000, with the remaining $1,850,000 balance funded by Local City Funds subject to approval of a requested transfer from the City's Unallocated Capital Funds account.

Attached please find the construction contract between the City of Waterbury and JA Rosa Construction LLC along with all relevant materials. One record copy of the contract documents has been submitted to City Clerk and six copies have been submitted for the Board of Aldermen.

Lastly, WDC will have representatives present at the Board of Aldermen meeting to answer any questions you may have regarding this matter.

Thank you.

Construction Contract
for
Renovations
of the
The Waterbury Community Health Resource Center
between the
City of Waterbury
and
J.A. Rosa Construction, LLC

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and **J.A. ROSA CONSTRUCTION, LLC**, located at 17 Town Line Road, Wolcott, Connecticut 06716, a Connecticut limited Liability company duly registered to do business in Connecticut (the "Contractor").

WHEREAS the Contractor submitted a proposal in response to **Request for Proposal ("RFP") No. 8801** for renovations to the Waterbury Community Health Resource Center, located at 24 Branch Street in Waterbury, Connecticut (the "Project"); and

WHEREAS the City accepted the Contractor's bid for **RFP No. 8801**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as the "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** all applicable local, state and federal laws, statutes, ordinances, rules and regulations and **(ii)** generally accepted professional standards.

1.1. The Project consists of renovations of the Waterbury Community Health Resource Center, located at 24 Branch Street in Waterbury, Connecticut, all of which are more detailed and described in the Bid Documents in **Attachment A**. **Attachment A and B (if any)** are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 RFP No. 8801 (incorporated by reference);

1.1.2 Addenda 1 through 4 to **RFP No. 8801** (incorporated by reference);
1.1.3 Contractor's Price Proposal (revised), dated September 22, 2026, and consisting of 20 pages (attached hereto);
1.1.4 Contractor's Response with associated attachments to **RFP No. 8801**, dated July 9, 2026, consisting of 64 pages (incorporated by reference);
1.1.5 **RFP No. 8801**, "Scope of Services" (also referred to as "Technical Specifications") (attached hereto);
1.1.6 "Site Map" with List of Drawings prepared by Friar Architecture, Inc. (attached hereto);
1.1.7 State of Connecticut Prevailing Wage Schedule dated May 14, 2026, and related information, consisting of 9 pages (incorporated by reference);
1.1.8 General Conditions and Special Conditions (attached hereto);
1.1.9 Contractor's Certificate of Insurance (incorporated by reference);
1.1.10 Contractor's Performance Bond (incorporated by reference);
1.1.11 Contractor's Payment Bond (incorporated by reference);
1.1.12 All amendments and change orders issued by the City after execution of Contract (incorporated by reference);
1.1.13 All applicable Federal, State and local statutes, regulations charter and ordinances; and
1.1.14 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument (including **Attachments B**, if any) are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflicts with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;
1.2.2 Contract Amendment(s) and Change Orders;
1.2.3 This Contract;
1.2.4 Special Conditions;
1.2.5 General Conditions;
1.2.6 Addendums to **RFP No. 8801**;
1.2.7 **RFP No. 8801** including "Scope of Services" (Technical "Specifications");
1.2.8 Drawings;
1.2.9 Contractor's Price Proposal; and
1.2.10 Contractor's Response.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of

this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Contractor hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Contractor and/or its employees be licensed, certified, registered, or otherwise qualified, the Contractor and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon the City's request, the Contractor shall provide the City with a copy of its licenses, certifications, registrations, etc.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibility to examine and to be thoroughly familiar with the City's bid documents, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submitting its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP Number 8801** (collectively, the "Bid Documents");

3.1.7 it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8 it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes;

3.1.10 it possesses the knowledge and understanding of the LoCIP program and with requirements associated with this funding source, including all rules, regulations and mandatory contract provisions required by it; and

3.1.11 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, State and Federal health and safety regulations. Contractor shall

immediately correct any dangerous conditions caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense (i) adequate off-site storage space for equipment, materials, incidentals, etc., and (ii) all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract. Contractor shall comply with Special Conditions Provision section 1.08 - Prosecution and Progress.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity unless the City gives prior written consent to such use of its name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are (i) subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or (ii) unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, necessary, or prudent for the performance of the Contractor's obligations under this Contract, and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and its duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment. At a minimum, Contractor's record retention shall be consistent with provisions set forth in 2 CFR Section 200.334-200.338, and as required by law under 24 CFR Part 570.

3.15. Place Holder.

4. Responsibilities of the City and Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as its Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; initially, Waterbury Development Corp. ("WDC") is so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with its own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such an event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **two hundred ten (210) consecutive calendar days** and shall reach Final Completion within **two hundred forty (240) consecutive calendar days** of the WDC's issuance of a written Notice to Proceed with the Project ("Contract Time"); provided, however, Contractor shall meet the following Project Milestone:

A. Project Milestone 1: complete fully all abatement and demolition within **sixty (60) consecutive calendar days** of the written notice to proceed.

5.1. Attachment B, if any, is the Project's schedule. On a monthly basis, the Contractor shall deliver to the WDC a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages.

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will ensure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **One Thousand Five Hundred and 00/100 Dollars ($1,500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damage from any monies due to the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire **Section 5**, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of its exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all the goods and services set forth in this Contract as follows in this **Section 6**. No claims for additional compensation will be considered for conditions made known to the Contractor prior

to bidding. No claims for additional compensation will be considered on account of the failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this **Section 6**, the fee payable to the Contractor shall not exceed **SIX MILLION EIGHT HUNDRED FIFTY THOUSAND DOLLARS ($6,850,000)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Pricing Proposal (revised) set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

i.	Base Contract: $6,668,175;	
ii.	Allowance 1	Concrete spalling: $10,000.00
iii.	Allowance 2	Repointing: $15,000.00
iv.	Allowance 3	Remediation of Hazardous Materials Gutters: $5,000
v.	Allowance 4	Remediation of Hazardous Materials - Electrical Vault: $1,500.00
vi.	Allowance 5	Remediation of Hazardous Materials - Boiler Interior: $7,500.00
vii.	Allowance 6	Remediation of Hazardous Materials - Base of Roof Statute: $5,000.00
viii.	Allowance 7	Unsatisfactory Soil Excavation: $7,500.00
ix.	Allowance 8	Mass Rock Removal: $7,500.00
x.	Allowance 9	Trench Rock Removal: $7,500.00
xi.	Allowance 10	Winter Conditions: $20,000.00
xii.	Allowance 11	Plaster Repair: $5,000.00
xiii.	Allowance 12	Terrazzo Repair: $5,000.00
xiv.	Owner Controlled Contingency as governed by **Section 6.1.1** below: $85,325.	

6.1.1 Owner Controlled Contingency/Allowances. At the sole discretion and control of the City, the contingency and allowance amounts set forth in **Section 6.1(ii)**, **(iii)** and **(iv)** of this Contract shall be utilized for the payment to the Contractor for extra and additional work requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the extra and additional work under the contingency/allowance shall be separate and apart from the base bid payment set forth above. The Owner Controlled Contingency/Allowances shall be the funding source for any City approved extra and additional work and services. Unless properly approved in writing by the City (**see Section 27**), Contractor shall not be entitled to any compensation from such contingency. The parties agree that a Change Order Form shall be utilized to set forth the extra and additional services, the cost of same and time for Contractor to provide said service.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and

services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with this Contract's provisions.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc., all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in its sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Contractor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP Number 8801** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed. Additionally, during the Project, at the City's option, it may require partial waivers of lien and claim from the Contractor and all subcontractors and materialmen with each payment application.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to it a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material

for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that it may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following: The City must receive the Contractor's Application for Payment by the City for its or its designee's review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide, at the City's request, reasonable documentation to substantiate the Contractor's Application for Payment.

6.10.2 Progress and Final Payments. The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by it, according to the schedule of values provided for in the Contract Documents and approved by it. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good

quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. The City's beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon its final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that the City shall be responsible for loss or damage caused by its gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized City representative.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City and its Boards and Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the

Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, any City's boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, any City's boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and City boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure for the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts

imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor's, or its subcontractor's, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: $1,000,000.00 per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** products and completed operations aggregate; providing coverage to protect the WDC and the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one

accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: $1,000,000.00 combined single limit (CSL); providing coverage to protect WDC and the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances: **$6,000,000.00** each occurrence and **$6,000,000.00** aggregate.

11.4.5 Builder's Risk Insurance: coverage equaling the monetary value of the construction component of the Project, whichever is greater. This "All Risk" Builders Risk insurance (also known as "course of construction") coverage with limits equal to or better than the maximum possible loss of all materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of WDC, the City, the Contractor and all subcontractors. If deemed necessary by the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy or final completion is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.4.6 Contractors Pollution Liability Insurance: $1,000,000.00 each claim and **$1,000,000.00** aggregate coverage. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for Contractor caused pollution events such as asbestos or lead abatement but not limited to only these pollution causes of loss.

11.5. Failure to Maintain Insurance. In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation. The City of Waterbury and the Waterbury Development Corporation shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance. The Contractor's General, Automobile, and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees as an additional insured and provide waiver of subrogation on all policies except Pollution Liability. The insurance afforded to the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to it, subject to its approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City and others, as follows **"City of Waterbury and any of its Boards, Waterbury Development Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage; waiver of subrogation applies to all lines of coverage except Pollution Liability as their interest may appear"**. The City's Invitation to Bid Number must be shown on the certificate of insurance to ensure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy (ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 **CFR**, Part 3); and **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 **CFR** Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 **CFR** Part 5); **THE HOUSING AND COMMUNITY**

DEVELOPMENT ACT OF 1974, as amended; 24 **CFR** Part 570 – Community Development Block Grants, and all applicable cross-cutting requirements, as applicable, under Subpart K, "Other Program Requirements," including but not limited to: Civil Rights and Fair Housing (24 **CFR** 570.601), Employment and Contracting Opportunities (24 **CFR** 570.607), Architectural Barriers and Americans with Disabilities (24 **CFR** 570.614), Labor Standards (24 **CFR** 570.603), Environmental Requirements, Historic Preservation, Floodplain Management, **NFIP**, Relocation, and Lead-Based Paint (24 CFR 570.608); the Build America, Buy America Act ("**BABA**"), 41 USC § 8301; **TITLE 31** and section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.3. Compliance with Build America, Buy America ("BABA") – Infrastructure Projects. The Contractor agrees to comply with the requirements of the Build America, Buy America ("**BABA**") Act, 41 **USC** § 8301 note, and all applicable rules and notices, as may be amended, if applicable to the Subrecipient's infrastructure project. Pursuant to **HUD**'s Notice, "Public Interest Phased Implementation Waiver for **FY** 2022 and 2023 of Build America, Buy America Provisions as Applied to Recipients of

HUD Federal Financial Assistance" (88 **FR** 17001), any funds obligated by **HUD** on or after the applicable listed effective dates, are subject to BABA requirements, unless excepted by a waiver.

12.3.1. Subcontract Provisions. The Contractor shall include the provisions of Subsection 12.3 (**BABA**), herein, in every sub or tiered contract, specifically or by reference, so that such provisions will be binding upon each of its own contractors or subcontractors.

12.4. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.5 Place Holder.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements and will require the same of all subcontractors.

13.3. Contractor Corrective Action.

13.3.1. Pursuant to Conn. Gen. Stat. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take corrective action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the

employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to Conn. Gen. Stat. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance.

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects" (the "Good Jobs

Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance, and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower-tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed

by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance. The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan of action shall include the anticipated number of job positions required for the Work. Not later than five (5) business days prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with WDC and the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the WDC and the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good

Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that WDC, the City or the Administrator reasonably believes will assist the WDC, City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the WDC and City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2. Liquidated Damages Applicable To Section 14.1.

14.2.1 If WDC or the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the WDC or City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City or WDC for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five-day work period, pay to the City or WDC one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City or WDC finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City or WDC within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City or WDC

for each week of ongoing violation.

14.2.3 The City or WDC shall provide the Contractor with an invoice identifying all sums due to the City or WDC, as liquidated damages, because of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by WDC until such time as all liquidated damages relating to that invoice have been paid to the City or WDC.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination. Notwithstanding the above, upon determination by a court of competent jurisdiction that the termination of the agreement pursuant to this **Section 16.1** was wrongful, such termination will be deemed converted to a termination for convenience pursuant to **Section 16.2** and the Contractor's remedy for wrongful termination shall be limited to the recovery of the payments permitted for termination for convenience pursuant to **Article 16.2**.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by it by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due it from the Contractor is determined.

16.2. Termination for Convenience. The City may terminate this Contract at any time for its convenience, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges this Contract is subject to the appropriation and disbursement of funds is not sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to it.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as it may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) it. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by it prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to it as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by it (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience, the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by it, all documents and other tangible items furnished by, or owned, leased, or licensed by the City and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control the activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to conduct such an audit, the Contractor shall immediately make available to it all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principals of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional costs or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 8801** and **(ii)** the Contractor's Bid response to **RFP Number 8801**. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor:	J.A. Rosa Construction, LLC 17 Town Line Road Wolcott, CT 06716
City:	Corporation Counsel's Office City of Waterbury City Hall 235 Grand Street Waterbury, CT 06702
With a copy to:	Waterbury Development Corporation Third Floor 83 Bank Street Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of

employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real

property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10. The Contractor hereby acknowledges receipt of a copy of Chapters 38 and 39 of the City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: http://www.waterburyct.org/content/458/539/default.aspx [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

34.16. CONFLICT OF INTEREST UNDER CFR. Contractor agrees to abide by the provisions of 2 **CFR** § 200.112 and 24 **CFR** Part 570.611 with respect to the conflicts of interest, and covenants that it presently has no financial interest and shall not acquire any financial interest, direct or indirect, which would conflict in any manner or degree with the performance of services under this Agreement. The contractor further covenants that in the performance of this Agreement, no person having such a financial interest shall be employed or retained by the Contractor hereunder. The conflict-of-interest provisions apply to any person who is an employee, agent, consultant, officer, or elected official or appointed official with the City or of any of the designated public agencies or subrecipients, which are receiving funds under the State of Connecticut LoCIP program.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1. Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2. Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3. Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4. City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5. Construction Supervisor: An employee of the City, or other City duly authorized person, including the Waterbury Development Corporation.

35.6. Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion and (ii) Final Completion.

35.7. Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for

purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8. Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized representative's written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9. Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10. Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11. Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction, which initially shall be Waterbury Development Corporation personnel.

35.12. Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13. Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14. Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15. Substantial Completion: The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16. Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17. Supplementary General and Special Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18. Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19. Using Agency: Waterbury Fire Department.

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Paul K. Pernerewski, Jr., Mayor

Date: _____

WITNESSES:

_____

_____

J.A. ROSA CONSTRUCTION, LLC

By:_____
John A. Rosa, Managing Member

Date: _____

ATTACHMENT A

ATTACHMENT B

REQUEST FOR PROPOSAL
BY
THE CITY OF WATERBURY
Renovation of the Waterbury Community Health Resource Center
RFP #8801

ATTACHMENT E - COST PROPOSAL- REVISED 06/26/2026
(Must be submitted as part of the Proposal in a separate sealed envelope marked "Confidential: Price Proposal.")

Date: 9/22/26

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

J. A. Rosa Construction, LLC
(Print or Type Company/Corporate Name)

17 Town Line Road Wolcott, CT 06716
(Print or Type Business Address)

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

[continued on following page(s)]

Waterbury Community Health Center Renovation
Price Proposal Sheet RFP #8801
Revised 9/22/26

ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
1	**MOBILIZATION AND DEMOBILIZATION** The work under this item shall include all personnel and equipment necessary for mobilization, demobilization, and administrative costs including the movement of all the contractor's storage facilities, maintenance and protection of traffic, transportation of equipment to and from the project site, and necessary to the performance of the work as shown and in accordance with the Contract Drawings and Technical Specifications, for the lump sum cost of: Fifty four thousand six hundred fifty 00/100 Lump Sum ($ 54,650.00) Written figures
2	**GENERAL CONDITIONS** The work under this item shall include, but is not limited to full time field supervision required, project staffing (including conducting weekly project meetings and recording project minutes), required insurance, bonds, overhead, and profit, for the lump sum cost of: One hundred ninety six thousand six hundred forty three 00/10 Lump Sum ($ 196,643.00) Written figures
3	**ABATEMENT** The work under this item shall include all materials, equipment, and labor to perform the abatement as necessary for the selective demolition work and as identified in environmental drawings and specifications, and as described in the Contract Drawings and Technical Specifications for the lump sum cost of: Three hundred fifty nine thousand seven hundred eighteen 00/100 Lump Sum ($ 359,718.00) Written figures
4	**SELECTIVE DEMOLITION AND SALVAGE** The work under this item shall include all materials, equipment and labor necessary for the selective interior and exterior demolition, removal, disposal, and salvage of materials in accordance with the Contract Drawings and Technical Specifications for the lump sum cost of: Two hundred eighty three thousand seven hundred sixty two 00/100 Lump Sum ($ 283,762.00) Written figures
5	**CAST-IN-PLACE CONCRETE** The work under this item shall include, but is not limited to: all material, labor, and equipment for cast-in-place concrete identified on the plans and specifications for the lump sum cost of: Two hundred seventy two thousand four hundred fifty nine 00/100 Lump Sum ($ 272,459.00) Written figures

Waterbury Community Health Center Renovation
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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
6	**UNIT MASONRY** The work under this item shall include all materials, equipment and labor for masonry work not limited to concrete masonry units, mortar and grout, masonry joint reinforcement, ties and anchors and material accessories as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Sixty eight thousand two hundred ninety two 00/100 Lump Sum ($ 68,292.00) Written figures
7	**METAL FABRICATIONS/ STRUCTURAL STEEL** The work under this item shall include, but is not limited to: all material, labor, and equipment for structural steel and metal fabrication identified on the plans and specifications for the lump sum cost of: One hundred twenty eight thousand six hundred fifty nine 00/100 Lump Sum ($ 128,659.00) Written figures
8	**ROUGH CARPENTRY** The work under this item shall include all materials, equipment and labor for rough carpentry work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Twenty eight thousand four hundred eight 00/100 Lump Sum ($ 28,408.00) Written figures
9	**DAMPROOFING/WATERPROOFING** The work under this item shall include all materials, equipment and labor for damproofing/waterproofing work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Six thousand eight hundred thirty six 00/100 Lump Sum ($ 6,836.00) Written figures
10	**MEMBRANE ROOFING** The work under this item shall include removal of old and installation of all new membrane roofing, equipment and labor to supply and install membrane roofing and all related flashings, as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Three hundred eighteen thousand seven hundred seventy 00/100 Lump Sum ($ 318,770.00) Written figures

Waterbury Community Health Center Renovation
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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
11	**PENETRATION FIRESTOPPING** The work under this item shall include all materials, equipment and labor for penetration firestopping work as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two thousand four hundred thirty six 00/100 Lump Sum ($ 2,436.00) Written figures
12	**JOINT SEALANTS** The work under this item shall include all joint sealants, equipment and labor to supply and install any sealants, as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Nine hundred seventy six 00/100 Lump Sum ($ 976.00) Written figures
13	**HOLLOW METAL DOORS AND FRAMES** The work under this item shall include all materials, equipment and labor to supply and install any hollow metal doors and frames as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Thirty two thousand six hundred sixty four 00/100 Lump Sum ($ 32,664.00) Written figures
14	**STORE FRONT** The work under this item shall include all materials, equipment and labor to supply and install all windows as shown on the Contract Drawings and as specified in the Technical Specifications. This work also includes removal and disposal of existing windows prior to installation of new, for the lump sum cost of: Four hundred one thousand nine hundred twenty six 00/100 Lump Sum ($ 401,926.00) Written figures
15	**CURTAIN WALL** The work under this item shall include all materials, equipment and labor to supply and install all windows as shown on the Contract Drawings and as specified in the Technical Specifications. This work also includes removal and disposal of existing windows prior to installation of new, for the lump sum cost of: One hundred thirty three thousand nine hundred seventy five 00/100 Lump Sum ($ 133,975.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
16	**DOOR HARDWARE** The work under this item shall include all materials, equipment and labor to supply and install any door hardware shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Fifty three thousand forty five 00/100 Lump Sum ($ 53,045.00) Written figures
17	**GLASS AND GLAZING** The work under this item shall include all materials, equipment and labor to supply and install any glass and glazing as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Four thousand three hundred seventy five 00/100 Lump Sum ($ 4,375.00) Written figures
18	**ARCHITECTURAL LOUVERS AND VENTS** The work under this item shall include all materials, equipment and labor to supply and install any louvers and vents as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: Thirty three thousand four hundred ten 00/100 Lump Sum ($ 33,410.00) Written figures
19	**GYPSUM BOARD** The work under this item shall include all materials, equipment and labor to supply and install any gypsum board assembly shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One hundred thirty thousand four hundred sixty four 00/100 Lump Sum ($ 130,464.00) Written figures
20	**TILE** The work under this item shall include all materials, equipment and labor to supply and install any tile shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Five thousand four hundred fourteen 00/100 Lump Sum ($ 5,414.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
21	**ACOUSTIC CEILING & SOUND ABSORBING PANELS** The work under this item shall include all materials, equipment and labor to supply and install any acoustic ceiling and sound absorbing panels shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Eleven thousand nine hundred twenty four 00/100 Lump Sum ($ 11,924.00) Written figures
22	**RESILIENT FLOORING** The work under this item shall include all materials, equipment and labor to supply and install any resilient tile flooring shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Seven thousand four hundred four 00/100 Lump Sum ($ 7,404.00) Written figures
23	**CARPET** The work under this item shall include all materials, equipment and labor to supply and install any carpet shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two thousand two hundred ninety seven 00/100 Lump Sum ($ 2,297.00) Written figures
24	**PAINTING** The work under this item shall include all materials, equipment and labor to supply wall coverings and paint all areas called for and shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One hundred twenty eight thousand four hundred fifty seven 00/100 Lump Sum ($ 128,457.00) Written figures
25	**SIGNAGE** The work under this item shall include all materials, equipment and labor to supply and install any signage shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Twenty thousand six hundred fifty eight 00/100 Lump Sum ($ 20,658.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
26	**TOILET COMPARTMENTS** The work under this item shall include all materials, equipment and labor to supply and install any toilet compartments shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Seven thousand five hundred twenty four 00/100 Lump Sum ($ 7,524.00) Written figures
27	**TOILET AND BATH ACCESSORIES** The work under this item shall include all materials, equipment and labor to supply and install any toilet and bath accessories shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Three thousand eight hundred three 00/100 Lump Sum ($ 3,803.00) Written figures
28	**WHEEL CHAIR LIFT** The work under this item shall include all materials, equipment and labor to supply and install any elevators as shown on the Contract Drawings and as specified in the Technical Specifications, for the lump sum cost of: One hundred fifty four thousand four hundred thirty three 00/100 Lump Sum ($ 154,433.00) Written figures
29	**FIRE PROTECTION** The work under this item shall include all materials, equipment and labor to supply and install any fire protection shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two hundred thirty one thousand nine hundred sixty three 00/100 Lump Sum ($ 231,963.00) Written figures
30	**PLUMBING** The work under this item shall include all materials, equipment and labor to supply and install any plumbing and all plumbing fixtures shown on the Contract Drawings and all below grade piping as specified in the Technical Specifications for the lump sum cost of: Four hundred eleven thousand one hundred sixty eight 00/100 Lump Sum ($ 411,168.00) Written figures
31	**MECHANICAL (HVAC)** The work under this item shall include all materials, equipment and labor to supply and install any mechanical systems shown on the Contract Drawings and as specified in the Technical Specifications including commissioning and instrumentation and controls for the lump sum cost of: One million three hundred twenty thousand nine hundred fifty nine 00/100 Lump Sum ($ 1,320,959.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
32	**ELECTRICAL** The work under this item shall include all materials, equipment and labor to supply and install any electrical work shown on the Contract Drawings and as specified in the Technical Specifications including instrumentation and controls for electrical systems for the lump sum cost of: One million twelve thousand one hundred twenty five 00/100 Lump Sum ($ 1,012,125.00) Written figures
33	**ELECTRONIC SAFETY & SECURITY** The work under this item shall include all materials, equipment and labor to supply and install any electronic safety and security systems shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Thirteen thousand eighty one 00/100 Lump Sum ($ 13,081.00) Written figures
34	**EARTHWORK** The work under this item shall include all materials, equipment and labor to perform necessary excavation, backfilling, and grading operations as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Five hundred thirteen thousand three hundred six 00/100 Lump Sum ($ 513,306.00) Written figures
35	**SITE IMPROVEMENTS** The work under this item shall include but not limited to all materials, equipment and labor to conduct site restoration and any site work shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two hundred three thousand one hundred eighty six 00/100 Lump Sum ($ 203,186.00) Written figures
36	**UTILITIES** The work under this item shall include but not limited to all materials, equipment and labor to supply and install water systems, sanitary sewer systems, and storm drainage systems shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One hundred six thousand eight hundred twenty five 00/100 Lump Sum ($ 106,825.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
37	**City Monuments** The work under this item shall include but not limited to all materials, equipment and labor to supply and install (6) six city monuments in the lot as directed and shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Two thousand one hundred eighty 00/100 Lump Sum ($ 2,180.00) Written figures
	Lump Sum Base Bid Total (Items 1 through 37) 6,668,175.00 Written amount Lump Sum ($) Six million six hundred sixty eight thousand one hundred seventy five 00/100
38	**ALLOWANCE #1 – CONCRETE SPALLING** The work under this item shall include but not limited to cost for patching and repairing exterior concrete spalling around the perimeter of the building and within the below grade area ways. This item is controlled by WDC and can only be used with WDC's authorization: TEN THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 10,000.00) Written figures
39	**ALLOWANCE #2 – REPOINTING** This work shall include but is not limited to cost for repointing of the exterior brick where necessary. This item is controlled by WDC and can only be used with WDC's authorization: FIFTEEN THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 15,000.00) Written figures
40	**ALLOWANCE #3 – REMEDIATION OF HAZARDOUS MATERIALS** This work shall include but is not limited to cost for remediation of hazardous materials in the existing to remain roof gutters. This item is controlled by WDC and can only be used with WDC's authorization: FIVE THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 5,000.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
41	**ALLOWANCE #4 – REMEDIATION OF HAZARDOUS MATERIALS** This work shall include but is not limited to cost for remediation of hazardous materials in the underground electrical vault. This item is controlled by WDC and can only be used with WDC's authorization: ONE THOUSAND FIVE HUNDRED DOLLARS AND ZERO CENTS Lump Sum ($ 1,500.00) Written figures
42	**ALLOWANCE #5 – REMEDIATION OF HAZARDOUS MATERIALS** This work shall include but is not limited to cost for remediation of hazardous materials in the interior of the boiler components. This item is controlled by WDC and can only be used with WDC's authorization: SEVEN THOUSAND FIVE HUNDRED DOLLARS AND ZERO CENTS Lump Sum ($ 7,500.00) Written figures
43	**ALLOWANCE #6 – REMEDIATION OF HAZARDOUS MATERIALS** This work shall include but is not limited to cost for remediation of hazardous materials at the base of removed roof top crucifixes, including use of a lift. This item is controlled by WDC and can only be used with WDC's authorization: FIVE THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 5,000.00) Written figures
44	**ALLOWANCE #7 – UNSATISFACTORY SOIL EXCAVATION** This work shall include but is not limited to include the removal of unsatisfactory soil excavation and disposal off site and replacement with satisfactory soil material from offsite, as specified in section 31 2310 "earth moving". This item is controlled by WDC and can only be used with WDC's authorization: SEVEN THOUSAND FIVE HUNDRED DOLLARS AND ZERO CENTS Lump Sum ($ 7,500.00) Written figures
45	**ALLOWANCE #8 – MASS ROCK REMOVAL** This work shall include but is not limited to include of mass rock removal and replacement with satisfactory soil material as specified in section 31 2310 "earth moving". This item is controlled by WDC and can only be used with WDC's authorization: SEVEN THOUSAND FIVE HUNDRED DOLLARS AND ZERO CENTS Lump Sum ($ 7,500.00) Written figures

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
46	**ALLOWANCE #9 – TRENCH ROCK REMOVAL** This work shall include but is not limited to include trench rock removal and replacement with satisfactory soil material as specified in section 31 2310 "earth moving". This item is controlled by WDC and can only be used with WDC's authorization: SEVEN THOUSAND FIVE HUNDRED DOLLARS AND ZERO CENTS Lump Sum ($ 7,500.00) Written figures
47	**ALLOWANCE #10 – WINTER ALLOWANCE** This work shall include but is not limited to include a winter allowance. This item is controlled by WDC and can only be used with WDC's authorization: TWENTY THOUSAND HUNDRED DOLLARS AND ZERO CENTS Lump Sum ($ 20,000.00) Written figures
48	**ALLOWANCE #11 – PLASTER REPAIR** This work shall include but is not limited to include a labor and material for plaster repair and any associated requirements to perform the work. This item is controlled by WDC and can only be used with WDC's authorization: FIVE THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 5,000.00) Written figures
49	**ALLOWANCE #12 – TERRAZZO REPAIR** This work shall include but is not limited to include a labor and material for terrazzo floor repair and any associated requirements to perform the work. This item is controlled by WDC and can only be used with WDC's authorization: FIVE THOUSAND DOLLARS AND ZERO CENTS Lump Sum ($ 5,000.00) Written figures
	Lump Sum Base Bid and Allowances Total (Items 1 through 49) 6,764,675.00 Written amount Lump Sum ($) Six million seven hundred sixty four thousand six hundred seventy five 00/100

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ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
48	**ALTERNATE #1 – REMOVED RAISED STEP FLOORING** The work under this item shall include but not limited to Remove the raised stepped flooring at the lower-level central meeting area and the first-floor concrete and terrazzo tile / marble flooring at the main pulpit where indicated on the drawings. Provide self-floor leveling and infill on entire area of removal to create a flat, uniform surface to ETR adjacent terrazzo flooring.as specified in Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Seventeen thousand seven hundred four 00/100 Lump Sum ($ 17,704.00) Written figures
49	**ALTERNATE #2 – ABATED TWELVE BY TWELVE CEILINGS** The work under this item shall include but not limited to Provide new 2'x2' ACT ceilings (pads and grids per spec, same as first floor Type C-1) along with new 2'x2' LED lighting (Type A2) at the lower-level were indicated on the drawings. Note: acceptance of this Add Alternate would include a credit for the lower-level linear light fixtures (Type U4). Ref. all drawings and specs for additional information. Reference specification for ceiling type and information as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: One hundred forty three thousand eight hundred twenty eight 00/100 Lump Sum ($ 143,828.00) Written figures
50	**ALTERNATE #3 – FRONT CANOPY** The work under this item shall include but not limited Provide the front canopy and all associated elements as indicated on the drawings; ref. sheet A3.3. Note: acceptance of this Add Alternate would include a credit for the concrete parging of the main entry mosaic. Ref. all drawings and specs for additional information as shown on the Contract Drawings and as specified in the Technical Specifications for the lump sum cost of: Sixty one thousand seven hundred forty seven 00/100 Lump Sum ($ 61,747.00) Written figures

Waterbury Community Health Center Renovation Price Proposal Sheet RFP #8801 Revised 9/22/26	
ITEM #	**ITEM DESCRIPTION IN WORDS AND FIGURES**
51	**UNIT PRICE 1** Patching and re pairing exterior concrete spalling around the perimeter of the building and within the below grade areaways. Sixteen 00/100 Per square foot ($ 16.00) Written figures
52	**UNIT PRICE 2** Repointing of exterior brick where necessary. Forty nine 00/100 Per square foot ($ 49.00) Written figures
53	**UNIT PRICE 3** Remediation of hazardous materials in the existing to remain roof gutters. Twenty seven 00/100 Linear foot ($ 27.00) Written figures
54	**UNIT PRICE 4** Remediation of hazardous materials in the underground electrical vault removal of asbestos containing tar on concrete within the vault One hundred sixty three 00/100 Per square foot ($ 163.00) Written figures

Waterbury Community Health Center Renovation
Price Proposal Sheet RFP #8801
Revised 9/22/26

ITEM #	ITEM DESCRIPTION IN WORDS AND FIGURES
55	**UNIT PRICE 5** Remediation of hazardous materials in the underground electrical vault, removal of asbestos containing wiring wrap One hundred ninety one 00/100 Per lineal foot ($ 191.00) Written figures
56	**UNIT PRICE 6** Remediation of hazardous materials in the interior of boiler components. Sixteen thousand three hundred forty three 00/100 Lump Sum ($ 16,343.00) Written figures
57	**UNIT PRICE 7** ASBESTOS CONTAINING FLOORING MATERIALS AND ADHESIVES (All Layers to Bare Substrate), REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Ten 00/100 Per Square Foot ($ 10.00) Written figures
58	**UNIT PRICE 8** ASBESTOS CONTAINING MUDDED PIPE FITTING INSULATION, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Eighty five 00/100 Per Fitting ($ 85.00) Written figures
59	**UNIT PRICE 9** ASBESTOS CONTAINING THERMAL SYSTEM INSULATION, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Eighty two 00/100 Per Linear Ft($ 82.00) Written figures

60	**UNIT PRICE 10** ASBESTOS-CONTAINING DUCT PIN ADHESIVE, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Forty eight 00/100 Per Square Ft($ 48.00) Written figures
61	**UNIT PRICE 11** ASBESTOS CONTAINING GLUE DAUBS AND ASSOCIATED 1'X1' CEILING TILES ON SHEETROCK, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Seven 00/100 Per Square Ft($ 7.00) Written figures
62	**UNIT PRICE 12** ASBESTOS CONTAINING INTERIOR CAULK, REMOVAL AND DISPOSAL AS ASBESTOS WASTE.R Ninety eight 00/100 Per Linear Ft($ 98.00) Written figures
63	**UNIT PRICE 13** ASBESTOS CONTAINING STAINED GLASS WINDOW GLAZING COMPOUND, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Four hundred thirty six 00/100 Per Window Sash Ft($ 436.00) Written figures
64	**UNIT PRICE 14** ASBESTOS CONTAINING STAINED GLASS WINDOW GLAZING COMPOUND, REMOVAL AND DISPOSAL AS ASBESTOS WASTE One thousand ninety 00/100 Per Door with Window Sash Ft($ 1,090.00) Written figures
65	**UNIT PRICE 15** ASBESTOS CONTAINING WINDOW GLAZING COMPOUND, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. One thousand six hundred thirty four 00/100 Per Opening($ 1,634.00) Written figures

66	**UNIT PRICE 16** ASBESTOS CONTAINING VAPOR PAPER UNDER BOTTOM LAYER ASPHALT SHINGLES (ALL LAYERS TO BARE SUBSTRATE), REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Twenty four 00/100 Per Square Ft($ 24.00) Written figures
67	**UNIT PRICE 17** ASBESTOS CONTAINING ROOF TAR AND FLASHING CEMENTS, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Twenty eight 00/100 Per Square Ft($ 28.00) Written figures
68	**UNIT PRICE 18** ASBESTOS CONTAINING TAR MOISTURE BARRIER ON MASONRY BEHIND INTERIOR PLASTER AND MARBLE WALL COVERINGS, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Two hundred forty five 00/100 Per Square Ft($ 245.00) Written figures
69	**UNIT PRICE 19** ASBESTOS CONTAINING EXTERIOR CAULK, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Sixty 00/100 Per Linear Ft($ 60.00) Written figures
70	**UNIT PRICE 20** ASBESTOS CONTAINING WIRE COATING, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Four 00/100 Per Linear Ft($ 4.00) Written figures
71	**UNIT PRICE 21** ASBESTOS CONTAINING PIPE FLANGE GASKETS, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Four hundred thirty six 00/100 Per Flange ($ 436.00) Written figures

72	**UNIT PRICE 22** ASBESTOS CONTAINING PIPE VALVE PACKING, REMOVAL AND DISPOSAL AS ASBESTOS WASTE. Four hundred thirty six 00/100 Per Valve($ 436.00) Written figures
73	**UNIT PRICE 23** REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIALS UTILIZING SPOT REPAIR PROCEDURES. Four hundred ninety 00/100 Per Glove Bag($ 490.00) Written figures
74	**UNIT PRICE 24** PREPARATION OF A SMALL CONTAINMENT (for abating asbestos >3 SF/3 LF but <260 LF/500 SF) WITH DECONTAMINATION UNIT (including remobilization, if necessary). Three thousand two hundred sixty nine 00/100 Per Containment($ 3,269.00) Written figures
75	**UNIT PRICE 25** PREPARATION OF A LARGE CONTAINMENT (for abating asbestos >260 LF/500 SF) WITH DECONTAMINATION UNIT (including remobilization, if necessary). Five thousand four hundred forty eight 00/100 Per Containment($ 5,448.00) Written figures
76	**UNIT PRICE 26** POLLUTED AND CONTAMINATED- RCS-1 RECLAMATION FACILITY. Two hundred seventy two 00/100 Per Ton($ 272.00) Written figures
77	**UNIT PRICE 27** POLLUTED AND CONTAMINATED- RCS-2 RECLAMATION FACILITY Two hundred seventy two 00/100 Per Ton($ 272.00) Written figures

78	**UNIT PRICE 28** POLLUTED AND CONTAMINATED- - PERMITTED CT DEEP AUTHORIZED BENEFICIAL RE-USE FACILITY Two hundred seventy two 00/100 Per Ton($ 272.00) Written figures
79	**UNIT PRICE 29** POLLUTED AND CONTAMINATED- -NON-RCRA IN-STATE LANDFILL. Two hundred seventy two 00/100 Per Ton($ 272.00) Written figures
80	**UNIT PRICE 30** POLLUTED AND CONTAMINATED- - NON-RCRA OUT-OF-STATE UNLINED LANDFILL. Three hundred twenty seven 00/100 Per Ton($ 327.00) Written figures
81	**UNIT PRICE 31** POLLUTED AND CONTAMINATED- NON-RCRA OUT-OF-STATE LINED LANDFILL. Three hundred twenty seven 00/100 Per Ton($ 327.00) Written figures
82	**UNIT PRICE 32** POLLUTED AND CONTAMINATED- THERMAL DESORPTION FACILITY. Three hundred eighty one 00/100 Per Ton($ 381.00) Written figures
83	**UNIT PRICE 33** RCRA HAZARDOUS WASTE LANDFILL FACILITY. One thousand thirty five 00/100 Per Ton($ 1,035.00)

	Written figures
84	**UNIT PRICE 34** Mass rock removal and replacement with satisfactory soil materials, as specified in Section 31 2310 "Earth Moving." Seven hundred fifty 00/100 Cubic Yard ($ 750.00) Written figures
85	**UNIT PRICE 35** Trench rock removal and replacement with satisfactory soil material, as specified in Section 31 2310 "Earth Moving." One thousand 00/100 Cubic Yard ($ 1,000.00) Written figures
86	**UNIT PRICE 36** Remediation and repair of existing terrazzo flooring. Twenty four 00/100 Square foot ($ 24.00) Written figures
87	**UNIT PRICE 37** Repair/infill of existing concrete floor slabs to receive new finishes. Twenty 00/100 Cubic Foot ($ 20.00) Written figures
88	**UNIT PRICE 38** Unsatisfactory soil excavation removal and replacement with satisfactory soil material, as specified in Section 31 2310 "Earth Moving." Three hundred twenty seven 00/100 Cubic Yard ($ 327.00) Written figures

89	**UNIT PRICE 39** Plastic repair and associated requirements. Sixteen 00/100 Square foot ($ 16.00) Written figures
90	**UNIT PRICE 39** Terrazzo floor repair and associated requirements. Twenty six 00/100 Square foot ($ 26.00) Written figures

06156670
Social Security Number
or Federal Identification Number

Signature of Individual or
Corporate Name

J. A. Rosa Construction, LLC
Company Name

John A. Rosa
Corporate Officer
(if applicable)

By: Managing Member
(Title)
17 Town Line Road
(Business Address)

Wolcott, CT 06716
(City, State, Zip Code)

Date: 9/22/26

Email: john@jarosa.com

END OF ATTACHMENT E

Revised 09/22/26

The City of Waterbury, Connecticut
Waterbury Community Health Resource Center
Project Manual
24 Branch Street, Waterbury, Connecticut 06704

May 01, 2026
Owner Proj. No.: RFP#8801
Friar Proj. No.: 2023-026B

FRIAR

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END OF SECTION 00 0110

SECTION 00 3119
EXISTING CONDITION INFORMATION

1.01 EXISTING CONDITION INFORMATION

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of the Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents. Any documents listed as part of this specification are for ELECTRONIC DOWNLOAD ONLY and no paper or physical copies will be provided.

B. Existing drawings that include information on existing conditions are limited in nature and are available for viewing on the Project Web site and at the office of Construction Manager.

C. Site and Utility survey information that includes information on existing conditions, prepared by Benesch, dated August 2023, is available for viewing as part of Drawings.

D. Photographic report of existing conditions that includes photographic documentation on existing conditions, provided by Friar Architecture, Inc. is available on the Project Web site and at the office of Construction Manager.

E. Pre-Renovation Hazardous Building Materials Inspection Report provided by Eagle Environmental, Inc. dated November 02, 2023, is available as part of this Project Manual in the Appendix Section.

F. Related Requirements:
   1. Document 00 2113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.
   2. Document 00 3126 "Existing Hazardous Material Information" for hazardous materials reports that are made available to bidders.
   3. Document 0 03132 "Geotechnical Data" for reports and soil-boring data from geotechnical investigations that are made available to bidders.

END OF SECTION 00 3119

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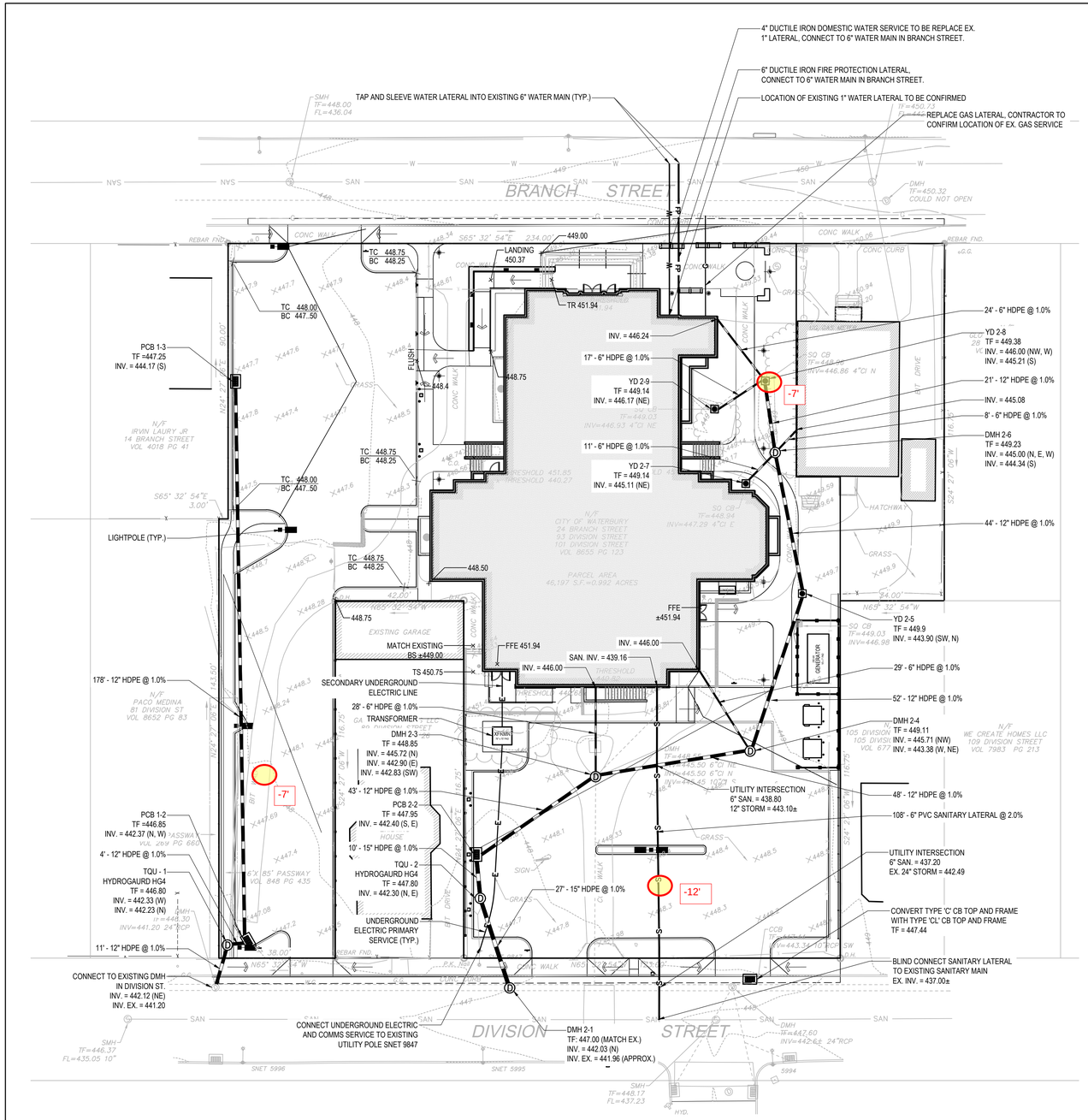

DRAINAGE NOTES

1. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT PROPER STORM DRAINAGE IS MAINTAINED THROUGHOUT CONSTRUCTION AND SHALL MAINTAIN ALL EXISTING AND NEW UTILITIES IN GOOD WORKING ORDER AND SHALL PROTECT THEM AT ALL TIMES UNTIL THE WORK IS COMPLETED AND ACCEPTED.
2. FUNCTIONAL COMPLETION OF STORM WATER DETENTION SYSTEMS AND STRUCTURES SHALL PRECEDE SITE DEVELOPMENT OF AREAS, ROADS, OR LOTS CONTRIBUTING TO THESE SYSTEMS.
3. CERTIFIED 'AS-BUILTS' VS 'AS-APPROVED' PLANS OF THE STORM WATER DETENTION-DISCHARGE SYSTEM SHALL BE SUBMITTED FOLLOWING ITS CONSTRUCTION AND PRIOR TO BOND RELEASE.

STORM SEWER

1. ALL PIPES ARE TO BE 12" HDPE WITH A MINIMUM 1.0% SLOPE AND 2 FT OF COVER UNLESS OTHERWISE NOTED.
2. ALL UNDERDRAINS ARE TO BE 4" PERFORATED PVC WITH A MINIMUM 0.0% SLOPE UNLESS OTHERWISE NOTED. REFER TO DETAIL SHEETS FOR DEPTH OF COVER ON UNDERDRAINS.
3. CONTRACTOR IS RESPONSIBLE TO ENSURE ADEQUATE SIZING OF MANHOLES TO ACCEPT PROPOSED PIPES.
4. ALL EXISTING UTILITY LINES TO BE ABANDONED SHALL BE ABANDONED ACCORDING TO UTILITY COMPANY REQUIREMENTS.
5. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH APPLICABLE STANDARDS.
6. DAMAGE TO EXISTING UTILITIES AS A RESULT OF THE CONTRACTOR'S OR ANY OF HIS SUBCONTRACTOR'S ACTIVITIES DURING THE CONSTRUCTION PROCESS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING DURING THE EXECUTION OF HIS WORK. REFER TO GEOTECHNNICAL REPORT FOR GROUNDWATER OBSERVATIONS.
8. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS DEVELOPED FROM THE BEST AVAILABLE INFORMATION. THE ACTUAL LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF EXCAVATION ACTIVITIES.
9. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING DRAINAGE PIPES TO REMAIN. CONTRACTOR TO SUPPORT PIPE AS NEEDED/HAND EXCAVATE TO ENSURE PIPE FUNCTIONALITY IS MAINTAINED.

UTILITY NOTES

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER SHOULD THERE BE ANY CONFLICT BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
2. WATER SERVICE TAPS SHALL BE PERFORMED BY THE WATER COMPANY THE CONTRACTOR SHALL EXCAVATE, BACKFILL AND PAY THE APPLICABLE FEES.
3. SANITARY SEWER
   - ALL SANITARY SEWER WORK TO COMPLY WITH CITY OF WATERBURY WPC STANDARDS AND SPECIFICATIONS.
   - ALL SANITARY LATERALS ARE TO BE 6" SDR-35 WITH A MIN. PITCH OF 1% AND 3.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL SANITARY LATERALS ARE TO HAVE INTERNAL CLEANOUTS OR A CLEANOUT WITHIN 10 FT OF BUILDING FOOTPRINT.
   - LOCATION OF SANITARY LATERALS AT BUILDING TO BE COORDINATED WITH PLUMBING DRAWINGS.
5. WATER SERVICE
   - ALL WATER SERVICE WORK TO COMPLY WITH CITY OF WATERBURY WATER DEPARTMENT STANDARDS AND SPECIFICATIONS.
   - ALL WATER MAINS ARE TO BE 8" D.I. WITH 4.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL DOMESTIC WATER SERVICES ARE TO BE 4" DUCTILE IRON WITH 4.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL FIRE SERVICES ARE TO BE 6" D.I. WITH 4.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL WATER SERVICES ARE TO BE A MIN. 10 FT FROM ANY SANITARY SERVICE (UNLESS SHELVED IN THE SAME TRENCH) AND A MINIMUM OF 18" OF VERTICAL CLEARANCE FROM ANY OTHER UTILITY LINE.
   - LOCATION OF WATER SERVICES AT BUILDINGS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
6. GAS SERVICE (EVERSOURCE)
   - ALL GAS SERVICES ARE TO CONFORM TO THE MOST CURRENT GAS COMPANY STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH EVERSOURCE
   - METER LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
7. ELECTRICAL SERVICES (EVERSOURCE)
   - ALL ELECTRICAL SERVICES ARE TO CONFORM TO EVERSOURCE MOST CURRENT STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH EVERSOURCE.
   - METER LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
8. TELEPHONE SERVICES (FRONTIER)
   - ALL TELEPHONE SERVICES ARE TO CONFORM TO FRONTIER MOST CURRENT STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH FRONTIER.
   - SERVICE LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
9. CABLE TELEVISION SERVICES (FRONTIER)
   - ALL CABLE TELEVISION SERVICES ARE TO CONFORM TO MOST CURRENT STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH FRONTIER.
   - SERVICE LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.

GRADING LEGEND

- DIRECTION OF SURFACE DRAINAGE FLOW
- PROPOSED INTERMEDIATE CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED SPOT ELEVATION (TW 123.45, BW 122.45)
- MATCH EXISTING SPOT ELEVATION (123.45 (ME))
- FLUSH CONDITION
- ACCESSIBLE ROUTE
- SOIL BORING LOCATION (B-#)

DRAINAGE AND UTILITIES LEGEND

- STORM DRAINAGE PIPE
- CATCH BASIN
- DRAINAGE MANHOLE
- AREA/YARD DRAIN
- TREATMENT UNIT
- ROOF LEADER (RL)
- SANITARY MANHOLE
- SANITARY SEWER (S)
- VENT LINE (VENT)
- CLEANOUT (CO)
- WATER LINE / FIRE LINE (FP)
- WATER LINE DOMESTIC (W)
- WATER GATE VALVE
- WATER TAPPING SLEEVE
- WATER METER (W)
- ELECTRIC / COMM. DUCT BANK
- ELECTRIC / COMM. DUCT BANK (E)
- GAS LINE (G)
- GAS METER (G)
- CO_2 SUPPLY
- COMMUNICATION CONDUITS

GENERAL NOTES

1. LOCATIONS & ELEVATIONS OF UNDERGROUND UTILITIES AND STRUCTURES ARE TAKEN FROM RECORD PLANS AND LIMITED FIELD VERIFICATION AND ARE APPROXIMATE ONLY. THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR THAT ALL UTILITIES AND SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY SIZE, LOCATION AND INVERTS OF UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL DETERMINE FOR HIMSELF, PRIOR TO BIDDING, THE LOCATIONS AND ELEVATIONS OF ALL UTILITIES THAT MAY AFFECT HIS CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL ADEQUATELY SUPPORT ALL UTILITIES AND SHALL BE RESPONSIBLE FOR ALL DAMAGE. CONTACT "CALL BEFORE YOU DIG", 1-800-922-4455, AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR IS TO COORDINATE ACTIVITIES WITH INDIVIDUAL UTILITY COMPANY REPRESENTATIVES.
3. CONTRACTOR SHALL ESTABLISH AND/OR MAINTAIN AT LEAST ONE (1) BENCHMARK ON SITE FOR VERTICAL AND HORIZONTAL REFERENCE.
4. ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS SHALL BE FIELD ALL EXISTING CURBING ON SITE IS TO BE FULLY REMOVED AND DISPOSED OF PROPERLY UNLESS INDICATED OTHERWISE.VERIFIED PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONSTRUCTION MANAGER.
5. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES AT NO ADDED COST TO THE OWNER (TYP.).
6. ALL ITEMS REQUIRING REMOVAL SHALL BE REMOVED TO FULL DEPTH TO INCLUDE BASE MATERIAL AND FOOTINGS OR FOUNDATIONS AS APPLICABLE AND LEGALLY DISPOSED OF OFFSITE.
7. ALL EXISTING UTILITIES REQUIRING REMOVAL SHALL BE COORDINATED WITH THE RESPECTIVE UTILITY COMPANIES.
8. ALL POINTS OF CONSTRUCTION INGRESS & EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD ONTO PUBLIC WAYS. ANY SEDIMENT TRACKED ONTO PAVED PUBLIC WAYS SHALL BE SWEPT AT THE END OF EACH WORK DAY.
9. THE CONSTRUCTION LIMITS ARE AS DEFINED IN THE SPECIFICATIONS AND AS SHOWN IN THE DRAWINGS. DRAWINGS INDICATE MINIMUM LIMITS OF DEMOLITION/PAVEMENT REMOVAL REQUIRED FOR CONSTRUCTION OF NEW IMPROVEMENTS. WORK SHALL NOT EXCEED CONTRACT LIMIT LINES UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE OWNER'S REPRESENTATIVE.
10. COORDINATE WORK ON EACH SITE WORK SHEET WITH ALL OTHER DRAWINGS PERTAINING TO SITE WORK IN THE CONTRACT DOCUMENT SET. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIM OR HERSELF FAMILIAR WITH THE FULL SET OF DOCUMENTS FOR ALL SITE RELATED ITEMS.
11. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, LOCAL AND FEDERAL REGULATIONS.
12. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES AND OPERATIONS.
13. CONTRACTOR TO SECURE ALL NECESSARY TRADE PERMITS.
14. CONTRACTOR SHALL CONTROL DUST CAUSED BY HIS OPERATIONS BY APPLYING WATER OR DUST PALLIATIVE, OTHER THAN CALCIUM CHLORIDE.
15. CONTRACTOR SHALL CONTROL NOISE TO AS GREAT AN EXTENT AS POSSIBLE. ALL POWER EQUIPMENT USED DURING CONSTRUCTION SHALL BE EQUIPPED WITH MUFFLERS.
16. PRIOR TO PROJECT CLOSE-OUT, CONTRACTOR SHALL REMOVE ALL DEBRIS AND EXCESS MATERIALS FROM SITE. ALSO, ANY DAMAGE TO FIELD OR FACTORY APPLIED FINISHES SHALL BE REPAIRED.

0 20 50 100

SCALE: 1" = 20'

FRIAR
architecture interior design master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

benesch
Alfred Benesch & Company
120 Hebron Avenue, 2nd Floor
Glastonbury, Connecticut 06033
860-633-8341

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 7519

REVISIONS

NO.	DATE	DESCRIPTION

SCHEMATIC DESIGN

NOT FOR CONSTRUCTION

GRADING DRAINAGE & UTILITY PLAN

DATE: 2024-0223
SCALE 1" = 20'
PROJ. #: 70905.00
DRAWN: RCD
CHECKED: RCD
12/19/2023 10:58:58 AM

SHEET NO.

L3.0

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SECTION 01 1000
SUMMARY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Project information.
   2. Work covered by Contract Documents.
   3. Possible proposed phased construction and associated schedule.
   4. Work performed by Owner.
   5. Multiple Work Packages.
   6. Work under Owner's separate contracts.
   7. Contractor's use of site and premises.
   8. Coordination with occupants.
   9. Work restrictions.
   10. Specification and Drawing conventions.
   11. Miscellaneous provisions.

B. Related Requirements:
   1. Section 01 7300 "Execution" for coordination of Owner-installed products.

1.03 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.04 PROJECT INFORMATION

A. Project Identification: Waterbury Community Health Resource Center.
   1. Project Numbers:
      a. Architect’s Project Number: 2023-026B.
      b. Owner’s Project Number: RFP # 8801
   2. Project Location: 24 Branch Street, Waterbury, CT 06704.

B. Owner: City of Waterbury.
   1. Owner's Representative: Kevin McCaffery.

C. Architect: Friar Architecture, Inc.
   1. Architect's Representative:
      a. Principal Representative: Michael Sorano, AIA –Principal.
      b. Project Manager: Dan Dryzgula.

D. Owner’s Program Manager (OPM): Waterbury Development Corporation (WDC).
   1. OPM Representative: Tom Favazzo, Project Manager.
   2. OPM has been engaged for this Project to serve as an advisor to Owner and to aid in administering the Contract for construction between Owner and Contractors, according to a separate contract between Owner and Construction Manager.
      a. OPM also serves as Project coordinator, as defined in Section 01 1200 "Multiple Contract Summary."

E. Project Coordinator for Multiple Contracts: Owner shall serve as Project coordinator if required.

1.05 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. The project is the addition of unisex restrooms on floors one, two, four, and six, and the renovation of existing restrooms on floors one, two, four, five, and six.
2. Scope of work for the unisex restroom additions and existing restroom renovations includes but is not limited to the addition of walls, new fixtures, new ceilings, new light fixtures, new water fountains, and all other work included on the Contract Documents.

B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.06 ITEMS FOR SALVAGE AND REINSTALLATION.

A. The Contractor will coordinate the following items, still in place on site and as indicated on the Contract Documents, to be carefully removed, salvaged, modified as indicated / where required, and reinstalled as indicated on the Contract Documents.
1. Lead Coated Copper (L.C.C.).
2. All gutters and associated elements.
3. All rain leaders and associated elements.
4. All white aluminum rain diverters or flow guards.

B. Contractor’s Responsibilities: The Work includes the following, as applicable:
1. Coordinate the proper and careful salvaging and storage of designated Owner items. Items are to be stored in a secure location either on site or off-site per the agreement of the Owner.
2. Re-install all salvaged items as indicated on the Contract Documents.

1.07 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section. The extents of site restrictions to be coordinated by the Construction Manager.

B. Limits on Use of Site: Limit use of Project site to work within the project limit lines indicated on the Contract Documents. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Driveways, Walkways and Entrances:
a. Any entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
b. Schedule deliveries to minimize use of driveways and entrances by construction operations.
c. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.08 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 6:00 a.m. to 5:00p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Weekend Hours: Construction Manager to coordinate and present to the Owner and authorities having jurisdiction if project requirements or schedule necessitate the discussion.
2. Early Morning Hours: Construction Manager to coordinate and present to the Owner and authorities having jurisdiction if project requirements or schedule necessitate the discussion.
3. Hours for Utility Shutdowns: Coordinate with the City of Waterbury, Owner, and authorities having jurisdiction.

C. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

D. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, smokeless vaporizers, and other controlled substances within the existing building and on Project site is strictly not permitted.

E. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

F. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
1. Maintain list of approved screened personnel with Owner's representative.

1.09 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and as published as part of the U.S. National CAD Standard.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 1000

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SECTION 01 1001 – HAZARDOUS MATERIALS GENERAL CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Related Sections:

1.	Section 01 1600:	Hazardous Materials Scheduling and Phasing
2.	Section 01 7701:	Hazardous Materials Contract Closeout
3.	Section 02 0750:	Selective Demolition for Hazardous Materials Abatement
4.	Section 02 0800:	Asbestos Abatement
5.	Section 02 0820:	Universal Waste Reclamation
6.	Section 02 0900:	Lead Paint Awareness

1.2 GENERAL REQUIREMENTS

A. The property located at 24 Branch Street in Waterbury, CT (the “Site”) shall undergo abatement of hazardous and regulated materials to support the renovation of the Site building.

B. The Site building consists of an elevated single-story structure of block construction. The structure was built in 1900 for use as a church. The building has a full finished basement.

C. The Hazardous Materials Abatement Contractor (HMAC) shall comply with all provisions and requirements of the Contract Documents including but not limited to the technical specifications, hazardous materials abatement plans, Owner, Construction Manager/General Contractor/Architect/Owner’s Consultant requirements, project phasing and scheduling.

D. Where project Specifications, hazardous materials abatement plans or requirements or directives from the Owner, Construction Manager/General Contractor/Architect/Owner’s Consultant are contradictory or ambiguous, the more stringent requirement in all cases shall apply.

E. Where required, the HMAC shall submit as part of their Bid, including but not limited to, qualifications, licenses, training certifications, insurance, bonding, written statements, acknowledgement of addenda, fees to perform the work as required by the Contract Documents and/or requests, directives or additional requirements by the Owner, Construction Manager/Architect/Owner’s Consultant. Failure to provide any and all aforementioned information may result in an unresponsive Bid.

F. The HMAC shall be bound to all general conditions and supplemental general conditions provided in the Contract Documents.

G. The HMAC shall perform their own quantity verification for the purpose of submitting their Bid and establishing actual material quantities for abatement included in their scope of abatement work. Quantities provided in the Hazardous Materials Abatement Specifications (Specifications) and on the Hazardous Materials Abatement Plans (Plans) are estimates to provide an order of magnitude for the work to be completed. No change orders will be approved for quantity or location discrepancies between the Specifications, Plans and actual field conditions.

H. The HMAC shall complete the work of this project in accordance with the overall phasing and scheduling plan(s) developed by the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant. The HMAC shall provide adequate staffing, materials, equipment and resources to complete the work in accordance with the Owner's, Construction Manager's/General Contractor's/Architect's/Owner's Consultant's phasing and scheduling plan(s). Overtime work incumbered by the Consultant as a result of the HMAC's ability to maintain the schedule shall be paid for by the HMAC.

I. The building will be vacant at the time of the abatement work.

1.3 HAZARDOUS MATERIALS ABATEMENT CONTRACTOR (HMAC) QUALIFICATIONS

A. All bidders shall submit a record of prior experience in hazardous materials renovation projects listing no less than three (3) completed jobs in the past five (5) years, with all projects of similar size and scope. The HMAC shall list the experience and training of the site supervisor and all on-site workers. The information that shall be included is as follows:

1. Project Name and Address
2. Owner's Name and Address
3. Construction Manager/General Contractor/Architect/Owner's Consultant
4. Contract Amount
5. Date of Completion
6. Extras and Change Orders

C. Submit a written statement regarding whether the HMAC has ever been found out-of-compliance with federal or state regulations pertaining to worker protection, removal, transport, or disposal.

D. Award of this Contract may not necessarily be based solely on the submitted lowest Base Bid amount. The Owner reserves the right to award this Contract to the Bidder who best meets all HMAC qualifications.

1.4 HMAC USE OF SITE AND PREMISES

A. The HMAC shall coordinate use of the premises under the direction of the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant.

B. The HMAC shall not interfere with general Site operations or local traffic. The HMAC shall coordinate parking for employees with the Owner.

C. The HMAC shall coordinate location of waste container(s) with the Owner. If waste containers will be located on the street or sidewalk, the HMAC shall apply for and pay for all associated fees for permits, if required, by the City of Waterbury.

D. Power and water shall be available at the Site for use by the HMAC.

1.5 WORK PHASING

A. Work under this project may be performed in phases to accommodate Owner's/Architect's requirements. Coordinate abatement schedule and operations with the Owner/Construction Manager/General Contractor/Architect/Owner's Consultant and other trades.

B. The HMAC shall become familiar with the phasing of this work and shall include the required mobilization and re-mobilization as necessary to support the work phasing.

1.6 OWNER'S OPERATIONS

A. Schedule the Work to accommodate this requirement.

B. Maintain means of egress.

C. Coordinate Work with the Owner, the Architect, and the Owner's Consultant.

D. Maintain the fire alarm and fire detection systems active at all time during construction.

E. Maintain permanent means of egress during construction. Provide and maintain temporary means of egress as required by Fire Marshall.

1.7 CLOSEOUT AND PUNCH LIST

A. The HMAC shall carefully check his/her own work and that of any Subcontractor as the work is being performed. Unsatisfactory work shall be corrected immediately.

B. When the HMAC determines that he is substantially complete, that is, has less than one percent of his Contract remaining to be completed, he shall prepare for submission to the Owner's Consultant, a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the HMAC to complete all work in accordance with the Contract Documents.

C. Upon receipt of the HMAC's list of items to be completed or corrected, the Owner's Consultant will promptly make a thorough inspection and prepare a "punch list" setting forth in accurate detail any items on the HMAC's list and any additional items that are not acceptable.

D. When the "punch list" has been prepared, the Owner's Consultant will arrange a meeting with the HMAC to identify and explain all punch list items and answer questions on the work that must be completed before final acceptance.

E. The HMAC shall correct all "punch list" items or shall cause the correction of the "punch list"

items within a time frame to be established when the “punch list” is made. The time frame for the completion of the “punch list” shall not exceed the completion date of the Contract. Should the “punch list” not be completed within the specified time frame, the Owner may invoke the rights given under the General Conditions.

F. The Owner’s Consultant shall not be expected to inspect any area more than once for the preparation of the “punch list” items. If, during an inspection, the Owner’s Consultant discovers five (5) or more deficient conditions, then the area shall be declared “Not Ready” for Inspection.

G. All inspections and sampling required for hazardous materials abatement compliance will be performed by the Owner’s Consultant.

1.8 CLEANING

A. Throughout the construction period, the HMAC shall maintain the building and the site free of rubbish, debris, surplus materials, and other items not required for the Work. Remove such material from the site daily to prevent accumulations. Remove all construction debris from work areas, and remove all hazardous waste as required by the most current federal, state, and local regulations and the requirements of the specifications.

1.9 ADDITIONAL GENERAL REQUIREMENTS

A. The HMAC shall employ a competent and English-speaking hazardous materials abatement Supervisor with at least three (3) years of experience on projects of similar scope and magnitude. The Supervisor shall be responsible for all work involving hazardous materials abatement as described in the specifications and defined in the applicable regulations, and have full time daily supervision of the same. The Supervisor shall be the “Competent Person” as defined by OSHA regulations.

B. The HMAC shall allow the work of this contract to be inspected, if required, by local, state, federal, and any other authorities having jurisdiction over such work. The HMAC shall immediately notify the Owner and Owner’s Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.

C. The HMAC shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The HMAC shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The HMAC shall immediately notify the Owner and Owner’s Consultant of the delivery of all permits, licenses, certificates of inspection, of approval or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless to who issued, and shall cause them to be displayed to the Owner and Owner’s Consultant for verification and recording.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1001

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SECTION 01 1600 – SCHEDULING AND PHASING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Related Sections:

1. Section 01 1001: Hazardous Materials General Conditions
2. Section 01 7701: Hazardous Materials Contract Closeout
3. Section 02 0750: Selective Demolition For Hazardous Materials Abatement
4. Section 02 0800: Asbestos Abatement
5. Section 02 0820: Universal Waste Reclamation
6. Section 02 0900: Lead Paint Awareness

1.2 GENERAL REQUIREMENTS

A. The abatement work for this project may be conducted in phases. The work of this project shall begin upon receipt of the "Notice to Proceed" from the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant. A Pre-Construction Meeting shall be scheduled by the Construction Manager/General Contractor/Architect/Owner's Consultant and must be attended by the Hazardous Materials Abatement Contractor (HMAC) and any Sub-Contractors. The assigned Site Supervisor(s) must also attend this meeting.

B. A working schedule for each phase of work shall be presented by the HMAC at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed and the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant will inform the HMAC of additions or changes in the scheduling requirements for the project.

C. As a result of the Pre-Construction Meeting, the HMAC shall submit a revised schedule no later than three (3) business days from the Pre-Construction Meeting. Upon approval from the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant, the HMAC will receive a "Notice to Proceed" with the work of the Contract.

D. Refer to all other applicable sections of the specification for coordination with other trades. The abatement HMAC shall coordinate work with all other activities at this occupied site.

1.3 TIME FOR COMPLETION AND WORKING HOURS

A. Upon award of contract from the Owner, the HMAC shall immediately submit state and federal notifications, order materials, supplies, and components for the work of this project.

B. The HMAC shall begin the work immediately upon receipt of the written “Notice to Proceed” from the Owner. The date of the commencement of the work is termed the “Construction Start Date.” The HMAC will be required to complete all work of this Contract within the time period stipulated in the finalized schedule. The last day in the schedule is termed as “Contract Completion Date.”

C. If conditions arise that are beyond the control of the HMAC and force delays in the performance of the Work, the Owner, Construction Manager/General Contractor/Architect/Owner’s Consultant shall be immediately notified. The HMAC shall state the reason for the delay and shall estimate the expected duration of the delay. Any application for an extension of the Contract completion date shall be made under proper change order procedures. The acceptance of the cause for delay and change order is subject to the Owner's review and approval.

D. Work hours will be established in coordination with the Owner and Construction Manager/General Contractor/Architect/Owner’s Consultant.

E. Any extra hours or days per week worked by the HMAC or Sub-Contractors shall be at no extra cost to the Owner. Denial of extra hours or days per week by the Owner shall not be grounds for extra time allotted to the overall Contract time. The HMAC shall be responsible for all overtime payment to cover Consultant’s overtime fees for work performed above and beyond normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1600

SECTION 01 2100
ALLOWANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:
   1. Unit-cost allowances.
   2. Quantity allowances.
   3. Contingency allowances.
   4. Testing and inspecting allowances.

C. Related Requirements:
   1. Section 01 2200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
   2. Section 01 2600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   3. Section 01 4000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.03 DEFINITIONS

A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.04 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.05 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.06 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.07 UNIT-COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
   1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.08 QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
   1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.09 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.10 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

C. Costs of testing and inspection services not specifically required by the Contract Documents are Contractor responsibilities and are not included in the allowance.

D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.11 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.03 SCHEDULE OF ALLOWANCES

A. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."

B. Allowance No. 01: Quantity Allowance: Include costs for patching and repairing exterior concrete spalling around the perimeter of the building and within the below grade areaways; 1,000 sq. ft.

C. Allowance No. 02: Quantity Allowance: Include costs for repointing of exterior brick where necessary; 750 sq. ft.

D. Allowance No. 03: Quantity Allowance: Include costs for remediation of hazardous materials in the existing to remain roof gutters; $2,000.00.

E. Allowance No. 04: Quantity Allowance: Include costs for remediation of hazardous materials in the underground electrical vault; $1,500.00.

F. Allowance No. 05: Quantity Allowance: Include costs for remediation of hazardous materials in the interior of boiler components; $7,500.00.

G. Allowance No. 06: Quantity Allowance: Include costs for remediation of hazardous materials at the base of removed roof-top crucifixes, including use of a lift; $5,000.00.

H. Allowance No. 07: Quantity Allowance: Include 2000 cu. yd. of unsatisfactory soil excavation and disposal off-site and replacement with satisfactory soil material from off-site, as specified in Section 31 2310 "Earth Moving."

I. Allowance No. 08: Quantity Allowance: Include 1000 cu. yd. of mass rock removal and replacement with satisfactory soil material, as specified in Section 31 2310 "Earth Moving."

J. Allowance No. 09: Quantity Allowance: Include 10 cu. yd. of trench rock removal and replacement with satisfactory soil material, as specified in Section 31 2310 "Earth Moving."

END OF SECTION 01 2100

SECTION 01 2300
ALTERNATES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.03 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
   2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.04 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other Work of the Contract.

C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SCHEDULE OF ADD ALTERNATES

A. Add Alternate No. 01: Remove the raised stepped flooring at the lower-level central meeting area and the first-floor concrete and terrazzo tile / marble flooring at the main pulpit where indicated on the drawings. Provide self-floor leveling and infill on entire area of removal to create a flat, uniform surface to ETR adjacent terrazzo flooring.

B. Add Alternate No. 02: Provide new 2'x2' ACT ceilings (pads and grids per spec, same as first floor Type C-1) along with new 2'x2' LED lighting (Type A2) at the lower-level where indicated on the drawings. Note: acceptance of this Add Alternate would include a credit for the lower level linear light fixtures (Type U4). Ref. all drawings and specs for additional information.

C. Add Alternate No. 03: Provide the front canopy and all associated elements as indicated on the drawings; ref. sheet A3.3. Note: acceptance of this Add Alternate would include a credit for the concrete parging of the main entry mosaic. Ref. all drawings and specs for additional information.

END OF SECTION 01 2300

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SECTION 01 2200
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Defect assessment and non-payment for rejected work.

1.02 RELATED REQUIREMENTS

A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.04 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

B. Take all measurements and compute quantities, provide diagrams and drawings as needed to confirm quantities. Measurements and quantities will be verified by Architect.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

D. Measurement by Area: Measured by square dimension using mean length and width or radius.

E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

F. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.

1.06 PAYMENT

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

B. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond the lines and levels of the required Work.
   5. Products remaining on hand after completion of the Work.
   6. Loading, hauling, and disposing of rejected Products.

1.07 DEFECT ASSESSMENT

A. Replace Work, or portions of the Work, not complying with specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:

1. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of Architect.

C. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct one of the following remedies:
   1. The defective Work will be partially repaired to the instructions of the Owner, and the unit price will be adjusted to a new unit price at the discretion of Owner.

D. The authority of Owner, or by direction and deferment to the Architect, to assess the defect and identify payment adjustment is final.

1.08 SCHEDULE OF UNIT PRICES

A. Item No. 01: Patching and repairing exterior concrete spalling around the perimeter of the building and within the below grade areaways
   1. Unit of Measurement: Per square foot: _____/sq. ft.

B. Item No. 02: Repointing of exterior brick where necessary.
   1. Unit of Measurement: Per square foot: _____/sq. ft.

C. Item No. 03: Remediation of hazardous materials in the existing to remain roof gutters
   1. Unit of Measurement: Per linear foot: _____/li ft.

D. Item:Remediation of hazardous materials in the underground electrical vault.
   1. Unit of Measurement: Per square foot: _____/sq. ft.

E. Item No. 05: Remediation of hazardous materials in the interior of boiler components.
   1. Unit of Measurement: Per square foot: _____/sq. ft.

F. Item No. 06: Remediation of hazardous materials at the base of removed roof-top crucifixes, including use of a lift.
   1. Unit of Measurement: Per square foot: _____/sq. ft.

G. Item No. 07: Excavation and disposal of unsatisfactory soils off-site and replacement with satisfactory soil material from off-site, as specified in Section 31 2310 "Earth Moving."
   1. Unit of Measurement: Per cubic foot: _____/cubic ft.

H. Item No. 08: Mass rock removal and replacement with satisfactory soil material, as specified in Section 31 2310 "Earth Moving."
   1. Unit of Measurement: Per cubic foot: _____/cubic ft.

I. Item No. 09: Trench rock removal and replacement with satisfactory soil material, as specified in Section 31 2310 "Earth Moving."
   1. Unit of Measurement: Per cubic foot: _____/cubic ft.

J. Item No. 10: Remediation and repair of existing terrazzo flooring.
   1. Unit of Measurement: Per square foot: _____/sq. ft.

K. Item No. 11: Repair / infill of existing concrete floor slabs to receive new finishes.
   1. Unit of Measurement: Per square foot: _____/sq. ft.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 2200

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:
   1. Document 00 2600 "Contract Modification Procedures" for requirements for substitution requests prior to award of Contract.
   2. Section 01 6000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.03 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.04 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use form the form provided in the Project Manual, or an alternate form that is presented to the Architect prior to approval and use.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
      b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
      e. Samples, where applicable or requested.
      f. Certificates and qualification data, where applicable or requested.
      g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
      h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.

i. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven <7> days of receipt of a request for substitution. The Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within [fifteen] <15> days of receipt of request, or seven <7> days of receipt of additional information or documentation, whichever is later.
   a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
   b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.07 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than [fifteen] <15> days prior to time required for preparation and review of related submittals.
   1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      b. Substitution request is fully documented and properly submitted.
      c. Requested substitution will not adversely affect Contractor's construction schedule.
      d. Requested substitution has received necessary approvals of authorities having jurisdiction.
      e. Requested substitution is compatible with other portions of the Work.
      f. Requested substitution has been coordinated with other portions of the Work.
      g. Requested substitution provides specified warranty.
      h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within [fifteen] <15> days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
   1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
      b. Requested substitution does not require extensive revisions to the Contract Documents.
      c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      d. Substitution request is fully documented and properly submitted.
      e. Requested substitution will not adversely affect Contractor's construction schedule.
      f. Requested substitution has received necessary approvals of authorities having jurisdiction.
      g. Requested substitution is compatible with other portions of the Work.
      h. Requested substitution has been coordinated with other portions of the Work.
      i. Requested substitution provides specified warranty.
      j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 2500

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Advancement of Construction Technology

CONTRACT DOCUMENTS
MARCH 01, 2024

SUBSTITUTION REQUEST
(After the Bidding Phase)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 yrs old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

_____

_____

☐ Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item: _____

_____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

_____

Savings to Owner for accepting substitution: _____ ($ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

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SECTION 01 2600
CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:
   1. Section 01 3100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.03 MINOR CHANGES IN THE WORK

A. Architect will issue through Construction Manager supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on web-based Project management software.

1.04 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Construction Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Work Change Proposal Requests issued by Construction Manager are not instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.
      d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
      e. Quotation Form: Use form provided as part of web-based Project management software.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Construction Manager.
   1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Proposal Request Form: Use form provided as part of web-based Project management software.

1.05 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 01 0270 "Unit Pricing" included in the Appendix technical specifications for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.06 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Construction Manager will issue a Change Order for signatures of Owner and Contractor on AIA Document G701
AIA Document G701CMa form provided as part of web-based Project management software.

1.07 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Construction Manager may issue a Construction Change Directive on AIA Document G714 AIA Document G714CMa form provided as part of web-based Project management software. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.08 WORK CHANGE DIRECTIVE

A. Work Change Directive: Construction Manager may issue a Work Change Directive on form provided as part of web-based Project management software. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 2600

SECTION 01 2900
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 01 0270 "Unit Pricing" included in the Appendix technical specifications for administrative requirements governing the use of unit prices.
   2. Section 01 2600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   3. Section 01 3200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.03 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.04 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
   1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date, but no later than [seven] <7> days before the date scheduled for submittal of initial Applications for Payment.
   3. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
   4. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 01 1000 "Summary."

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the schedule of values:
      a. Project name and location.
      b. Owner's name.
      c. Owner's Project number.
      d. Name of Architect.
      e. Architect's Project number.
      f. Contractor's name and address.
      g. Date of submittal.
   2. Arrange schedule of values consistent with format of AIA Document G703.
   3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
      a. Related Specification Section or division.

b. Description of the Work.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Name of supplier.
f. Change Orders (numbers) that affect value.
g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
    1) Labor.
    2) Materials.
    3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of [five] <5> percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
    a. Differentiate between items stored on-site and items stored off-site.
6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
7. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
8. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
9. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
10. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
11. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling [five] <5> percent of the Contract Sum and subcontract amount.
12. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.05 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and Construction Manager and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the last day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
    1. Submit draft copy of Application for Payment [seven] <7> days prior to due date for review by Architect.

D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
   4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:
      a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
      b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
      c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit [three] <3> signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment, subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
   1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   2. When an application shows completion of an item, submit conditional final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.

5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Certification of completion of final punch list items.
   3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   4. Updated final statement, accounting for final changes to the Contract Sum.
   5. AIA Document G706.
   6. AIA Document G706A.
   7. AIA Document G707.
   8. Evidence that claims have been settled.
   9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
   10. Final liquidated damages settlement statement.
   11. Proof that taxes, fees, and similar obligations are paid.
   12. Waivers and releases.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 2900

SECTION 01 3100
PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
   1. General coordination procedures.
   2. Coordination drawings.
   3. RFIs.
   4. Digital project management procedures.
   5. Web-based Project management software package.
   6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:
   1. Section 01 3200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
   2. Section 01 7300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.03 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.04 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
   1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
   2. Number and title of related Specification Section(s) covered by subcontract.
   3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within [15] days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
   1. Post copies of list in Project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in each built facility. Keep list current at all times.

1.05 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate

construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall cooperate with Project coordinator, who shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors and direction of Project coordinator to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.06 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
    a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    b. Coordinate the addition of trade-specific information to coordination drawings by multiple contractors in a sequence that best provides for coordination of the

information and resolution of conflicts between installed components before submitting for review.

c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
f. Indicate required installation sequences.
g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
   a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
   c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
   d. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Fire-Protection System: Show the following:
   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.

1.07 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
   1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
   2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
   1. Project name.
   2. Owner name.
   3. Owner's Project number.
   4. Name of Architect and General Contractor.
   5. Architect's Project number.
   6. Date.
   7. Name of Contractor.
   8. RFI number, numbered sequentially.
   9. RFI subject.
   10. Specification Section number and title and related paragraphs, as appropriate.
   11. Drawing number and detail references, as appropriate.
   12. Field dimensions and conditions, as appropriate.
   13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
   14. Contractor's signature.
   15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
       a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716 or Form bound in Project Manual.
   1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow [seven] days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
   1. The following Contractor-generated RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for approval of Contractor's means and methods.
      d. Requests for coordination information already indicated in the Contract Documents.
      e. Requests for adjustments in the Contract Time or the Contract Sum.
      f. Requests for interpretation of Architect's actions on submittals.
      g. Incomplete RFIs or inaccurately prepared RFIs.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect or Construction Manager of additional information.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 2600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within [5] days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's and Construction Manager's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within [seven] days if Contractor disagrees with response.

1.08 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Architect's Data Files Not Available: Architect will not provide Architect's digital data files for Contractor's use during construction.

B. Web-Based Project Management Software Package: If requested by the Owner, provide, administer, and use Contractor’s web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.
1. Web-based Project management software includes, at a minimum, the following features:
a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
c. Document workflow planning, allowing customization of workflow between project entities.
d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
e. Track status of each Project communication in real time, and log time and date when responses are provided.
f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
g. Processing and tracking of payment applications.
h. Processing and tracking of contract modifications.
i. Creating and distributing meeting minutes.
j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
k. Management of construction progress photographs.
l. Mobile device compatibility, including smartphones and tablets.

2. Provide up to [seven] Project management software user licenses for use of Owner, Owner's Commissioning Authority, Contractor, Architect, and Architect's consultants. Provide [eight] <8> hours of software training at Architect's office for web-based Project software users.
3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.09 PROJECT MEETINGS

A. General: Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of [seven] <7 > days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Contractor, and Architect, within [three] <5> days of the meeting.

B. Preconstruction Conference: Contractor will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than [15] days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Contractor, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Use of web-based Project software.
h. Procedures for processing field decisions and Change Orders.
i. Procedures for RFIs.
j. Procedures for testing and inspecting.
k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Sustainable design requirements.
o. Preparation of Record Documents.
p. Use of the premises and existing building.

q. Work restrictions.
r. Working hours.
s. Owner's occupancy requirements.
t. Responsibility for temporary facilities and controls.
u. Procedures for moisture and mold control.
v. Procedures for disruptions and shutdowns.
w. Construction waste management and recycling.
x. Parking availability.
y. Office, work, and storage areas.
z. Equipment deliveries and priorities.
aa. First aid.
bb. Security.
cc. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, Contractor, and Owner's Commissioning Authority of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Sustainable design requirements.
i. Review of mockups.
j. Possible conflicts.
k. Compatibility requirements.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written instructions.
o. Warranty requirements.
p. Compatibility of materials.
q. Acceptability of substrates.
r. Temporary facilities and controls.
s. Space and access limitations.
t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Contractor will schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than [90] days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Contractor, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
   a. Preparation of Record Documents.
   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
   c. Procedures for completing and archiving web-based Project software site data files.
   d. Submittal of written warranties.
   e. Requirements for completing sustainable design documentation.
   f. Requirements for preparing operations and maintenance data.
   g. Requirements for delivery of material samples, attic stock, and spare parts.
   h. Requirements for demonstration and training.
   i. Preparation of Contractor's punch list.
   j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
   k. Submittal procedures.
   l. Coordination of separate contracts.
   m. Owner's partial occupancy requirements.
   n. Installation of Owner's furniture, fixtures, and equipment.
   o. Responsibility for removing temporary facilities and controls.
4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Contractor will schedule and conduct progress meetings at least weekly or biweekly intervals as required by the Owner.
1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority, Contractor, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in

relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:
   1) Interface requirements.
   2) Sequence of operations.
   3) Resolution of BIM component conflicts.
   4) Status of submittals.
   5) Status of sustainable design documentation.
   6) Deliveries.
   7) Off-site fabrication.
   8) Access.
   9) Site use.
   10) Temporary facilities and controls.
   11) Progress cleaning.
   12) Quality and work standards.
   13) Status of correction of deficient items.
   14) Field observations.
   15) Status of RFIs.
   16) Status of Proposal Requests.
   17) Pending changes.
   18) Status of Change Orders.
   19) Pending claims and disputes.
   20) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 3100

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AIA® Document G716™ – 2004

Request for Information ("RFI")

TO:	**FROM:**	
PROJECT:	**ISSUE DATE:**	**RFI No.**
PROJECT NUMBERS: /	**REQUESTED REPLY DATE:** **COPIES TO:**	

RFI DESCRIPTION: *(Fully describe the question or type of information requested.)*

REFERENCES/ATTACHMENTS: *(List specific documents researched when seeking the information requested.)*
SPECIFICATIONS: **DRAWINGS:** **OTHER:**

SENDER'S RECOMMENDATION: *(If RFI concerns a site or construction condition, the sender may provide a recommended solution, including cost and/or schedule considerations.)*

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User Notes: (1315258953)

RECEIVER'S REPLY: *(Provide answer to RFI, including cost and/or schedule considerations.)*

BY	DATE	COPIES TO

Note: This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order, Construction Change Directive or a Minor Change in the work must be executed in accordance with the Contract Documents.

DRAFT

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User Notes: (1315258953)

SECTION 01 3200
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Startup construction schedule.
   2. Contractor's Construction Schedule.
   3. Construction schedule updating reports.
   4. Daily construction reports.
   5. Material location reports.
   6. Site condition reports.
   7. Unusual event reports.

B. Related Requirements:
   1. Section 01 2900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.

1.02 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.
   1. Float time is per the discretion of the Owner and to be coordinated with the Owner by the Construction Manager.
   2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
   3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.03 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:
   1. Working electronic copy of schedule file.
   2. PDF file.
   3. No paper documents are to be provided unless specifically requested by the Architect or Owner.

B. Startup construction schedule.
   1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
   1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
   1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
   2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
   3. Total Float Report: List of activities sorted in ascending order of total float.
   4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at weekly intervals or at the Construction Manager’s discretion.

G. Material Location Reports: Submit at monthly intervals or at the Construction Manager’s discretion.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

I. Unusual Event Reports: Submit at time of unusual event.

J. Qualification Data: For scheduling consultant.

1.04 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
   1. Review software limitations and content and format for reports.
   2. Verify availability of qualified personnel needed to develop and update schedule.
   3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and potential partial Owner occupancy.
   4. Review delivery dates for Owner-furnished products.
   5. Review schedule for work of Owner's separate contracts.
   6. Review submittal requirements and procedures.
   7. Review time required for review of submittals and resubmittals.
   8. Review requirements for tests and inspections by independent testing and inspecting agencies.
   9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
   10. Review and finalize list of construction activities to be included in schedule.
   11. Review procedures for updating schedule.

1.05 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.06 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
   1. Use Microsoft Project, Primavera, Meridian Prolog or equivalent for current Windows operating systems.

B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion and anticipated Final Completion.
   1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat building roof area as a separate numbered activity for each main element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than [20] days, unless specifically allowed by Architect.
   2. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.
   3. Punch List and Final Completion: Include not more than [30] days for completion of punch list items and Final Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 1000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
   2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
      a. Subcontract awards.
      b. Purchases.
      c. Fabrication.
      d. Sample testing.
      e. Deliveries.
      f. Installation.
      g. Tests and inspections.
      h. Air quality monitorin
      i. Building flush-out.
   3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

F. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

G. Recovery Schedule: When periodic update indicates the Work is [5] or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

1.07 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within [seven] <7> days of date established for commencement of the Work.

1.08 REPORTS

A. Weekly Construction Reports: Prepare a weekly construction report recording the following information concerning events at Project site:
   1. Approximate count of personnel at Project site.
   2. Material deliveries.
   3. High and low temperatures and general weather conditions, including presence of rain or snow.
   4. Accidents.
   5. Meetings and significant decisions.
   6. Unusual events.
   7. Stoppages, delays, shortages, and losses.
   8. Orders and requests of authorities having jurisdiction.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 3200

SECTION 01 3233
PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Preconstruction photographs.
   2. Periodic construction photographs.
   3. Package completion construction photographs.

1.02 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within [seven] <7> days of taking photographs.
   1. Submit photos by uploading to web-based Project management software site or via emailed. Include copy of key plan indicating each photograph's location and direction.
   2. Identification: Provide the following information with each image description in web-based Project management software site:
      a. Name of Project.
      b. Name and contact information for photographer.
      c. Name of Architect and Contractor.
      d. Date photograph was taken.
      e. Description of location, vantage point, and direction.
      f. Unique sequential identifier keyed to accompanying key plan.

C. Printed Photographs: not required unless specifically requested by either the Owner or Architect for a validated and approved reason.

1.03 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been proven to be able to provide clear, non-blurry photographs of construction-related activities. A professional photographer is not required but images provided do need to be clear, non-blurry and show accurately the condition they are intending to portray.

1.04 FORMATS AND MEDIA

A. Digital Photographs: Provide color images in JPG or PDF format, produced by a digital camera with minimum sensor size of [12] megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.

B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

C. File Names: Name media files with project number, date, and specific Project area where taken and sequential numbering suffix.

1.05 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified photographer to take construction photographs.

B. General: Take photographs with maximum depth of field and in focus.
   1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect and/or Construction Manager.

1. Take a suitable number of photographs to show existing conditions before starting the Work.

D. Periodic Construction Photographs: Take a suitable number of photographs coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Final Completion Construction Photographs: Take a suitable number of photographs after date of Substantial Completion for submission as Project Record Documents. The architect will inform the photographer of desired vantage points and confirm that the provided amount and quality of photographs taken are acceptable.

F. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for in the allowance for construction photographs.
   1. Three days' notice will be given, where feasible.
   2. Circumstances that could require additional photographs include, but are not limited to, the following:
      a. Immediate follow-up when on-site events result in construction damage or losses.
      b. Substantial Completion of a major phase or component of the Work.
      c. Extra record photographs at time of final acceptance.
      d. Owner's request for special publicity photographs.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 3233

SECTION 01 3300
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Submittal schedule requirements.
   2. Administrative and procedural requirements for submittals.

B. Related Requirements:
   1. Section 01 2900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
   2. Section 01 3100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
   3. Section 01 3200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
   4. Section 01 3233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
   5. Section 01 4000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
   6. Section 01 7700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
   7. Section 01 7823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.

1.03 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.04 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and Construction Manager and additional time for handling and reviewing submittals required by those corrections.
   1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
   2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
   3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:
   a. Scheduled date for first submittal.
   b. Specification Section number and title.
   c. Submittal Category: Action; informational.
   d. Name of subcontractor.
   e. Description of the Work covered.
   f. Scheduled date for Architect's and Contractor’s final release or approval.
   g. Scheduled dates for purchasing.
   h. Scheduled date of fabrication.
   i. Scheduled dates for installation.
   j. Activity or event number.

1.05 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:
   1. Project name.
   2. Date.
   3. Name of Architect.
   4. Name of Contractor.
   5. Name of firm or entity that prepared submittal.
   6. Names of subcontractor, manufacturer, and supplier.
   7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
   8. Category and type of submittal.
   9. Submittal purpose and description.
   10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
   11. Drawing number and detail references, as appropriate.
   12. Indication of full or partial submittal.
   13. Location(s) where product is to be installed, as appropriate.
   14. Other necessary identification.
   15. Remarks.
   16. Signature of transmitter.

B. Options: Clearly and boldly identify options requiring selection by Architect or Architect’s consultants.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect and Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals: paper submittals are not to be submitted unless specifically requested by the Owner, Architect, or Construction Manager. If paper copies are required, the required quantity will be formally requested.

E. Electronic Submittals: Prepare submittals as a single combined multi-page PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

F. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.06 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
   1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
      a. Architect, through Contractor, will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
   2. Web-Based Project Management Software: If required by the Owner, prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
   4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of the need to review multiple submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow [15] days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Resubmittal Review: Allow [15] days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow [21] days for initial review of each submittal.
      a. The types of sequential reviews include submittals where the Architect’s consultants need to review the data first and then provide back to the Architect for selection of colors, finishes, etc.
      b. Examples of these types of submittals include but are not limited to light fixtures, any electrical equipment requiring a finish color selection, etc.

D. Resubmittals: Make resubmittals in the same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked with approval notation from Architect's and Contractor’s action stamp.

4. Resubmittals with annotations marked by the Architect or Architect's consultants more than twice in a row per submittal without adequate correction by contractor or subcontractor will result in billed time to the contractor using the Architect's or Architect's consultants standard hourly rates.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.07 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
   3. Include the following information, as applicable:
      a. Manufacturer's catalog cuts.
      b. Manufacturer's product specifications.
      c. Standard color charts.
      d. Statement of compliance with specified referenced standards.
      e. Testing by recognized testing agency.
      f. Application of testing agency labels and seals.
      g. Notation of coordination requirements.
      h. Availability and delivery time information.
   4. For equipment, include the following in addition to the above, as applicable:
      a. Wiring diagrams that show factory-installed wiring.
      b. Printed performance curves.
      c. Operational range diagrams.
      d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
   5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. The Architect's nor the Architect's Consultant's drawings will be provided for the use of shop drawings.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Identification of products.
      b. Schedules.
      c. Compliance with specified standards.
      d. Notation of coordination requirements.
      e. Notation of dimensions established by field measurement.
      f. Relationship and attachment to adjoining construction clearly indicated.
      g. Seal and signature of professional engineer if specified.
   2. PDF digital print "sheet" file Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 24" x 36".

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.
   f. Specification paragraph number and generic name of each item.
3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Web-Based Project Management Software: If required by the Owner. prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Paper Transmittal: Include paper transmittal, including complete submittal information indicated when submitting a physical sample.
6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
7. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit [three] <3> full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager, will return submittal with options selected.
8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured, and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit [three] <3> sets of Samples. Architect will retain [one] <1> Sample sets; remainder will be returned. Retain one returned Sample set as a project record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least [three] <3> sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.

2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:
1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:
1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
a. Name of evaluation organization.
b. Date of evaluation.

c. Time period when report is in effect.
d. Product and manufacturers' names.
e. Description of product.
f. Test procedures and results.
g. Limitations of use.

1.08 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note all corrections and field dimensions. Mark with approval stamp before submitting to Architect and Owner.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp with indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1. Architect will not review submittals received from Contractor that do not have their stamp confirming review and approval to Contract Documents.

1.09 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action, as follows:
a. Authorizing purchasing, fabrication, delivery, and installation:
1) "No Exceptions Taken", or language with same legal meaning.
2) "Make Corrections Noted", or language with same legal meaning.
(a) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
3) "Revise and Resubmit", or language with same legal meaning.
4) “Submit Specified Item”, or language with same legal meaning.
5) “Rejected and Resubmit”, Not Authorizing fabrication, delivery, and installation and resubmission required.
b. Architect's consultants' actions on items submitted for information:
1) Items for which no action was taken:
(a) "Received" - to notify the Contractor that the submittal has been received for record only.
2) Items for which action was taken:
(a) "Reviewed" - no further action is required from Contractor.

B. Informational Submittals: Architect will review each submittal and will not return it or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 3300

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SECTION 01 3516
ALTERATION PROJECT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes special procedures for alteration work.

1.02 DEFINITIONS

A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.

B. Consolidate: To strengthen loose or deteriorated materials in place.

C. Design Reference Sample: A sample that represents the Architect's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.

D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.

F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

K. Retain: To keep an element or detail secure and intact.

L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.03 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 COORDINATION

A. Alteration Work Subschedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.
   1. Schedule construction operations in sequence required to obtain best Work results.
   2. Coordinate sequence of alteration work activities to accommodate the following:
      a. Owner's continuing occupancy of portions of existing building.
      b. Owner's partial occupancy of completed Work.
      c. Other known work in progress.
      d. Tests and inspections.
   3. Detail sequence of alteration work, with start and end dates.
   4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
   5. Use of elevator and stairs.

6. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support the imposed loadings without damage.

B. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project building(s) and site. Some work is near existing street traffic circulation patterns. Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

1.05 PROJECT MEETINGS FOR ALTERATION WORK

A. Preliminary Conference for Alteration Work: Before starting alteration work, the Construction Manager will conduct the conference at Project site.
   1. Attendees: In addition to representatives of Owner, Construction Manager, Architect, and Contractors.
   2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:
      a. Alteration Work Subschedule: Discuss and finalize; verify availability of materials, specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
      b. Fire-prevention plan.
      c. Governing regulations.
      d. Areas where existing construction is to remain and the required protection.
      e. Hauling routes.
      f. Sequence of alteration work operations.
      g. Storage, protection, and accounting for salvaged and specially fabricated items.
      h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
      i. Qualifications of personnel assigned to alteration work and assigned duties.
      j. Requirements for extent and quality of work, tolerances, and required clearances.
      k. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.
   3. Reporting: Construction Manager will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from the conference.

B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at intervals prescribed by the Construction Manager. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
   1. Attendees: In addition to representatives of Owner, Construction Manager, Architect, and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to alteration work.
   2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
      a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss

whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.

b. Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

c. Review present and future needs of each entity present, including review items listed in the "Preliminary Conference for Alteration Work" Paragraph in this article and the following:
   1) Interface requirements of alteration work with other Project Work.
   2) Status of submittals for alteration work.
   3) Access to alteration work locations.
   4) Effectiveness of fire-prevention plan.
   5) Quality and work standards of alteration work.
   6) Change Orders for alteration work.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.06 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner's property.
   1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, Construction Manager to coordinate locations and items per the Contract Documents.

1.07 INFORMATIONAL SUBMITTALS

A. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor's alteration work operations.

1.08 STORAGE AND HANDLING OF SALVAGED MATERIALS

A. Salvaged Materials:
   1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
   2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Protect items from damage during transport and storage.

B. Salvaged Materials for Reinstallation:
   1. Repair and clean items for reuse as indicated.
   2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.

C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.

D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.

1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.
3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F or more above the dew point.

E. Storage Space:
1. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

1.09 FIELD CONDITIONS

A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs.
1. Comply with requirements specified in Section 01 3233 "Photographic Documentation."

B. Discrepancies: Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

PART 2 PRODUCTS - (NOT USED)

PART 3 EXECUTION

3.01 PROTECTION

A. Protect persons, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.
1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
3. Contain dust and debris generated by alteration work and prevent it from reaching the public or adjacent surfaces.
4. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
5. Protect floors and other surfaces along hauling routes from damage, wear, and staining.

B. Temporary Protection of Materials to Remain:
1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.

C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

D. Utility and Communications Services:
1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.

3.02 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following:
1. Comply with NFPA 241 requirements unless otherwise indicated.

2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
    a. If combustible material cannot be removed, provide fire blankets to cover such materials.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:
    1. Obtain Owner's approval for operations involving use of open-flame or welding or other high-heat equipment. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
    2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.
    3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
    4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
    5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
    6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:
        a. Train each fire watch in the proper operation of fire-control equipment and alarms.
        b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
        c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
        d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than 30 minutes ???thirty??? after conclusion of work to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
        e. Maintain fire-watch personnel at each area of Project site until 60 minutes after conclusion of daily work.

C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.

3.03 PROTECTION DURING APPLICATION OF CHEMICALS

A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.

B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.

C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.

D. Neutralize alkaline and acid wastes and legally dispose of off Owner's property.

E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.04 GENERAL ALTERATION WORK

A. Have specialty work performed only by qualified specialists.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation, comply with requirements in Section 01 3233 "Photographic Documentation."

D. Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.

E. Notify Architect of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.
   1. Do not proceed with the work in question until directed by Architect.

END OF SECTION 01 3516

SECTION 01 3573
DELEGATED DESIGN PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Delegated Design specification sections and procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.

B. Section 01 3300 – Submittal Procedures: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

C. Section 01 4000 - Quality Requirements: Procedures for testing, inspection, reports, certificates; use of reference standards.

D. Section 01 4200 - References: Consolidated list of citations with edition dates.

E. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

F. Section 01 7300 - Execution: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.

G. Section 01 7419 - Construction Waste Management and Disposal.

H. Section 01 7700 - Closeout Procedures: Project record documents, operation, and maintenance (O&M) data, warranties and bonds.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.04 SUBMITTALS

A. See Section 01 3300 – Submittal Procedures.

B. Product Data: Provide product data for all products included as part of this section.

C. Shop Drawings: Indicate sizes and connections of all members.

D. Certificate: Certify that products of this section meet or exceed specified requirements.

E. Design Data: Indicate all calculations used in the design. Calculations must be performed and provided by professionals licensed in the State of Connecticut.

F. Erection Drawings: Indicate instructions for sequence and specific directions for erection of delegated design items.

G. Special Procedures Submittals: Indicate any special procedures for each delegated design items.

H. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State of Connecticut.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.06 WARRANTY

A. See Section 01 7700 - Closeout Procedures for additional warranty requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 DELEGATED DESIGN SPEC SECTION SCHEDULE:

SECTION	DESCRIPTION
08 4413	GLAZED ALUMINUM CURTAIN WALLS

END OF SECTION 01 3573

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Commissioning Authority, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of [five] <5> previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
   1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and

completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.03 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.04 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
   1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
   2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
   7. Time schedule or time span for tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.05 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, telephone number, and email address of testing agency.

4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.06 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
   1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
   1. Contractor's Responsibilities:
      a. Provide test specimens representative of proposed products and construction.
      b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
      c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
      d. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
      e. When testing is complete, remove test specimens and test assemblies; do not reuse products on Project.
   2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, through Construction Manager, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

1.07 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
   2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
   1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
   2. Engage a qualified testing agency to perform quality-control services.
      a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
   3. Notify testing agencies at least [24] hours in advance of time when Work that requires testing or inspection will be performed.
   4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
   5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
   6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform duties of Contractor.

E. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspection equipment at Project site.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
   1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
   2. Distribution: Distribute schedules to Owner, Architect, Commissioning Authority, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.08 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:
   1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
   2. Notifying Architect, Commissioning Authority, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
   3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Owner with copy to authorities having jurisdiction.
   4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
   5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
   6. Retesting and reinspecting corrected Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection logs for Architect's, Commissioning Authority's, and Contractor’s reference during normal working hours.
   1. Submit log at Project closeout as part of Project Record Documents.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 7300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 4000

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SECTION 01 4200
REFERENCES

PART 1 GENERAL

1.01 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms, including "shown," "noted," "scheduled," and "specified," have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.02 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
   1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.03 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Industry Organizations, List: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; (see FGIA).
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; www.concrete.org.
9. ACP - American Clean Power; (Formerly: American Wind Energy Association); www.cleanpower.org.
10. ACPA - American Concrete Pipe Association; www.concretepipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; (see PLIB).
21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
22. AMPP - Association for Materials Protection and Performance; www.ampp.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA/SCST - Association of Official Seed Analysts (The)/Society of Commercial Seed Technologists (The); www.analyzeseeds.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASA - Acoustical Society of America; www.acousticalsociety.org.
30. ASCE - American Society of Civil Engineers; www.asce.org.
31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (see ASCE).
32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
33. ASME - ASME International; American Society of Mechanical Engineers (The)
34. ASSE - ASSE International; (American Society of Sanitary Engineering); www.asse-plumbing.org.
35. ASSP - American Society of Safety Professionals; www.assp.org.
36. ASTM - ASTM International; www.astm.org.
37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
38. AVIXA - Audiovisual and Integrated Experience Association; www.avixa.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.

46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - Business and Institutional Furniture Manufacturer's Association; www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; www.bwfbadminton.com.
50. CARB - California Air Resources Board; www.arb.ca.gov.
51. CDA - Copper Development Association Inc.; www.copper.org.
52. CE - Conformite Europeenne (European Commission); www.ec.europa.eu/growth/single-market/ce-marking.
53. CEA - Canadian Electricity Association; www.electricity.ca.
54. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
55. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
56. CGA - Compressed Gas Association; www.cganet.com.
57. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
58. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
59. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
60. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
61. CPA - Composite Panel Association; www.compositepanel.org.
62. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
63. CRRC - Cool Roof Rating Council; www.coolroofs.org.
64. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
65. CSA - CSA Group; www.csagroup.org.
66. CSI - Cast Stone Institute; www.caststone.org.
67. CSI - Construction Specifications Institute (The); www.csiresources.org.
68. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
69. CTA - Consumer Technology Association; www.cta.tech.
70. CTI - Cooling Technology Institute; www.coolingtechnology.org.
71. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
72. DHA - Decorative Hardwoods Association; www.decorativehardwoods.org.
73. DHI - Door and Hardware Institute; www.dhi.org.
74. ECIA - Electronic Components Industry Association; www.ecianow.org.
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. EOS/ESD - EOS/ESD Association, Inc.; Electrostatic Discharge Association; www.esda.org.
78. ESTA - Entertainment Services and Technology Association; www.esta.org.
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
81. FGIA - Fenestration and Glazing Industry Alliance; https://fgiaonline.org.
82. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
83. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
84. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
85. FM Global - FM Global; www.fmglobal.com.
86. FRSA - Florida Roofing and Sheet Metal Contractors Association, Inc.; www.floridaroof.com.
87. FSA - Fluid Sealing Association; www.fluidsealing.com.
88. FSC - Forest Stewardship Council U.S.; www.fscus.org.
89. GA - Gypsum Association; www.gypsum.org.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HMMA - Hollow Metal Manufacturers Association; (see NAAMM).

93. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
94. IAS - International Accreditation Service; www.iasonline.org.
95. ICC - International Code Council; www.iccsafe.org.
96. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
97. ICPA - International Cast Polymer Association (The); www.theicpa.com.
98. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
99. IEC - International Electrotechnical Commission; www.iec.ch.
100. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
101. IES - Illuminating Engineering Society; www.ies.org.
102. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
103. IGMA - Insulating Glass Manufacturers Alliance; (see FGIA).
104. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
105. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
106. Intertek - Intertek Group; www.intertek.com.
107. ISA - International Society of Automation (The); www.isa.org.
108. ISFA - International Surface Fabricators Association; www.isfanow.org.
109. ISO - International Organization for Standardization; www.iso.org.
110. ITU - International Telecommunication Union; www.itu.int.
111. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
112. LPI - Lightning Protection Institute; www.lightning.org.
113. MBMA - Metal Building Manufacturers Association; www.mbma.com.
114. MCA - Metal Construction Association; www.metalconstruction.org.
115. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
116. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
117. MHI - Material Handling Industry; www.mhi.org.
118. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
119. MPI - Master Painters Institute; www.paintinfo.com.
120. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.; www.msshq.org.
121. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
122. NACE - NACE International; (National Association of Corrosion Engineers International); (see AMPP).
123. NADCA - National Air Duct Cleaners Association; www.nadca.com.
124. NAIMA - North American Insulation Manufacturers Association; www.insulationinstitute.org.
125. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
126. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
127. NBI - New Buildings Institute; www.newbuildings.org.
128. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
129. NCMA - National Concrete Masonry Association; www.ncma.org.
130. NEBB - National Environmental Balancing Bureau; www.nebb.org.
131. NECA - National Electrical Contractors Association; www.necanet.org.
132. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
133. NEMA - National Electrical Manufacturers Association; www.nema.org.
134. NETA - InterNational Electrical Testing Association; www.netaworld.org.
135. NFHS - National Federation of State High School Associations; www.nfhs.org.
136. NFPA - National Fire Protection Association; www.nfpa.org.
137. NFPA - NFPA International; (see NFPA).
138. NFRC - National Fenestration Rating Council; www.nfrc.org.
139. NGA - National Glass Association; www.glass.org.

140. NHLA - National Hardwood Lumber Association; www.nhla.com.
141. NLGA - National Lumber Grades Authority; www.nlga.org.
142. NOFMA - National Oak Flooring Manufacturers Association; (see NWFA).
143. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
144. NRCA - National Roofing Contractors Association; www.nrca.net.
145. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
146. NSF - NSF International; www.nsf.org.
147. NSI - Natural Stone Institute; www.naturalstoneinstitute.org.
148. NSPE - National Society of Professional Engineers; www.nspe.org.
149. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
150. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
151. NWFA - National Wood Flooring Association; www.nwfa.org.
152. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
153. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
154. PDI - Plumbing & Drainage Institute; www.pdionline.org.
155. PLASA - PLASA; www.plasa.org.
156. PLIB - Pacific Lumber Inspection Bureau; www.plib.org.
157. PVCPA - Uni-Bell PVC Pipe Association; www.uni-bell.org.
158. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
159. RFCI - Resilient Floor Covering Institute; www.rfci.com.
160. RIS - Redwood Inspection Service; (see WWPA).
161. SAE - SAE International; www.sae.org.
162. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
163. SDI - Steel Deck Institute; www.sdi.org.
164. SDI - Steel Door Institute; www.steeldoor.org.
165. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
166. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (see ASCE).
167. SIA - Security Industry Association; www.securityindustry.org.
168. SJI - Steel Joist Institute; www.steeljoist.org.
169. SMA - Screen Manufacturers Association; www.smainfo.org.
170. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
171. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
172. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
173. SPIB - Southern Pine Inspection Bureau; www.spib.org.
174. SPRI - Single Ply Roofing Industry; www.spri.org.
175. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
176. SSINA - Specialty Steel Industry of North America; www.ssina.com.
177. SSPC - SSPC: The Society for Protective Coatings; (see AMPP).
178. STI/SPFA - Steel Tank Institute/Steel Plate Fabricators Association; www.steeltank.com.
179. SWI - Steel Window Institute; www.steelwindows.com.
180. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
181. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
182. TCNA - Tile Council of North America, Inc.; www.tcnatile.com.
183. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.kbcdco.tema.org.
184. TIA - Telecommunications Industry Association (The); www.tiaonline.org.
185. TMS - The Masonry Society; www.masonrysociety.org.
186. TPI - Truss Plate Institute; www.tpinst.org.
187. TPI - Turfgrass Producers International; www.turfgrasssod.org.
188. TRI - Tile Roofing Industry Alliance; www.tileroofing.org.

189. UL - Underwriters Laboratories Inc.; www.ul.org.
190. UL LLC - UL LLC; www.ul.com.
191. USAV - USA Volleyball; www.usavolleyball.org.
192. USGBC - U.S. Green Building Council; www.usgbc.org.
193. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
194. WA - Wallcoverings Association; www.wallcoverings.org.
195. WCLIB - West Coast Lumber Inspection Bureau; (see PLIB).
196. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
197. WDMA - Window & Door Manufacturers Association; www.wdma.com.
198. WI - Woodwork Institute; www.woodworkinstitute.com.
199. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
200. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
   1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
   2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
   3. ICC - International Code Council; www.iccsafe.org.
   4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
   1. CPSC - U.S. Consumer Product Safety Commission; www.cpsc.gov.
   2. DOC - U.S. Department of Commerce; www.commerce.gov.
   3. DOD - U.S. Department of Defense; www.defense.gov.
   4. DOE - U.S. Department of Energy; www.energy.gov.
   5. DOJ - U.S. Department of Justice; www.ojp.usdoj.gov
   6. DOS - U.S. Department of State; www.state.gov.
   7. EPA - United States Environmental Protection Agency; www.epa.gov.
   8. FAA - Federal Aviation Administration; www.faa.gov.
   9. GPO - U.S. Government Publishing Office; www.gpo.gov.
   10. GSA - U.S. General Services Administration; www.gsa.gov.
   11. HUD - U.S. Department of Housing and Urban Development; www.hud.gov.
   12. LBNL - Lawrence Berkeley National Laboratory; Energy Technologies Area; www.lbl.gov/.
   13. NIST - National Institute of Standards and Technology; www.nist.gov.
   14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
   15. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
   16. USACE - U.S. Army Corps of Engineers; www.usace.army.mil.
   17. USDA - U.S. Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
   18. USDA - U.S. Department of Agriculture; Rural Utilities Service; www.usda.gov.
   19. USP - U.S. Pharmacopeial Convention; www.usp.org.
   20. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
   1. CFR - Code of Federal Regulations; Available from U.S. Government Publishing Office; www.govinfo.gov.

2. DOD - U.S. Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
3. DSCC - Defense Supply Center Columbus; (see FS).
4. FED-STD - Federal Standard; (see FS).
5. FS - Federal Specification; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from U.S. General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
6. MILSPEC - Military Specification and Standards; (see DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (see USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. BEARHFTI; California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; (see BHGS).
2. BHGS; State of California Bureau of Household Goods and Services; (Formerly: California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation); www.bhgs.dca.ca.gov.
3. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.oal.ca.gov/publications/ccr/.
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; https://tfsweb.tamu.edu/.

1.04 REFERENCE STANDARDS

A. MBMA - Metal Roofing Systems Design Manual; 2012.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 4200

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SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Refer to OPM's provided Logistics Plan for all contents included in this specification.
   1. Temporary sanitary facilities.
   2. Temporary utilities.
   3. Temporary Controls: Barriers, enclosures, and fencing.
   4. Security requirements.
   5. Vehicular access and parking.
   6. Waste removal facilities and services.
   7. Lay-down and material storage areas.
   8. Project identification sign.
   9. Field offices.

1.02 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Use of building facilties is strictly prohibited.

C. Maintain daily in clean and sanitary condition.

1.03 TEMPORARY UTILITIES

A. General: Provide new materials and equipment; if acceptable to the Engineer, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

C. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

D. Provide temporary lighting in all areas, throughout construction activities where light fixture ballasts are to be removed as part of the hazardous abatement package.
   1. All temporary installations are to be made by a licensed electrician to all the applicable electrical codes in the State of which the project is located.
   2. This Contractor is responsible furnish, install, maintain and remove when no longer necessary temporary lights to all work areas in accordance with OSHA standards. Temporary lighting shall be installed as soon as practical and be maintained daily for the project duration until permanent lighting can be utilized. Respond to requests for maintenance within 24 hours of notification by the Construction Manager. All temporary lighting shall be weatherproof. All temporary lighting shall be controlled with a seven day time clock. Lighting levels shall be as required by OSHA, maintain lighting levels of 15 foot candles in all general areas and levels of 10 foot candles within 15 feet of all elevators on all floors, measured at typical anticipated desk height (30"), until the permanent lighting is activated. No space will contain less than the equivalent of a 18 watt LED bulb. Portable lights will not be allowed as temporary lights. All temporary lighting and wiring shall be removed prior to substantial completion. Permanent lighting fixtures are to remain covered until the time of final cleaning.

3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Engineer, and will not be accepted as a basis of claims for a Change Order.
4. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.
    a. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

E. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

F. Termination and Removal: Unless the Engineer requires that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.

1.04 BARRIERS

A. Coordinate any physical barrier requirements with the OPM's logistics plan.

B. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

C. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

1.05 FENCING

A. Coordinate any fencing requirements with the OPM's logistics plan.

1.06 SECURITY - SEE SECTION 01 3553

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.07 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 5500

A. Coordinate any vehicular access and parking with the OPM's logistics plan.

B. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

C. Coordinate access and haul routes with governing authorities and Owner.

D. Provide and maintain access to fire hydrants, free of obstructions.

E. Provide means of removing mud from vehicle wheels before entering streets.

F. Coordinate all construction personnel parking with Owner to determine authorized parking areas. Do not park in any handicapped or parking spaces close to the building which are strictly reserved for building occupants.

1.08 WASTE REMOVAL

A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with lids. Remove trash from site as needed to maintain a clean site and prevent waste receptacles from overflowing.

D. Open free-fall chutes are permitted and locations of chutes and dumpsters below are to be coordinated with the OPM's logistics plan. Terminate closed chutes into appropriate containers with lids.

1.09 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on drawings.

B. Erect on site at location indicated.

C. No other signs are allowed without Owner permission except those required by law.

1.10 FIELD OFFICES

A. Coordinate field office requirements with the OPM's logistics plan.

B. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.

C. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

D. Locate offices a minimum distance of 30 feet from existing and new structures.

1.11 LAY-DOWN AND MATERIAL STORAGE AREAS.

A. Coordinate lay-down and storage locations directly with the Owner and OPM. Access and regular building maintenance and operations must be maintained at all times.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 5000

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DOCUMENT 01 5639 – TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.2 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: For limits placed on Contractor's use of the site.

B. Section 01 5000 - Temporary Facilities and Controls: For other temporary site fencing.

C. Section 31 1100 – Clearing and Grubbing: For removing existing trees and shrubs.

D. Section 31 2310 - Earthwork: Preparation of subsoil that may affect existing plants.

1.3 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at a height 6 inches (150 mm) above the ground for trees up to and including 4-inch (100-mm) size at this height and as measured at a height of 12 inches (300 mm) above the ground for trees larger than 4-inch (100-mm) size.

B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at project site.
   1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
      a) Tree-service firm's personnel, and equipment needed to make progress and avoid delays.
      b) Arborist's responsibilities.

c) Quality-control program.
d) Coordination of Work and equipment movement with the locations of protection zones.
e) Trenching by hand or with air spade within protection zones.
f) Field quality control.

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:
1. Include plans, elevations, sections, and locations of protection-zone fencing and signage, showing relation of equipment-movement routes and material storage locations with protection zones.
2. Detail fabrication and assembly of protection-zone fencing and signage.
3. Indicate extent of trenching by hand or with air spade within protection zones.

C. Samples: For each type of the following:
1. Organic Mulch: 1-pint (0.5-L) volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
2. Protection-Zone Fencing: Assembled samples of manufacturer's standard size made from full-size components.
3. Protection-Zone Signage: Full-size samples of each size and text, ready for installation.

D. Qualification Data: For arborist and tree service firm.

E. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

F. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

G. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

H. Quality-control program.

1.6 QUALITY ASSURANCE

A. Arborist Qualifications: Licensed arborist in jurisdiction where project is located.

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this project and that will assign an experienced, qualified arborist to project site during execution of the Work.

C. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection zone fencing and signage, the arborist's and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.7 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Moving or parking vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
   1. Type: Wood and bark chips.
   2. Size Range: 3 inches (76 mm) maximum, 1/2-inch (13-mm) minimum.

B. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements: Previously used materials may be used when approved by Landscape Architect.
   1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch (50-mm) maximum opening in pattern and weighing a minimum of 0.4 lb/ft (0.6 kg/m); remaining flexible from minus 60 to plus 200 deg F (minus 16 to plus 93 deg C); inert to most chemicals and acids; minimum tensile yield strength of 2000 psi (13.8 MPa) and ultimate tensile strength of

2680 psi (18.5 MPa); secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches (2400 mm) apart.

a) Height: 48 inches (1200 mm).
b) Color: High-visibility orange, nonfading.

C. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:
1. Size and Text: 12 inch by 18-inch sign reading “NO ENTRY - TREE PROTECTION ZONE”.
2. Lettering: 3-inch (75-mm) high minimum, black characters on white background.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. All existing trees to remain to be evaluated by a licensed arborist for tree protection, pruning or removal, if necessary, for safety reasons.

C. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Flag each tree trunk at 54 inches (1372 mm) above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
1. Apply 4-inch (100-mm) uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches (150 mm) of tree trunks.

3.3 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle

intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Landscape Architect.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Landscape Architect. Install one sign spaced approximately every 50 feet (15 m) on protection-zone fencing, but no fewer than two signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Maintain protection-zone fencing and signage in good condition as acceptable to Landscape Architect and remove when construction operations are complete, and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 ROOT PRUNING

A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
2. Cut Ends: Do not paint cut root ends.
3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
4. Cover exposed roots with burlap and water regularly.
5. Backfill as soon as possible according to requirements in Section 31 2323.

B. Root Pruning at Edge of Protection Zone: Prune tree roots 12 inches (300 mm) outside of the protection zone by cleanly cutting all roots to the depth of the required excavation.

3.5 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.6 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.
   1. Submit details of proposed pruning and repairs.
   2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
   3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
   1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 6 inches (150 mm) or smaller in caliper size.
   2. Large Trees: Provide two new tree(s) of 6-inch (150-mm) caliper size for each tree being replaced that measures more than 6 inches (150 mm) in caliper size.
      a) Species: As selected by Landscape Architect.
   3. Plant and maintain new trees as specified in Section 32 9300.

C. Soil Aeration: Where directed by Landscape Architect, aerate surface soil compacted during construction. Aerate 10 feet (3 m) beyond drip line and no closer than 36 inches (900 mm) to tree trunk. Drill 2-inch (50-mm) diameter holes a minimum of 12 inches (300 mm) deep at 24 inches (600 mm) o.c. Backfill holes with an equal mix of augered soil and sand.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF DOCUMENT 01 5639

DOCUMENT 01 7513 - TEMPORARY EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation of temporary erosion and sedimentation control measures
2. Maintenance of temporary erosion and sedimentation control measures.
3. Monitoring of site condition and installation of supplemental temporary erosion and sedimentation control measures.
4. Sediment removal and disposal
5. Temporary seeding or other surface stabilization measures.
6. Removal of temporary erosion and sedimentation control measures.
7. Monitoring, documentation, and recordkeeping.
8. Installation of permanent erosion control materials.
9. Final cleanup.

B. Erosion and sediment control techniques include, but are in no way limited to, silt fence, hay bales, drainage structure inserts/filters, mulching with hay/straw, netting/matting, grassing, stone dikes/berms/check-dams, compost blankets and berms, barriers, diversions, traps, basins, and appurtenances which will ensure that erosion and sediment pollution will be either eliminated or maintained within acceptable limits.

C. The measures specified herein are the minimum requirements which Contractor shall comply to control erosion and siltation throughout execution of the work. Contractor shall provide additional work if necessary to control erosion and siltation throughout the duration of the construction as conditions dictate, or as directed by Engineer.

D. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

E. Contractor is responsible for all health and safety.

1.2 SUBMITTALS

A. Submit material specifications and shop drawings for all materials furnished under this Section.

B. Prior to the start of the construction, submit schedule for the construction of required stormwater detention basins, temporary and permanent erosion and sedimentation control measures, clearing and grubbing, grading, structures at watercourses, construction, and paving.

C. During construction, submit to Engineer schedule changes that affect timing of construction.

D. Submit copies of all inspection and maintenance report forms.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Regulations of Connecticut State Agencies (RCSA)

1. 22a-315-10 through 19, Soil and Water Conservation

C. Connecticut Department of Energy and Environmental Protection (DEEP)

1. Connecticut Guidelines for Soil Erosion and Sediment Control, DEEP Bulletin 34, State of Connecticut Council on Soil and Water Conservation, 2002.

D. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016 and any supplements.

1.4 PERMIT CONDITIONS

A. Contractor and Subcontractors are bound to comply with any project-related permits obtained by Owner or Engineer for the work of the project. Such permits will affect performance of the work, and Contractor and Subcontractors are bound to comply with requirements of such permit and representations contained in permit application as though Contractor and Subcontrator were the Permittee/permit-holder. Requirements and conditions set forth in Owner or Engineer-obtained project-related permits and permit applications shall be binding on Contractor just as any Specification would be.

1.5 QUALITY CONTROL

A. Contractor shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the erosion of soil or movement of sediment from construction activities to off-site areas via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of Contractor.

B. Where additional erosion and sedimentation control measures are required beyond what is indicated on the Drawings or herein, comply with applicable sections of the Connecticut Guidelines for Soil Erosion and Sediment Control, DEEP Bulletin 34, State of Connecticut Council on Soil and Water Conservation, 2002.

C. If applicable, comply with applicable provisions of the Connecticut Department of Energy and Environmental Protection (DEEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, (DEEP-WPED-GP-015), latest revision thereof. Conditions of such General Permit, other conditions of approval or authorizations, and associated Stormwater Pollution Control Plan (SWPCP) shall become part of the Contract Documents.

D. Engineer has the authority to order immediate, additional, temporary control measures to prevent contamination of adjacent streams or other watercourses, or other areas of water impoundment and damage by erosion.

E. If Engineer observes construction procedures and operations that jeopardize erosion control provisions, Engineer will notify Contractor. If such construction procedures and operations are not corrected promptly, Engineer may suspend the performance of any or all construction until corrections have been made, and such suspension shall not be the basis of any claim by Contractor for additional compensation, nor for an extension of time to complete the Work.

F. Should construction materials be washed away or otherwise rendered ineffective in the opinion of Engineer during the progression of the Work, Contractor shall replace the installations at no additional cost to the Owner.

1.6 COORDINATION WITH PERMANENT EROSION CONTROL PROVISIONS

A. Coordinate temporary erosion and sedimentation control measures with permanent erosion control features to the extent practical to ensure economical, effective and continuous erosion control throughout construction and post-construction periods.

PART 2 PRODUCTS

2.1 HAY BALES

A. Hay bales shall be made of cut hay with forty (40) pounds minimum weight and 120 pounds maximum weight. Bales shall be free of rotten or degraded hay, significant splits or voids. Hay bales shall be held together with a minimum of two bands made of either wire or heavy twine.

B. Stakes to anchor the bales shall be a minimum of 36 inches long and made of hardwood with a minimum dimension of 1½-inch by 1½-inch normal size. Metal stakes may be used instead of wooden stakes. Metal stakes shall be round, “U,” “T,” “L,” or “C” shaped with a minimum weight of 0.5 pounds per foot.

C. Replace individual hay bales upon loss of 30% of original mass or volume, whichever is less.

2.2 SILT FENCE

A. Woven Polypropylene geotextile having a minimum weight of 3.1 ounces per square yard conforming to the following:

1. Mechanical and Physical Properties of Silt Fence Geotextile

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Weight	ASTM D 3776	oz/yd^2	5.6
Grab Tensile Strength	ASTM D 4632	Pounds	60
Grab Elongation (Max percent)	ASTM D 4632	Percent (%)	15–30
Trapezoidal Tear	ASTM D 4533	Pounds	30
Puncture	ASTM D 4833	Pounds	30
Mullen Burst	ASTM D 3786	psi	150–200
Permittivity	ASTM D 4491	Sec^{-1}	0.15
Flow Rate	ASTM D 4491	gal/min/ft2	15–20
Apparent Opening Size	ASTM D 4751	(U.S. Sieve)	30–35
UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	70

B. Silt fence shall be constructed of a minimum thirty-six (36) inch wide continuous woven geotextile. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics. Edges of the fabric shall be finished to prevent the outer fibers from pulling away from the geotextile. Geotextile shall be free of defects or flaws that significantly affect its physical and/or filtering properties.

C. Fabric shall be securely fastened to stakes a minimum of 42 inches long and made of hardwood with a minimum dimension of 1½ inch by 1½ inch normal size such that a 6 to 8 inch length of fabric is unattached at the bottom for anchorage in soil. Metal stakes may be used instead of wooden stakes. Metal stakes shall be round, “U,” “T,” “L,” or “C” shaped with a minimum weight of 0.5 pounds per foot. Stakes shall be spaced not greater than ten feet apart. When required, wire or another type of support shall be constructed between the geotextile fabric and the posts to improve the load carrying capacity of the silt fence.

2.3 CATCH BASIN INSERT

A. Manufactured “bag type” catch basin insert of woven polypropylene geotextile with integral lifting loops or straps conforming to the following:

1. Mechanical and Physical Properties of Catch Basin Insert

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value

Grab Tensile Strength	ASTM D 4632	Pounds	315
Grab Elongation (Max percent)	ASTM D 4632	Percent (%)	30
Trapezoidal Tear	ASTM D 4533	Pounds	40x50 (min)
Puncture	ASTM D 4833	Pounds	135 (min)
Mullen Burst	ASTM D 3786	psi	420 (min)
Permittivity	ASTM D 4491	gal/min/sq ft	0.7
Flow Rate	ASTM D 4491	gal/min/ft2	50-200
Apparent Opening Size	ASTM D 4751	(U.S. Sieve)	20-40
UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	80 (min)

Note: Catch basin inserts for catch basins with curb openings shall be equipped with integral curb deflector.

2.4 STRAW MULCH

A. Straw mulch shall be comprised of threshold straw of oats, wheat, barely, or rye that is free from noxious weeds, mold or other objectionable material. Straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment. Straw mulch shall be utilized on all newly graded areas with slopes exceeding 5% to protect areas against washouts and erosion unless other erosion control measures are provided.

2.5 FILTER BERM COMPOST

A. Where establishing vegetation is not planned, compost shall be a decomposed, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. Compost shall possess a moisture content of 30 to 60% and a organic matter content of 25 to 100%. The maximum particle length shall be 6”, and 100% passing a 3”, 90 to 100% passing a 1”, 70% to 100% passing a 3/4”, and 30% to 75% passing a 1/4” screen. However, no more than 50% passing a 1/4” screen in high rainfall/flow rate situations.

B. Where establishing vegetation is planned, compost shall be use a well decomposed, stable, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. Compost shall possess a moisture content of 30 to 60%, a pH of 6.0 to 8.5 and an organic matter content of 25 to 65%. The maximum particle length shall be 6”, and 100% passing a 3”, 90 to 100% passing a 1”, 70% to 100% passing a 3/4”, and 30% to 75% passing a 1/4” screen. However, no more than 60% passing a 1/4” in high rainfall/flow rate situations. It shall contain no substances toxic to plants, shall possess no objectionable odors, and shall not resemble the raw material from which it was derived.

2.6 COMPOST SOIL BLANKET

A. Compost soil blankets may be utilized on slopes of up to 2:1.

B. Slightly scarify slopes and remove large clods, rocks, stumps, roots larger than 2 inches in diameter and debris on slopes, where vegetation is to be established. This soil preparation step may be eliminated where approved by the Landscape Architect/Designer, or where seeding or planting isn't planned. Track (compact) slope using a bulldozer before applying compost.

C. Apply compost at the following rates:

Compost Application Rates

Annual Rainfall/Flow Rate	Total Precipitation & Rainfall Erosivity Index	Application Rate for Slopes to be Vegetated (Note 1)	Application Rate for Slopes not being Unvegetated
Low	1″–25″ & 20–90	½″–¾ ″	1″–1½″
Average	26″–50″ & 91–200	¾″–1″	1½″–2″
High	51″ and above, & 201 and above	1″–2″	2″–4″

D. Lower application rates indicated for slopes to be vegetated should only be used in conjunction with seeding, and for compost blankets applied during the prescribed planting season for the particular region.

E. Compost shall be uniformly applied using an approved spreader unit, including bulldozers, side discharge manure spreaders, etc. Track (compact) the compost layer using a bulldozer or other appropriate equipment. (This step may be eliminated where impractical or where deemed unnecessary by the Landscape Architect/Designer.) Alternatively, apply compost using a pneumatic (blower) unit, or other unit that propels the product directly at the soil surface, thereby preventing water from moving between the soil-compost interface. Thorough watering may be used to improve settling of the compost. Apply compost layer approximately 3 feet (90 cm) over the top of the slope, or overlap it into existing vegetation.

F. On highly unstable soils, use compost in conjunction with appropriate structural measures.

G. Dry or hydraulic seeding may be completed following compost application, as required, or during the compost application itself, where a pneumatic unit is used to apply the compost.

2.7 STONE CHECK DAM

A. Stone shall be graded as follows:

Gradation of Stone for Check Dam (ConnDOT M.01.01 Grading No. 3)

Sieve	Percent Passing by Weight
2 1/2″	100

2″	90–100
1 1/2″	35–70
1	0–15
1/2″	0–5

Stone shall be sound, tough, durable, angular, not subject to disintegration, on exposure to water, or weathering, be chemically stable and shall be suitable in all other respects for the purpose intended.

B. Geotextile may be used under the stone to provide a stable foundation and to facilitate removal of the stone.

2.8 EROSION CONTROL SEED MIXTURE

Erosion Control Seed

Species (Note 1)	Application Rate, Pounds Per Acre	Application rate, Pounds Per 1,000 sf	Optimum Seed Depth, inches (Note 2)	Optimum Seeding Dates (Note 3)
Annual ryegrass Lolium multiflorum	40	1.00	0.5	3/1–6/15 and 8/1–10/15
Perennial ryegrass Lolium perenne	40	1.00	0.5	3/15–7/1 and 8/1–10/15
Winter Rye Secale cereale	120	3.00	1.00	4/5–7/1 and 8/15–10/15
Oats Avena sativa	86	2	1	3/1–6/15 and 8/1–9/15
Winter Wheat Triticum aestivum	120	3	1	4/15–7/1 and 8/15–10/15
Millet Echinochloa crusgalli	20	.5	1	5/15–7/15
Sudangrass Sorghum sudanese	30	.7	1	5/15–8/1
Buckwheat Fagopyrum esculentum	15	.4	1	4/1–9/15
Weeping lovegrass Eragostis curbula	5	.2	.25	6/1–7/1
ConnDOT All Purpose Mix	150	3.4	.5	3/1–6/15 and 8/1–10/15

Notes:

1 – Listed species may be used in combinations to obtain a broader time spectrum. If used in combinations, reduce each species planting rate by 20% of that listed

2 – Seed at twice the indicated depth for sandy soils.

3 – May be planted throughout summer if soil moisture is adequate or can be irrigated. Fall seeding may be extended 15 days in the coastal towns

2.9 EROSION CONTROL MATTING

A. Temporary Erosion Control Blanket shall be 1) Curlex® Excelsior Blanket, as manufactured by American Excelsior Company, 2) ERO-MAT® V75S(FD), as manufactured by Verdyol Plant Research, Ltd., or 3) Landlok® S2 RD, as manufactured by SI® Geosolutions, or 4) approved equal.

B. Degradable Erosion Control Fabric Netting shall be Landlok® 407 GR, as manufactured by 1) SI® Geosolutions, or 2) GeoJute® as manufactured by Belton Industries, Inc., or 3) BioNet® S150BN™ Double Net Straw Blanket, as manufactured by North American Green, or 4) approved equal.

C. Long-Term and Non-degradable Turf Reinforcement Mats shall be 1) Pyramat®, as manufactured by SI® Geosolutions, or 2) Recyclex® Turf Reinforcement Matting, as manufactured by American Excelsior Company, or 3) Vmax3 C350™, as manufactured by North American Green, or 4) approved equal.

D. Erosion control matting shall be secured with staples or an alternative attachment device such as geotextile pins or plastic pegs as recommended by the manufacturer. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval prior to installation.

PART 3 EXECUTION

3.1 GENERAL

A. Install erosion and sedimentation control measures as shown on the Drawings prior to any site disturbance.

B. No work shall be started until erosion control schedules and installation have been accepted by Engineer.

C. Engineer has the authority to control the surface area of each material exposed by construction operations and to direct Contractor to immediately provide permanent or temporary pollution control measures to prevent contamination of adjacent watercourses or other areas of water impoundment. Every effort shall be made by Contractor to prevent erosion on the site and abutting properties or areas.

D. Contractor shall construct all permanent erosion and sediment control features at the earliest practical time as outlined in the accepted schedule. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction, which were unforeseen, but are needed prior to installation of permanent control features, or that are

needed temporarily to control erosion or sedimentation which develops during construction operations.

E. Contractor shall limit as necessary the surface area of the earth material exposed to sufficiently maintain and protect the slopes to prevent pollution. Where erosion is likely to be a problem, clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent erosion and sediment control features can follow immediately thereafter, if conditions permit; otherwise, temporary control measures will be required between successive construction stages.

F. Erosion control measures shall be maintained by Contractor, and he shall remove such installations only upon completion of the work and the site is stabilized or when authorized to do so by Engineer.

G. Contractor shall operate all equipment and perform all construction operations so as to minimize pollution. Contractor shall cease any of his operations, which will increase pollution during rainstorms.

H. Failure by Contractor to control erosion, pollution, and siltation shall be cause for the Engineer to employ outside assistance to provide the necessary corrective measures. The cost of such assistance, including engineering costs, will be charged to Contractor and appropriate deductions made to Contractor's payment.

3.2 HAY BALES

A. Hay bales shall be positioned as indicated on the Drawings and/or as necessary to prevent off site movement of sediment produced by, or as a result of, construction activities, or as direct by the Engineer.

B. Hay bales shall be utilized on all catch basins and drainage facilities on the Project Site to prevent the entry of sediments or other debris. Maintain such protection throughout execution of the work until such drainage facilities have been abandoned/removed.

C. Bales shall be placed lengthwise with ends of adjacent bales tightly abutting one another to form a continuous barrier. Bales shall be entrenched to a depth of 4 inches and backfilled, with the backfill placed toward the potential source of runoff and sediment. All bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms. Each bale shall be anchored with a minimum of two stakes, driving the first stake in each bale towards the previously laid bale to drive the bales together. Stakes must be driven a minimum of 18 inches into the ground. Loose hay shall be inserted between bales as required to prevent water from escaping between the bales.

3.3 GEOTEXTILE SILT FENCE

A. Install a filter fabric silt fence prior to construction and remove after full surface restoration has been achieved. Install silt fence as indicated on the Drawings and/or as necessary to prevent off site movement of sediment produced by, or as a result of, construction activities.

B. Install as follows:

1. Hand shovel excavate a small trench a minimum of six inches wide by six inches deep on the upslope side of the desired fence line location.

2. Unroll the siltation fence system, position the post in the back of the trench (downhill side), and hammer the post at least 12 inches into the original ground.

3. Fabric rolls shall be spliced at posts. The fabric shall be overlapped six inches, folded over and securely fastened to posts.

4. Lay the bottom 6 inches of the fabric into the trench to prevent undermining by storm water run-off.

5. Backfill the trench and compact. Compaction is necessary to prevent the run-off from eroding the backfill.

6. For slope and swale installations, extend the ends of the trench sufficiently up slope such that the bottom end of the fence will be higher than the top of the lowest portion of the fence.

3.4 CATCH BASIN INLET SEDIMENT CONTROL

A. Install catch basin inlet sediment control devices in each exiting catch basin as long as it remains in use in accordance with manufacturer’s guidelines at the locations shown on the Drawings.

B. A catch basin sediment filter shall be installed and changed/cleaned per the manufacturer’s recommendations, during construction.

C. New catch basins shall have a filter installed immediately upon completion of construction. In addition, a hay bale, or similar, barrier shall be installed around the new basin and maintained in place until binder is placed or disturbed areas draining to it are stabilized.

D. Catch basins with curb openings shall have filter fabric covering the opening and the edges of the fabric shall be secured. A filter boom shall also be placed over the opening.

3.5 TEMPORARY SEDIMENT BASINS

A. Temporary sedimentation basins shall be employed as required during construction. Sedimentation shall be periodically removed from the basins and from behind erosion and sedimentation control devices. The Contractor shall direct all possible site runoff to the temporary sedimentation basins.

B. The temporary sedimentation basins shall be maintained from the start of construction until construction of the permanent detention basins is completed and perimeter areas are stabilized.

3.6 TEMPORARY MULCHING

A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 calendar days of the completion of rough grading or where final grading has been completed but seeding is not anticipated for 20 days.

1. Straw/Hay Mulch

   Exposure Period: 6 months

   Application Method: By hand or machine

   Application Rate: 110 lbs/1,000 square feet.

2. Bark Chips/Shredded Bark

   Exposure Period: Less than one year

   Application Method: By hand or machine

   Application Rate: 6 cubic yards /1,000 square feet.

3.7 TEMPORARY EROSION CONTROL MATS

A. Erosion control mats shall be furnished, installed, maintained, and later removed in ditches or swales, on embankment slopes, and excavation slopes at the locations shown on the Drawings in accordance with the manufacturer's recommendations.

B. All areas shall be smooth graded and compacted. Remove all rocks, dirt clods, vegetation and other obstructions that may cause damage to the mats.

C. Unroll mats parallel to the direction of water flow and lay flat against the ground. Overlap roll ends 1–2 feet with upslope mat on the top to prevent uplift of mat end by water flow. Overlay adjacent edges of mat by six inches. Extend mat 2–3 feet above the crest of steep slopes and anchor by excavating a 6-inch-deep trench, and secure end of mat in trench, backfill and compact. Secure mat to the ground using staples or pins furnished by manufacturer of mat.

D. When no longer required, as determined by the Engineer, temporary erosion control mats shall become the property of the Contractor and be removed and properly disposed.

E. Ground disturbances, including holes and depressions caused by the installation and removal of the temporary erosion control blanket shall be backfilled and repaired.

3.8 INSPECTIONS AND MAINTENANCE

A. Contractor is responsible to maintain the sediment and erosion control features at all times throughout the project duration and until the completion certification and approval has been issued.

B. Regular erosion and sediment control system inspections shall be conducted by Contractor throughout the project duration. At a minimum, Contractor shall conduct daily inspections and maintain erosion control systems in good operating condition. Report the results of the inspection and the recommended maintenance and/or repair requirements to Engineer.

C. Additional inspections may be required and/or directed prior to, or immediately following, a storm event >0.1 inches. Repairs shall be made as necessary.

D. In the event that the sedimentation and erosion control measures employed by Contractor prove to be inadequate as determined by the Engineer, Contractor shall adjust operations to the extent necessary to prevent erosion and sediment transport.

E. Surface water shall be pumped to maintain excavations free of water. Comply with applicable requirements of the Connecticut Department of Environmental Protection, specifically those requirements related to the management of stormwater and dewatering wastewaters associated with construction activities.

F. Hay bales and/or silt fences.

1. Remove accumulated sediment once it builds up to one-half of the height of the bale or fabric.

2. Replace damaged or degraded bales as necessary or when directed by the Engineer.

3. Replace damaged fabric, or patch with a 2-ft minimum overlap. Overlaps may only be made at fence posts.

4. Make other repairs as necessary to ensure that the bales/fence is filtering all runoff.

G. Erosion Control Mats shall be inspected at least once a week. Areas where the mat has become dislodged from the soil surface or become torn shall be re-graded and re-seeded as necessary and the mat re-installed. When repetitive failures occur at the same location review conditions and modify erosion control measures to reduce failure rate. Temporary erosion control blanket damaged during the progress of work or resulting from the Contractor's vehicles, equipment, or operations shall be repaired or replaced at the expense of the Contractor.

H. Clean catch basin inlet sediment control devices in accordance with manufacturer's guidelines.

I. Any catch basins that collect sediment as a result of Contractor's work shall be thoroughly cleaned out by Contractor.

END OF DOCUMENT 01 7513

DOCUMENT 01 5714 - TEMPORARY DUST CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnishing and spreading water, calcium chloride, and/or mulch on the subgrade, or in other areas of a Project Site or associated off-site areas, for the purpose of controlling dust emissions.

B. The requirements set forth in this section of the specifications apply to all phases and areas of construction.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Regulations of Connecticut State Agencies (RCSA)

1. RCSA Section 22a-174-1 through 43, Abatement of Air Pollution.

C. ASTM International (ASTM)

1. ASTM D98, Standard Specification for Calcium Chloride.

PART 2 PRODUCTS

2.1 MATERIALS

A. Only water, calcium chloride, and mulch are approved for dust control. No asphalt or petroleum-based products may be utilized for dust control.

B. Water used shall be clean, non-polluted water obtained from sources approved by Engineer.

C. Calcium chloride, ASTM D98. Calcium chloride in pellet form and flake form shall be acceptable.

1. Calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.

2. Engineer may reject calcium chloride failing to meet the requirements of the aforementioned specifications or which has become caked or sticky in shipment.

D. Mulch

1. Straw mulch: Threshold straw of oats, wheat, barely, or rye that is free from noxious weeds, mold or other objectionable material. Straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer.

2. Wood chips: Processed tree trimmings free of trash or other physical contaminants such as metal and plastic.

PART 3 EXECUTION

3.1 GENERAL

A. Dust control shall be the responsibility of Contractor and dust control operations shall meet the requirements of the State of Connecticut Department of Environmental Protection.

B. Construction sequencing shall be organized and conducted in a manner to leave existing pavement or ground coverings in place until just prior to earth excavation for the purpose of minimizing the migration of dust beyond the Project Limits into the surrounding area.

C. Engineer reserves the right to conduct active dust monitoring using visual methods and may utilize particulate measurement equipment during the course of the work. If the amount of fugitive dust and/or particulate generated during the work is deemed unacceptable in the Engineer's judgment or exceeds baseline Project Site conditions at Engineer's monitoring locations, Engineer may require Contractor to stop work and implement corrective measures. No claim for delay will be considered for work stoppage based upon the results of Engineer's active dust monitoring results.

D. Stockpiled materials from which particle have the potential of becoming airborne shall be securely covered with a temporary waterproof covering made of polyethylene, polypropylene, hypalon, or approved equal. The covers must be in place at all times when work with the stockpiles is not occurring.

E. Subcontractor shall sweep all adjacent roads and neighboring parking lots and driveways that are impacted by the work. Whenever dirt is tracked from the site it shall be cleaned as necessary to prevent it from becoming a nuisance or hazard. At a minimum, adjacent streets shall be swept once per week.

3.2 WATER

A. The application of water shall be under the control of Engineer at all times. It shall be applied only at the locations, and at such times, and in the amount as may be directed by Engineer. Quantities of water wasted or applied without authorization will not be paid for.

B. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding or pollution.

C. Contractor shall have available and maintain in an operable condition at all times, sufficient equipment for the purpose of applying water for dust control.

D. Watering equipment shall consist of pipelines, tanks, tank trucks, distributors, pumps, meters, hose or other devices, approved by Engineer, which are capable of applying a uniform spread of water over the surface. A suitable device for a positive shut-off and for regulating the flow of water shall be located so as to permit positive operator control.

E. Applications of water for dust suppression include, but are not necessarily limited to, the following:

1. Demolition activities, material handling, material processing, and loading.

2. Earthwork.

3. Open excavation faces and dust-prone areas of the work.

4. Temporary access roads and roadway surfaces within and around the Project Site.

3.3 CALCIUM CHLORIDE

A. Calcium chloride shall be applied only at the locations, at such times and in the amount as may be directed by the Engineer and only in areas that will not be adversely affected by the application.

B. Calcium chloride shall be uniformly applied at the rate of one and one-half (1½) pounds per square yard (lb/yd2) or at any other rate as directed by Engineer. Application shall be by means of a mechanical spreader, or other approved methods. The number and frequency of applications shall be to Engineer’s satisfaction.

3.4 MULCH FOR DUST CONTROL

A. Coordinate the use of mulch for dust control with erosion and sedimentation control measures.

B. Straw mulch shall be applied at a rate of 100 pounds per 1,000 square feet (100 lb/1,000 ft2).

C. Wood chips or wood mulch shall be applied at such a rate as to form a layer one (1) inch thick.

3.5 OTHER DUST CONTROL MEASURES

A. A temporary seed mixture may be spread in lieu of, or in addition to mulch over areas where the suspension of grading work in disturbed areas is expected to be more than 30 calendar days and as directed by Engineer.

END OF DOCUMENT 01 5714

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. The Work of This Section Includes: Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:
   1. Section 01 1000 "Summary" for Contractor requirements related to Owner-furnished products.
   2. Section 01 2100 "Allowances" for products selected under an allowance.
   3. Section 01 2300 "Alternates" for products selected under an alternate.
   4. Section 01 2500 "Substitution Procedures" for requests for substitutions.
   5. Section 01 4200 "References" for applicable industry standards for products specified.
   6. Section 01 7700 "Closeout Procedures" for submitting warranties.

1.02 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products unless otherwise indicated.
   3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
   1. Evaluating Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 01 3300 "Submittal Procedures."

F. Substitution: Refer to Section 01 2500 "Substitution Procedures" for definition and limitations on substitutions.

1.03 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
1. Resolution of Compatibility Disputes between Multiple Contractors:
a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products will be used.

1.04 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:
1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.06 PRODUCT WARRANTIES

A. Warranties specified in other Sections are to be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of Owner or endorsed by manufacturer to Owner.
   2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
   3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."

PART 2 PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.
   6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
      a. Submit additional documentation required by Architect through Construction Manager to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by Architect, whose determination is final.

B. Product Selection Procedures:
   1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
      a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
   2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
      a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."

3. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
    a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
4. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
    a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 2500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 2500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 6000

SECTION 01 6116
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

1.02 RELATED REQUIREMENTS

A. Section 01 3300 - Submittal Procedures.

1.03 DEFINITIONS

A. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.

B. Interior of Building: Anywhere inside the exterior weather barrier.

C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

E. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2025.

C. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2; 2017.

D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.

E. CHPS (HPPD) - High Performance Products Database; Current Edition.

F. CRI (GLP) - Green Label Plus Testing Program - Certified Products; Current Edition.

G. SCAQMD 1113 - Architectural Coatings; 1977, with Amendment (2016).

H. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

I. SCS (CPD) - SCS Certified Products; Current Edition.

J. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

1.06 QUALITY ASSURANCE

A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
   1. Wet-Applied Products: State amount applied in mass per surface area.
   2. Paints and Coatings: Test tinted products, not just tinting bases.
   3. Evidence of Compliance: Acceptable types of evidence are the following;
      a. Current UL (GGG) certification.
      b. Current SCS (CPD) Floorscore certification.
      c. Current SCS (CPD) Indoor Advantage Gold certification.
      d. Current listing in CHPS (HPPD) as a low-emitting product.
      e. Current CRI (GLP) certification.
      f. Test report showing compliance and stating exposure scenario used.
   4. Product data submittal showing VOC content is NOT acceptable evidence.
   5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.

B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
   1. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Joint Sealants: SCAQMD 1168 Rule.
   3. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).
   4. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION 01 6116

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SECTION 01 7300
EXECUTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering.
   3. Installation.
   4. Cutting and patching.
   5. Coordination of Owner's portion of the Work.
   6. Progress cleaning.
   7. Starting and adjusting.
   8. Protection of installed construction.
   9. Correction of the Work.

1.02 PREINSTALLATION MEETINGS

A. The contractor is to conduct as many preinstallation meetings as required to ensure that all sub-contractors are aware that the building is a public building and needs to remain safe and in operation during construction.

B. Cutting and Patching Conference: Conduct conference at Project site.
   1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect and Contractors of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
      a. Contractor's superintendent.
      b. Trade supervisor responsible for cutting operations.
      c. Trade supervisor(s) responsible for patching of each type of substrate.
      d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
   2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.03 CLOSEOUT SUBMITTALS

A. Final Property Survey: Submit final property survey showing the Work performed and record survey data.

1.04 QUALITY ASSURANCE

A. Professional Engineer Qualifications: Refer to Section 01 4000 "Quality Requirements."

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
   2. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 PRODUCTS – NOT USED.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Examine existing roofing exterior penetrations of mechanical, plumbing, and any electrical systems to verify actual locations of connections before roofing replacement.
   2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
   2. List of detrimental conditions, including substrates.
   3. List of unacceptable installation tolerances.
   4. Recommended corrections.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect through Construction Manager in accordance with requirements in Section 01 3100 "Project Management and Coordination."

3.03 INSTALLATION

A. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

B. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

C. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

D. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

E. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels. Any tools utilizing open flames are strictly prohibited.

F. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

G. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.04 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work as required to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 01 1000 "Summary."

F. Cutting: Cut in-place construction by sawing, grinding, and similar operations using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations. Absolutely no torch or open flame cutting is to be used.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Proceed with patching after construction operations requiring cutting are complete.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
   4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

3.05 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

B. Refer to hazardous materials technical specifications in the Appendix for additional cleaning requirements and procedures.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
   3. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

C. Site: Maintain Project site free of waste materials and debris.

D. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

E. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

F. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

G. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

H. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 7419 "Construction Waste Management and Disposal."

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.06 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.07 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.08 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 7300

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SECTION 01 7419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
   1. Aluminum and plastic beverage containers.
   2. Corrugated cardboard.
   3. Wood pallets.
   4. Clean dimensional wood.
   5. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

G. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

I. Trash Chutes: open free-fall chutes are permitted and location to be coordinated with OPM and Owner. Terminate closed chutes into appropriate containers with lids.

1.02 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

A. Refer to hazardous materials abatement technical specifications in the Appendix for additional information and procedures.

B. Submit Waste Management Plan within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.

C. Waste Management Plan: Include the following information:
   1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).

D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
   1. Submit Report on a form acceptable to Owner.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. Refer to hazardous materials abatement technical specifications in the Appendix for additional information and procedures.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Prebid meeting.
   2. Preconstruction meeting.
   3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

END OF SECTION 01 7419

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SECTION 01 7700
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final Completion procedures.
   3. List of incomplete items.
   4. Submittal of Project warranties.
   5. Final cleaning.

B. Related Requirements:
   1. Section 01 2900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
   2. Section 01 3233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
   3. Section 01 7823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.

1.02 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.04 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.05 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of [10] days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect, and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.06 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 01 2900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect, and Contractor will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.07 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize roof area by wing or space below.
2. Include the following information at the top of each page:
a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.
3. Submit list of incomplete items in the following format:
a. MS Excel Electronic File: Architect will return annotated file.
b. PDF Electronic File: Architect will return annotated file.
c. Web-Based Project Software Upload: If required by Owner, utilize software feature for creating and updating list of incomplete items (punch list).

1.08 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

D. Warranties in Paper Form:
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
   1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 EXECUTION

3.01 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
      a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Remove tools, construction equipment, machinery, and surplus material from Project site.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 01 5000 "Temporary Facilities and Controls” and Section 01 7419 "Construction Waste Management and Disposal."

3.02 CORRECTION OF THE WORK

A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 01 7300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 01 7700

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SECTION 01 7701 – HAZARDOUS MATERIALS CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Related Sections:

1. Section 01 0100: Hazardous Materials General Conditions
2. Section 01 0160: Hazardous Materials Scheduling and Phasing
3. Section 02 0750: Selective Demolition For Hazardous Materials Abatement
4. Section 02 0800: Asbestos Abatement
5. Section 02 0820: Universal Waste Reclamation
6. Section 02 0900: Lead Paint Awareness

1.2 FINAL CLEANING

A. Unless otherwise specified under Sections of this Specification, the Hazardous Materials Abatement Contractor (HMAC) shall perform final cleaning operations as herein specified prior to final inspection.

B. Maintain the project site free from accumulations of waste, debris and rubbish caused by operations. At the completion of the work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave the project clean and ready for work of other trades.

C. Cleaning shall include all surfaces, interior and exterior, in which the HMAC has had access.

D. Use only those materials that will not create hazards to health or property.

1.3 ABATEMENT CLOSEOUT DOCUMENTS

A. Submit to the Owner/Consultant, final completed hard copies, via mail, all asbestos-containing materials (ACM) Waste Manifests signed by all transporters and the designated disposal site owner/operator. Manifests shall be submitted to the Owner's Consultant within thirty-five (35) calendar days from shipment of waste from Site.

B. Submit to the Owner/Consultant, final completed hard copies, via mail, all universal waste manifests and recycling certificates, signed by all transporters and the designated disposal site owner/operator, and associated certificates of recycling. Manifests and recycling certifications shall be submitted to the Consultant within thirty-five (35) calendar days from shipment of waste from site.

C. Submit to the Owner/Consultant certifying documents indicating work was performed in

accordance with project plans and specifications.

D. Refer to each hazardous materials abatement section for specific post project submittal requirements.

E. Final payment will be withheld until receipt of all the above documentations to Owner's/Consultant's satisfaction.

F. The HMAC will be responsible for compensating the Consultant for additional time required to review incomplete closeout documents and or partial submittals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 7701

SECTION 01 7823
OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory manuals.
   2. Product maintenance manuals.

B. Related Requirements:
   1. Section 01 3300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.03 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.04 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

B. Format: Submit operation and maintenance manuals in the following format:
   1. Submit by emailing to PDF to Architect and Owner.

C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion.
   1. Correct or revise each manual to comply with Architect's and Owner's comments. Submit copies of each corrected manual within [15] days of receipt of Architect's and Owner's comments.

D. Comply with Section 01 7700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.05 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve

on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.06 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name and contact information for Contractor.
   6. Name and contact information for Architect.
   7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the

Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.07 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 7823

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SECTION 01 7839
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Requirements:
   1. Section 01 7300 "Execution" for final property survey.
   2. Section 01 7700 "Closeout Procedures" for general closeout procedures.
   3. Section 01 7823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.03 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit copies of Record Drawings as follows:
      a. Initial Submittal:
         1) Submit PDF electronic files of scanned record prints and one <1> set(s) of file prints for the Owner.
         2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
      b. Final Submittal:
         1) Submit PDF electronic files of scanned Record Prints and one <1> set(s) of file prints for the Owner.
         2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written reports indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.04 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
   1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether

individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.
   e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Architect and Construction Manager.
   e. Name of Contractor.

1.05 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic file.

1.06 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

1.07 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.
1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.08 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Manager's reference during normal working hours.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 7839

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SECTION 01 7900
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Instruction in operation and maintenance of systems, subsystems, and equipment.
   2. Demonstration and training video recordings.

B. Allowances: Furnish demonstration and training instruction time under the demonstration and training allowance as specified in Section 01 2100 "Allowances."

C. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up. See requirements in Section 01 2200 "Unit Prices."

1.02 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.03 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit a recorded digital copy of training videos within seven <7> days of end of each training module.
   1. Identification: On each copy, provide an applied label with the following information:
      a. Name of Project.
      b. Name and address of videographer.
      c. Name of Architect.
      d. Name of Construction Manager.
      e. Name of Contractor.
      f. Date of video recording.
   2. Transcript:
      a. Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
      b. Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
   3. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 01 7823 "Operation and Maintenance Data."

1.04 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 4000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
   1. Inspect and discuss locations and other facilities required for instruction.
   2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
   3. Review required content of instruction.
   4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.05 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.06 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
   1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
      a. System, subsystem, and equipment descriptions.
      b. Performance and design criteria if Contractor is delegated design responsibility.
      c. Operating standards.
      d. Regulatory requirements.
      e. Equipment function.
      f. Operating characteristics.
      g. Limiting conditions.
      h. Performance curves.
   2. Documentation: Review the following items in detail:
      a. Emergency manuals.
      b. Systems and equipment operation manuals.
      c. Systems and equipment maintenance manuals.
      d. Product maintenance manuals.

e. Project Record Documents.
f. Identification systems.
g. Warranties and bonds.
h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.
5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.
7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning.
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.
8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

1.07 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 7823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.08 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
   2. Owner will furnish an instructor to describe Owner's operational philosophy.
   3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner through Construction Manager with at least seven <7> days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.09 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
   1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 ???twelve??? megapixels and capable of recording in full HD mode with vibration reduction technology.
   1. Submit video recordings on thumb drive and by uploading to web-based Project software site.
   2. File Hierarchy: Organize folder structure and file locations in accordance with Project Manual table of contents. Provide complete screen-based menu.
   3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
   4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged in accordance with Project Manual table of contents:
      a. Name of Contractor/Installer.
      b. Business address.
      c. Business phone number.

d. Point of contact.
e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
1. Film training session(s) in segments not to exceed 15 minutes.
a. Produce segments to present a single significant piece of equipment per segment.
b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by either audio narration by microphone while recording if acceptable, or if necessary for audibility by dubbing audio narration off-site after video recording is recorded. Include description of items being viewed. The Owner will evaluate if the on-video narration is sufficient prior to final submission of the files.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 7900

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SECTION 02 0750 - HAZARDOUS MATERIALS SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Sections:

1.	Section 01 1001:	Hazardous Materials General Conditions
2.	Section 01 1600:	Hazardous Materials Scheduling and Phasing
3.	Section 01 7701:	Hazardous Materials Contract Closeout
4.	Section 02 0800:	Asbestos Abatement
5.	Section 02 0820:	Universal Waste Reclamation
6.	Section 02 0900:	Lead Paint Awareness

1.2 SUMMARY

A. The Hazardous Materials Abatement Contractor (HMAC) shall be responsible for performing selective demolition to access known hazardous materials scheduled for removal. The selective demolition shall include but not be limited to non-asbestos sheetrock walls, cabinets, pews, fixtures, and equipment in order to access asbestos-containing materials and universal wastes.

B. The HMAC shall open up the onsite sectional boiler to allow the Owner's Consultant to inspect, and test, as necessary, concealed materials within the boiler.

C. The HMAC shall open up specified pipe chases for exploratory inspection of plumbing walls in select areas of the building scheduled for demolition to locate asbestos-containing thermal system insulation within.

D. The HMAC shall perform selective demolition of all suspended ceilings scheduled for demolition. The suspended ceiling systems, including ceiling tiles, sheetrock backer, grids and support wires, shall be removed by the HMAC to access all thermal system insulation above. The glue daubs associated with the ceiling tiles applied to sheetrock backer contain asbestos; all ceiling demolition shall be performed with engineering controls in place as defined in Section 02 0800 Asbestos Abatement.

E. Materials demolished during asbestos abatement activities shall either be decontaminated of all asbestos debris or properly packaged, labeled and disposed of as asbestos waste.

F. The HMAC shall remove all light fixtures set within ceiling grid. Clean and recycle metal fixtures, reclaim mercury vapor from fluorescent light tubes and recycle electronic lighting ballasts.

G. Coordinate all selective demolition work with the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant.

1.3 PROJECT CONDITIONS

A. Occupancy:

1. Areas of the building in which selective demolition will occur will be unoccupied during work.

B. Existing Conditions:

1. After the project has begun, the HMAC is responsible for the condition of the structures to be selectively demolished and surfaces to remain.
2. Unforeseen Conditions: Should unforeseen conditions be encountered that affect design or function of project, investigate and fully submit an accurate, detailed, written report to the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant. While awaiting a response, reschedule operations if necessary to avoid delay of overall project.

C. Work under this project may be performed in phases to accommodate Owner's/Architect's requirements and remaining construction phases. Coordinate abatement schedule and operations with the Owner, Construction Manager/General Contractor/Architect/Owner's Consultant and other trades.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and sealed.

B. Insofar as is practicable, arrange operations to reveal unknown or concealed conditions for examination and verification before removal or demolition.

C. Verify actual conditions to determine, in advance, whether removal or demolition of any element will result in structural deficiency, overloading, failure, or unplanned collapse.

1. Demolish and remove connections to all electrical, gas and plumbing fixtures required to remove hazardous building materials.
2. Located and mark areas, equipment, building components requiring selective demolition.
3. Demolish all building materials as required to access materials identified for abatement and remediation.

3.2 PREPARATION

A. Traffic: Do not obstruct walks or public ways without the written permission of governing authorities and of the Owner. Where routes are permitted to be closed, provide alternate routes if required.

B. Do not obstruct on-site employee traffic or pedestrian traffic.

C. Manage dust during selective demolition activities.

D. Install dust suppression equipment including misters during demolition activities.

E. Protection:

1. Provide for the protection of persons passing around or through the area of demolition.
2. Provide fencing and signing required to keep occupants from entering the demolition area.
3. Perform demolition so as to prevent damage to adjacent improvements and facilities to remain.
4. Protect walls, floors, and other new or existing work from damage during demolition operations and abatement work.
5. Protect grounds, trees, plantings, monuments, etc. during demolition activities.

3.3 POLLUTION CONTROLS

A. Control as much as practicable the spread of dust and dirt.

B. Observe environmental regulations.

C. Do not allow water usage that results in freezing or flooding.

D. Do not allow adjacent improvements to remain to become soiled by demolition operations.

3.4 DEMOLITION - GENERAL

A. Remove: Items indicated to be removed shall be removed by the HMAC.

B. Existing to Remain: Construction or items indicated to remain shall be protected against damage during demolition operations. Where practical, and with the Owner's permission, the HMAC may elect to remove items to a suitable storage location during demolition and then properly clean and reinstall the items.

C. Perform work in a systematic manner.

D. Demolish and remove existing structures only to the extent required, as indicated in the Contract Documents.

E. Perform selective demolition using methods that are least likely to damage work to remain and which will provide proper surfaces for patching.

F. Remove debris daily.

G. Use any methods permitted by governing regulations and the requirements of the Contract Documents.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Promptly dispose of materials resulting from demolition operations. Do not allow materials to accumulate on site.

B. The HMAC shall become familiar with the various waste streams that will be generated during this project and shall manage them in accordance with the requirements of the Specifications.

C. All rubbish and waste material from the Work shall be neatly stacked or kept in suitable containers and removed from the premises daily. The premises shall be kept clean and in an orderly condition at all times to the satisfaction of the Owner and the Consultant.

D. Transport materials resulting from demolition operations and legally dispose of off-site.

E. Off-site disposal location shall not be within one-half mile of any portion of the project site or within sight of the project site.

F. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

G. All disposal containers, receptacles, dumpsters shall be properly labeled and sealed from the onset of waste accumulation. Exterior waste containers shall be locked.

3.6 CLEANING

A. Throughout the abatement and remediation period, the HMAC shall maintain the building and Site free of rubbish, debris, surplus materials, and other items not required for the Work.

B. Remove such material from the site daily to prevent accumulations. Remove all construction debris from work areas, and remove all hazardous waste and universal waste as required by the most current federal, state, and local regulations and the requirements of the specifications.

END OF SECTION 02 0750

SECTION 020800 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Related Sections:

1. Section 01 1001: Hazardous Materials General Conditions
2. Section 01 1600: Hazardous Materials Scheduling and Phasing
3. Section 01 7701: Hazardous Materials Contract Closeout
4. Section 02 0750: Selective Demolition for Hazardous Materials Abatement
5. Section 02 0900: Lead Paint Awareness
6. Section 02 0820: Universal Waste Reclamation

C. Related drawings:

1. Hazardous Building Materials Abatement Plans HM-1 through HM-5

1.2 GENERAL PROVISIONS

A. The work specified herein covers the proper worker protection, work area preparation, removal procedures, disposal requirements, and post abatement re-occupancy air testing for the abatement of asbestos-containing building components associated with the renovation work at the building located at 24 Branch Street in Waterbury, Connecticut (Site).

B. The Site building consists of an elevated single-story structure of block construction. The structure was built in 1900 for use as a church. The building has a full finished basement. Asbestos containing material (ACM) testing has identified materials within the building that contain asbestos. The work covered in this section includes the minimum procedures that shall be employed during the abatement of the ACM.

C. The abatement project may be divided into phases that are to be coordinated with the overall phasing of the renovation project. Refer to the Construction Manager's phasing plans for additional information. It is the Hazardous Materials Abatement Contractor's (HMAC) responsibility to become familiar with the phasing plan for the project and to include the required remobilization fees to support the phasing. The HMAC shall comply with the overall project schedule established by the Construction Manager. Modifications or changes to the project phasing shall not be grounds for a change order.

D. Mr. Chris Liberti of Eagle Environmental, Inc. is the designer of this Specification. Mr. Liberti is a State of Connecticut Department of Public Health (CTDPH) Licensed Asbestos Project Designer (License #000261).

1.3 PROJECT DESCRIPTION

A. The work to be performed includes but is not limited to the proper removal, handling, and disposal of all regulated asbestos-containing materials (ACM) present within the building. Detailed descriptions of materials and locations of ACM scheduled for removal are shown on Table I below and on the Hazardous Building Materials Abatement Plans HM-1 through HM-5.

B. The asbestos abatement work includes but is not limited to the abatement of interior friable and non-friable ACM and the abatement of exterior non-friable ACM associated with materials and components specified for demolition.

C. The asbestos abatement work shall include all selective demolition to access concealed ACM within masonry walls, under newer walls and cabinetry, above solid or suspended ceilings and under newer roofing materials.

D. The Base Bid asbestos abatement work shall include but not be limited to the ACM identified in the following Table 1 - Table of ACM. The Table provides information on the magnitude of the project. It is the sole responsibility of the HMAC to visit the site, review the Contract Documents and determine the quantities of ACM to be removed when developing their bid. Locations and estimated quantities of specific items noted in paragraph A above include:

TABLE I – BASE BID - TABLE OF ACM

LOCATION(S)	MATERIAL	ESTIMATED QUANTITY	SHEET NUMBER	KEY CODE
0-01, 0-04, 0-05, 0-06, 0-07, 0-11, 0-14, 1-24, 1-26, 1-27, 1-28, 2-32, 2-33	Black mastic - under single layer of 12" x 12" or 9" x 9" floor tile	~9,000 SF	HM-1, HM-2, HM-3	Diagonal Line Hatch
0-09	Black mastic - under double layer 12" x 12" and 9" x 9" floor tile	~500 SF	HM-1	X Hatch
0-01, 0-04, 0-05, 0-06, 0-08, 0-09, 0-12, 0-13, 0-14	Mudded fitting cement associated with fiberglass pipe insulation exposed in room or above suspended ceiling	~205 Each	HM-1	1
0-010	Residual mudded fitting insulation on heating system	~45 Each	HM-1	1
0-01, 0-02, 0-03, 0-07, 0-09, 0-11, 0-14, 1-15, 1-16, 1-25, 1-28, 2-32	Mudded fitting cement assumed in walls and above hard ceilings	~115 Each	HM-1, HM-2, HM-3	2
0-04, 0-07, 0-10, 0-11, 0-12, 0-13, 2-33	Interior door frame caulk	~275 LF	HM-1, HM-3	3
0-10	Mud insulation at black pipe wall penetration	~3 SF	HM-1	4
0-01, 0-04, 0-05, 0-06, 0-07, 0-09, 0-14, 1-15, 1-16, 1-18, 1-19, 1-20, 1-22, 1-23, 1-24, 1-26, 1-27, 1-29, 1-31, 2-33	Glue daubs associated with 1' x 1' ceiling tile - brown	~8,600 SF	HM-1, HM-2, HM-3	5

LOCATION(S)	MATERIAL	ESTIMATED QUANTITY	SHEET NUMBER	KEY CODE
1-17, 2-32	Glue daubs and associated 1' x 1' ceiling tiles only from sheetrock backer board at elevated ceiling	~8,500 SF	HM-3	6
1-17, 1-29, 2-32	Residual window glazing compound associated with interior removed window system	~600 LF	HM-2 HM-3	7
1-17, 2-32	Window glazing compound debris - on floor	~6 SF	HM-2	7
0-08, 0-13	Duct pin adhesive on interior of metal duct	~160 SF	HM-1	8
1-15, 1-17, 2-32	Stained glass window glazing compound in doors and windows	~13 Doors; 4 Sashes at 4’x7’	HM-2 HM-3	9
Exterior Facades	Window caulk at window perimeters (all layers)	~1,300 LF	HM-4, HM-5	10
	Window caulk at vents (all layers)	~85 LF		
	Window caulk at 'rose' window (all layers)	~11 Panes		
	Window caulk at doors	~115 LF		
0-10	Valve gaskets	~35 Each	HM-1	11
0-10, 0-13	Valve packing	~37 EA	HM-1	12
Main Roof (Pitched)	Caulk (all layers) at metal step flashing (vertical and horizontal seams)	~110 LF	HM-4, HM-5	13
Main Roof	Vapor paper under bottom layer asphalt shingles	~10,000 SF	HM-4, HM-5	14
Flat Roofs (3)	Flashing cement at parapet/roof wall junctions under rubber membrane	~125 SF	HM-4, HM-5	15
Main Roof	Tar on bottom layer asphalt shingles at gutter edge flashing	~310 SF	HM-4, HM-5	Dash Line Hatch
Interior Walls	Tar moisture barrier on masonry behind interior plaster and marble wall coverings at new duct and pipe penetrations	2 Duct Penetrations at 3’x3’ Each; 10 – 4” Core Penetrations	HM-2, HM-3	16
Roofs	Interior gutter liner tar	~12 Areas at 1 SF Each	HM-4, HM-5	17
0-010	Interior boiler refractory	1 Boiler	HM-1	18
2-32	Interior window caulk	~150 LF	HM-3	19

E. The HMAC shall determine the quantities of asbestos-containing materials requiring removal prior to submission of their Bid. Any discrepancies must be submitted in writing in RFI format to the Construction Manager or Owner's Consultant for interpretation prior to submission of their Bid. The quantities provided above are estimates only.

F. The HMAC shall not perform any work that raises dust or creates emissions without proper engineering controls in place. Work of this project shall be performed in a manner that protects the adjacent spaces of the building from fugitive dust, emissions, gross debris, waste, materials, etc.

G. Limited ACM will not be impacted by the renovation work within the building and will remain. These materials include: tar moisture barrier on masonry behind interior plaster and marble wall coverings; tar on CMU at floor to Attic Fan Room; caulk at seams and edges of fiberboard wall panels in Attic Fan Room; interior window frame caulk at mezzanine windows (Room 2-32); stained glass partition window glazing compound (Room 1-15) (scheduled to be reused).

H. The glue daubs associated with the 1'x1' ceiling tiles throughout the building, applied to a suspended sheetrock backer board, are confirmed ACM. Within the Main Chapel (Room 1-17) and Mezzanine (Room 2-32), the sheetrock backer board associated with the vaulted ceilings will remain but all overlying ceiling tiles and associated glue daubs shall be removed under the Base Bid Scope of Work. The HMAC shall not demolish the sheetrock backer board in these locations and will be required to install isolation barriers over all existing ceiling penetrations from within the attic space above prior to glue daub removal.

I. The tar lining the interior of the gutters is scheduled to remain except for areas of impact. Existing down spouts will be sealed and new holes for new down spouts will be installed during the roof renovations. Only the tar in the areas of impact are included in the scope of abatement work with the tar in the rest of the gutter system is scheduled to remain. Refer to the Architect's Plans for additional information on the scope and locations of gutter impact.

J. The General Contractor shall provide scaffolding within the Main Chapel (Room 1-17) and Mezzanine (Room 2-32) for access to the suspended ceiling and wall penetrations. The HMAC shall coordinate with the General Contractor for the installation of scaffolding and timing to perform the removal of the ceiling glue dabs in these rooms.

K. Interior asbestos-containing tar moisture barrier has been identified within the interstitial space on the exterior perimeter masonry block walls behind the interior plaster and marble walls. An additional layer of suspect tar is assumed to be present behind the exterior brick veneer. The tars are scheduled to remain and are only anticipated to be impacted at duct and pipe penetrations through the exterior walls. The HMAC shall removal all tar coated masonry within areas of penetrations. Coordinate areas of duct and pipe penetrations with Architect's demolition drawings and General Contractor prior to the start of demolition and abatement work.

L. The HMAC shall be responsible for select wall and ceiling demolition, the removal of counters, cabinets, limited walls, fixtures, electrical, mechanical, plumbing systems, and miscellaneous items to facilitate asbestos removal. Refer to Section 02 0750 Selective Demolition for Hazardous Materials Abatement for additional requirements.

M. The HMAC is directed to review Section 02 0900 Lead Paint Renovation for additional requirements affecting the work of this Section.

1.4 QUALITY ASSURANCE

A. The HMAC shall be licensed by the State of Connecticut Department of Public Health (DPH) to perform asbestos abatement.

B. The Asbestos Abatement Supervisor(s) and Asbestos Abatement Workers shall be accredited in accordance with EPA regulation 40 CFR Part 763, subpart E, Appendix C; and shall be licensed by the State of Connecticut Department of Public Health.

1.5 APPLICABLE CODES

A. The HMAC shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state and local regulations and guidelines pertaining to asbestos abatement. Specifically, the HMAC shall comply with the requirements of the following:

1. USEPA AHERA Regulation (40 CFR 763 Final Rule and Notice);
2. USEPA NESHAP Regulations (40 CFR 61, Subpart M);
3. OSHA Asbestos Regulations (29 CFR 1910.1001 and 1926.1101);
4. Connecticut DEEP Regulations (Section 22a-209-8 (I) and Section 22a-220 of the Connecticut General Statutes);
5. Connecticut DPH Standards for Asbestos Abatement Sections 19a-332a-1 to 19a-332a-16;
6. Connecticut DPH Licensure and Training Requirements Section 20-440-1 to Section 20-440-9.
7. Connecticut Basic Building Code (BOCA);
8. Connecticut Fire Safety Code (NFPA);
9. Local health and safety codes, ordinances or regulations pertaining to asbestos remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

1.6 EXEMPTIONS

A. This project was designed by a State of Connecticut Department of Public Health licensed Asbestos Abatement Designer. Any deviation from these specifications requires the written approval and authorization from the Designer.

B. Any deviations from CTDPH Standards for Asbestos Abatement Sections 19a-332a-1 through 19a-332a-16 must be requested in writing and must be approved in writing by CTDPH.

1.7 NOTIFICATIONS, POSTINGS AND PERMITS

A. The HMAC shall make the following notifications and provide the submittals to the following agencies prior to the commencement of removal work. This notification is required ten (10) days (10 calendar days for CTDPH and 10 business days for USEPA) prior to the start of the abatement project:

1. State of Connecticut
   Department of Public Health
   Indoor Air Program, MS #12 AIR
   410 Capitol Avenue
   P.O. Box 340308
   Hartford, CT 06134-0308
2. USEPA New England Headquarters
   5 Post Office Square, Suite 100
   Boston, Massachusetts 02109-3912

B. The minimum information included in the notification includes:

1. Name and address of building owner/operator
2. Building location
3. Building size, age, and use
4. Amount of friable asbestos
5. Work schedule, including proposed start and completion date
6. Asbestos removal procedures to be used
7. Name and location of disposal site for generated asbestos waste, residue, and debris

C. Ten day notifications shall be posted for each individual phase of the project.

1.8 WORK SITE SAFETY PLAN

A. The HMAC shall establish a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:

1. Evacuation of injured workers.
2. Emergency and fire exit routes from all work areas.
3. Emergency first aid treatment.
4. Local telephone numbers for emergency services including ambulance, fire, and police.
5. A method to notify workers in the event of a fire or other emergency requiring evacuation of the building.
6. 24 hour site security program.

B. The HMAC is responsible for training all workers in these procedures.

1.9 ALTERNATIVE WORK PRACTICES (AWP)

A. No AWPs have been submitted to the CTDPH for this project.

B. Any deviations from these specifications require the written approval and authorization from the Owner and the Owner's Consultant.

C. Any deviations from CTDPH Standards for Asbestos Abatement Sections 19a-332a-1 through 19a-332a-16 must be requested in writing by the designer of record for the project and must be approved in writing by CTDPH.

1.10 RE-OCCUPANCY CLEARANCE

A. Re-occupancy air sampling will be required within all interior work areas prior to the removal of containment barriers and engineering controls. Make up air into the work area must be free of demolition dust to ensure samples can be analyzed.

B. The HMAC shall work with the Construction Manager to coordinate activities outside the abatement work area to ensure dusty conditions that may impact the ability to analyze clearance samples are not created.

C. The Owner shall be responsible for payment of the sampling and analysis of initial final air clearance samples only. The HMAC shall be responsible for payment of all costs associated with the collection and analysis of additional final air clearance samples for areas that failed the initial test. This shall also include the laboratory charges for preparation of slides for samples that are “overloaded” and become unreadable.

D. Phase Contrast Microscopy (PCM) air samples will be analyzed by the Owner’s Consultant. Transmission Electron Microscopy (TEM) air samples will be analyzed by an outside laboratory on a twenty-four (24) hour turn-around time. The turnaround time starts once the samples are received at the laboratory.

1.11 CONTROL OVER REMOVAL WORK

A. All HMAC work procedures shall be monitored by the HMAC’s “Competent Person” to ensure that areas outside the designated work locations do not become contaminated. The following controls shall be implemented each working day to help ensure this:

1. Prior to work on any given day, the HMAC’s designated "Competent Person" shall evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the building or the employees. This includes a visual survey of the work area and the decontamination enclosure systems.

B. The HMAC shall maintain control of and be responsible for access to all work areas to ensure the following requirements:

1. Nonessential personnel are prohibited from entering the area;
2. All authorized personnel entering the work area shall sign the work area entry log at the entrance to each work area;
3. All authorized personnel entering the work area shall read the "worker protection procedures" which are posted at the entry points to the enclosure system, and shall be equipped with properly fitted respirators and protective clothing;
4. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated;
5. Asbestos waste that is taken out of the work area must be properly bagged and labeled in accordance with these specifications. The surface of the bags shall be decontaminated. Asbestos waste leaving the enclosure system must be transported off site or immediately placed in locked, posted temporary storage on site, and be removed within 24 hours of the project conclusion.
6. Any material, equipment, or supplies that are brought out of the decontamination enclosure system shall be cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.

1.12 SITE SECURITY

A. The HMAC shall be responsible for the security of regulated areas. Post asbestos abatement warning signs at entrances to the work area including the waste load out and worker decontamination chamber. The HMAC shall have a supervisor monitoring the entrance of the worker decontamination chamber during abatement work.

B. The HMAC shall be responsible for building security following the removal of window systems. Coordinate the removal of the window systems with the General Contractor and all other trades.

C. Coordinate the removal of asbestos roofing materials with Roofing Contractor and General Contractor to maintain a weather tight roof system.

D. The supervisor shall maintain a work area access log for each work area. The access log shall document each person that enters the work area, the time entered, and the time exited. Copies of the work area access logs shall be provided to the Owner's Consultant during the course of the project.

E. The HMAC shall use only those entrances and exits to the building established for Contractors' use.

1.13 PERSONNEL PROTECTION

A. Prior to commencing work, instruct all workers in all aspects of personnel protection, work procedures, emergency procedures use of equipment including procedures unique to this project.

B. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134, 29 CFR 1926.11, 29 CFR 1926.62 and the requirements of the CTDPH Standards for Asbestos Abatement (19a-332a-1 through 16). A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134. The HMAC shall conduct exposure assessment air sampling, analysis and reporting to ensure the workers are using appropriate respiratory protection.

C. The HMAC shall provide appropriate respiratory protection for each worker and ensure usage during potential asbestos exposure.

D. The HMAC shall provide respirators from among those approved as being acceptable for protection by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part II.

E. The HMAC shall provide an adequate supply of filter for respirators in use.

F. Minimum respiratory protection shall be as follows:

Air borne Asbestos Level:	Required Respirator:
Not in excess of 1 f/cc (10 x PEL)	Half mask air purifying or otherwise as required respirator other than a disposable respirator,

	equipped with HEPA P 100 filters.
Not in excess of 5 f/cc (50 x PEL)	Full facepiece air purifying respirator equipped with HEPA P 100 filters.
Not in excess of 10 f/cc (100 x PEL)	Any powered air purifying respirator equipped with HEPA P 100 filters, or any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1000 x PEL)	Full facepiece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (1000 x PEL)	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

Notes:

1. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations.
2. A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.
3. In addition to the selection criteria in paragraph 1.15F, the HMAC shall provide a tight-fitting powered air purifying respirator equipped with high efficiency filters or a full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges or an auxiliary positive pressure self- contained breathing apparatus for all employees within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions if the exposure assessment indicates exposure levels above 1 f/cc as an 8 hour time weighted average.
4. If compresses air is used for supplied air respirators, this air will meet the requirements for grade D breathing air as described by the Compresses Gas association commodity Specification G-7.1-1966. The compressor will be equipped with the necessary safety devices and sorbends/filters, and be situated to avoid entry of contaminated air. In addition, the compressor will be equipped with alarms to indicate failure or overheating, and additional alarms for indicating the presence of carbon monoxide. Air line couplings will be incompatible with outlets for other gas system to prevent inadvertent servicing of air line respirators with non-respirable gases.

G. The HMAC shall provide and require all workers to wear protective clothing in Work Areas where asbestos fiber concentration exceeds permissible limits established by the OSHA or where contamination exists. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.

H. The HMAC shall ensure that all authorized persons entering contaminated areas are equipped with proper respirators and protective clothing.

1.14 WORKER PROTECTION PROCEDURES

A. The HMAC shall monitor airborne asbestos concentrations in the workers' breathing zone to establish conditions and work procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001 and 1926.1001.

B. The HMAC's air sampling professional shall document all air sampling results and provide all air sampling reports as soon as feasible. OSHA air monitoring results shall be posted at a conspicuous location at the job site.

C. All personnel air sampling shall be conducted in accordance with methods described in OSHA standards 29 CFR 1910.1001 and 1926.1101.

1.15 SUBMITTALS

A. The HMAC will submit one hard copy of the following submittals to the Owner's Representative ten (10) calendar days prior to the commencement of removal work:

1. HMAC's construction schedule
2. Shop drawings showing work area configuration with decontamination facility and negative air exhaust locations
3. Waste generator label to be used including facility address, Owner's information and name of HMAC
4. Waste shipment and disposal form to be used with generator information completed
5. Waste hauling contractor and associated licenses and permits
6. Asbestos abatement training (initial and current refresher), licenses, medical and respirator fit-test records of each employee who may be on the project Site
7. Copies of all local notifications and permits, if required
8. Copies of the written respirator plan compliant with the most current issue of OSHA 1910.134
9. Copies of all SDS sheets for materials to be used on Site
10. Work Site Safety Plan
11. Negative Exposure Assessment, if any
12. HMAC's State of Connecticut Asbestos Contractor license
13. State and EPA Asbestos Notifications

B. If rental equipment will be utilized during abatement activities, the HMAC shall provide written acknowledgement to the rental equipment provider and copy the Owner's Consultant stating that equipment will be used during hazardous material removal and will be thoroughly decontaminated prior to being returned.

C. The HMAC will submit the following to the Consultant during the work:

1. Results of all personal air sampling
2. Certificate of training (initial and current certification), medical, and fit-test records for new employees to start work (24 hours in advance of work)
3. HMAC site logs and containment access logs
4. Revised Notifications, if any

D. The following shall be submitted to the Consultant at the completion of work:

1. Completed copies of Waste Shipment Records (WSR).
2. Remaining personal air sampling results and work area access control logs.

1.16 DEFINITIONS

A. ABATEMENT - Procedures to control fiber release from asbestos-containing materials; includes removal, encapsulation, and enclosure.

B. AIRLOCK - A system for permitting ingress and egress while assuring air movement to a contaminated area from an uncontaminated area. Two curtained doorways spaced a minimum of six feet apart can form an airlock.

C. AIR MONITORING - The process of measuring the fiber concentration of an area or of a person.

D. AIR SAMPLING PROFESSIONAL – A licensed professional capable of developing air sampling protocols and conducting air monitoring and analysis. This individual should be an industrial hygienist, an environmental scientist, or an engineer with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with 29 CFR 1910.1001 and 1926.1101.

E. ADEQUATELY WETTED - means sufficiently mixed or coated with water, amended or an aqueous solution; or the use of removal encapsulant to prevent dust emissions.

F. AMENDED WATER - Water to which a surfactant has been added.

G. ASBESTOS - The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms that have been chemically altered.

H. ASBESTOS ABATEMENT - Means the removal, encapsulation, enclosure, renovation, or repair of asbestos-containing materials except activities that are related to the removal or repair of asbestos cement pipe and are performed by employees of a water company as defined in Section 25-32a of the Connecticut General Statutes.

I. ASBESTOS ABATEMENT SITE SUPERVISOR - Means any licensed individual who is employed or engaged by an HMAC to supervise an asbestos abatement project.

J. ASBESTOS ABATEMENT WORKER - Means any employee of an HMAC who engages in asbestos abatement.

K. ASBESTOS CONSULTANT - Any person who engages in any activity directly involved with asbestos consultation services and who has been issued a certificate by the commissioner and a license by the department.

L. ASBESTOS CONTAINING MATERIAL (ACM) - A material composed of asbestos of any type and in an amount greater than one percent be weight, either alone or mixed with other fibrous or nonfibrous material.

M. ASBESTOS CONTRACTOR - Any person or entity engaged in asbestos abatement whose employees actually perform asbestos abatement work.

N. ASBESTOS CONTROL AREA - An area where asbestos abatement operations are performed which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

O. ASBESTOS FIBERS - Those particles with a length greater than five (5) microns and a length to diameter ratio of 3: 1 or greater.

P. ASBESTOS PERMISSIBLE EXPOSURE LIMIT (PEL) - The maximum airborne concentration of asbestos fibers to which an employee is allowed to be exposed. The current level established by OSHA is 0.1 fibers per cubic centimeter of air as an eight (8) hour time weighted average and 1.0 fibers/cc averaged over a sampling period of 30 minutes as an excursion limit. The HMAC is responsible for maintaining work areas in a manner that this standard is not exceeded.

Q. ASBESTOS PROJECT MONITOR - The licensed asbestos consultant who is certified as a project monitor and who functions as an on-site representative of the facility Owner or other persons by over-seeing the activities of the asbestos abatement contractor.

R. AUTHORIZED VISITOR - Any person authorized by the Owner to enter the building.

S. BUILDING OWNER - For this Contract only, the building Owner is the City of Waterbury.

T. CLEAN ROOM - An uncontaminated area or room, which is a part of the workers' decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.

U. CLEARANCE SAMPLING - Final air sampling performed aggressively after the completion of the abatement project in a regulated area. Five (5) air samples collected by the asbestos abatement project monitor inside the work area, and having a fiber concentration of less than 0.010 fibers/cc of air will denote acceptable clearance sampling by Phase Contrast Microscopy. Five air samples collected by the asbestos abatement project monitor having an average asbestos concentration of less than 70 asbestos structures mm/sq. will denote acceptable clearance sampling for Transmission Electron Microscopy.

V. COMMISSIONER - Means the Commissioner of the Connecticut Department of Health Services or his/her authorized agent.

W. COMPETENT PERSON - A representative of the HMAC who is capable of identifying an asbestos hazard and who has the authority to take prompt corrective measures to eliminate the hazard during asbestos removal.

X. CONFINED SPACE - A work zone where access and egress are restricted, a potential for gaseous vapors to accumulate exist, or a potential for low oxygen content exists.

Y. DECONTAMINATION ENCLOSURE SYSTEM - A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.

Z. DEPARTMENT - The Department of Public Health.

AA. EPA - Means the U.S. Environmental Protection Agency.

BB. ENCAPSULANT - A liquid material that can be applied to asbestos-containing material that controls the possible release of asbestos fibers from the materials by either creating a membrane over the surface (bridging encapsulant) or penetrating the material and binding its components together (penetrating encapsulant).

CC. ENCAPSULATION - A specified asbestos remediation strategy involving the application of an encapsulant to asbestos containing materials to control the release of asbestos fibers into the air.

DD. EQUIPMENT DECONTAMINATION ENCLOSURE - That portion of a decontamination enclosure system designed for controlling the transfer of materials and equipment, typically consisting of a washroom and a holding area.

EE. EQUIPMENT ROOM - A contaminated area or a room, which is part of the workers' decontamination enclosure with, provisions for storage of contaminated clothing and equipment.

FF. FACILITY - Means any private or public building or structure including but not limited to those used for institutional, residential (including single family homes), commercial or industrial purposes and vessels while ashore or in dry-dock.

GG. FIXED OBJECT - A unit of equipment or furniture in the work areas which cannot be removed from the work area.

HH. FRIABLE ASBESTOS MATERIAL - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.

II. GLOVE BAG - An impervious plastic bag-like enclosure affixed around asbestos containing material, with glove-like appendages through which materials and tools may be handled.

JJ. HAZARDOUS MATERIALS ABATEMENT CONTRACTOR (HMAC) - Means the Asbestos Contractor, Lead Based Paint Abatement Contractor and or PCB/DEHP and Mercury Vapor Lighting Removal Contractor.

KK. HEPA FILTER - A high efficiency particulate air (HEPA) filter in compliance with ANSI Z9.2-1979.

LL. HEPA VACUUM EQUIPMENT - Vacuum equipment with a HEPA filter system for filtering the effluent air from the unit.

MM. HOLDING AREA - An air-locked chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.

NN. INSPECTOR (ASBESTOS ABATEMENT PROJECT MONITOR)- An individual, retained by the Building Owner, who is a "qualified asbestos abatement project monitor" as defined by the State of Connecticut Department of Public Health, and who will be responsible for monitoring the HMAC during the asbestos abatement project.

OO. MOVABLE OBJECT - A unit of equipment or furniture in the work area, which can be removed from the work area.

PP. NEGATIVE AIR FILTRATION EQUIPMENT - A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.

QQ. OWNER'S REPRESENTATIVE -The Asbestos Consultant for the project.

RR. NESHAPS - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.

SS. PLASTICIZE - To cover floors and walls with plastic sheeting as specified herein.

TT. SEPARATION BARRIER - A rigid barrier sealed with two (2) layers of six (6) mil polyethylene sheeting installed between an occupied area and the asbestos abatement work area.

UU. SHOWER ROOM - A room between the clean room and the equipment room in the workers' decontamination enclosure with hot/cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.

VV. STRIPPING - Removing asbestos materials from any structural member, pipe surface, HVAC, or other equipment.

WW. WASHROOM - A room between the work area and the holding area in the equipment decontamination enclosure with provisions for storage of contaminated clothing and equipment.

XX. WET CLEANING - The process of reducing asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools, which have been dampened by amended water, and by then disposing of these cleaning items as asbestos contaminated waste.

YY. WORK AREA - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are occurring and which may become contaminated as a result of such abatement actions. The work area must be totally self-contained by sealing, plasticizing and equipping the area with a decontamination enclosure system.

ZZ. WORKER DECONTAMINATION ENCLOSURE SYSTEM - That portion of a decontamination enclosure system designated for controlled passage of workers, other personnel, and authorized visitors, typically consisting of a clean room, a shower room, and an equipment room.

AAA. WORK STOPPAGE CLEANUP PROCEDURE - A process following the issuance of a written stop work order, whereby the HMAC thoroughly cleans and decontaminates the work area, the decontamination enclosure system, and any other areas of the building affected by the removal project, to the satisfaction of the Asbestos Project Monitor.

BBB. WORK ZONE - The area of the decontamination enclosure system where asbestos is being removed.

1.17 PRECONSTRUCTION MEETING

A. The HMAC shall be required to attend a preconstruction meeting with his/her site supervisor, any subcontractor they employ on site for the purpose of reviewing the contract requirements.

PART 2 - MATERIALS AND EQUIPMENT

2.1 MATERIALS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

C. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 4 or 6 mil.

D. Polyethylene disposable bags shall be true six (6) mil with preprinted labels.

E. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

F. Surfactant (wetting agent) - shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one (1) ounce surfactant to five (5) gallons of water or as directed by manufacturer.

G. Impermeable containers are to be used to receive and retain any asbestos-containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with OSHA Standard 29 CFR 1926-1101.) Containers must be both air and watertight.

H. Labels and signs, as required by OSHA Standard 29 CFR 1926.1001 will be used.

I. Encapsulant shall be bridging or penetrating type which has been found acceptable to Eagle Environmental. Usage shall be in accordance with manufacturer’s printed technical data.

J. Disposal labels shall be preprinted on self-adhesive labels with the generator name, abatement site and HMAC's name and address. Labels shall not be photocopied and applied with spray adhesive.

2.2 TOOLS AND EQUIPMENT

A. Provide suitable tools for asbestos removal, encapsulation and enclosure.

B. The HMAC shall have air monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements.

C. The HMAC shall have available sufficient inventory on site for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape, and air filters.

D. The HMAC shall provide temporary electrical power sources such as generators (when required).

E. The HMAC shall have available shower stalls and sufficient hose length and a drain system equipped with 5-micron filters.

F. Exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative pressure of 0.02 inches of water within the enclosure with respect to the outside area. Equipment shall be checked for proper operation by smoke tubes or a differential pressure gauge before the start of each shift and at least twice during the shift. Adequate exhaust air shall be provided for a minimum of four (4) air changes per hour within the enclosure. No air movement system or air filtering equipment shall discharge unfiltered air outside.

G. Vacuum units, of suitable size and capacities for project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.

H. The HMAC will have reserve exhaust air filtration system units in order to maintain negative air filtration in the event that a unit malfunctions during use.

I. The HMAC shall have available and use recording manometers to monitor pressure differential between the work area and occupied areas of the building. A minimum negative pressure differential of 0.02 inches of water column shall be maintained.

J. The HMAC shall have available spray equipment capable of mixing a wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas with asbestos.

K. HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where asbestos-containing materials may be disturbed.

PART 3 - EXECUTION

3.1 INTERIOR WORK AREA PREPARATION - GENERAL

A. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with

the applicable electrical codes. All temporary installations are to be made by a licensed electrician.

B. Shut down electrical power, including receptacles and light fixtures. Lock and tag out circuits associated with the electrical components in the work area(s). Under no circumstances during the abatement and ceiling demolition procedures will lighting fixtures be permitted to be energized.

C. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. Lock and tag out circuits associated with heating and cooling units. During the work, vents within the work area shall be sealed with duct tape and polyethylene sheeting.

D. Seal off all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffuser, and any other penetration of the work areas, with polyethylene sheeting minimum of six (6) mils thick sealed with duct tape. This includes doorways and corridors which will not be used for passage during work areas and occupied areas. Install 5 micron water filtration socks in all floor drains prior to sealing.

E. Establish worker decontamination facility, containment barriers and negative air filtration prior to conducting pre-cleaning activities or selective demolition where ACM will be affected. Pre-clean fixed objects within the work areas, using HEPA vacuum equipment and/or wet cleaning methods as appropriate, and enclose with minimum six (6) mil plastic sheeting sealed with duct tape.

F. Pre-clean movable objects within the work areas, using HEPA vacuum equipment and wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

G. After HEPA vacuum pre-cleaning, conduct work area preparation in accordance with this Specification section.

H. Where fixed walls are not used, one layer of six (6) mil polyethylene sheeting will be applied to a rigid framework of wood, metal, or PVC as the primary isolation barrier.

I. Install two (2) layers of four (4) mil polyethylene wall sheeting over all wall surfaces and isolation barriers (where wall materials are not being removed as ACM). All overlaps shall be sealed with tape.

J. Cover all floors in the work area with two (2) layers of six (6)-mil polyethylene sheeting (where flooring materials are not being removed as ACM). Extend the polyethylene flooring a minimum of twelve (12) inches up the walls. Ensure that the wall sheeting overlaps the floor sheeting from the top.

K. Maintain emergency and fire exits from the work area, or establish alternative exits satisfactory to fire officials.

L. Create pressure differential between work areas and occupied areas by the use of acceptable

negative air pressure equipment. The HMAC shall ensure required negative air pressure is obtained throughout the containment and the total volume of air within the work area is changed every fifteen (15) minutes.

M. Install and maintain a manometer for each negative pressure enclosure where Class I work will be performed.

N. Post all approaches to each work area with Asbestos Warning signs. Warning signs shall be of size and type that are easily readable and are visible from all approaches to the work areas.

3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM

A. The HMAC shall establish contiguous to each work area, a personnel decontamination system consisting of equipment room, shower room and clean room in series. Access between the contaminated and uncontaminated areas shall be through this decontamination enclosure only. The decontamination system shall be constructed of two (2) layers of six (6)-mil polyethylene sheeting. Pre-fabricated "pop-up" decontamination chambers will not be permitted on this project.

B. Access between rooms in decontamination system shall be through double flap-curtained openings. Clean room, shower room and equipment room within decontamination system shall be completely sealed ensuring that the sole source of air flow through this area originates from uncontaminated areas outside the work area.

C. The shower unit shall be equipped with an adequate supply of warm water. A shower filtration pump containing two (2) 5-micron sock filters or the best available technology shall be installed to filter shower water. Filtered shower water shall be discharged into sanitation drains and shall not be discharged into storm drains or onto floor or ground surfaces.

D. The shower room shall have soap and an adequate supply of drying towels. Provide an adequate number of shower units in accordance with OSHA 29 CFR 1926.1101.

E. Each personnel decontamination system shall be established on two layers of polyethylene sheeting to protect floor finishes from water damage.

F. Each personnel decontamination system shall have a water supply that can be turned off from outside the work area. Water shall be turned off to the personnel decontamination system at the end of each shift.

G. If the decontamination system will be constructed on the exterior of the building, the entire unit shall be constructed of a solid frame and sturdy wall and ceiling system to prevent unauthorized entry and to keep out the weather. The entrance to the decontamination system shall be lockable and vented to allow for adequate make-up air into containment. The unit shall have a change area for the workers to change into street clothes before exiting.

3.3 REMOTE PERSONNEL DECONTAMINATION SYSTEM

A. The HMAC shall establish a remote personnel decontamination system where contiguous decontamination systems are not feasible. The use of such remote decontamination unit must be indicated in the State Notification. Access between the contaminated and uncontaminated

areas shall be through this decontamination enclosure only. The decontamination system shall be constructed of two layers of six (6)-mil polyethylene sheeting. Pre-fabricated "pop-up" decontamination chambers will not be permitted on this project.

B. Access between rooms in decontamination system shall be through double flap-curtained openings. Clean room, shower room and equipment room within decontamination system shall be completely sealed ensuring that the sole source of air flow through this area originates from uncontaminated areas outside the work area.

C. The shower unit shall be equipped with an adequate supply of warm water. A shower filtration pump containing two (2) 5-micron sock filters or the best available technology shall be installed to filter shower water. Filtered shower water shall be discharged into sanitation drains and shall not be discharged into storm drains or onto floor or ground surfaces.

D. The shower room shall have soap and an adequate supply of drying towels. Provide an adequate number of shower units in accordance with OSHA 29 CFR 1926.1101.

E. When a remote personnel decontamination system is utilized, two (2) contiguous chambers shall be attached to the work area consisting of an equipment room (for workers to remove asbestos contaminated work suits) and a change room (for workers to don a clean work suit prior to proceeding to the remote personnel decontamination system). A HEPA vacuum shall be available within the equipment for workers to remove visible debris from clothing prior to donning clean work suit.

3.4 WASTE LOAD OUT SYSTEMS

A. The HMAC shall establish waste load out systems, where feasible, attached to the work areas. Waste load out systems shall consist of a minimum of two (2) chambers that are of suitable size for transporting waste out of the work area. Waste load out systems shall be constructed of two (2) layers of six (6)-mil polyethylene sheeting.

B. Where waste load out systems are not feasible, the HMAC shall remove waste through the personnel decontamination system.

C. Access between rooms in the waste load out system shall be through double flap-curtained openings. The waste load out system shall be used for decontaminating waste containers, bags, bundles, etc. prior to removal from the work area and transporting waste from the work area to the non-work area.

D. Persons working inside the contaminated work area are not permitted to pass from the work area to the non-work area through the waste load out system. Persons inside the contaminated work area shall not be permitted to enter into the clean area of the waste load out system.

E. The waste load out system shall remain sealed at all times except during decontamination of waste containers and transport of waste from the work area to the non-work area.

F. Asbestos waste shall remain within the construction area of each phase and shall not be transported through occupied areas of the building.

G. Asbestos waste shall be transported out of the work area at the completion of each shift.

3.5 EXTERIOR WORK AREA PREPARATION – NON-FRIABLE ASBESTOS CONTAINING MATERIALS

A. Where exterior non-friable ACM is to be removed outdoors, post asbestos abatement warning signs and erect temporary barricades to create regulated areas. Regulated areas should be kept clear of any persons not fully trained and protected against potential exposure to asbestos fibers.

B. Exterior work areas shall be regulated with four-foot high orange construction fencing staked in place. Warning tape shall not be permitted in place of construction fencing. The fencing shall be established around the entire exterior work area leaving no openings in the fence other than at a single access point into the work area.

C. Post asbestos warning signs at twenty (20) foot intervals around the entire exterior regulated work area.

D. Establish temporary water service to support the work of this project. All temporary water service connections shall be made by a licensed plumber.

E. Comply with all OSHA requirements for all work including roof and caulk removal work.

F. Install single six (6)-mil drop cloths extending a minimum of ten (10) feet from the exterior wall of the building. Extend polyethylene sheeting outward from the base of the structure in order to collect debris when working from higher elevations. Install single six (6)-mil isolation barriers over any louver, vent, or penetration into the building interior within or directly adjacent to the regulated area.

G. Maintain an operable remote worker decontamination system adjacent to the work area during exterior abatement work.

H. Maintain a work area access log at each exterior regulated work area. Access to the regulated area shall be established at a designated location.

3.6 ASBESTOS REMOVAL PROCEDURE - GENERAL

A. The HMAC shall have a designated "Competent Person" on the job at all times to ensure establishment of a proper enclosure system and proper work practices throughout the project. At a minimum, the HMAC Competent Person shall perform or supervise the following duties, as applicable:

1. Ensure the integrity of the containment or enclosure.
2. Set up procedures to control entry to and exit from the enclosure.
3. Supervise employee exposure monitoring.
4. Ensure that employees set up, use and remove engineering controls, use work practices and personal protective equipment in compliance with OSHA regulations.
5. Ensure that employees use the worker decontamination facilities and observe decontamination procedures.
6. Ensure the requirements of the Technical Specification are fulfilled.

7. Ensure the HMAC is in compliance with all applicable asbestos regulations.

B. Abatement work will not commence until all work area preparation is completed in accordance with this technical specification section or an approved AWP.

C. Spray asbestos materials with amended water using airless spray equipment or apply removal wetting agent to reduce the release of fibers during removal operation.

D. Spraying of amended water shall be adequate enough to allow the ACM to absorb the water. Actual removal of ACM shall not be allowed until all ACM has become adequately wet.

E. Do not create any visible emissions during asbestos removal. Ensure all ACM is adequately wet prior to removal.

F. Fill disposal containers as removal proceeds. Seal filled containers before moving to waste load out system. Wet clean each container thoroughly, double bag, drum or use other approved containerization methods and apply a caution label before moving to holding area.

G. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris.

H. Solidify all liquid waste prior to containerization for disposal.

I. Wastes containing sharp edges including but not limited to metal lath, floor tiles, boiler components, etc. shall be placed in reinforced nylon or burlap bags prior to placing into six mil disposal bags or double lined drums.

J. Sealed disposal containers and all equipment used in the work area shall be included in the cleanup and shall be removed from work areas, via the waste load out system at an appropriate time in the cleaning sequence.

K. The HMAC shall remove from each containment all abated asbestos containing materials at the end of each work shift.

L. At any time during asbestos removal, should the competent person suspect contamination of areas outside the work area(s), they shall cause to stop all abatement work until steps to decontaminate these areas and eliminate causes of such contamination are completed. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.

M. Immediately seal openings between work area and non-work that may be exposed during abatement activities.

N. All asbestos waste removed during a shift must be packaged in sealed containers by the end of each shift. At no time shall asbestos-containing materials be allowed to dry out while awaiting waste packaging.

O. The HMAC's Supervisor shall perform a final visual inspection of each work area to determine completeness of abatement and cleaning work prior to requesting a final visual inspection from the Owner's Consultant.

P. Upon acceptance of the work area by the Owner's Consultant, the HMAC shall apply an even coating of bridging encapsulant with airless spray equipment to all exposed surfaces contained within the work area. Apply encapsulant in accordance with manufacturer's recommendation.

Q. Re-occupancy air monitoring shall be performed within each interior abatement work area. Containment barriers shall not be removed until re-occupancy air clearance results are on site.

R. After successful re-occupancy air testing, the HMAC shall remove all containment barriers and dispose of as asbestos-contaminated waste. Negative air filtration equipment shall remain in operation during containment removal.

S. The HMAC shall perform a post tear down inspection and perform any necessary final cleaning of the work area.

T. Negative air equipment shall be properly shut down by concurrently sealing the intake with polyethylene sheeting and turning the power off to the equipment. At no time shall negative air intakes be unsealed while the equipment is not in operation.

3.7 WASTE PACKAGING AND REMOVAL PROCEDURE

A. The HMAC shall strictly adhere to the requirements of this section for ACM waste packaging and transporting waste from the work area enclosure to the disposal dumpster.

B. Waste disposal bags and drums shall be affixed with pre-printed OSHA warning labels, DOT labels and NESHAP labels.

C. Each container of ACM waste shall be made adequately wet prior to sealing the container. Bags shall be sealed immediately following additional wetting procedures. Bags of ACM waste shall not be permitted to remain unsealed while in the work area enclosure.

D. Each bag of ACM waste shall be double-bagged during waste load out procedures. The following waste load out procedure shall be strictly adhered to:

1. Wet wipe inner bag or drum to remove all ACM contamination. Ensure the inner bag is sealed.
2. Transport bag or drum to the equipment room located in the worker decontamination enclosure.
3. One (1) worker, equipped with personal protective equipment, shall be inside the clean room of the worker decontamination enclosure.
4. The worker in the clean room of the decontamination enclosure shall open a six-mil disposal bag and hold it open inside the shower room where the inner bag containing the ACM waste shall be placed.
5. The outer bag shall be sealed with duct tape inside the shower room.
6. The double bagged or drummed waste shall be removed from the decontamination enclosure and waste generator labels shall be immediately affixed to the outer bag or drum.
7. Waste generator labels shall be printed self-adhering labels and shall contain the Owner's name, the site location address, and the HMAC's name.

8. The properly labeled waste shall be transported directly to the lined waste container.
9. The waste container shall be double lined with six (6)-mil polyethylene sheeting.
10. OSHA warning signs shall be secured to the waste container prior to any loading and unloading operations.
11. The waste container shall be kept locked at all times other than loading and unloading.

3.8 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – THERMAL SYSTEM INSULATION

A. Prior to the removal of any thermal system insulation, the HMAC shall ensure the work area is prepped in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

B. Prior to any demolition work of plaster or masonry walls, the HMAC shall confirm with Architect and Construction Manager limits of wall demolition.

C. Within the boiler room, residual thermal system insulation has been identified on the mechanical system distribution system piping. The removal of the residual thermal system insulation shall be performed utilizing full containment procedures in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

D. Minimum specific requirements relative to the removal of thermal system insulation, including mudded pipe fitting cement and insulation at pipe penetration, are as follows.

1. Prior to starting any removal activities, the HMAC shall perform all required demolition to access all thermal system insulation within each work area. This shall include the removal of built-in cabinets, sheetrock and plaster walls, ceilings, masonry block, plumbing fixtures, etc. to access thermal system insulation for removal.
2. The selective demolition shall be performed following the completion of work area preparation in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL but prior to the start of any asbestos removal work. During demolition, the HMAC shall confirm the presence and condition of thermal system insulation within walls and above ceilings and shall not damage the ACM. If damaged ACM is encountered, the remaining wall/ceiling system shall be removed and disposed of as ACM. Demolition debris not contaminated by ACM may be removed from work area as construction debris prior to the start of asbestos removal work. Install additional isolation barriers and wall poly as necessary following cabinet demolition.
3. No asbestos abatement or the removal of fiberglass insulation from pipe lengths shall be performed prior to the completion of all selective demolition. Should asbestos abatement commence prior to the completion of all selective demolition, the materials removed during selective demolition shall be disposed of as friable asbestos waste at the HMAC's expense.
4. Following wall/ceiling demolition, install additional isolation barriers and wall/floor sheeting, where required, to complete work area preparations. Pre-clean all surfaces by HEPA vacuuming and wet wiping surfaces prior to installation of barriers.
5. Utilizing an airless sprayer, the HMAC shall adequately wet all thermal system insulation. Thermal system insulation shall include pipe insulation, pipe fittings, contaminated fiberglass insulation on pipes, residual insulation in penetrations and

debris on ground, if identified during demolition.

6. In work areas where asbestos-containing ceiling tile glue daubs will be removed to access thermal system insulation above, all sheetrock backer and ceiling tiles shall be removed and disposed of as contaminated asbestos waste.
7. Large pieces of thermal system insulation and contaminated materials shall be reduced to manageable sections and made wet prior to packaging for disposal.
8. The HMAC shall cut banding, remove thermal system insulation in sections and package for disposal. Ensure material is adequately wet prior to sealing disposal bag.
9. Remove all thermal system insulation debris from masonry walls and floor penetrations.
10. Remove all visible residues from pipes, fittings and ducts using nylon scrub pads. Wire brushes are prohibited.
11. Clean all lengths of pipes, ducts, fittings, hangars, saddles, supports, threads and adjacent masonry until they are free of visible residue.
12. Where pipes and ducts enter/exit walls, ceilings, floors, remove all insulation from penetrations and HEPA vacuum all penetrations.
13. Remove asbestos waste from work area enclosure in conformance with Part 3.7 WASTE PACKAGING AND REMOVAL PROCEDURES.

3.9 MINIMUM SPECIFIC REMOVAL PROCEDURE – FLOOR TILE AND ASSOCIATED ADHESIVES

A. Provide selective demolition to remove walls, cabinets, suspended ceilings systems, millwork, bookshelves, wood platforms, base cove with non-asbestos adhesives, miscellaneous fixtures or furniture and other restrictive molding to access all floor area.

B. Within select areas of the building, multiple layers of flooring have been identified on the Hazardous Materials Abatement Plans. Additional rooms may also contain more than one (1) layer of flooring. Removal of all layers of flooring and mastic down to structural concrete, whether individual layered flooring components are shown on abatement plan drawings, is included in the base work. Dispose of all layers of flooring as asbestos waste.

C. The HMAC shall examine all walls and demolish sections of walls and wall plates to access asbestos-containing flooring materials underneath.

D. Minimum specific requirements relative to the removal of asbestos-containing non-friable flooring and sanitary base and associated adhesives are as follows:

1. Prior to the removal of any non-friable flooring products, the HMAC shall ensure the work area is prepped in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.
2. The HMAC shall continuously mist the non-friable flooring products with amended water, removal encapsulant, or detergent solution, so that entire surface is wet. Do not allow wetting agent to puddle, or run off to other areas. If removal encapsulant is used, use in strict accordance with the manufacturer's instructions.
3. Continuously pick up flooring materials and place in lined drums or in nylon mesh bags. Place nylon mesh bags into six (6)-mil thick disposal bags with pre-printed OSHA warning labels. Ensure that all waste is placed in six (6)-mil disposal bags during waste load out operations.

4. Following removal of floor tiles, there will be a layer of adhesive(s) remaining on the concrete floors. The adhesives shall be removed using blastract, manual scraping methods or grinder with a dust collection device fitted with a HEPA filtration system. One (1) worker shall be dedicated to continuously misting work area during blastract and grinder use.
5. The waste captured by blastrac operations and grinders, if used, shall be removed from the blastrac hopper and vacuums, wetted and disposed of as friable asbestos waste.
6. Manually remove adhesives from all imperfections, seams, cracks, gaps, or other spaces in floor and masonry walls, which is not removed during blastrac or grinding operations.
7. All liquid wastes shall be solidified once packaged for disposal. No liquid wastes shall be permitted to leave the Site in liquid form.
8. Remove asbestos waste from work area enclosure in conformance with Part 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES.

E. Final clean all floor and exposed wall surfaces so no visible residue remains.

3.10 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – INTERIOR CAULKS

A. The HMAC shall perform all selective demolition of wall covering, counters, cabinets, and mechanical systems to access caulks.

B. Prior to the removal of any caulk, the HMAC shall ensure the work area is prepped in accordance with the requirements of Section 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

C. Removal procedure shall include the following:

1. The HMAC shall continuously mist the caulks with amended water, removal encapsulant, or detergent solution, so that entire surface is wet. Do not allow wetting agent to puddle or run off to other areas. If removal encapsulant is used, use in strict accordance with the manufacturer's instructions.
2. Remove caulk using manual techniques. Remove all backer rod material in contact with caulk and dispose of as asbestos contaminated waste.
3. Continuously mist area where materials are being removed. Wet any debris generated as necessary to keep continuously wet.
4. Continuously pick up debris and place into six (6)-mil thick disposal bags with pre-printed OSHA warning labels. Ensure that all waste is placed in six (6)-mil disposal bags during waste load out operations.
5. Following caulk removal, remove all residual caulk and residues from behind framing or within wall depressions, mortar seams, and divots in masonry substrate.
6. All liquid wastes shall be solidified once packaged for disposal. No liquid wastes shall be permitted to leave the Site in liquid form.

D. Remove waste from area in conformance with Part 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES.

3.11 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – GLUE DAUBS AND ASSOCIATED CEILING TILES

A. The sheetrock backer associated with the select ceilings is scheduled to remain. Within

designated areas, the HMAC shall remove only the ceiling tiles and associated glue daubs in their entirety from the sheetrock backer board. Within remaining areas, the sheetrock backer will require removal to access asbestos-containing thermal system insulation above.

B. Minimum specific requirements relative to the removal of asbestos-containing glue daubs and associated ceiling tiles are as follows:

1. Prior to the removal of any ceiling tiles or glue daubs, the HMAC shall ensure the work area is prepped in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM or as identified in an approved AWP.
2. The HMAC shall continuously mist the materials with amended water, removal encapsulant, or detergent solution, so that entire surface is wet. Do not allow wetting agent to puddle, or run off to other areas. If removal encapsulant is used, use in strict accordance with the manufacturer's instructions.
3. Continuously pick up ceiling tiles and sheetrock backer board and place in lined drums, lined boxes or disposal bags with pre-printed OSHA warning labels. Ensure that all waste is placed in six (6)-mil disposal bags during waste load out operations.
4. Following removal of ceiling tiles, there will be a layer of adhesive remaining on the sheetrock backer board. The adhesive shall be removed using manual scraping methods.
5. Manually remove adhesive from all imperfections, seams, cracks, gaps, or other spaces in sheetrock backer board.
6. Within areas where sheetrock backer board has been removed, dispose of sheetrock backer board as asbestos waste. Remove all backer board fasteners and decontaminate plenum space and all associated metal hangers, structural steel components, ceiling deck, and exposed pipes and electrical components and wiring.
7. All liquid wastes shall be solidified once packaged for disposal. No liquid wastes shall be permitted to leave the Site in liquid form.
8. Remove asbestos waste from work area enclosure in conformance with Part 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES.

C. Final clean all exposed ceiling surfaces so no visible residue remains.

3.12 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – INTACT REMOVAL OF DOORS, GASKETS, VALVE PACKING

A. Minimum specific requirements relative to the removal of doors with window glazing compound, gaskets, and valve packing:

1. The HMAC may remove the components following CTDPH guideline dated April 7, 2003 for "intact removal of non-friable ACM".
2. The HMAC shall remove doors by unscrewing hinges and dispose of entire door and associated window sash as asbestos waste. Doors may be reduced in size as long as window sash and associated asbestos-containing glazing compound are not disturbed.
3. The HMAC shall confirm all plumbing disconnects are performed and systems drained prior to the removal of any gasket or valve.
4. Valves and gaskets may be removed intact by cutting pipe on either side of bolted connections and disposing of entire valve or gasket as asbestos waste. The HMAC shall

provide a hot-works permit if required by General Contractor if pipes will be torch cut.

5. Removed items shall be misted with amended water, removal encapsulant, or detergent solution and immediately packaged for disposal in leak tight containers.
6. Properly label all packages and transport immediately to waste disposal container.

B. If window sash will be removed from the doors, removal shall only be performed once the work area is prepped in accordance with the requirements of Section 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

3.13 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – DUCT PIN ADHESIVE

A. The duct pin adhesive has been identified on the interior of metal duct work. Prior to the removal of any ductwork or associated pin adhesive, the HMAC shall ensure the work area is prepared in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM or as identified in an approved AWP.

B. Ensure isolation barriers are in place at ends of duct to prevent asbestos contamination outside of abatement areas.

C. The HMAC shall sufficiently wet components with amended water or a detergent solution prior to removal.

D. Where entire section of duct and associated pin adhesive will be disposed of as ACM, the HMAC shall remove duct work in whole sections where feasible. Wrap each section with a minimum of two (2) layers of six (6)-mil polyethylene sheeting and label for disposal as asbestos waste.

E. If duct work will be cleaned of all adhesive and recycled, the HMAC shall disassemble duct work sections, removal all interior fiberglass insulation, and then remove all remaining adhesives from substrates. Dispose of all insulation and pin adhesive as asbestos waste.

F. If adhesives are removed using grinder, a dust collection device fitted with a HEPA filtration system shall be utilized. One (1) worker shall be dedicated to continuously misting work area during grinder use. The waste captured by vacuums while using grinders, if used, shall be removed from the vacuums, wetted and disposed of as friable asbestos waste.

G. Metal duct work sections shall be visually inspected by the Owner's Consultant prior to being removed from the work area to confirm each section has been cleaned and is free of all asbestos adhesive, dust and debris.

H. Clean work area until no visible residue is present.

I. All asbestos containing materials shall be placed directly into appropriate waste containers. Remove asbestos waste from work area enclosure in conformance with Part 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES.

3.14 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – INTERIOR BOILER COMPONENTS

A. The HMAC shall be responsible for performing selective demolition of one (1) sectional boiler

scheduled for removal to remove all interior boiler components including ropes, fire brick insulation, gaskets, and cements..

B. Prior to the removal of any interior boiler components, the HMAC shall ensure the work area is prepared in accordance with the requirements of Section 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

C. The HMAC shall sufficiently wet boiler, any insulation, refractory, roping, gaskets, insulation, and cement with amended water or a detergent solution prior to removal.

D. The HMAC may remove and dispose of metal shell and associated fiberglass insulation on exterior of the boiler to access asbestos-containing materials as construction debris or recycle prior to the start of any asbestos abatement work within boiler room.

E. The HMAC shall disassemble boiler to access all interior materials. If torch cutting will be required, the HMAC shall acquire all Hot Works permits, if required by the Construction Manager, local Fire Department or Health Department, prior to proceeding.

F. Remove all boiler packings, refractory cements, refractory brick and mortar, boiler base insulation and gaskets and dispose of as asbestos waste.

G. Metal boiler components shall be wet-wiped and decontaminated and shall be subjected to final visual inspection and air clearance testing. Metal components that will be removed from the work area, shall be visually inspected by the Owner's Consultant, prior to being removed from the work area, to confirm each piece has been cleaned and is free of all asbestos, dust and debris.

H. All piping, pipe fittings, pipe hangers, boiler components, pipe saddles, threads, etc. within work area shall be wet scrubbed with nylon pads so no visible residue remains on the components.

I. All asbestos containing materials shall be placed directly into appropriate waste containers. Remove asbestos waste from work area enclosure in conformance with Section 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES.

3.15 MINIMUM SPECIFIC REMOVAL PROCEDURE – EXTERIOR NON-FRIABLE ROOF VAPOR PAPER, ROOF FLASHING CEMENTS AND GUTTER LINER TAR

A. Prior to the removal of any exterior non-friable roofing materials, the HMAC shall ensure the work area is prepped in accordance with the requirements of Part 3.5 EXTERIOR WORK AREA PREPARATION – NON FRIABLE ASBESTOS CONTAINING MATERIALS and Part 3.3 REMOTE PERSONNEL DECONTAMINATION SYSTEM.

B. The HMAC shall confirm all locations and full extents of roofing material demolition with the Construction Manager prior to the start of removal activities. Coordinate removal of roofing materials with interior work to prevent water from penetrating the building.

C. Remove exterior non-friable ACM utilizing methods that do not cause the material to become friable. Cutting, sanding, and abrading of roofing materials is strictly prohibited.

D. The vapor paper has been identified under the bottom layer of asphalt shingles on the roof decking. Where able to be inspected, the pitched roofs were covered by two (2) layers of asphalt shingles.

E. The asbestos-containing flashing cement has been identified under the top layer rubber roof membrane on brick walls and masonry parapets. All flashing cement and rubber membrane contaminated with flashing cement shall be included in the abatement scope of work.

F. Coordinate locations of new penetrations through existing gutters scheduled to remain for new down spouts. The gutter liner tar shall be removed from gutter in area of new penetrations as well as a minimum of four (4) inches from the perimeter of new openings and the existing down spout locations scheduled to be capped to accommodate brazing.

G. Wet and remove flashing cement from masonry substrates. Place directly in six (6)-mil disposal bags and transport to the appropriate waste container.

H. Remove all roof flashing and gutter tar materials down to bare substrate where indicated for removal.

I. Continuously mist material during removal. Keep debris wet and provide immediate cleanup following removal operation. Do not create visible emissions during removal operations.

J. All roofing materials removed shall be lowered to the ground and placed in the appropriate waste container by the end of each shift for disposal as asbestos waste.

3.16 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – EXTERIOR CAULK

A. Prior to the removal of any exterior caulk or framing components, the HMAC shall ensure the work area is prepared in accordance with the requirements of Part 3.5 EXTERIOR WORK AREA PREPARATION and Part 3.3 REMOTE PERSONNEL DECONTAMINATION SYSTEM.

B. All layers of caulk shall be removed from window openings, vents, door casing, expansion joints, and under window sills and disposed of as asbestos waste. Removal of window sashes, vents, and door casings may be required to access all caulks from openings.

C. Wet exterior caulk and remove utilizing hand tools or caulk removal equipment.

D. Remove caulk from all head, sill, and side jambs of each opening and from all surfaces within each window opening including under metal window sills where indicated.

E. Remove vent, window, and door frames if scheduled for demolition to access all caulk concealed behind frames.

F. Remove all backer rod material in contact with caulk and dispose of as asbestos contaminated waste.

G. Vents, window, and door frames that are removed from openings may be properly packaged and disposed of as contaminated asbestos waste or cleaned for disposal as non-hazardous construction debris. Components to be disposed of as non-hazardous construction debris

shall be cleaned of all caulk residues then thoroughly cleaned by wet wiping and HEPA vacuuming techniques within regulated area. Once dry, all components shall be subjected to a visual inspection by the Owner's Consultant prior to being removed from the work area.

H. Final clean openings by wet scrubbing substrates to remove caulk residue. Utilize nylon brushes to remove caulk from masonry. Removal of caulk by mechanical methods is prohibited. Remove all caulk and caulk residue from remaining substrate(s) until no visible residue is present.

I. If any exterior asbestos containing material will become friable during removal activities, the work area shall be prepared in accordance with Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

J. Each window, door, and vent opening shall be visually inspected by the HMAC's Site Supervisor then the Owner's Consultant to determine the completeness of the work. The HMAC shall continue to clean the openings until no visible caulk residues are observed.

3.17 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – TAR MOISTURE BARRIER

A. The tar moisture barrier identified on the interior of the building at the exterior perimeter walls behind the plaster and marble walls has been confirmed to be asbestos-containing. A tar moisture barrier located behind and beneath the exterior brick veneer on the exterior face of the building has been assumed to be present and asbestos-containing. Removal of these materials is anticipated to be required only where penetrations through exterior perimeter walls will be made. All exterior wall demolition shall be performed by the HMAC. All layers of interior masonry and exterior brick shall be removed and disposed of as asbestos waste in areas of penetrations. Refer to the Architect's demolition plans for size and locations of duct penetrations. Coordinate with the MEP Contractors, General Contractor and Architect for locations of core holes that may be determined once the project has started.

B. All tars, papers, flashings, and associated substrates in areas of penetrations shall be removed and disposed of as asbestos waste.

C. Prior to the removal of any interior masonry wall or the selective demolition of exterior brick veneer, the HMAC shall ensure the work area is prepped in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL and Part 3.2 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.

D. If a gap between wall plaster/marble wall and tar coated masonry exists, plaster and marble may be removed prior to asbestos coated masonry.

E. Where plaster and marble wall systems are attached to tar layer on masonry wall, removal of the plaster and marble shall be performed within a full containment enclosure.

F. All surfaces and areas which become exposed during plaster and marble wall removal shall be considered contaminated and shall be decontaminated during final cleaning activities.

G. All layers of masonry shall be removed so no visible residue remains.

H. Masonry removal shall include, but is not limited to, all concrete block, tar coatings, and paper vapor barriers. If the inner face of the exterior brick veneer is coated with a tar moisture barrier, exterior brick shall be removed and disposed of as asbestos waste.

I. Perform all selective demolition and properly dispose of all materials as required to complete tar moisture barrier abatement.

J. Do not damage components scheduled to remain.

K. Coordinate locations of mechanical, electrical, plumbing, and fire alarm penetrations with the Construction Manager.

L. Do not allow asbestos debris to fall from heights exceeding eight (8) feet without intercepting with an inclined chute or raised platform. Dedicate a minimum of one (1) person at each removal location with airless spray equipment to control emissions.

M. All surfaces which become exposed during wall removal shall be cleaned so that no visible residue or dust is present. Remove residues from all surfaces which may have become contaminated during application including masonry walls, wood framing, structural components, and electrical fixtures.

N. Core drilling shall only be performed with drills equipped with a HEPA filtered shrouds attached to a HEPA vacuum within full containment or utilizing spot repair work procedures. All dust and water collected during coring activities shall be collected and disposed of as contaminated asbestos waste.

O. All liquid wastes shall be solidified once packaged for disposal. No liquid wastes shall be permitted to leave the Site in liquid form.

P. Remove asbestos waste from work area enclosure in conformance with Part 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES.

3.18 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – WINDOW GLAZING COMPOUND

A. Window sashes with asbestos containing glazing compound are located in limited exterior perimeter window walls and associated with removed inner storm windows.

B. Prior to the removal of window sashes, remove all exterior caulk from window frames, expansion joints, and substrates followed by a visual inspection by the Owner's Consultant. If caulks are removed concurrently with window removal, six (6)-mil polyethylene barriers on the interior of the building shall be established prior to window sash removal.

C. Prior to any removal, HEPA vacuum all loose window glazing compound from the frame perimeter and adjacent surfaces.

D. The HMAC shall confirm with disposal facility and transporter any size or weight restrictions prior to window removal that may dictate the removal procedures.

E. Minimum specific requirements relative to the removal of window sashes, if removed intact,

are as follows.

1. Following removal of all interior asbestos-containing materials, the HMAC may remove the entire intact window sash as a non-disturbance activity following CTDPH guidelines dated April 7, 2003 for "intact removal of non-friable ACM" by removing entire window sash from opening while keeping glass and glazing compound undisturbed.
2. Prior to the removal of the window sashes to the exterior of the building, the HMAC shall ensure the work area is prepared in accordance with the requirements of Part 3.5 EXTERIOR WORK AREA PREPARATION – NON-FRIABLE ASBESTOS CONTAINING MATERIALS and Part 3.3 REMOTE PERSONNEL DECONTAMINATION SYSTEM.
3. The HMAC shall post asbestos abatement warning signs and erect temporary barricades to create regulated areas on interior and exterior of building at each window opening and install drop cloths at base of building prior to removal.
4. Following intact removal, make window sash wet, wrap in a minimum of two (2) layers of six (6) mil polyethylene sheeting, label and dispose of as regulated asbestos waste.

F. Minimum specific requirements relative to the removal of window sashes if sash cannot be removed intact and the glazing compound will be disturbed are as follows.

1. Prior to the removal of window sash, the HMAC shall ensure the work area is prepped in accordance with the requirements of Part 3.1 INTERIOR WORK AREA PREPARATION – GENERAL. Install isolation barriers on opposite side of window from containment with a minimum of three (3) layers of six (6)-mil polyethylene sheeting.
2. The HMAC shall continuously mist the sash and glazing compound with amended water, removal encapsulant, or detergent solution, so that entire surface is wet. Do not allow wetting agent to puddle, or run off to other areas. If removal encapsulant is used, use in strict accordance with the manufacturer's instructions.
3. Remove glass panes as required using manual or mechanical methods. Reduce to manageable sections.
4. Continuously mist materials in area of removal. Wet any debris generated as necessary to keep continuously wet.
5. Continuously pick up glass and debris and place in lined drums, boxes or in nylon mesh bags. Drums and boxes shall be lined with two (2) layers of six-mil polyethylene liners and leak tight. Place nylon mesh bags into six (6)-mil thick disposal bags with pre-printed OSHA warning labels. Ensure that all waste is placed in six (6)-mil disposal bags during waste load out operations.
6. Remove remaining window system then wet and wrap window system in a minimum of two (2) layers of polyethylene sheeting and properly label for disposal as regulated asbestos waste.
7. Remove all remaining caulks from window opening within regulated area. Dispose of all removed materials as regulated asbestos.
8. Remove asbestos waste from work area enclosure in conformance with Part 3.7 – WASTE PACKAGING AND REMOVAL PROCEDURES. All wrapped window components must be removed from the work area prior to the final visual inspection and re-occupancy air clearance monitoring.
9. Re-occupancy air monitoring shall be performed for each work area once the lockdown encapsulant has had time to dry.

G. The work areas shall be subject to a final visual inspection by the Site Supervisor and Asbestos Project Monitor. The work area shall be cleaned until no visible dust or residue is present within the work area.

3.19 SPECIFIC REQUIREMENTS – SPOT REMOVAL GLOVEBAG

A. Where less than three (3) linear/square feet of ACM is to be removed by glovebag operation, post asbestos abatement warning signs and erect temporary barricades to create regulated areas. Regulated areas should be kept clear of any persons not fully trained and protected against exposure.

B. Provide GFCI devices and temporary power installed in compliance with the applicable electrical codes.

C. Pre-clean surfaces contaminated with ACM, using HEPA vacuum equipment or wet wiping as appropriate. Where friable asbestos containing materials are present, establish worker decontamination facility, isolation barriers and negative air filtration prior to conducting pre-cleaning activities.

D. Install one layer of six (6) mil polyethylene sheeting on the ground below the work inside the regulated area. All overlaps shall be sealed with tape or spray adhesive.

E. Install six (6) mil glovebag in accordance with OSHA 1926.1101.

F. Post all approaches to each work area with asbestos warning signs. Warning signs shall be of size and type that are easily readable and are visible from all approaches to the work areas.

G. A minimum of two (2) workers will be required to perform glovebag removal activities. Perform removal in accordance with OSHA 1926.1101.

H. All applicable OSHA requirements and glovebag manufacturer’s recommendations shall be met during glove bag operations. In the case where a glovebag is not feasible, the Contractor will need to build a full negative pressure containment of sufficient size and follow all regulations as it pertains to removal.

1. Mix the surfactant with water in the garden sprayer, following the manufacturer's directions.
2. Have each employee put on a HEPA filtered respirator approved for asbestos and check the fit using the positive/negative fit check.
3. Have each employee put on a disposable full-body suit. Remember, the hood goes over the respirator straps.
4. Check closely the integrity of the glove bag to be used. Check all seams, gloves, sleeves, and glove openings. OSHA requires the bottom of the bag to be seamless.
5. Attach glovebag with required tools per manufacturer’s instructions.
6. Using the smoke tube and aspirator bulb, test 10% of glovebags by placing the tube into the water porthole (two-inch opening to glove bag), and fill the bag with smoke and squeeze it. If leaks are found, they should be taped closed using duct tape, and the bag should be retested with smoke.

7. Insert the wand from the water sprayer through the water porthole.
8. Insert the hose end from a HEPA vacuum into the upper portion of the glove bag.
9. Wet with removal encapsulant and remove the pipe/cork insulation. Scrub remaining pipes with nylon pads to remove all asbestos residue.
10. If the section of pipe is covered with an aluminum jacket, remove it first using the wire cutters to cut any bands and the tin snips to remove the aluminum. It is important to fold the sharp edges in to prevent cutting the bag when placing it in the bottom.
11. When the work is complete, spray the pipe and upper portion of the bag and clean; push all residue into the bottom of the bag with the other waste material. Be very thorough. Use adequate water.
12. Put all tools, after washing them off in the bag, in one of the sleeves of glove bag and turn it inside out, drawing it outside of the bag. Twist the sleeve tightly several times to seal it and tape it several tight turns with duct tape. Cut through the middle of the duct tape and remove the sleeve. Put the sleeve in the next glove bag or put it in a bucket of water to decontaminate the tools after cutting the sleeve open.
13. Turn on the HEPA vacuum and collapse the bag completely. Remove the vacuum nozzle, seal the hole with duct tape, twist the bag tightly several times in the middle, and tape it to keep the material in the bottom during removal of the glove bag from the pipe.
14. Slip a disposal bag over the glove bag (still attached to the pipe).
15. Remove the tape securing the ends and slit open the top of the glove bag and carefully fold it down into the disposal bag. Double bag and gooseneck waste materials.
16. Each glovebag shall pass a visual inspection by the Owner's Consultant prior to bag removal.

3.20 FINAL CLEANING AND ENCAPSULATION

A. Upon completion of gross removal of all ACM specified for removal, the HMAC shall begin final cleaning of the effected work area. The HMAC shall HEPA vacuum and wet wipe all surfaces contained within the work area.

B. All tools or equipment that are not necessary for final cleaning shall be decontaminated or bagged and removed from the work area enclosure.

C. The HMAC shall begin final cleaning procedures at the furthest and highest most points from the personnel decontamination unit and move towards the unit. The HMAC shall ensure that all exposed building components and or surfaces are thoroughly HEPA vacuumed and wet wiped.

D. The HMAC shall HEPA vacuum and wet wipe any component specified to remain inside the work area enclosure.

E. The HMAC shall thoroughly wet wipe all polyethylene sheeting inside the work area enclosure.

F. Remove and replace all pre-filters on negative air filtration equipment. Decontaminate all negative air filtration equipment including wheels.

G. Remove all waste from Equipment Room in Decontamination System. Decontaminate entire personnel decontamination facility. Pump standing water from shower basin through filtration

system.

H. Once all surfaces and components within the work area have been thoroughly cleaned, AND THE WORK AREA IS DRY, the HMAC's Competent Person shall perform a visual inspection of all surfaces and components within the work area enclosure. The HMAC's Competent Person shall sign off on the work area stating that all abatement has been completed for that portion of work and that the work area has met the no visible residue criteria.

I. The HMAC's Competent Person shall then request a final visual inspection to be performed by the Owner's Consultant. The Owner's Consultant shall visually inspect all surfaces and components in the work area for residual debris and or dust. Work areas must be dry for final visual inspection. Inspections will not be performed in work areas where there is standing water or wet surfaces. Additional cleaning shall be performed at the HMAC's expense if the Owner's Consultant identifies visual debris and/or dust during the visual inspection. Additional cleaning shall be performed until the work area meets the no visible residue/dust criteria.

J. Upon acceptance of the work area by the Owner's Consultant, the HMAC shall apply an even layer of bridging encapsulant to all surfaces contained within the work area. The Owner's Consultant shall verify the completeness of work area encapsulation.

3.21 EXTERIOR WORK AREAS FINAL CLEANING

A. Upon completion of gross removal of all ACM specified for removal, the HMAC shall begin final cleaning of the effected work area. The HMAC shall wet debris that has accumulated on the drop cloths. And shall roll up the drop cloths ensuring that all debris is contained within the polyethylene sheeting.

B. The HMAC shall HEPA vacuum and wet wipe surrounding surfaces contained within the work area. Clean all substrates under drop clothes of all debris.

C. The HMAC shall begin final cleaning procedures at the furthest and highest most within the regulated work area. The HMAC shall ensure that all exposed building components and or surfaces contained within the work area are thoroughly HEPA vacuumed and wet wiped.

D. Exterior work areas shall not be deregulated until a final visual inspection has been performed by the Asbestos Supervisor and Owner's Consultant.

3.22 DISPOSAL OF ASBESTOS AND ASBESTOS CONTAMINATED WASTE

A. All disposal of asbestos containing and or asbestos contaminated material must be in compliance with requirements of the State of Connecticut Department of Energy and Environmental Protection, State of Connecticut Department of Public Health and the USEPA NESHAP regulations.

B. All ACM shall be properly packaged, labeled, and disposed of as asbestos waste.

C. Disposal approvals shall be obtained from the CTDEEP before commencing asbestos removal if waste will be disposed of in Connecticut.

D. Waste container storage locations shall be pre-approved by the Owner and Owner's Consultant.

E. A copy of approved disposal authorization shall be provided to the Owner and Owner's Consultant and any required federal, state or local agencies.

F. Copies of all landfill receipts will be retained by the Owner's Consultant as part of the project file. The receipts will be signed by the landfill operator on receipt, and the quantity of asbestos debris leaving the job site and arriving at the landfill acknowledged.

G. All asbestos debris shall be transported in covered, sealed vans, boxes or dumpsters, which are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet United States Department of Transportation (USDOT) requirements.

H. Friable ACM waste shall be placed in double lined enclosed waste containers equipped with a lockable hasp. Waste containers shall be posted with OSHA warning signs during loading and unloading.

I. All liquid waste generated during the work shall be solidified. At no time will liquid wastes be permitted to be stored on site. Liquid waste generated during this project shall be solidified prior to the end of each work shift.

J. Completed Waste Shipment Records (WSR) signed by the landfill must be returned to the Owner or Owner's Consultant no later than 45 days from the time the waste was transported off-site. Completed waste shipment records that are not received by the Owner within 35 days shall require the HMAC to begin tracking the waste. The HMAC must notify the Owner of intentions on tracking the waste.

K. The HMAC must take appropriate actions as outlined in 40 CFR Part 61 NESHAP regulations when completed WSR are not forwarded to the Owner or Owner's Consultant within 45 days from the time the waste was transported off-site.

3.23 RE-OCCUPANCY AIR CLEARANCE MONITORING

A. After the presealant visual inspection has passed and all surfaces in the abatement area have dried, re-occupancy air clearance monitoring will be performed. The primary and secondary barriers, worker decontamination enclosure, and negative air filtration units shall remain in place. At no time shall tools, ladders, vacuums or waste remain inside the work area enclosure during final air clearance sampling.

B. Once the work area has dried, the Owner's Consultant shall collect aggressive re-occupancy air clearance samples. Aggressive air monitoring will be used. Selection of the locations of the air samples shall be the responsibility of the Owner's Consultant. Air monitoring volumes shall be sufficient to provide a detection limit of 0.010 f/cc (fiber per cubic centimeter of air) using NIOSH-7400 method by Phase Contrast Microscopy (PCM) or 0.005 s/mm^2 (structures per square millimeter) using Tranmission Electron Microscopy (TEM) method.

C. Areas that do not comply with the re-occupancy air clearance criteria shall continue to be

cleaned by and at the HMAC's expense until the specified re-occupancy air clearance criteria is achieved as evidenced by results of air testing as previously specified.

D. Laboratories conducting analysis of final air clearance samples shall be approved by the State of Connecticut Department of Health.

3.24 OWNER'S CONSULTANT RESPONSIBILITY

A. The Owner has retained the services of Eagle Environmental, Inc. to monitor this project. The Owner's Consultant shall collect and analyze air samples to ascertain the integrity of controls, which protect the building from asbestos contamination. Independently, the HMAC shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.

B. The Owner's Consultant shall collect and analyze air samples during a minimum of two (2) time periods:

1. Abatement Period: The Asbestos Abatement Project Monitor shall collect samples on a daily basis during the work period. A sufficient number of background samples shall be taken outside of the work area, at the exhaust of the negative pressure filtration equipment, and outside of the building to evaluate the degree of cleanliness or contamination of the building during asbestos removal. Additional samples may be taken inside the work area and decontamination enclosure system, at the discretion of the Asbestos Abatement Project Monitor.

    a. The Asbestos Abatement Project Monitor shall provide a continual evaluation of the air quality of the building during asbestos abatement, using his/her best professional judgments in respect to the State Department of Public Health guideline of 0.010 f/cc or the background air quality established during the pre-abatement period, whichever is higher.
    b. If the Asbestos Abatement Project Monitor determines that the building air quality has become contaminated from the project, he/she shall immediately inform the HMAC to cease all removal operations and implement a work stoppage clean up procedure. The HMAC shall conduct a thorough cleanup of areas of the building designated by the Asbestos Abatement Project Monitor. No further asbestos abatement work shall take place until the Asbestos Abatement Project Monitor has determined that the building's air has been decontaminated.
    c. Abatement air samples shall be collected for a minimum period of ninety minutes at a minimum flow rate of 12 liters per minute, or as required to obtain a volume of 1,000 liters. Samples shall be analyzed by phase contrast microscopy (PCM) using the NIOSH 7400 protocol.

2. Re-occupancy Clearance Period: The Asbestos Abatement Project Monitor shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion as established by the site supervisor and the Asbestos Abatement Project Monitor has been met.

    a. Phase Contrast Microscopy (PCM) - For work areas containing less than 500 linear feet or 1500 square feet of ACM, post abatement analysis of the samples to

determine if reoccupancy clearance standards have been met shall be conducted by PCM. A minimum of five (5) samples shall be collected inside each containment utilizing aggressive methods to comply with State of Connecticut DPH Standard for Asbestos Abatement sections 19a-332a-12, and 19a-332a-13. The project shall be considered complete when the results of samples collected in the work area and analyzed by phase contrast microscopy using the most current National Institute for Occupational Safety and Health (NIOSH) method 7400, to show that the concentration of fibers for each of the five samples is less than or equal to a limit of quantification for PCM (0.010 fibers per cubic centimeter of air).

b. Transmission Electron Microscopy (TEM) - For work areas containing greater than 500 linear feet or 1500 square feet of ACM, post abatement analysis of the samples to determine if reoccupancy clearance standards have been met shall be conducted by TEM. A minimum of five (5) samples shall be collected inside containment utilizing aggressive methods to comply with State of Connecticut DPH Standard for Asbestos Abatement sections 19a-332a-12, and 19a-332a-13. An asbestos abatement project shall be considered complete when the average concentration of asbestos fibers of five air samples collected within the work area and analyzed by the TEM method in Appendix A of 40 CFR Part 763 subpart E is less than 70.0 structures per square millimeter (s/mm^2) of filter surface or is not statistically significantly different, as determined by the Z-test calculation found in Appendix A of 40 CFR Part 763, subpart E, from the average asbestos concentration of five air samples collected at the same time outside the work area and analyzed in the same manner, and the average asbestos concentration of the three field blanks described in Appendix A of 40 CFR Part 763, subpart E, is below the filter background level, as defined in Appendix A of 40 CFR Part 763 subpart E, of 70 s/mm^2.

3. Elevated fiber counts: If elevated fiber counts exceeding the establish pre-abatement level or 0.01 f/cc are recorded, the cause for such elevated readings shall be investigated. If necessary, the HMAC shall be responsible for cleaning the affected area and will provide additional support to lower the air born fiber levels. All cost incurred by the HMAC for the decontamination work shall be borne by the HMAC.

C. Inspections shall be conducted by the Owner's Consultant throughout the progress of the abatement project. Inspections shall be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the HMAC. The Asbestos Abatement Project Monitor shall perform the following inspections during the course of abatement activities.

1. Precommencement Inspection: Precommencement inspections shall be performed at the time requested by the HMAC. The Asbestos Abatement Project Monitor shall be informed 24 hours prior to the time the inspection is needed. During the course of the precommencement inspection, the Asbestos Abatement Project Monitor shall inspect the containment. This shall include, but not be limited to, inspection of barrier integrity, the worker decontamination, facility, negative air filtration equipment etc. If during the course of the precommencement inspection, deficiencies are found, the HMAC shall perform the necessary adjustments in order to obtain compliance.
2. Work Area Inspections: Work area inspections shall be conducted on a daily basis at the discretion of the Asbestos Abatement Project Monitor. During the course of the work area inspections, the Asbestos Abatement Project Monitor shall observe the HMAC removal procedures, verify barrier integrity, monitor negative air filtration devices,

assess project progress, and inform the HMAC of specific remedial activities if deficiencies are noted.

3. Presealant Inspection: Upon the request of the HMAC, The Asbestos Abatement Project Monitor shall conduct a presealant inspection. The presealant inspection shall be conducted after completion of the initial final cleaning procedures, but prior to work area encapsulation. The presealant inspection shall verify that all ACM and residual debris have been removed from the work area. If, during the course of the presealant inspection, the Asbestos Abatement Project Monitor identifies residual dust or debris, the HMAC shall comply with the request of the Asbestos Abatement Project Monitor, in order to render the area is free of visible residue.
4. Final Visual Inspection: Following receipt of acceptable reoccupancy air monitoring results and concurrent with removal of the work area containment, the Asbestos Abatement Project Monitor shall conduct a final visual inspection. If residual dust or debris is identified during the course of the final inspection, the HMAC shall comply with the request of the Asbestos Abatement Project Monitor, in order to render the area free of visible residue.

END OF SECTION 02 0800

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SECTION 02 0820 – UNIVERSAL WASTE RECLAMATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Related Section:

1. Section 01 1001: Hazardous Materials General Conditions
2. Section 01 1600: Hazardous Materials Scheduling and Phasing
3. Section 01 7701: Hazardous Materials Contract Closeout
4. Section 02 0750: Selective Demolition for Hazardous Materials Abatement
5. Section 02 0800: Asbestos Abatement
6. Section 02 0900: Lead Paint Awareness

1.2 GENERAL PROVISIONS

A. The property located at 24 Branch Street in Waterbury, CT (the “Site”) shall undergo abatement of hazardous and regulated materials to support the renovation of the Site building. The Site building consists of an elevated single-story structure of block construction. The structure was built in 1900 for use as a church. The building has a full finished basement.

B. The reclamation of universal waste products as defined by the State of Connecticut Department of Energy and Environmental Protection (CTDEEP) will be performed in conjunction with the renovation activities.

1.3 DESCRIPTION OF WORK

A. The Hazardous Materials Abatement Contractor (HMAC) shall furnish all labor, materials, facilities, equipment, services, employee training and testing, permits and agreements, and waste transport, incineration, and reclamation necessary to perform the work required for universal waste removal and reclamation in accordance with these specifications; EPA, OSHA, NIOSH, State of Connecticut regulations, and other applicable federal, state and local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions are applicable.

B. Collection and disposal/recycling of Mercury: The HMAC shall remove approximately three (3) Mercury-containing thermostats that will be impacted by the renovation project. Thermostats shall be properly packaged and transported for disposal or recycling.

C. Collection and recycling of lead-acid batteries from emergency light systems, fire alarms and exit signs: The HMAC shall remove and dispose/recycle approximately eighteen (18) batteries that will be impacted by the demolition project within the building.

D. Collection and reclamation of refrigerants: The HMAC is responsible for removing tanks and reclaiming Freon. An approximate quantity of Freon tanks requiring reclamation within the building include two (2) refrigerators.

E. Within portions of the building, the collection of universal waste materials will be performed concurrently with asbestos abatement work. Workers performing work within these areas shall be properly trained and licensed as Asbestos Abatement Workers. Waste materials removed concurrently with asbestos abatement work shall be properly decontaminated of all suspect dust and debris then visually inspected by the Owner's Asbestos Project Monitor prior to being removed from asbestos regulated work areas for recycling.

1.4 APPLICABLE CODES

A. State Regulations

1. Section 22a-449(c)-113 - Regulations of Connecticut State Agencies (RCSA) for disposal of ballast.
2. Section 22a-465 – Regulation of Connecticut State Agencies for remediation of PCB Bulk Remediation Waste.

B. Federal Regulations

1. 29 CFR 1910.120 – Hazardous Waste Operations and Emergency Response
2. 29 CFR 1910.134 – Respiratory Protection
3. 40 CFR 263 – Standards applicable to Transporters of Hazardous Waste
4. 40 CFR 264 – Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
5. 40 CFR 268 – Land Disposal Restrictions
6. 40 CFR Part 700 - Toxic Substance Control Act (TSCA)
7. 40 CFR Part 761 – PCB Manufacturing, Processing, Distribution in Commerce and Use Prohibition.

1.5 DEFINITIONS: WHERE APPLICABLE OR STATED, TERMS SHALL HAVE THE FOLLOWING DEFINITIONS:

A. Universal Waste shall mean batteries, Mercury-containing thermostats, certain pesticides, lamps (including but not limited to fluorescent, neon and mercury vapor lamps), refrigerants and used electronics.

B. Large Quantity Generator means a handler can accumulate 5000 kilograms or more of universal waste at any time.

C. Small Quantity Generator means a handler can accumulate not more than 5000 kilograms or more of universal waste at any time.

D. Handler means the Generator of the universal waste product.

1.6 GENERAL REQUIREMENTS

A. The HMAC is subject to approval by the Owner's Consultant and all regulatory agencies with jurisdiction over this work, and may be rejected based on criteria established.

B. The Owner's Consultant requires that documentation be provided for all aspects of work detailing the bidder's qualifications and prior experience on the following criteria:

C. Workers handling universal waste must be informed by their employer of the proper handling and emergency procedures appropriate to the type(s) of universal waste handled at the facility.

PART 2 - PRODUCTS

2.1 TRANSPORTATION AND STORAGE CONTAINERS AND LABELING

A. All containers for universal waste must be closed, structurally sound, compatible with the contents of the universal waste, and must be capable of preventing leakage, spillage or damage that could cause leakage.

B. All universal waste products must be stored in a container and the container shall be properly labeled. Appropriate labeling is as follows.

1. Universal waste lamps (each lamp) or the container or package in which such lamps are contained must be labeled or marked clearly with any of the following: "Universal Waste - Lamp(s)" or "Waste Lamp(s), or "Used Lamp(s)".
2. Universal waste used electronics (each piece of equipment) or the container; package or pallet in which the used electronics are contained must be labeled or marked clearly with any of the following: "Universal Waste - used electronics" or "Waste Used Electronics, or "Used Electronics".

PART 3 - EXECUTION

3.1 RECLAMATION OF MERCURY CONTAINING THERMOSTATIC CONTROLS

A. Disassemble thermostatic control and remove mercury containing ampoules from housing.

B. Package, store, and ship ampoules in approved containers from recycling facility.

C. Provide Reclamation Certificates following work.

3.2 RECYCLING OF LEAD ACID BATTERIES

A. Disassemble fixtures and remove lead acid batteries.

B. Package, store and ship batteries in approved containers from recycling facility.

C. Provide Reclamation Certificates following work.

3.3 RECLAMATION OF FREON REFRIGERANT

A. Disassemble refrigerator and remove refrigerant tanks.

B. Package, store and ship tanks to facility to reclaim Freon.

C. Provide Reclamation Certificates following work.

END OF SECTION 02 0820

SECTION 02 0900 - LEAD-BASED PAINT AWARENESS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General Supplementary Conditions and Division 01 Specifications Sections, of the Contract Documents apply to this Section.

B. Related Sections:

1. Section 01 1001: Hazardous Materials General Conditions
2. Section 01 1600: Hazardous Materials Scheduling and Phasing
3. Section 01 7701: Hazardous Materials Contract Closeouts
4. Section 02 0750: Selective Demolition for Hazardous Materials Abatement
5. Section 02 0800: Asbestos Abatement
6. Section 02 0820: Universal Waste Reclamation

1.2 GENERAL CONDITIONS

A. The property located at 24 Branch Street in Waterbury, CT (the “Site”) shall undergo abatement of hazardous and regulated materials to support the renovation of the Site building. The Site building consists of an elevated single-story structure of block construction. The structure was built in 1900 for use as a church. The building has a full finished basement.

1.3 PROJECT DESCRIPTION

A. The work specified herein covers the proper worker protection, work area preparation and removal and disposal of lead-based paint coated building components associated with the renovation work at the Site building.

B. This project does not include lead-based paint abatement but does include lead renovation and demolition work. The personnel performing renovation work disturbing painted surfaces shall be trained in accordance with the Department of Labor's Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62. Lead in Construction Standard. This Specification is intended to provide general information pertaining to lead in surface coatings at the Site and to assist the Contractor in complying with applicable worker protection and disposal laws. It is the sole responsibility of the Contractor to comply with all OSHA worker protection laws and disposal laws.

C. All painted, varnished, shellacked, stained, primed or otherwise coated surfaces should be assumed to contain lead above 0.0 mg/cm^2. Trades performing work that impact any painted, varnished, shellacked, stained, primed or otherwise coated surface must comply with the requirements of OSHA 29 CFR 1926.62 Lead in Construction Standard.

D. A lead-based paint screen was performed within the Site building. Limited metal door frames were found to contain toxic levels of lead above 1.0 mg/cm^2. Additionally, lead strip flashing was identified within the seams of the concrete parapet cap on the perimeter of the Flat Roof.

E. The Contractor should assume that building components that were not tested that are like in color and construction date have similar lead paint levels as the components that were tested. In accordance with OSHA 29 CFR 1926.62, the Contractor must assume certain exposure levels for certain tasks in the absence of testing or personal exposure monitoring data. It is the sole responsibility of the Contractor to comply with OSHA 29 CFR 1926.62 for all tasks that disturb paint, varnish, shellac, stain or other surface coatings.

F. All components and surfaces that will be impacted by the work of this project shall be covered by this Specification.

1.4 APPLICABLE CODES

A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner which will be in conformance with all federal, state and local regulations and guidelines pertaining to lead paint abatement. Specifically, the Contractor shall comply with the requirements of the following:

1. Occupational Safety and Health Administration: OSHA
    a. 29 CFR 1910 General Industry Standards
    b. 29 CFR 1910.1025 Lead Standard for General Inventory
    c. 29 CFR 1910.134 Respiratory Protection
    d. 29 CFR 1910.1200 Hazard Communication
    e. 29 CFR 1910.245 Specifications for Accident Prevention (Sign and Tags)
    f. 29 CFR 1926.62 Lead in Construction Final Rule
2. State of Connecticut Department of Energy and Environmental Protection: DEEP
    a. Guidance for the management and disposal of lead contaminated materials generated in the lead abatement renovation and demolition industries.
    b. All applicable hazardous solid waste disposal regulations.
3. USEPA
    a. 40 CFR 745.80 - 119 Final Rule
    b. 40 CFR part 261
    c. 40 CFR 745 Subpart E
    d. 40 CFR 61 Subpart M
    e. 40 CFR 261 Identification and Listing of Hazardous Waste

1.5 DEFINITIONS

A. “Action level” means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m(3)) calculated as an eight (8)-hour time-weighted average (TWA).

B. "Biological monitoring" means the analysis of a person's blood and/or urine, to determine the level of lead contamination in the body.

C. “Competent Person” means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

D. “Contractor" means the primary contractor and all sub-contractors performing the work.

E. “Containment” means a process for protecting workers, residents, and the environment by controlling exposures to lead dust and debris created during abatement through the construction of polyethylene barriers.

F. “Exposure Assessment” means an employer’s initial determination if an employee will be exposed to lead at or above the action level.

G. “Exposure Monitoring” instrument monitoring of the air within the breathing zone for the presence of lead.

H. “Hazardous Lead Waste” any identified materials that meets or exceeding 1.0 mg/cm2 by X-ray fluorescence analyzer testing should be handled and disposed of as hazardous lead waste unless TCLP analysis is performed and determined otherwise.

I. "High efficiency particulate air" (HEPA) means a type of filtering system capable of filtering out particles of 0.3 microns or greater diameter from a body of air at 99.97% efficiency or greater.

J. “High Level of Lead” means a paint or surface coating containing >1.0 mg/cm2 of lead by XRF or > 0.5% of lead by weight utilizing laboratory analysis.

K. “Lead” means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

L. “Lead Cleaning Detergent” means Tri-Sodium Phosphate (TSP) or equivalent.

M. “Low Level of Lead” means a paint or surface coating containing <1.0 mg/cm2 of lead by XRF or <0.5% of lead by weight utilizing laboratory analysis.

N. “Paint Removal” means the approved method of the removal of all layers of paint down to bare substrate so no visible paint and paint residue or primer and primer residue remains.

O. “Paint Stabilization” means the interim control to repair any physical defect in the substrate of a painted surface that is causing paint deterioration, remove loose paint and other material from the surface to be treated and applying a new protective coating.

P. “Permissible Exposure Limit (PEL)” The employer shall ensure that no employee is exposed to an airborne concentration of lead, or its compounds, in excess of the PEL of 0.05 mg/m3 for an 8-hour time weighted average (TWA).

Q. “RCRA” (Resource Conservation Recovery Act): The USEPA enforced act, which establishes regulatory levels for hazardous chemicals. There are eight (8) heavy metals of concern for disposal: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver.

R. “Specialized Cleaning” means the use of HEPA vacuum equipment and wet wiping techniques to clean surfaces containing or which may contain, lead dust to levels which comply with the clearance standards.

S. "Toxicity Characteristic Leachate Procedure (TCLP)" is the EPA required sample preparation and analysis for determining the hazard characteristic of a waste generated at a lead abatement site.

T. "Wet Cleaning" means the process of eliminating lead contamination from building surfaces and objects by using clothes, mops or other cleaning tools which have been dampened with TSP and water, and by afterwards disposing of these cleaning items as clean contaminated waste.

1.6 FEES, PERMITS AND LICENSES

A. The Contractor shall comply with the provisions of all permits or applications required by the work specified, as well as make all submittals required under those auspices.

1.7 SEQUENCING AND SCHEDULING

A. The Contractor shall extend full cooperation to Owner in all matters involving the use of Owner's facilities. At no time shall the Contractor cause or allow to be caused conditions that may cause risk or hazards to the general public or conditions that might impair safe use of the facility.

B. The Contractor shall submit a time-line schedule, not date specific, to Owner and Owner's Consultant for integration into the overall project schedule. Coordinate the work of this section with the needs of the Owner and General Contractor/Construction Manager. Phasing and scheduling of this project will be at the discretion of the General Contractor and shall not proceed in any area without the express consent of the General Contractor.

C. The Contractor shall coordinate their work with the progress of the work of other trades so that the work shall be completed as soon as conditions permit.

D. Schedule initial assessment work in areas where the work will not cause an exposure potential to unprotected individuals.

1.8 SUBMITTALS

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work.

B. The Contractor shall provide the following pre-project submittals prior to initiating work at the site:

1. Copies of all notifications, permits, applications, licenses and like documents required by federal, state and local regulations obtained or submitted in proper fashion.
2. Copies of medical records for each employee to be used on the project.
3. Record of successful respirator fit testing performed by a qualified individual within the previous year, for each employee to be used on this project with the employee's name and social security number with each record.
4. Proposed respiratory protection program for employees throughout all phases of the job, including make, model and NIOSH approval numbers of respirators to be used.
5. Written description, for the Owner's review and acceptance, of all proposed procedures,

methods or equipment to be utilized that differ from the Contract Specifications, including manufacturers' specifications on any equipment not specified for use by this Section; in all instances, the Contractor must comply with all applicable federal, state and local regulations.

6. Proposed electrical safeguards to be implemented by qualified Electrical Contractor, including but not limited to location of GFCI outlets, lighting, and power panels necessary to safely perform the job including a description of electrical hazards safety plan for common practices in the work area.
7. Chain-of-Command of responsibility at work site including supervisors, foremen, and competent person, their names, resumes and certificates of training.
8. List of all supervisors and workers intended to be assigned to the project.
9. The name and address of Contractor 's blood lead testing lab, OSHA-CDC listing, and Certification in the state where work site is located.
10. The name and address of Contractor 's personal air monitoring and waste disposal lead testing laboratory (ies) including certification(s) of AIHA accreditation for heavy metal analysis, listing of relevant experience in air and debris lead analysis.
11. Safety Data Sheets (SDS) on all materials and chemicals to be used on the project.
12. Name, address, and ID number of the hazardous waste hauler, waste transfer route, and proposed disposal site.
13. Name, address, and ID number of the proposed construction debris site.
14. Copy of each workers lead awareness training certificate.
15. Copy of each workers initial blood lead level and zinc protoporphorin level.
16. Lead Based Paint compliance plan.

C. The Contractor shall provide the following post-project submittals at the completion of the work on site:

1. Copies of work area access logs.
2. Copies of supervisor log
3. Copies of post project blood lead levels and zinc protoporphorin levels for each worker and supervisor who worked on the site.
4. Copies of all OSHA Compliance air sampling results.

1.9 BUILDING OCCUPANCY

A. The work of this project must be performed during agreed upon work hours unless given written permission by the Owner. The work schedule shall be approved by the Owner prior to the start of the project.

B. The Site building will be vacant during the work of this project.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the

manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.

C. Fire retardant polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 6 mil.

D. Polyethylene disposable bags shall be six (6) mil with pre-printed label. Tie wraps for bags shall be plastic, five (5) inches long (minimum), pointed and looped to secure filled plastic bags.

E. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

F. Impermeable containers are to be used to received and retain any lead containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with EPA and DOT standards.)

G. HEPA filtered exhaust systems shall be used during any dust generating deleading operations.

H. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the work area shall be provided as appropriate for the work.

PART 3 - EXECUTION

3.1 INITIAL EXPOSURE ASSESSMENT

A. In order to comply with the requirements of OSHA 29 CFR 1926.62 Lead in Construction regulation, an initial exposure assessment must be performed for each activity that disturbs lead paint covered building materials. If the results of the initial exposure assessment are less than the “Action Level” for lead dust exposure of 30 micrograms per cubic meter of air, the employer is not obligated to comply with most requirements of the regulation. If the results of the initial exposure assessment are greater than the Action Level for lead dust exposure, all requirements of the Standard apply.

1. The Scope of this Section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from the general industry standard for lead 29 CFR 1910.1025(a) (2) is covered by this section. This includes but is not limited to the following.

    a. Demolition or salvage of structures where lead or materials containing lead is present.
    b. Removal or encapsulation of materials containing lead.
    c. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof that contain lead, or materials containing lead.
    d. Lead contamination cleanup
    e. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed.

B. The Contractor shall assume that the employee is being exposed above the Permissible Exposure Level (PEL) until an initial exposure assessment has been completed for each lead related task being performed.

C. For the purpose of the initial exposure assessment, employee exposure is that exposure which would occur if the employee were not using a respirator.

D. The employer shall collect personal air samples representative of a full shift including at least one sample for each job classification in each work area for each shift or for the shift with the highest exposure level.

E. Until the employer performs an initial exposure assessment as required by the Standard, the employer shall provide appropriate respiratory protection, appropriate personal protective equipment, clean change areas, hand washing facilities, biological monitoring, training under 29 CFR 1926.59, Hazard Communication; 29 CFR 1926.62 – Lead, 29 CFR 1926.21, Safety Training and Education.

F. Where the employer has objective data, demonstrating that a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the Action Level during processing, use or handling, the employer may rely upon such data instead of implementing initial monitoring.

3.2 LEAD-BASED PAINT COMPLIANCE PLAN

A. The Contractor shall be required to submit a lead-based paint compliance plan to the Owner detailing how the Contractor will maintain compliance with this Specification.

B. The Contractor shall describe the work procedures within the compliance plan that will be utilized to prevent contamination to the work site and surrounding environment.

C. The Contractor shall describe the work procedures and engineering controls that will be implemented to ensure that workers are not exposed above OSHA's PEL for lead dust exposure.

D. The Contractor shall describe how compliance with the hazardous waste disposal regulations will be met.

3.3 DUST GENERATING ACTIVITIES - WORK AREA PREPARATION

A. The Contractor shall establish a clean area outside the work areas for workers to change into protective clothing and store personal belongings.

B. When dust generating activities are undertaken, the work area shall be isolated from other trades by double flapped curtain doorways. The contractor shall utilize double flapped curtain doorways for separation of the work area from the non-work area. All ingress to the work area shall be through the double flapped curtain doorways.

C. Six-mil polyethylene sheeting shall be installed on the floors within the work area to capture dust and paint chips during the lead disturbing tasks.

D. Non-moveable objects shall be covered with a single layer of six-mil polyethylene sheeting.

3.4 PERSONAL PROTECTION

A. Workers shall don protective gear prior to entering work area including respirators, disposable coveralls, and footwear. Street clothes shall not be permitted to be worn under protective clothing. The Contractor shall provide a clean area for workers to store street clothes and personal belongings.

B. Eye protection, head protection, and ear protection shall be provided to each worker.

C. The Contractor shall establish a wash station in close proximity to the work area where workers shall decontaminate their person. The wash station shall be supplied with warm water and soap and an ample supply of drying towels. Wash water shall be tested for proper disposal.

D. All equipment used by workers inside the work area shall be wet wiped or bagged for later decontamination before removal from work area.

E. The Contractor is responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by GFIs.

3.5 PAINT DISTURBANCE DEMOLITION PROCEDURE (DUST GENERATING)

A. Prior to any lead-based paint activity, the Contractor shall ensure that work area set up has been completed in accordance with applicable work area preparation section. Refer to the Architects plans and specifications to determine extent of work demolition.

B. The Contractor shall perform all incidental work necessary to facilitate removal of lead-based painted components.

C. Dust control measures must be employed during all demolition work.

D. The Contractor shall transport painted components to the appropriate waste container as required to keep the work area free from tripping hazards. Waste shall not be transported through the occupied section of the building during business hours.

E. Metal components removed from the building shall be recycled in a facility that can receive metal coated with lead-based paint. If lead strip flashing will be removed, removed pieces shall be properly packaged and recycled.

3.6 PROHIBITED ACTIVITIES – GENERAL

A. The Contractor shall be prohibited from the following:

1. Sanding lead-based painted components without HEPA dust collection devices and appropriate engineering controls.
2. Open flame paint removal.
3. Torch cutting steel components without appropriate engineering controls.
4. Rivet busting without appropriate engineering controls.
5. Creating visible dust or fumes during paint removal.
6. Welding directly to lead-based painted steel.

END OF SECTION 02 0900

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DOCUMENT 02 3219 – EXPLORATORY EXCAVATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavation of test pits where it may be necessary to locate or examine soils, groundwater, drains, pipes, rock, utilities, subsurface structures, or any other obstacles or subsurface conditions.

2. Stockpiling, management, and disposal of surplus or unsuitable material.

3. Backfilling and compacting of test pits with suitable material.

B. Exploratory excavations shall be conducted where shown on the Drawings, where directed or approved by Engineer, and as Contractor may deem necessary to locate or examine subsurface conditions as part of his work.

C. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

D. Contractor is responsible for all health and safety.

1.2 PAYMENT

A. Exploratory excavation work conducted by Contractor for his use shall be considered incidental work and shall be included in Contractor's base price for the project. Contractor shall be responsible for any required backfilling with suitable materials, disposal of unsuitable excavated materials, and restoration of the excavation area.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. United States Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

1.4 SAFETY

A. Contractor shall conduct all excavation activities in conformance with applicable regulations, including those relating to warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Contractor shall provide and maintain barricades, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas and open excavations. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

D. Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to construct permanent or temporary excavation support systems, including, but not necessarily limited to, sheet piling, trench shields, trench boxes, timber trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping, and benching.

E. Any time an excavation is to remain open, at a minimum, provide full enclosure with safety barriers and fencing, warning signs, and additional safety control measures as appropriate for the condition.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Utility Mark-out

1. Prior to commencing work, comply with utility mark-out requirements of the Call-Before-You-Dig System (1-800-922-4455).

2. Verify the location of all subsurface utilities marked through the Call-Before-You-Dig System.

3. Not all subsurface facilities or structures will be identified through the Call-Before-You-Dig System. Confirm the location of other subsurface utilities and other subsurface facilities or structures prior to commencing work. Field-mark utilities as required.

C. Utility Coordination

1. Inform all utility owners of the necessity of test pit work. Prove reasonable advance notice to allow for coordination.

2. Coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the test pit location.

3. If so desired by the respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

D. Utility Protection

1. Safeguard and protect from damage any utility to remain in service. Before excavating near any utility, notify the utility owner, coordinate protective work, and comply with the utility owners' requirements.

2. Where utilities are encountered, notify Engineer and document location and type of utility before proceeding with work in such area.

3. When uncharted or incorrectly charted piping or utilities are encountered during excavation, stop work and notify Engineer immediately. Cooperate with the utility owners in maintaining their utilities in operation prior to resuming work.

E. Retaining Structures

1. Provide bracing, shoring, sheeting, sheet piling, underpinning or other retaining structures necessary to guard against any movement or settlement of existing or new construction, utilities, paving, light standards, piping or conduit. Assume responsibility for the strength and adequacy of retaining structures, and for the safety and support of construction, utilities or paving, and for any movement, settlement or damage thereto.

1.6 SEQUENCING

A. If test pits are required during the work to evaluate unforeseen conditions, notify Engineer as soon as the need for such work is known.

B. Notify Engineer and/or utility companies of any conflicts or other conditions observed which may require design revisions, relocations, and/or adjustment. No work shall be started within areas where conflicts or other conditions are observed which require design revisions, relocations, and/or adjustment until authorized by Engineer.

PART 2 PRODUCTS – NOT USED

2.1 SOILS

A. Refer to Section 31 2310 – Earthwork.

PART 3 EXECUTION

3.1 EXCAVATION

A. Test pit excavation and backfill shall comply with applicable provisions of earthwork and excavation as indicated in other applicable Specification Sections.

B. Excavation of test pits shall be accomplished by such means as are required to ensure that underground utilities or structures which may be encountered are not damaged.

C. Contractor shall measure and record the size, configuration, exact horizontal and vertical location of all utilities, pipes or other conditions/obstacles encountered.

D. Contractor shall be solely responsible for any damages incurred during excavation operations. Any such damages shall be repaired or replaced by Contractor to the satisfaction of the facility owner/operator, responsible/administering agency, and/or Engineer. Whether repair and/or replacement is Conducted by Contractor or must be conducted by owner/operator or responsible/administering agency, any and all costs thereof, including those costs associated with planning, coordination and owner/operator or responsible/administering agency personnel, shall be borne by Contractor.

E. Where an existing pavement has been removed for test pit excavation, the surface shall be restored in accordance with the Drawings and Specifications. In all other areas, the surface of test pit areas shall be backfilled and the surface restored to a condition equal to original, unless otherwise indicated by Engineer.

END OF DOCUMENT 02 43219

SECTION 02 4119
SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Demolition and removal of selected portions of building or contents.

B. Related Requirements:
   1. Section 01 1000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
   2. Section 01 7300 "Execution" for cutting and patching procedures.

1.02 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and carefully store for reinstallation as per the Contract Documents.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.03 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.04 PREINSTALLATION MEETINGS

A. Pre-demolition Walk-through and Conference: A mandatory pre-demolition walk-through conference is required for all Bidders at the Project site.
   1. Inspect and discuss condition of construction to be selectively demolished, as well as visual inventory of any and all items to be removed and disposed of as part of the project scope.
   2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   4. Review areas where existing construction is to remain and requires protection.

1.05 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's and other tenants' on-site operations are uninterrupted.
   2. Coordination of Owner's continuing occupancy of the existing building and of Owner's partial occupancy of completed Work.

1.06 FIELD CONDITIONS

A. Owner will occupy the building during the demolition. Conduct selective demolition so Owner's operations will not be disrupted.

B. It is required of all prospective bidders to attend the pre-demolition walk-through and conference to fully understand extents of demolition scope.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 PRODUCTS – NOT USED.

PART 3 EXECUTION

3.01 EXAMINATION

A. Review Project Record Documents of existing construction or other existing conditions and provided by the Owner upon request. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

3.03 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.04 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically and in a logical manner.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.

3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Use of cutting torches or any open flame tools is strictly prohibited. All cutting is required to be performed by mechanical tools. For cutting abandoned mechanical exhaust flue, maintain portable fire-suppression devices during cutting operations.
5. Maintain fire watch during and for at least one hour after interior metal cutting operations.
6. Maintain adequate ventilation when cutting metal.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."

B. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area to be coordinated with the Owner.
4. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. It is the intent that all existing electrical devices, including light fixtures, and mechanical diffusers are to remain, but be disconnected and reinstalled per the intent of the drawings.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 01 7419 "Construction Waste Management and Disposal."
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 01 7419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.07 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 4119

DOCUMENT 02 4123 - SITE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. General Site Demolition.

2. Demolition of site structures, retaining walls, signage, light standards, foundations and appurtenances, pavement, curbing, and similar site improvements.

3. Filling of voids and excavations resulting from site demolition.

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut.

1. State of Connecticut Solid Waste Management Regulations, Section 22a-209 including any amendments thereto.

1.3 DEFINITIONS

A. Demolition: Any operation including the dismantling or wrecking of a structure, assembly, appurtenance, or any portion thereof, including major and minor components, parts, and systems. Demolition shall be inclusive of the removal, handing, processing, segregation, loading, and proper off-site disposition of materials. Demolition shall be interpreted as complete and total removal unless otherwise indicated. The term Remove shall be synonymous with Demolition.

B. Bulky Waste: Land clearing debris and non-contaminated or hazardous waste material resulting directly from demolition activities other than Clean Fill, including such materials as tree stumps, tree tops, concrete, wood, brick, plaster, roofing materials, wallboard, metals,

carpeting, insulation, furniture, and furnishings. Bulky Waste shall include Construction and Demolition Debris and Construction and Demolition Waste.

1.4 SAFETY

A. Conduct the work of this Section in conformance with applicable regulations, including those relating to warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Provide and maintain barricades, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas and open excavations. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

D. Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to construct permanent or temporary excavation support systems, including, but not necessarily limited to, sheet piling, trench shields, trench boxes, timber trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping, and benching.

E. Any time an excavation is to remain open, at a minimum, provide full enclosure with safety barriers and fencing, warning signs, and additional safety control measures as appropriate for the condition.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Utility Mark-out

1. Prior to commencing work, comply with utility mark-out requirements of the Call-Before-You-Dig System (1-800-922-4455).

2. Verify the location of all subsurface utilities marked through the Call-Before-You-Dig System.

3. Not all subsurface facilities or structures will be identified through the Call-Before-You-Dig System. Confirm the location of other subsurface utilities and other subsurface facilities or structures prior to commencing work. Field-mark utilities as required.

C. Utility Coordination

1. Inform all utility owners of the necessity of test pit work. Provide reasonable advance notice to allow for coordination.

2. Coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the test pit location.

3. If so desired by the respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

1.6 REGULATORY REQUIREMENTS

A. Comply with all applicable federal, state, and local safety and health requirements regarding all aspects of the work. Do not proceed until all permits or other approvals are secured.

B. Contractor is bound to comply with any project-related permits or approval obtained by Owner, including all requirements of such permit and representations contained in permit application as though Contractor were the permittee. Requirements and conditions set forth in Owner-obtained project-related permits and permit applications shall be binding on Contractor just as any Specification would be.

C. Do not close or obstruct roadways, sidewalks, hydrants, or other infrastructure without permits or authorization from local municipal authorities or other authorities having jurisdiction.

PART 2 EXECUTION

2.1 IDENTIFICATION OF EXISTING FEATURES

A. Prior to commencing construction activities, Contractor shall identify and delineate those areas or specific improvements that are not to be disturbed. Areas or specific improvements within the Limits of Work/Contract Limits and general work areas which are not to be disturbed shall be clearly marked or fenced. Monuments and markers shall be protected before construction operations commence. Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting designated areas, specific improvements, monuments, and markers at the Project Site.

2.2 PROTECTION OF EXISTING FEATURES

A. General

1. All areas or specific improvements, including but not limited to vegetation, utilities, poles, wires, fences, curbs, monuments/property-line markers, and other structures, which must be preserved in place without being temporarily or permanently relocated shall be carefully supported and otherwise protected from damage by Contractor.

2. As excavation/demolition work approaches underground structures, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools.

B. Pavements

1. On paved surfaces to remain, Contractor shall not use or operate heavy equipment, other power-operated equipment, or store tools, equipment, or materials which may mar, cut, or otherwise damage such surfaces. If there is no alternative to the operation of heavy equipment, other power-operated equipment, or storage of tools, equipment, or materials on paved surfaces to remain, Contractor shall take all measures necessary to protect such surfaces.

2. All surfaces, which have been damaged by Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of construction operations. Such restoration shall meet the approval of Engineer and may include repair or complete replacement at Contractor's expense.

C. Planted Areas

1. All planted areas, including lawn/turf areas and landscaped areas, which have been damaged by Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of construction operations.

D. Utilities

1. Locate and identify existing utilities that are to remain and protect them from damage. Provide protection as required such as marking, blocking, bracing, stabilizing, supporting, and retaining.

2. Before excavating near any utility, notify the utility owner, coordinate protective work, and comply with the utility owners' requirements.

3. All utility services shall be supported by suitable means so that the services shall not fail when tamping and settling occurs.

4. Where known utilities are encountered, notify Engineer and document location and type of utility before proceeding with work in such area.

5. When uncharted or incorrectly charted utilities are encountered, stop work and notify Engineer. Cooperate with the utility owners in maintaining their utilities in operation prior to resuming work.

E. Retaining Structures: Provide bracing, shoring, sheeting, sheet piling, underpinning or other retaining structures necessary to guard against any movement or settlement of existing or new construction, utility systems, paving, or other improvements. Contractor assumes responsibility for the strength and adequacy of retaining structures, and for the safety and support of construction, utilities or paving, and for any movement, settlement or damage thereto.

2.3 SITE DEMOLITION

A. Conduct site demolition as shown on the Drawings.

B. Conduct site demolition operations in a manner that will prevent damage to adjacent structures, utilities, pavements and other facilities to remain.

C. Remove from the site and properly dispose of all materials resulting from site demolition operations.

2.4 DUST CONTROL

A. Implement fugitive dust suppression to prevent unacceptable levels of dust resulting from site demolition operations or other activities required by the Contract Documents. It shall be the Contractor's responsibility to supervise fugitive dust control measures and to monitor airborne particulate matter. Comply with applicable provisions of Section 01 5714 – Temporary Dust Control.

2.5 REPLACEMENT

A. In case of damage, Contractor shall notify the appropriate party so that proper steps may be taken to repair any and all damage done. When the Owner does not wish to make the repairs themselves, all damage shall be repaired by Contractor, or, if not promptly done by him, Engineer may have the repairs made at the expense of Contractor.

B. Contractor shall patch, repair and/or replace all adjacent materials and surfaces damaged through the prosecution of work at no expense to Owner. All repair and replacement work shall match the existing in-kind. Final acceptance of said work shall be at the sole judgment of Owner.

END OF DOCUMENT 02 4123

SECTION 03 3000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 CT HPB documentation:

A. For all installed products and materials of the Section, submit the following information:

1. Cost breakdowns for the materials included in the Contractor or subcontractor's work. Cost breakdowns shall include total installed cost and material-only cost.
2. The percentages (by weight) of post-consumer and/or pre-consumer recycled content in the supplied product(s).
3. Indication of location (city, state) of the manufacturing location of the supplied product(s) and the distance from the project site.
4. Indication of location (city, state) of the extraction, harvest or recovery location of the raw materials used to manufacture the supplied product(s) and the distance from the project site.

B. For all field-applied adhesives, sealants, paints and coatings relating to work of this Section, indicate the Volatile Organic Compound (VOC) content in grams/liter and whether the product meets the requirements of the California Department of Health Services (CDHS) Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, including 2004 Addenda.

C. Provided cut sheets with the Contractor's or subcontractor's stamp, confirming that the submitted products are the products installed in the Project.

D. All steel/iron products within this specification shall be produced in the Unites States; specifically, all manufacturing processes with respect to any steel or iron items herein take place in the United States.

1.3 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings.
2. Foundation walls.
3. Slabs-on-grade.
4. Suspended slabs.
5. Concrete toppings.

B. Related Sections:

1. Division 03 Section "Architectural Concrete" for general building applications of specially finished formed concrete.
2. Division 31 Section "Earth Moving" for drainage fill under slabs-on-grade.
3. Division 32 Section "Concrete Paving" for concrete pavement and walks.

1.4 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.5 SUBMITTALS

B. Product Data: For each type of product indicated.

C. Shop Drawings

1. Submit shop drawings of all members to be furnished. Detail drawings of the members and their connections shall follow standard practice as set forth in the AISC "Manual of Structural Steel Detailing" (Second Edition). In particular, welding shall be shown, using standard AWS welding symbols. Show on detail drawings the paint to be used.

2. Shop drawings will not be accepted for review by the Engineer unless there is substantial evidence that the General Contractor or Construction Manager on the project has reviewed the submittal for compliance with the contract documents and has addressed questions to be responded to by the Contractor. All coordination items with other trades and submittals are to be performed and the submittal marked accordingly before submission. Failure to provide the above will result in the submittal being returned and not reviewed.

3. Contractor shall perform review and schedule shop drawing submittals to permit a minimum of 15 calendar days for review by the Engineer. Shop Drawings will be returned to the Architect for their required review and processing.

4. Shop drawings will not be reviewed unless accompanied by erection drawings which locates and identifies the members. Copies or reproductions of contract drawings will not be accepted or reviewed as shop drawings.

5. Shop drawings shall be submitted in the form of an electronic file (PDF).

6. The following is the definitions for the Shop Drawing stamp disposition:

   No Exceptions Taken - Re-submission is not required unless document is revised.

   Make Corrections Noted - If checked, fabrication may be undertaken. Contractor is responsible for making noted corrections. Re-submission of record copies are required.

   Revise and Resubmit - If checked, fabrication may not be undertaken. Resubmit corrected copies for final review, with all changes clouded.

   Rejected - Resubmit for review.

   Reviewed – Reviewed for general compliance with the structural Contract Documents. Proprietary items or items designed by Others are reviewed only and shall not be approved by MHAI. Resubmission is not required.

   Corrections or comments made on shop drawings during this review do not relieve the Contractor from compliance with the requirements of the project drawings and specifications. This check is only for the review of general conformance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes, techniques and sequence of construction, coordinating his work with that of other trades, and performing his work in accordance with OSHA requirements and other sections of the Project Specifications.

D. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

E. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

F. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

   1. Location of construction joints is subject to approval of the Architect.

G. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Steel reinforcement and accessories.
4. Fiber reinforcement.
5. Waterstops.
6. Curing compounds.
7. Floor and slab treatments.
8. Bonding agents.
9. Adhesives.
10. Vapor retarders.
11. Semi-rigid joint filler.
12. Repair materials.

H. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates.

I. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

J. Field quality-control reports.

K. Minutes of pre-installation conference.

L. CT HPB documentation:

1. For all installed products and materials of the Section, submit the following information:

a. Cost breakdowns for the materials included in the Contractor or subcontractor's work. Cost breakdowns shall include total installed cost and material-only cost.
b. The percentages (by weight) of post-consumer and/or pre-consumer recycled content in the supplied product(s).
c. Indication of location (city, state) of the manufacturing location of the supplied product(s) and the distance from the project site.
d. Indication of location (city, state) of the extraction, harvest or recovery location of the raw materials used to manufacture the supplied product(s) and the distance from the project site.

2. For all field-applied adhesives, sealants, paints and coatings relating to work of this Section, indicate the Volatile Organic Compound (VOC) content in grams/liter and whether the product meets the requirements of the California Department of Health Services (CDHS) Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, including 2004 Addenda.

3. Provided cut sheets with the Contractor's or subcontractor's stamp, confirming that the submitted products are the products installed in the Project.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete. Sections 1 through 5 and Section 7, "Lightweight Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Owner will engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

G. Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Ready-mix concrete manufacturer.
d. Concrete subcontractor.
e. Special concrete finish subcontractor.

2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semi-rigid joint fillers, forms and form removal limitations, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. High-density overlay, Class 1 or better.
b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
c. Structural 1, B-B or better; mill oiled and edge sealed.
d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

C. Deformed-Steel Wire: ASTM A 496/A 496M.

D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
2. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150 Type I/II, gray

B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source[with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials].

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C 330, 3/4-inch at typical slabs and 3/8-inch at stair pan slabs nominal maximum aggregate size.

D. Water: ASTM C 94/C 94M and potable.

2.5 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle Coatings & Waterproofing, Inc.; MiraSTOP.
b. CETCO; Volclay Waterstop-RX.
c. Concrete Sealants Inc.; Conseal CS-231.
d. Greenstreak; Swellstop.
e. Henry Company, Sealants Division; Hydro-Flex.
f. JP Specialties, Inc.; Earth Shield Type 20.

2.7 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle Coatings & Waterproofing, Inc.; Blackline 400.
b. Fortifiber Building Systems Group; Moistop Ultra 15.
c. Grace Construction Products, W. R. Grace & Co.; Florprufe 120.
d. Raven Industries Inc.; Vapor Block 15.
e. Stego Industries, LLC; Stego Wrap 15 mil Class A.

2.8 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

2.9 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Reglets: Fabricate reglets of not less than 0.022-inch- (0.55-mm-) thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

D. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, and concrete with a water-cementitious materials ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings and foundation walls: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4500 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.

B. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 3500 psi at 28 days.
2. Water/ Cement ratio not to exceed 0.50.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

C. Suspended Slabs: Proportion structural lightweight concrete mixture as follows:

1. Minimum Compressive Strength: 3500 at 28 days.
2. Calculated Equilibrium Unit Weight: 145lb/cu.ft, plus or minus 3 lb/cu.ft as determined in ASTM C 567.
3. Water/ Cement ratio not to exceed 0.50.
4. Slump Limit: 4 inches, plus or minus 1 inch (25 mm).
5. Air Content: Do not allow air content

2.13 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement per CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete per ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Do not chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls 30 feet maximum. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth depth of concrete thickness slabs for typical slabs and a maximum of 1” for with embedded piping for radiant heat:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when

cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install diamond dowel and support assemblies at joints where indicated.

3.7 WATERSTOPS

A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
2. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M):
   a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for typical slabs-on-grade.
   b. Specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 24; for gymnasium slab-on-grade.
   c.
   d. Specified overall values of flatness, F(F) 35; with minimum local values of flatness, F(F) 24; for suspended slabs.

3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.

b. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3.13 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.14 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.

b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 48 hours of finishing.

END OF SECTION 03 3000

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SECTION 03 3200 - SITE-CAST-IN-PLACE-CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes

1. Site cast-in-place concrete, including but not necessarily limited to, sidewalks, ramps, driveways, curbing, pads, bases, retaining walls, and thrust blocks.

2. All facilities, labor, materials, tools, equipment, appliances, transportation, supervision, and related work necessary to complete the Work shown on the Drawings and as specified herein.

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. ASTM International (ASTM)

1. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

2. ASTM A706 – Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

3. ASTM A767 – Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

4. ASTM A775 – Standard Specification for Epoxy-Coated Steel Reinforcing Bars.

5. ASTM A996 – Standard Specification for Rail-Steel and Axle-Steel Deformed Bars or Concrete Reinforcement.

6. ASTM A1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

7. ASTM C29 – Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate

8. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.

9. ASTM C33 – Standard Specification for Concrete Aggregates.

10. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

11. ASTM C42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

12. ASTM C70 – Standard Test Method for Surface Moisture in Fine Aggregate.

13. ASTM C94 – Standard Specification for Ready-Mixed Concrete.

14. ASTM C117 – Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing.

15. ASTM C127 – Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.

16. ASTM C128 – Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.

17. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

18. ASTM C138 – Standard Test Method for Density (“Unit Weight”), Yield, and Air Content (Gravimetric) of Concrete.

19. ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete.

20. ASTM C150 – Standard Specification for Portland Cement.

21. ASTM C156 – Standard Test Method for Water Retention by Concrete Curing Materials.

22. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete.

23. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete.

24. ASTM C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

25. ASTM C192 – Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.
26. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
27. ASTM C233 – Standard Test Method for Air-Entraining Admixtures for Concrete.
28. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
29. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
30. ASTM C311 – Standard Methods of Sampling and Testing Fly Ash and Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete.
31. ASTM C387 – Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
32. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.
33. ASTM C566 – Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying.
34. ASTM C595 – Standard Specification for Blended Hydraulic Cements.
35. ASTM A 615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
36. ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
37. ASTM C685 – Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
38. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete.
39. ASTM C803 – Standard Test Method for Penetration Resistance of Hardened Concrete.
40. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
41. ASTM C979 – Standard Specification for Pigments for Integrally Colored Concrete.
42. ASTM C989 – Ground Granulated Blast-Furnace Slag for Use in Concrete Mortars.
43. ASTM C1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.

44. ASTM A1078 – Standard Specification for Epoxy-Coated Steel Dowels for Concrete Pavement.

45. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

46. ASTM D1752 – Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.

47. ASTM D2628 – Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

48. ASTM D4397 – Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.

49. ASTM D5249 – Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints.

50. ASTM D5893 – Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

51. ASTM E329 – Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

D. Concrete Reinforcing Steel Institute (CRSI).

1. CRSI Manual of Standard Practice, latest edition.

E. State of Connecticut

1. 2016 Connecticut State Building Code, including all Amendments, Supplements, and Errata.

F. American Concrete Institute (ACI)

1. ACI 224R – Control of Cracking on Concrete Structures.

2. ACI 224.3R – Joints in Concrete Construction.

3. ACI 301 – Specifications for Structural Concrete.

4. ACI 302.1R – Guide for Concrete Floor or Slab Construction.

5. ACI 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete.

6. ACI 305R – Guide to Hot Weather Concreting.

7. ACI 306R – Guide to Cold Weather Concreting.

8. ACI 308R – Guide to Curing Concrete.

G. American Welding Society (AWS).

1. AWS A5.1/A5.1M (2004; Errata 2004) Carbon Steel Electrodes for Shielded Metal Arc Welding.

2. AWS D1.4/D1.4M (2005; Errata 2005) Structural Welding Code – Reinforcing Steel.

1.3 SUBMITTALS

A. For each type of specially furnished concrete provide a description of methods and the sequence of placement.

B. Manufacturer's catalog data for the following items shall include printed instructions for admixtures, bonding agents, epoxy-resin adhesive binders, waterstops, and liquid chemical hardeners:

1. Concrete Aggregates.

2. Portland Cement.

3. Ready-Mix Concrete.

4. Form Facing Materials.

5. Reinforcement Materials.

6. Joint Materials.

7. Water-Vapor Barrier Subgrade Cover.

8. Bonding Materials.

9. Finish Materials.

10. Concrete Curing Materials.

11. Form release agent.

12. Concrete coloring additive.

13. Elastomeric joint sealant.

14. Preformed joint filler

C. Submit samples of the following:

1. Preformed joint filler.

2. Manufacturer's color charts showing full range of colors available.

3. Cured samples of elastomeric join sealants in the color(s) selected.

D. Design Data

1. Mix Design data for each class of Ready-Mix Concrete shall be submitted at least 15 calendar days prior to start of specified work.

2. Mix Design data for each type of integrally-colored concrete mix called-for shall be submitted at least 15 calendar days prior to start of specified work.

E. Test Reports

1. Submit test reports for all testing conducted under this Section.

F. Certificates

1. Submit certificates for the following:

a. Concrete Design Mixes.

b. Concrete Aggregates.

c. Welding Procedures. Welding Procedures shall be in accordance with AWS D1.4/D1.4M. Certificates for Welder Qualifications shall be in accordance with the paragraph entitled, "Qualifications for Welding Work," of this section.

d. Mill certificates for Steel Bar.

2. Certificates for concrete shall contain project name, title/number, date, name of Contractor, name of concrete testing service, source of concrete aggregates, material manufacturer, brand name of manufactured materials, material name, values as specified for each material, and test results.

G. Manufacturer's Instructions

1. Installation instructions shall indicate the manufacturer's recommended method and sequence of installation for the following items:

a. Admixtures

b. Bonding Materials

c. Waterstops

d. Liquid Chemical Hardener

1.4 QUALITY ASSURANCE

A. Dimensions, locations, and details of equipment pads, anchors, supports, and similar features indicated on the Drawings are approximate. Manufacturer's approved shop drawings of equipment to be supported, anchored, or contained thereby shall be consulted for exact location, size and details.

B. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.

C. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

D. Welder qualifications: Welder qualifications shall be verified in accordance with AWS D1.4/D1.4M or under an equivalent qualification test approved in advance. Welders shall be permitted to do only the type of welding for which each is specifically qualified.

E. Concrete testing: Concrete testing shall be performed by an approved Testing Agency/Testing Laboratory experienced in sampling and testing of concrete. Testing Agency/Testing Laboratory shall meet the requirements of ASTM E329.

1.5 MOCKUPS

A. Where mockups are called-for, comply with the following:

1. At location on the Project Site selected by Engineer, place and finish 100 square foot mockup section for examination. Mockup to be constructed by the installer who will actually perform the work for the Project.

2. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.

3. For colored concrete, record the amount of integral colorant, dray colorant, or chemical stain needed per square foot of application to establish coverage rates for the work.

4. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control construction, and expansion joints in sample panels.

5. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work.

6. Accepted mockup provides visual standard for all work.

7. Mockup shall remain through completion of work for use as a quality standard for finished work.

8. Provide suitable protections to preclude damage to mockup.

9. Remove mockup when directed.

1.6 TESTING

A. Owner will retain a testing entity to perform observation and testing of the work under this Section. The testing entity's presence does not constitute supervision or direction of Contractor's work. Neither the presence of the testing entity nor any observations and testing performed by him, nor any notice or failure to give notice shall excuse Contractor from conformance with these Specifications or from defects discovered in his work.

B. Testing shall include sampling and testing concrete materials proposed for use in the work and testing the design mix for each class of concrete.

C. Tests will be required to determine whether the concrete being produced complies with the standard of quality and strength as specified.

D. Concrete Replacement: Failure of any test or to follow proper installation procedures will require that the concrete be removed and properly replaced at the Contractor's expense.

1.7 DELIVERY, STORAGE AND HANDLING

A. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturers' written recommendations.

B. Packaged materials shall be delivered to the project site in their original, unopened package or container bearing label clearly identifying manufacturer's name, brand name, material, weight or volume, and other pertinent information. Packaged materials shall be stored in their original, unbroken package or container in a weather-tight and dry place until ready for use in the work.

C. Unpackaged aggregates shall be stored to avoid excessive segregation, contamination with other materials or other size aggregates, or freezing.

D. Reinforcement and other metal items shall be protected from corrosion and shall be kept free from ice, grease, and other coatings that would destroy or reduce bond.

E. Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry condition.

1.8 PROJECT CONDITIONS

A. Environmental Requirements

1. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours.
2. Protect fresh concrete from rain, moisture, and freezing.
3. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.

PART 2 PRODUCTS

2.1 PORTLAND CEMENT

A. Cement: ASTM C 150. One brand and type of cement shall be used for formed concrete having exposed-to-view finished surfaces.

B. Unless otherwise specified, cement shall be Type IA.

2.2 READY-MIX CONCRETE

A. Ready Mix Concrete: Portland Cement Concrete, air-entrained, ASTM C94.

1. Compressive Strength:

a. Unless otherwise indicated, minimum compressive strength at 28 days shall be 4,000 psi minimum.

b. Sidewalks, stairs and landings, pedestrian and vehicle ramps, and curbing: Minimum compressive strength at 28 days shall be 4,500 psi minimum.

2. Water/cement ratio: Maximum 0.45.
3. Air content by volume: 6 percent ± 1 percent, ASTM C231 (primary method) or ASTM C173 (secondary method).
4. Slump: no less than 2 inches, not greater than 4 inches, ASTM C143.
5. Standard Color: Natural grey.
6. Colored Concrete: See the Article “Integral Colorant” herein if applicable.

B. Aggregate

1. Coarse aggregate: ASTM C33. Broken stone or gravel consisting of clean durable fragments of uniform quality throughout. It shall be free from soft, disintegrated pieces, mud, dirt, organic or other injurious material. Coarse aggregate of a size retained on a 1-inch square opening sieve shall not contain more than 8% of flat or elongated pieces, whose longest dimension exceeds five times their maximum thickness.

2. Fine aggregate: ASTM C33. Sand consisting of clean, hard, durable, uncoated particles of quartz or other rock, free from lumps of clay, soft or flaky material, loam, organic or other injurious material. Fine aggregate shall contain not more than 3% of material finer than a #200 sieve, ASTM C117.

C. Water: Potable quality.

D. Admixtures

1. Concrete shall contain a water reducing agent, ASTM C494, to minimize cement and water content of the concrete mix at the specified slump.

2. Air-Entraining Admixtures: ASTM C260.

3. Pozzolan: Fly ash or other pozzolans used as admixtures shall conform to ASTM C618, Class C or Class F with 4 percent maximum loss on ignition. Pozzolan may be used to replace a maximum of 15 percent (15 %) of cement by weight.

4. No calcium chloride or admixtures containing calcium chloride shall be added to the concrete. No admixtures other than those specified shall be used in the concrete without the specific written permission of Engineer in each case.

2.3 FORMS

A. Forms shall be substantially built and adequately braced so as to withstand the liquid weight of concrete without deforming. All linings, studding, walling and bracing shall be such as to prevent bulging, spreading, or loss of true alignment while pouring and displacement of concrete while setting.

B. All edge forms for sidewalk pavements, curbs and gutters shall be of sufficient rigidity and adequately braced to accurately maintain line and grade. Form work shall be designed so that sections may be fastened together to prevent vertical or horizontal movement of ends.

C. Forms for curved sections shall be so constructed and placed that the finish surface of walls and edge of sidewalks, curbs and gutters will not deviated appreciably from the arc of the curve.

D. Exposed vertical and horizontal edges of the concrete in structures shall be chamfered as indicated on the Drawings by the placing of moldings in the forms.

E. Forms for Exposed Finish: Plywood, metal, metal-framed plywood faced, or other acceptable panel materials. Form work materials shall produce a smooth, continuous, straight, and level surface.

1. Plywood shall be APA A-A, A-B or A-C, Class 1, Exterior Grade. Thickness shall be as required to prevent movement or deformation but shall not be less than 5/8” thick.

F. Forms for Non-Exposed Finish: Plywood, metal, metal-framed plywood faced, or other acceptable panel materials. Form work materials shall produce a generally smooth, continuous, straight, and level surface. Grain patterns or similar imperfections are acceptable. Lumber shall be dressed on at least two edges and one side.

1. Plywood shall be at least B-B, Class 1, Exterior Grade. Thickness shall be as required to prevent movement or deformation but shall not be less than 5/8" thick.

G. Cylindrical Forms: Sonotube Fibre Forms, wax-impregnated strippable forms or ABS or PVC plastic reusable forms.

H. Form Ties: Provide prefabricated, adjustable length galvanized steel snap-off ties, with brackets, cones, corner locks and other accessories as necessary.

I. Form Release Agent: Commercial formulation compounds that will not bond with, stain or adversely affect concrete.

2.4 REINFORCEMENT MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60 unless otherwise indicated.

B. Galvanized Reinforcing Bars: ASTM A 767, Class II with galvanizing before fabrication.

C. Weldable Reinforcing Bars: ASTM A 706, Grade 60 unless otherwise indicated. Maximum carbon content shall be 0.55 percent.

D. Epoxy-Coated Reinforcing Bars: ASTM A 775, Grade 60 unless otherwise indicated.

E. Steel Wire: ASTM A 82, 16 gauge or heavier black annealed wire.

1. Ties for epoxy-coated bars shall be vinyl-coated or epoxy-coated.

2. Ties for zinc-coated bars shall be zinc-coated.

F. Welded Wire Reinforcement (WWR)

1. Sidewalks: Plain wire, ASTM A1064 as indicated on the Drawings.

2. Concrete Pavement: Plain wire, ASTM A1064 as indicated on the Drawings.

G. Supports for Reinforcement

1. Supports shall include bolsters, chairs, spacers, and other devices necessary for proper spacing, supporting, and fastening reinforcing bars and wire reinforcement in-place. Conform with CRSI Manual of Standard Practice for corrosion-resistant, plastic-protected wire, epoxy-coated, or stainless-steel supports.

2. For exposed-to-view concrete surfaces and where support legs are in contact with forms, provide supports with plastic protection (CRSI, Class1) or stainless steel protection (CRSI, Class 2).

H. Dowel Bars: Plain (smooth) high-chrome steel bar, ASTM A615 Grade 60 with full-length plastic sleeve as a combined unit, dimensions as indicated on the Drawings.

1. Where epoxy-coated dowels are called for: ASTM A1078.

I. Bar/Dowel Adhesive: Two component (1:1 ratio), 100% solids, high modulus, moisture-insensitive structural epoxy gel designed specifically for bonding bars, dowels, and bolts in concrete.

2.5 JOINT MATERIALS

A. Preformed Joint Filler Strips

1. Where no joint sealant is called-for: Nonextruding and resilient bituminous type conforming to ASTM D 1751, 1/2 inch thick, one piece for the full depth and width of the joint.

2. Where joint sealant is called-for: Nonextruding and resilient nonbituminous type conforming to ASTM D 1752, Type I (sponge rubber) or Type II (cork), 1/2 inch thick, allowance for sealant at top and extending for the full depth and width of the joint.

B. Joint Sealant Compound, ASTM C920

1. Self-Leveling (Type SL; Grade “P”)

a. Cold-applied and self-leveling, Type S or Type M elastomeric polymer sealant.

2. Gun-Grade (Non-Sage; Grade “NS”)

a. One-component (Type S) high-performance moisture-curing polyurethane sealant specifically formulated for bonding to masonry and concrete.

3. Traffic Bound areas: T sealant.

4. Non-Traffic Bound areas: NT sealant.

5. Color: As approved by Engineer.

6. Backer material: ASTM D5249, closed cell.

2.6 DETECTABLE WARNING PANEL

A. Surface-mount, UV-stabilized, polymer composite panel as indicated on the Drawings. Fasteners, adhesives, and sealants per manufacturer's requirements. Panel shall comply with Connecticut Building Code/ADA Guidelines.

1. Color: As approved by Engineer.

B. Duralast Detectable Warning Plate with Black Asphaltic Coating, Product Number 00700570 as manufactured by East Jordan Iron Works, 301 Spring Street, East Jordan, MI or approved equal.

2.7 CONCRETE BONDING MATERIALS

A. Aqueous-phase, film-forming, nonoxidizing, freeze and thaw-resistant compound suitable for brush or spray application conforming to ASTM C 932.

B. Epoxy-Resin Adhesive Binder: Two-component, penetrating high solids, epoxy-based primer/bond coat, 100% solids, moisture-tolerant, ASTM C-881, Types I, II, and V, Grade-2, Class C and AASHTO M-235.

2.8 CONCRETE CURING MATERIALS

A. Curing shall be by moist curing (preferred) or by use of curing compound. Sodium Silicate curing compounds shall be used where required by the weather, approved construction schedules and construction that is not adaptable to damp curing.

B. Curing compound shall be a resin-base, white pigmented compound, ASTM C309, Type 2.

C. Curing compounds shall contain a fugitive dye or when hot weather conditions dictate, a fugitive heat reflecting pigment.

D. Moisture-Retaining Cover:

1. Waterproof paper, ASTM C 171, regular or white.

2. Polyethylene sheeting, ASTM C 171.

3. Polyethylene-coated burlap consisting of a laminate of burlap and a white opaque polyethylene film permanently bonded to the burlap. Burlap: ASTM C 171, Class 3. Polyethylene film: ASTM C 171.

4. When tested for water retention in accordance with ASTM C 156, weight of water lost 72 hours after application of moisture retaining covering material shall not exceed 0.039 gram per square centimeter of the mortar specimen surface.

E. Water: Potable Quality.

F. Membrane-Forming Curing Compound

1. Liquid type, ASTM C 309, Type 1, clear, Type 2, white, pigmented.

2.9 BOND BREAKER

A. Asphalt felt conforming to ASTM D2626, Type I or 6-mil polyethylene sheeting, ASTM D4397.

2.10 SEALER

A. Consolideck® Saltguard® silane/siloxane water repellent and chloride screen as manufactured by Prosoco, Inc., 3741 Greenway Circle, Lawrence, KS 66046, or approved equal.

PART 3 EXECUTION

3.1 GENERAL

A. Verify site conditions before proceeding with the work. Field check the accuracy of the Drawings and inspect structures, utilities, and other site features prior to start of work and notify Engineer in writing, of any hazardous conditions and/or discrepancies.

B. Provide construction techniques in accordance with applicable provisions of ACI 224R, ACI 224.3R, and ACI 302.1R-04.

C. Engineer shall be notified of concrete placement sufficiently in advance of start of operation to allow their representative to complete preliminary inspection of the Work, including subgrade, forms, and reinforcing steel, if used.

D. Adjacent work, etc., shall be protected from stain and damage during entire operation. Damaged and stained areas shall be replaced or repaired to equal their original conditions at the contractor's expense. No concrete walks shall be poured after 12 noon unless a guard is visibly stationed nearby to prevent graffiti. Contractor shall be responsible for replacing any graffiti if he fails to provide adequate protection.

E. Concrete surface shall be protected from traffic or damage until surfaces have hardened sufficiently. If necessary, 1/2-inch thick plywood sheets shall be used to protect exposed surfaces.

F. Retempering of concrete is not permitted.

G. Contractor is responsible for the protection and resetting of all existing utility covers/castings to finish grade; as well as, setting all new utility covers/castings to finish grade prior to placement of concrete. The repair of any settlement, or protrusion above finish grade, shall be the responsibility of Contractor at no additional cost to Owner.

3.2 PREPARATION OF SUBGRADE

A. Compact and bring area to required subgrade elevation in accordance with Section 31 2310 – Earthwork. Provide for final fine grading, and compaction of areas as required to form a firm, uniform, accurate and unyielding subgrade at required elevations and to required lines.

B. Existing subgrade material, which will not readily compact as required, shall be removed and replaced with satisfactory materials in accordance with Section 31 2310 – Earthwork.

C. Subgrade of areas to receive concrete shall be recompacted as required to bring the top 8 inches of material, immediately below the base course, to a compaction at optimum moisture content of at least 95 percent (95%) of maximum density, as determined by ASTM D1557. Subgrade compaction shall extend for a distance of at least 1 foot beyond pavement edge.

D. Materials shall not be stored or stockpiled on subgrade.

E. Disposal of debris and other material excavated under this section, and material unsuitable for, or in excess of requirements for, completing work of this section shall be disposed of off-site.

F. Prepared subgrade shall be inspected and approved by Engineer Representative before installation of the gravel base course. Disturbance to subgrade caused by inspection procedures shall be repaired under this Section of the Specification.

3.3 AGGREGATE BASE COURSE

A. Prepare aggregate base course for concrete in accordance with Section 31 2310 – Earthwork and as shown on the Drawings.

B. Width of base course shall be greater than or equal to the width of concrete surface, if continuous lateral support is provided during rolling. The width of base course shall extend at least 2 x base thickness beyond the edge of the course above, if it is not so supported.

C. Aggregate shall be applied in lifts less than or equal to 6 inches thick, compacted measure. Each lift shall be separately compacted to specified density.

1. Material shall be placed adjacent to wall, manhole, catch basin, and other structures only after they have been set to required grade and level.

2. The base shall be wetted and rolled or tamped after the spreading of each lift.

3. Rolling shall begin at the sides and progress to the center of crowned areas, and shall begin on the low side and progress toward the high side of sloped areas. Rolling shall continue until material does not creep or wave ahead of roller wheels.

4. Surface irregularities, which exceed 1/2-inch, as measured by means of a 10-foot long straightedge, shall be replaced and properly re-compacted.

D. Density: Base course shall be compacted at optimum moisture content to not less than 95 percent of maximum density as determined by ASTM D1557.

E. Subgrade and base course shall be kept clean and uncontaminated. Less select materials shall not be permitted to become mixed with gravel. Materials spilled outside pavement lines shall be removed and the area repaired.

F. Portions of subgrade, or of construction above, which become contaminated, softened, or dislodged by the passing of traffic, or otherwise injured, shall be cleaned, replaced, or otherwise repaired to conform to the requirements of this specification before proceeding with the next operation.

3.4 FORMS

A. Forms shall be securely staked, braced and held firmly to the required line and grade and shall be sufficiently tight to prevent leakage of mortar. All forms shall be cleaned and oiled or wetted before concrete is placed against them.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Complete and approve formwork. Remove debris and foreign material from interior of forms before start of concrete placing.

D. Set edge forms or bulkheads and intermediate screed strips for slabs to obtain indicated elevations and contours in finished slab surface and must be strong enough to support vibrating bridge screeds or roller pipe screeds if nature of specified slab finish requires use of such equipment. Align concrete surface to elevation of screed strips by use of strike-off templates or approved compacting-type screeds.

E. The maximum cross slope for sidewalks shall be 2.0 percent, sloped towards the gutter. Verify formwork prior to concrete placement. Make corrections as required and bring discrepancies to attention of Engineer.

3.5 JOINTS

A. Locate joints as located on the Drawings, as shown on Engineer-approved joint plan. Conform with applicable sections of ACI 224.3R.

B. Construction Joints: Effected at the end of a pour, lift, or at the end of a day’s concrete placement. This type of joint is a plane surface between two distinct sections of concrete.

1. Construction Joints shall be ½ inch wide and full-depth of slab.

2. Joint filler: Unless otherwise specified, Construction Joints shall be constructed with joint filler. Joint filler shall extend the full depth of the slab and shall extend the full length of the joint. Use of multiple pieces of joint material of lesser dimensions to make up required depth and width of joint will not be permitted.

3. Where joints are to receive filler, recess joint filler 1/4-inch below finish surface or as otherwise indicated on the Drawings.

4. Where called-for on the Drawings, install dowels at Construction Joints.

C. Isolation Joints: Installed at intersections of structures on any type including but not limited to buildings, walks with steps, pre-cast concrete curb, light foundations, walls, pads, slabs at footings, or other structures. Isolation Joints shall not be required where concrete flatwork abuts granite curbing.

1. Isolation Joints shall be ½ inch wide.

2. Joint Filler: All Isolation Joints shall be constructed with joint filler. Joint filler shall extend the full depth of the slab and shall extend the full length of the joint. Use of multiple pieces of joint material of lesser dimensions to make up required depth and width of joint will not be permitted.

3. Where joints are to receive filler, recess joint filler 1/4-inch below finish surface or as otherwise indicated on the Drawings.

D. Control/Contraction Joints: Installed to form a weakened plane in a concrete member to provide a reduction in member thickness for the purpose of controlling shrinkage stresses to that specific area. Control/Contraction Joints shall be synonymous with “Dummy Joints.”

1. Control/Contraction Joints shall be tooled or saw-cut.

a. Tooled joints: Tool-form joint into the concrete 1 inch in depth, but in no case less than 25 percent of slab depth. Joint width shall be 1/4-inch. Each side of tooled joint shall be dressed to match final overall slab finish. Joint shall be made after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab, but before the slab has achieved its final set.

1) Where tooled joints are to receive joint sealant, provide 1/2-inch wide tooled joint and install backer rod material to create 1/4-inch recess below finished surface.

b. Saw-cut joints: Saw-cut joint into concrete 1 inch in depth, but in no case less than 25 percent of slab depth. Joint width shall be 1/8-inch. Cut joint using rotary saw within 4 to 12 hours after the concrete has been finished.

3.6 STEEL REINFORCEMENT

A. Install steel reinforcement as shown on the Drawings.

1. Welded Wire Reinforcement: Where WWR is called-for, install material in the upper 30 to 40 percent (30%–40%) of the overall slab thickness, or at the nearest depth below top of slab as required to achieve a minimum of 2-inches of cover.

B. Before being placed in position, reinforcing for reinforced concrete shall be thoroughly cleaned of loose mill and rust scale, dirt, ice, and other foreign material, which may reduce the bond between the concrete and reinforcing. Where there is a delay in placing concrete after reinforcement is in place, bars shall be re-inspected and cleaned when necessary.

C. Any bar showing cracks after bending shall be discarded.

D. Minimum Cover: 2 inches, except where concrete is cast against and permanently exposed to earth minimum cover shall be 3 inches.

E. For slab-type construction, welded wire reinforcement and reinforcing bars shall be elevated off the base material by use of supports as specified herein. Adjacent sheets of welded wire reinforcing shall lap 6 inches.

F. Joints

1. Construction Joints: Reinforcement shall not continue through construction joints. Allow for 2-inches of cover at end of slab. Where called-for on the Drawings, install pins at Construction Joints per detail.

2. Isolation Joints/Expansion Joints: Allow for 2-inches of cover at end of slab.

3. Control/Contraction Joints: Cut at least one-half of reinforcement at joints.

G. Reinforcing shall be securely wired in the position called for, and shall be maintained in that position until concrete is placed and compacted.

3.7 PLACEMENT

A. Before placing concrete, forms and the space to be occupied by the concrete shall be thoroughly cleaned, and reinforcing steel and embedded metal shall be free from dirt, oil, mill scale, loose rust, paint, and other material which might tend to reduce bond.

B. Existing concrete, earth, forms, and other water-permeable material against which new concrete is to be placed and shall be thoroughly damp when concrete is placed. There shall be no free water on the surface.

C. Concrete shall arrive at the job site in a timely manner so that no additional water will be required to produce the desired slump. When conditions develop that require the addition of water to produce the desired slump, permission of the Engineer must be obtained. The concrete shall be transported from the mixer to its place of deposit by a method that will prevent segregation or loss of material.

D. Concrete, which has set, or partially set, before placement shall not be employed.

E. Existing concrete, earth, and other water-permeable material against which new concrete is to be placed shall be thoroughly damp when concrete is placed. There shall be no free water on surface.

F. Concrete shall be thoroughly spaded and tamped to secure a solid and homogeneous mass, thoroughly worked around reinforcement and into corners of forms.

G. When joining fresh concrete to concrete which has attained full set, the latter shall be cleaned of foreign matter, and mortar scum and laitance shall be removed by chipping and washing. Clean, roughened base surface shall be saturated with water, but shall have no free water on surface. A coat of 1:1 cement-sand grout, approximately 1/8-inch thick shall be well scrubbed into thoroughly dampened concrete base. New concrete shall be placed immediately, before grout has dried or set.

3.8 FINISHING

A. Concrete flatwork surfaces shall be screened off and finished true to line and grade, and free of hollows and bumps. Surface shall be dense, smooth, and at exact level and slope required.

1. Finished concrete surface for concrete subbase shall be woodfloated to a slightly rough surface. Surface shall not deviate more than 1/4-inch in 10 feet.

2. Finished concrete surface for concrete pavement, walks, and pads shall be wood-floated and steel troweled to a smooth surface. Surface shall not deviate more than 1/8-inch in 10 feet.

B. Unless otherwise indicated, horizontal surfaces of concrete surfaces, which will be exposed, shall be given a light broomed finish, with direction of grooves in concrete surface perpendicular to length of concrete band, slab or pad. After concrete has set sufficiently to prevent coarse aggregate from being torn from the surface, but before it has completely set, brooms shall be drawn across it to produce a pattern of small parallel grooves. Broomed surface shall be uniform, with no smooth, unduly rough or porous spots, or other irregularities. Coarse aggregate shall not be dislodged by the brooming operation.

C. Immediately following finishing operations, arises at edges and both sides of expansion joints shall be rounded to a ¼ inch radius. Control joints to be tooled shall be scored into slab surface with scoring tool. Adjacent edges of control joint shall be same time be finished to a ¼ inch radius.

D. Where finishing is performed before the end of the curing period, concrete shall not be permitted to dry out, and shall be kept continuously moist from time of placing until end of curing period, or until curing membrane is applied.

3.9 CURING

A. Cure in accordance with ACI 308R.

B. Concrete shall be kept continuously damp from time of placement until the end of the specified curing period.

C. Water shall not be applied to curing concrete within 24 hours after initial placement. Any water shall be applied only to maintain damp conditions. Do not add water during floating and troweling operations.

D. Between finishing operations, the surface shall be protected from rapid drying by covering with a material specified herein. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of fine-spray of water, applied as often as necessary to prevent drying after the initial 24-hour cure period.

E. Concrete surfaces shall be cured by completely covering them with curing paper or an application of a curing compound.

1. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.

2. If concrete is cured with a curing compound, the compound shall be applied at a rate of 200 square feet per gallon, in two applications perpendicular to each other.

3. Curing period shall be seven days minimum. Full-strength shall be considered after 28 days.

F. Only if additional protection is required, the surface should remain uncovered for at least 4 days, after which time new and unwrinkled non-staining reinforced waterproof Kraft curing paper may be used.

G. Integrally Colored Concrete: Cure using a curing compound specific for integrally colored concrete according to manufacturer's instructions using manufacturer's recommended application techniques. Apply curing and sealing compound at consistent time for each pour to maintain close color consistency.

3.10 COLD WEATHER CONCRETING

A. Comply with ACI 306R Guide to Cold Weather Concreting.

B. Materials for concrete shall be heated for concrete, which is mixed, placed or cured when the mean daily temperature is below 40 degrees F or is expected to fall below 40 degrees F within 72 hours. The concrete, after placement, shall be protected by covering, heat, or both.

C. Details of handling and protecting concrete during freezing weather shall be subject to the approval of Engineer.

3.11 HOT WEATHER CONCRETING

A. Comply with ACI 305R: Guide to Hot Weather Concreting.

B. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placement shall be sprinkled with cold water. Every effort shall be made to minimize delays that will result in excessive mixing of the concrete after arrival on the job.

C. During periods of excessively hot weather (95□F, or above), ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels all in accordance with the provisions of ACI 305R. Any concrete with a temperature below 95□F, when ready for placement, will not be acceptable, and will be rejected.

D. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. Records shall include checks on temperature of concrete as delivered and after placing in forms. Data should be correlated with the progress of the Work so that conditions surrounding the construction of any part of the structure can be ascertained.

3.12 PROTECTION

A. Concrete surface shall be protected from traffic or damage until surfaces have hardened sufficiently. If necessary, ½ inch thick plywood sheets shall be used to protect the exposed surface.

3.13 CLEAN UP

A. Remove all debris, residuals, and materials at the conclusion of the work. Dispose of all materials in accordance with applicable waste management regulations.

END OF DOCUMENT 03 3200

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Mortar and Grout.

C. Ties and Anchors.

D. Reinforcement and anchorage.

E. Lintels.

F. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Loose steel lintels and Fabricated steel items.

B. Section 07 8400 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.

C. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

D. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2026.

E. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2025b.

F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019 (Reapproved 2025).

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

H. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2026.

I. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

J. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2024.

K. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2019.

L. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.

M. ASTM C129 - Standard Specification for Dry-Cast Nonloadbearing Concrete Masonry Units; 2025.

N. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.

O. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

P. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2024.

Q. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2024.

R. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

S. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

T. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

U. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

V. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2024.

W. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

X. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2025.

Y. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.

Z. ASTM D1056 - Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber; 2020.

AA. ASTM D2000 - Standard Classification System for Rubber Products in Automotive Applications; 2018, with Editorial Revision (2024).

BB. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

CC. ACI 315R - Guide to Presenting Reinforcing Steel Design Details 2018.

DD. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

EE. ASTM C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement 2015.

FF. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar 1992a (Reapproved 2014).
    1. Masonry 2019a.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting at least one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
    1. Include calculations or selections from the manufacturer's prescriptive design tables that indicate compliance with the applicable building code and project conditions.
    2. Include the design engineer's stamp or seal on each sheet of shop drawings with engineer licensed in the State of Connecticut.

D. Shop Drawings: Submit for the following:
    1. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315R. Show elevations of reinforced walls.

E. Samples: Physical samples of standard masonry units are not required.

F. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

I. Cold-Weather and Hot-Weather Procedures: Submit detailed description of methods, materials, and equipment to be used to comply with requirements.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Fire Rated Assemblies: Conform to applicable code for indicated requirements for fire rated masonry construction.

C. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

D. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum five years of documented experience.

E. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.08 FIELD CONDITIONS

A. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in TMS 402/602.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 402/602.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from a single source from a single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from a single source or producer for each aggregate.

2.02 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. A. Jandris & Sons.
      b. Nitterhouse Masonry Products, LLC.
      c. Westbrook Block, Inc.
   2. Size: Standard units with nominal face dimensions of 16 by 8 inches (400 by 200 mm) and nominal depths as indicated on drawings for specific locations.
   3. Special Shapes: Provide nonstandard blocks configured for corners.
      a. Provide 1" radius bullnose units for outside corners.
   4. Load-Bearing Units: ASTM C90, lightweight.

a. Hollow block.
b. Minimum Compressive Strength: 2000 psi.
c. Exposed Faces: Manufacturer's standard color and texture.

5. Non-Loadbearing Units for Exterior Back-Up and Interior Partitions: ASTM C129.
   a. Hollow block, unless otherwise indicated on the drawings.
   b. Lightweight.
   c. Minimum Net Area Compressive Strength: As indicated on the drawings.
   d. Exposed Faces: Manufacturer's standard color and texture.

2.03 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
   1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.

D. Grout Aggregate: ASTM C404.

E. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As selected by Architect from manufacturer's full range.

F. Water: Clean and potable.

G. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.

H. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Use only in combination with masonry units manufactured with integral water repellent admixture.
   2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
   3. Meet or exceed performance specified for water repellent admixture used in masonry units.

I. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Type N.
   2. Application: All concealed unit masonry.
      a. Type: Type N.
      b. Color: Standard gray.
   3. Application: Where indicated.
      a. Type: Type N.
      b. Color: As selected from the manufacturer's standard color palette.

J. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.

2.04 TIES AND ANCHORS

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
   1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A153/A153M, Class B-2 coating.

2. Galvanized-Steel Sheet: ASTM A653/A653M, Commercial Steel, G60 zinc coating.
3. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
4. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.
1. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches long may be used for masonry constructed from solid units.
2. Where wythes do not align or are of different materials, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.
3. Wire: Fabricate from 1/4-inch-diameter, hot-dip galvanized steel wire.

D. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-iameter, hot-dip galvanized steel wire.
2. Tie Section: Triangular-shaped wire tie made from 0.25-inch-diameter, hot-dip galvanized steel wire.

E. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.105-inch-thick steel sheet, galvanized after fabrication.
a. 0.108-inch-thick, galvanized-steel sheet may be used at interior walls unless otherwise indicated.
2. Tie Section: Single screw veneer tie for concrete with EPDM washers, Basis-of-Design Product, Hohman and Barnard Thermal Concrete 2-Seal Wing Nut Anchor made from hot-dipped galvanized steel sheet and hot-dipped galvanized hooks.

F. Partition Top Anchors: 0.105-inch-thick metal plate with a 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

G. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.

H. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.105-inch- thick steel sheet, galvanized after fabrication.
3. Fabricate wire ties from 0.25-inch- diameter, hot-dip galvanized-steel wire unless otherwise indicated.
4. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours according to ASTM B117. Provide with seismic hook.
a. Basis-of-Design Product: Hohmann & Barnard, Inc. Thermal 2-Seal Wing Nut Anchor.

2.05 REINFORCEMENT AND ANCHORAGE

A. Reinforcing Steel: Type specified in Section 03 2025; size as indicated on drawings; uncoated finish.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in the center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Heckmann Building Products, Inc.
      b. Hohmann & Barnard, Inc.
      c. Wire-Bond.

C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

D. Single Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Ladder.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to 16 CFR 1201 Class 3.
   3. Size: 0.1875 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

E. Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Ladder.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to 16 CFR 1201 Class 3.
   3. Size: 0.1875 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

F. Adjustable Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Truss, with adjustable ties or tabs spaced at 16 inch on center.
   2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M Class B.
   3. Size: 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire, width of components as required to provide not less than 5/8 inch of mortar coverage from each masonry face.

G. Joint Reinforcement: Use ladder type joint reinforcement at all multiple wythe walls; use truss type joint reinforcement only at single wythe walls which are not reinforced or grouted.

H. Reinforcement for Stack Bond Masonry: Provide W1.7 horizontal reinforcing wire in every other course for 8 inch wide masonry, unless otherwise required by TMS 402/602.

I. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

2.06 ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

C. Preformed Control Joints:
   1. Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
   2. Provide with corner and tee accessories, fused joints.

D. Joint Filler: Closed cell neoprene; oversized 50 percent to joint width; self-expanding; in maximum lengths available.

E. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.148-

inch (9 gauge) steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.

1. Products: Subject to compliance with requirements, provide one of the following:
    a. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
    b. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
    c. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

F. Masonry Cleaners:

1. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
        1) Diedrich Technologies, Inc.; a division of Sandell Construction Solutions.
        2) EaCo Chem, Inc.
        3) PROSOCO, Inc.

2.07 LINTELS

A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.08 MORTAR AND GROUT MIXING

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.

1. Masonry below grade and in contact with earth: Type S.
2. Exterior, loadbearing masonry: Type S.
3. Exterior, non-loadbearing masonry: Type S.
4. Interior, loadbearing masonry: Type N.
5. Interior, non-loadbearing masonry: Type N.

C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of masonry cement by weight.
3. Mix to match Architect's sample.
4. Application: Use pigmented mortar for exposed mortar joints with the following units:
    a. Decorative CMUs.
    b. Architectural Stone Veneer.

D. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 402/602 for dimensions of grout spaces and pour height.

E. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: As indicated for different locations.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Struck Flush joints.

3.05 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high-pressure cleaning methods.

F. Interlock intersections and external corners, except for units laid in stack bond.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

J. Isolate masonry partitions from vertical structural framing members with a control joint.

K. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

3.07 LINTELS

A. See Lintel Schedules on drawings.

B. Install loose steel lintels over openings where indicated.

C. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.

D. Reference drawings and details for minimum bearing lengths at each side of openings.

3.08 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.09 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

3.10 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.11 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 feet and 1/4 inch in 10 feet; 1/2 inch in 30 feet.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.12 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.13 FIELD QUALITY CONTROL

A. Inspections: Perform special inspections according to Level B in TMS 402/602.

B. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

3.14 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Use non-metallic tools in cleaning operations.

3.15 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION 04 2000

DOCUMENT 04 4205 – EXTERIOR STONE CLADDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Dimension stone panels set with individual anchors anchored to concrete and unit masonry backup.
2. Dimension stone trim units, including wall caps.
3. Metal skateboard deterrents installed in joints between stone panels and precast architectural concrete seat wall units.

B. Related Sections:

1. Division 04 Section "Unit Masonry Assemblies" for concealed flashing and miscellaneous masonry accessories.
2. Division 07 Section "Joint Sealants" for sealing joints in dimension stone cladding system with elastomeric sealants.

1.3 DEFINITIONS

A. Definitions contained in ASTM C 119 apply to this Section.

1.4 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

A. LEED Submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

B. Samples for Initial Selection: For each variety, color, and finish of stone cladding unit submitted other than Basis-of-Design Products specified.

C. Stone Samples for Verification: Sets for each variety, color, and finish of stone required; not less than 12 inches (300 mm) square.

1. For each stone type indicated. Include at least two samples in each set for each type of stone, exhibiting extremes of the full range of color and other visual characteristics expected in completed Work. Samples will establish the standard by which stone provided will be judged.
2. Final approval of stone will be subject to Owner's review of samples on site.

D. Sealant Samples for Verification: For each type and color of joint sealant required.

E. Delegated-Design Submittal: For dimension stone cladding assembly.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer, fabricator and professional engineer.

B. Material Test Reports:

1. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous five years.
2. For metal components, by a qualified testing agency, indicating chemical and physical properties of metal.
3. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer complying with requirements in Division 07 Section "Joint Sealants" and indicating that sealants will not stain or damage stone. Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.

C. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Dimension Stone Units: Furnish not less than 2 percent of finished stone panels and trim units installed for each size, finish and variety of stone specified.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate dimension stone cladding assemblies similar to that required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: A firm or individual experienced in installing dimension stone cladding assemblies similar in material, design, and extent to that indicated for this Project, whose work has a record of successful in-service performance.

C. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of exterior stone cladding and trim assemblies that are similar to those indicated for this Project in material, design, and extent.

D. Source Limitations for Stone: Obtain stone from one quarry with resources to provide materials of consistent quality in appearance and physical properties.

E. Mockup: Build mockup to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup as part of mockup as specified in Division 04 Section “Unit Masonry Assemblies”.

F. Preinstallation Conference: Conduct conference at Project site as specified in Division 04 Section “Unit Masonry Assemblies”.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.

   1. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
   2. Store stone on wood skids or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.

B. Mark stone units, on surface that will be concealed after installation, with designations used on Shop Drawings to identify individual stone units. Orient markings on vertical panels so that they are right side up when units are installed.

C. Deliver sealants to Project site in original unopened containers labeled with manufacturer's name, product name and designation, color, expiration period, pot life, curing time, and mixing instructions for multicomponent materials.

1.9 PROJECT CONDITIONS

A. Protect dimension stone cladding during erection by doing the following:

1. Cover tops of dimension stone cladding installation with nonstaining, waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 24 inches (600 mm) down both sides and hold securely in place.
2. Prevent staining of stone from mortar, grout, sealants, and other sources. Immediately remove such materials without damaging stone.
3. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on ground and over wall surface.
4. Protect sills, ledges, and projections from mortar and sealant droppings.

B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

D. Environmental Limitations for Sealants: Do not install sealants when ambient and substrate temperatures are outside limits permitted by sealant manufacturer or below 40 deg F (5 deg C) or when joint substrates are wet.

1.10 COORDINATION

A. Coordinate installation of inserts that are to be embedded in masonry, flashing reglets, and similar items to be used by dimension stone cladding Installer for anchoring, supporting, and flashing of dimension stone cladding assembly. Furnish setting drawings, templates, and directions for installing such items and deliver to Project site in time for installation.

B. Time delivery and installation of dimension stone cladding to avoid extended on-site storage and to coordinate with work adjacent to dimension stone cladding.

C. Advise installers of other work about specific requirements for placement of flashing and similar items to be built into stone cladding.

1.11 MANUFACTURERS

A. Source Limitations for Stone: Obtain stone, regardless of finish, from single quarry with resources to provide materials of consistent quality in appearance and physical properties.

1. Make quarried blocks available for examination by Architect.

B. Source Limitations for Other Materials: Obtain each type of stone accessory, sealant, and other material from single manufacturer for each product.

1.12 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design dimension stone cladding assembly.

B. General: Design stone anchors and anchoring systems according to ASTM C 1242.
1. Stone anchors shall withstand not less than two times the weight of the stone cladding in both compression and tension.

C. Structural Performance: Dimension stone cladding assembly shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Wind Loads: As indicated on the Structural Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Safety Factors for Stone: Design dimension stone cladding assembly to withstand loads indicated without exceeding stone's allowable working stress determined by dividing stone's average ultimate strength, as established by testing, by the following safety factors:
1. Safety Factor for Granite: 3.
2. Safety Factor for Concentrated Stresses: 4 for granite.

F. Design stone anchors to withstand loads indicated without exceeding allowable working stresses established by the following:
1. For Cold-Formed Steel: AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
2. For Cast-in-Place and Postinstalled Fasteners in Concrete: One-fourth of tested capacity when installed in concrete with compressive strength indicated.

G. Corrosion and Staining Control: Prevent galvanic and other forms of corrosion as well as staining by isolating metals and other materials from direct contact with incompatible materials. Materials shall not stain exposed surfaces of stone and joint materials.

PART 2 - PRODUCTS

2.1 LIMESTONE

A. Material Standard: Comply with ASTM C 568.
1. Classification:II Medium-Density.

B. Description: Oolitic limestone.

C. Varieties and Sources: Indiana limestone quarried in Lawrence, Monroe, or Owen Counties, Indiana.
   1. Indiana Limestone Grade and Color: Select, buff, according to grade and color classification established by ILI.

D. Cut stone from one block or contiguous, matched blocks in which natural markings occur.

E. Top and Sides Finish: Sawn with sand rubbed finish matching standard ILI finish.

F. Thickness: As indicated on the Drawings.

G. Description: Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

   1. Stone Panels: Size as indicated on the Drawings; 2 inches thick; thermal finish.
   2. Wall Caps: Provide cap profiles of sizes as shown on the Drawings; thermal finish.

H. Sealants for Joints in Dimension Stone Cladding: Manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated below that comply with applicable requirements in Division 07 Section "Joint Sealants" and do not stain stone:

   1. Silicone Joint Sealant: Complying with ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

      a. Basis-of-Design Product: Subject to compliance with requirements, provide "Pecora 890FTS-TXTR" non-staining textured silicone sealant by Pecora Corporation.
      b. Joint-Sealant Color: Custom color to be selected by the Architect.

2.2 ANCHORS AND FASTENERS

A. Stone Cladding Anchors: Units fabricated with tabs designed to engage kerfs in stone trim units and holes for fasteners or postinstalled anchor bolts for fastening to substrates or framing as indicated.

   1. Basis-of-Design Product: Provide "#SRX-Plus Stone Anchor System" by Hohmann & Barnard, Inc. Subject to compliance with requirements, provide either the named product or a comparable product manufactured by one of the following, as approved by the Architect:

      a. Dayton Superior Corporation, Dur-O-Wal Division.
      b. Heckmann Building Products Inc.

   2. Materials: Fabricate anchors from 3/16 inch (4.7 mm) stainless steel, ASTM A 240/A 240M, Type 304.
   3. Shims: Provide plastic or neoprene shims between the stainless steel anchor and substrate as needed.
   4. Fasteners: 1/4 inch diameter stainless steel self-drilling TEK screws. Provide 2 per anchor.

2.3 STONE ACCESSORIES

A. Setting Shims: Strips of resilient plastic or vulcanized neoprene, Type A Shore durometer hardness of 50 to 70, nonstaining to stone, of thickness needed to prevent point loading of stone on anchors and of depths to suit anchors without intruding into required depths of pointing materials.

B. Cellular Plastic Weep Hole/Vents: As specified in Division 04 Section "Unit Masonry".

C. Through Wall Flashing: Through wall flashing complying with SMACNA's "Architectural Sheet Metal Manual, Division 07 Section "Sheet Metal Flashing and Trim" as specified in Division 04 Section "Unit Masonry Assemblies ".

D. Through Wall Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated as follows:

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Heckmann Building Products Inc.; #1007 Hemmed Drip Edge Flashing.
   b. Hohmann & Barnard, Inc.; Standard Drip Plate DP.
   c. Wire-Bond; Drip Edge.

2. Stainless Steel: ASTM A 240/A 240M, Type 304, 26 gauge.
3. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing. Provide preformed inside and outside corners to match size and gauge of drip edge flashing.
4. Metal Drip Edges: Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed 3/8-inch.

2.4 STONE FABRICATION

A. General: Fabricate stone to comply with sizes, shapes, and tolerances recommended by applicable stone association or, if none, by stone source, for faces, edges, beds, and backs.

1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."

B. Control depth of stone and back check to maintain minimum clearance of 1-1/2 inches (38 mm) between backs of stone units and surfaces or projections of structural members, fireproofing (if any), backup walls, and other work behind stone.

C. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.

D. Cut and drill sinkages and holes in stone for anchors, fasteners, supports, and lifting devices as indicated or needed to set stone securely in place.

E. Finish exposed faces and edges of stone, except sawed reveals, to comply with requirements indicated for finish and to match approved samples and mockups.

F. Quirk-miter corners unless otherwise indicated; provide for cramp anchorage in top and bottom bed joints of corner pieces.

G. Cut stone to produce uniform joints 3/8 inch (10 mm) wide, unless otherwise indicated, and in locations indicated.

H. Contiguous Work: Provide chases, reveals, reglets, openings, and similar features as required to accommodate contiguous work.

I. Clean backs of stone to remove rust stains, iron particles, and stone dust.

J. Inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

1. Grade and mark stone for overall uniform appearance when assembled in place. Natural variations in appearance are acceptable if installed stone units match range of colors and other appearance characteristics represented in approved samples and mockup.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive dimension stone cladding and conditions under which dimension stone cladding will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of dimension stone cladding.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of dimension stone cladding.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING DIMENSION STONE CLADDING, GENERAL

A. Before setting stone, clean surfaces that are dirty or stained by removing soil, stains, and foreign materials. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

B. Execute dimension stone cladding installation by skilled mechanics and employ skilled stone fitters at Project site to do necessary field cutting as stone is set.
1. Use power saws with diamond blades to cut stone. Produce lines cut straight and true, with edges eased slightly to prevent snipping.

C. Contiguous Work: Provide reveals, reglets, and openings as required to accommodate contiguous work.

D. Set stone to comply with requirements indicated. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure dimension stone cladding in place. Shim and adjust anchors, supports, and accessories to set stone accurately in locations indicated, with uniform joints of widths indicated, and with edges and faces aligned according to established relationships and indicated tolerances.

E. Install concealed flashing at continuous ledges and similar obstructions to downward flow of water, to divert water to exterior. Extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
   1. Comply with requirements as specified in Division 04 Section “Unit Masonry”.

F. Keep cavities open where unfilled space is indicated between back of stone units and backup wall; do not fill cavities with mortar or grout.

   1. Place weep holes in joints where moisture may accumulate, including at base of cavity walls and above lintels and flashing. Locate weep holes at intervals not exceeding 24 inches (600 mm). Use plastic weep hole/vents.
   2. Place vents in cavity walls at tops of cavities, below wall caps and flashing, and at intervals not exceeding 20 feet (6 m) vertically. Locate vents in joints at intervals not exceeding 60 inches (1500 mm) horizontally. Use plastic weep hole/vents.

3.3 SETTING MECHANICALLY ANCHORED DIMENSION STONE CLADDING

A. Set dimension stone cladding with mechanical anchors without mortar unless otherwise indicated.

B. Attach anchors securely to stone and to backup surfaces. Comply with recommendations in ASTM C 1242.

C. Provide compressible filler in ends of dowel holes to prevent end bearing of dowels and anchor tabs on stone. Fill remainder of anchor holes with sealant indicated.

D. Set stone supported on clips or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform joint widths and to prevent point loading of stone on anchors. Hold shims back from face of stone a distance at least equal to width of joint.

3.4 JOINT-SEALANT INSTALLATION

A. Prepare joints and apply sealants of type and at locations indicated to comply with applicable requirements in Division 07 Section "Joint Sealants."

3.5 INSTALLATION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of walls, do not exceed 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (10 mm in 6 m), or 1/2 inch in 40 feet (12 mm in 12 m) or more. For external corners, corners and jambs within 20 feet (6 m) of an entrance, expansion joints, and other

conspicuous lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch in 40 feet (10 mm in 12 m) or more.

B. Variation from Level: For lintels, sills, and other conspicuous lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (10 mm) maximum.

C. Variation of Linear Building Line: For positions shown in plan and related portions of walls, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (12 mm in 12 m) or more.

D. Variation in Cross-Sectional Dimensions: For thickness of walls from dimensions indicated, do not exceed plus or minus 1/4 inch (6 mm).

E. Variation in Joint Width: Do not vary from average joint width more than plus or minus 1/8 inch (3 mm) or a quarter of nominal joint width, whichever is less. For joints within 60 inches (1500 mm) of each other, do not vary more than 1/8 inch (3 mm) or a quarter of nominal joint width, whichever is less from one to the other.

F. Variation in Plane between Adjacent Stone Units (Lipping): Do not exceed 1/16-inch (1.5-mm) difference between planes of adjacent units.

3.6 ADJUSTING AND CLEANING

A. Remove and replace broken, chipped, stained, or otherwise damaged stone, defective joints, and dimension stone cladding that does not match approved samples and mockup. Damaged stone may be repaired if Architect approves methods and results.

B. Replace damaged or defective work in a manner that results in dimension stone cladding's matching approved samples and mockup, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean dimension stone cladding as work progresses. Remove excess sealant and smears as sealant is installed.

D. Final Cleaning: Clean dimension stone cladding no fewer than six days after completion of pointing and sealing, using clean water and stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning agents containing caustic compounds or abrasives, or other materials or methods that could damage stone.

3.7 EXCESS MATERIALS AND WASTE

A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.

B. Disposal as Fill Material: Dispose of clean masonry waste, including mortar and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.

1. Crush masonry waste to less than 4 inches (100 mm) in greatest dimension.

2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31 Section "Earth Moving."
3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other waste, and legally dispose of off Owner's property.

1. Comply with requirements as specified in division 01 Section “Construction Waste Management and Disposal”.

END OF DOCUMENT 04 4205

SECTION 05 0513
SHOP-APPLIED COATINGS FOR METAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hot-dip galvanizing and factory-applied prime-coat for the following metal fabrications including, but not limited to:
   1. Factory-applied hot-dip galvanizing and prime coat:
      a. Interior railings, handrails and guardrails at locations indicated on the plans.
      b. Exterior railings, handrails and guardrails and signposts included as site improvements.
      c. Metal fabrications and gratings at locations indicated on the plans.
      d. Miscellaneous and structural steel exposed to the weather or moisture.
   2. Factory-Applied Hot-Dip Galvanizing, Prime Coat and Topcoat:
      a. Miscellaneous landscape items, including signposts. Refer to landscape drawings.
      b. Salvaged areaway metal grating sections and associated hardware at locations indicated on the plans.
      c. Metal bar gratings.

1.02 RELATED SECTIONS

A. Section 05 5000 - Metal Fabrications.

B. Section 05 5113 - Metal Pan Stairs.

C. Section 05 5214 – Pipe and Tube Railings.

D. Section 09 9113 – Exterior Painting.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

D. ASTM D522/D522M - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings; 2017 (Reapproved 2021).

E. ASTM D610 - Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces; 2025.

F. ASTM D714 - Standard Test Method for Evaluating Degree of Blistering of Paints; 2002 (Reapproved 2017).

G. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact); 1993 (Reapproved 2024).

H. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test; 2022.

I. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser; 2025.

J. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2022.

K. NFPA 15 - Standard for Water Spray Fixed Systems for Fire Protection; 2027.

L. ASTM A143/A143M - Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

M. ASTM A384/A384M - Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies.

N. ASTM A385/A385M - Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).

O. ASTM D2485 - Standard Test Methods for Evaluating Coatings For High Temperature Service.

P. ASTM D4585/D4585M - Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation.

Q. ASTM D5894 - Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet).

1.04 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Galvanizer's product literature for coatings specified in this section indicating type of products and performance requirements.

C. Verification Samples: Submit two 3-inch by 6-inch (76-mm by 152-mm) samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
   1. Prepare verification samples on substrate of actual material to receive specified factory-applied coating systems. Fabricator shall furnish galvanizer with samples of actual materials (substrates). Galvanizer shall hot-dip and finish sample in selected color.
   2. Architect will approve sample for surface color and gloss prior to full fabrication and production.

D. Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certificate that shop drawings for metal fabrications to receive metal coatings have been reviewed; and fabrications are acceptable to the galvanizer for proper application of galvanizing and factory-applied metal coatings. Drawings shall be stamped by the galvanizer to indicate approval of the design for galvanizing prior to submitting for Architect's review.

E. Certificate of Compliance of Item Identification Galvanizer: Galvanizer shall mark all lots of material with a clearly visible stamp or tag indicating the name of the galvanizer, the type and weight of the nickel-zinc coating, and the applicable ASTM Standard Numbers.

F. Certificate of Compliance for Items Coated by Galvanizer: Submit notarized Certificate of Compliance with application for payment for galvanizing, signed by galvanizer, indicating compliance with requirements of specifications. Include scope of services provided, and quantity and itemized description of items processed.
   1. Include galvanizer's certification that shop-applied primer is completely compatible with field-applied topcoats specified in Section 09 9113 - Exterior Painting.

G. Galvanizer/Coater shall provide a certificate of compliance that all coatings have been performed in accordance with SSPC QP3/AISC 420 - Qualification of Paint Shops, standards and procedures.

1.05 QUALITY ASSURANCE

A. Comply with applicable portions of ASTM A143/A143M, ASTM A384/A384M and ASTM A385/A385M.

B. Coordination Between Fabricator and Galvanizer: Prior to fabrication, fabricator shall submit approved shop drawings to the galvanizer for all fabrications. Galvanizer shall review fabricator's shop drawings for suitability of materials for galvanizing and coatings and coordinate any required modifications to fabrications which shall be completed by the fabricator.

C. Steel Materials: For steel to be hot dip-galvanized, provide steel chemically suitable for metal coatings complying with the following requirements: Carbon below 0.25 percent, silicon below

1. 0.24 percent, phosphorous below 0.05 percent, and manganese below 1.35 percent. Notify galvanizer if steel does not comply with these requirements to determine suitability for processing.
2. To prevent unnecessary damage to the galvanized coating by field welding, provide slip-fit method of connecting pipe railings. Fabricate pipe railing from mechanical steel tubing internally vented with holes 3/4 the size of the pipe's internal diameter. For other fabrications, bolted connections shall be used wherever possible.
3. Assemblies: Where size of assembly is too large for galvanizing kettle, galvanize components prior to fabrication and assemble after galvanizing.

D. Engage the services of a galvanizer who has demonstrated a minimum of 10 years experience in the successful performance of the processes outlined in this specification and who will apply the galvanizing and coatings within the same facility as outlined herein. The Architect has the right to inspect and approve or reject the galvanizer/galvanizing facility.

E. Galvanizer/galvanizing facility shall conduct an ongoing Quality Control/Quality Assurance program acceptable to the Architect which has been in effect for a minimum of five years and shall provide the Architect with process and final inspection documentation.

F. Galvanizer/galvanizing facility shall have an on-premise testing facility capable of measuring the chemical and metallurgical composition of the galvanizing bath and pickling tanks.

G. In-process paint application shall be monitored with a wet film gage and the measurements recorded. Dry film thickness measurement shall be by Tooke Gage and Magnetic Coating Thickness gage.

H. Provide and apply materials complying with environmental requirements of authority having jurisdiction. All materials shall be delivered to the galvanizer with label or product data sheet affixed to the manufacturer's containers showing the manufacturer's name, batch number, type of paint, stock number, label analysis of solids and vehicle, reducing and thinning instructions, drying and recoat time, MSDS sheets, recommended application procedures and environmental restrictions.
   1. Paint materials shall be stored in an accepted location reserved only for such materials and related equipment in compliance with applicable local health and fire regulations and OSHA requirements.

I. The galvanizer/galvanizing facility shall have a dedicated, on-premise painting and curing facility for the exclusive use of coating galvanized steel. Galvanizing facility shall utilize the following:
   1. Recording hygrometer to measure air temperature and humidity.
   2. A spray booth conforming to OSHA regulations with filtered exhaust.
   3. A convection hot air curing system with solvent vapor removal ability.
   4. The curing booth shall be heated using an indirect thermostat-controlled gas fired forced hot air blower. The booth shall be protected with a sprinkler system complying with NFPA 15. The air in the curing booth shall be continuously monitored by a lower explosive limit (LEL) monitoring device connected to the ventilation system. The booth shall be capable of reaching 150 degrees Fahrenheit with a sustained capability of 100 degrees Fahrenheit.

1.06 WARRANTY

A. Warranty Terms: Provide galvanizer's standard warranty that materials will be free from 10 percent or more visible rust for 20 years.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Basis-of-Design Products: The design systems for factory-applied galvanizing coatings and factory-applied prime-coat are based on products and installation processes of Duncan

Galvanizing, The Duncan Group; 69 Norman St., Everett, MA, 02149; Tele: (617) 389-8440; www.duncangalvanizing.com. Subject to compliance with requirements, provide either the named products/process or comparable ones by the following:

1. Voigt & Schweitzer LLC (Main Office), 987 Buckeye Park Road, Columbus, Ohio 43207; Tel: (617) 443-4621; www.hotdipgalvanizing.com.
2. AZZ Galvanizing Service, 446 Smith St, Middletown, CT 06457: Tel: (860) 632-8766; www.azz.com.

2.02 HOT-DIP GALVANIZING

A. Provide coating for iron and steel fabrications applied by the hot-dip process, and as follows:
   1. Comply with ASTM A123/A123M for fabricated products and ASTM A153/A153M for hardware.
   2. Provide thickness of galvanizing specified in referenced standards.
   3. The galvanizing bath shall contain high grade zinc, nickel and other earthly materials.
   4. Coating Product: “DuraGalv®”, Duncan Galvanizing, or subject to compliance with requirements a comparable product approved by the Architect.

2.03 FACTORY-APPLIED PRIMER OVER HOT-DIP GALVANIZING

A. Provide factory-applied polyamide epoxy primer, 2.0 mils 0 inch dry film thickness minimum, and as follows:
   1. Apply primer within 12 hours after galvanizing at the galvanizer’s plant in a controlled environment meeting applicable environmental regulations.
   2. Coating Product: “PrimerGalv®”, Duncan Galvanizing, or subject to compliance with requirements a comparable product approved by the Architect.
   3. Performance Criteria: Coating shall meet or exceed the following performance criteria:
      a. Abrasion Resistance: 200 mg loss when tested in accordance with ASTM ASTM D4060 (CS17 Wheel, 1,000 grams load).
      b. Adhesion: 1050 psi when tested in accordance with ASTM D4541.
      c. Corrosion Weathering: Rating 10 per ASTM D714 for blistering and Rating 7 per ASTM D610 for rusting when tested in accordance with ASTM D5894.
      d. Direct Impact Resistance: 160 inch. lbs. when tested in accordance with ASTM D2794.
      e. Flexibility: Coating shall pass when tested in accordance with ASTM D522/D522M, 180-degree bend, 1-inch (25.4-mm) mandrel.
      f. Pencil Hardness: 3H when tested in accordance with ASTM D3363.
      g. Moisture Condensation Resistance: Coating shall pass with no cracking or delamination when tested in accordance with ASTM D4585/D4585M, 100 degrees Fahrenheit, 2000 hours.
      h. Dry Heat Resistance: 250 degrees Fahrenheit when tested in accordance with ASTM D2485.

2.04 FACTORY-APPLIED ARCHITECTURAL FINISH OVER HOT-DIP GALVANIZING AND PRIMER

A. Provide factory-applied high-performance urethane color coating over primed galvanized steel as previously referenced, and as follows:
   1. Apply coating at the galvanizer’s plant, in a controlled environment meeting applicable environmental regulations.
   2. Galvanizing facility shall assume single-source responsibility for galvanizing, priming and finish coatings.
   3. Coating Product: “ColorGalv®”, Duncan Galvanizing, or subject to compliance with requirements a comparable product approved by the Architect.

PART 3 EXECUTION

3.01 APPLICATION OF GALVANIZING AND METAL COATINGS

A. Galvanize materials in accordance with referenced standards and this specification. Galvanizing shall provide an acceptable substrate for applied coatings.

B. The dry kettle process shall be used to eliminate flux inclusions on the surface of the galvanized material. Prior to galvanizing, steel shall be immersed in a pre-flux solution (zinc ammonium chloride). The pre-flux tank shall be 12° to 14° Baumé and contain less than 0.4% iron. Use of the wet kettle process shall be prohibited.

C. Comply with the following procedures for galvanizing:
   1. The tank shall be inspected regularly to observe any variances in the galvanizing bath temperature, utilizing a monitoring recorder.
   2. Pickling tanks shall contain hydrochloric acid with a constant range between 10-14%, an iron content less than 8%, and zinc content less than 3%. Titrations shall be taken weekly, minimum.
   3. Rinse tanks, for the removal of cleaning chemicals, shall contain water.
   4. Water quenching of galvanized steel shall be prohibited.
   5. All chemicals and zinc shall be tested weekly to determine compliance with ASTM standards. Testing shall be accomplished using atomic absorption spectrometry equipment or X-ray fluorescence (XRF) equipment at a laboratory in the galvanizing plant.

D. Galvanizing shall exhibit a rugosity (smoothness) 4 rug or less (16-20 microns of variation) when measured by a profilometer over a 1-inch (25.4-mm) straight line on the surface of elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1-micron increments.

E. The primer and topcoat materials shall be certified VOC compliant, <2.9 lbs/gal (0.35 gms/cu cm), and conform to the following:
   1. Primer: High-solid polyamide epoxy applied to a DFT of 3 mils 0 inch minimum.
   2. Topcoat: Color pigmented, two-component high build aliphatic polyurethane applied to a DFT of 3 mils 0 inch minimum.
   3. Primer and topcoat shall be selected from manufacturers approved by the Architect.

F. Apply primer over hot-dip galvanizing within 12 hours after galvanizing in the galvanizer's facility in accordance with specified requirements and recommendations of galvanizer.

G. Primer and topcoat shall be applied under the following conditions:
   1. Minimum air temperature shall be 65 degrees Fahrenheit. Surface temperature of steel shall be 60-95 degrees Fahrenheit and, in any event, be 5 degrees Fahrenheit higher than the dew point. Humidity shall be 85% maximum.
   2. Surface of steel shall be dry and free from dust, dirt, oil, grease or other contaminants. Coating and cure facility shall be maintained free of airborne dust and dirt until coatings are completely cured.
   3. The use of iron or steel shot and sand and aluminum oxide grit as a blast medium, and power wire brushes are not permitted.
   4. Primer shall be applied by way of a plural component airless spray over a consistent surface profile, 1.5 mils 0 inch minimum. The profile shall be measured and permanently recorded with TestTex Press-O-Film replica tape.

H. Installation: Comply with fabricator's and galvanizer's requirements for installation of materials and fabrications, including use of nylon slings or padded cables for handling factory- primed or factory-finished materials.

I. Touch-Up and Repair: For damaged and field-welded metal coated surfaces, clean welds, bolted connections and abraded areas.

1. On galvanized surfaces, apply organic zinc repair paint complying with requirements of ASTM A780/A780M. Modified to 95 percent zinc in dry film.
   a. Galvanizing repair paint shall have 95 percent zinc by weight.
   b. “ZiRP” by Duncan Galvanizing.
   c. Thickness of applied galvanizing repair paint shall be not less than coating thickness required by ASTM A123/A123M or ASTM A153/A153M as applicable.
   d. Touch-up of galvanized surfaces with silver paint, brite paint, or aluminum paints is not acceptable.
2. Field-touch-up shall be performed in accordance with factory-applied metal coating manufacturer’s requirements and in the presence of a technical representative of the factory-applied metal coating manufacturer.
3. Provide touch up repair kit and touchup instructions with each order for each type of factory-applied finish coating.

END OF SECTION 05 0513

SECTION 05 1200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 CT HPB documentation:

A. For all installed products and materials of the Section, submit the following information:

1. Cost breakdowns for the materials included in the Contractor or subcontractor's work. Cost breakdowns shall include total installed cost and material-only cost.
2. The percentages (by weight) of post-consumer and/or pre-consumer recycled content in the supplied product(s).
3. Indication of location (city, state) of the manufacturing location of the supplied product(s) and the distance from the project site.
4. Indication of location (city, state) of the extraction, harvest or recovery location of the raw materials used to manufacture the supplied product(s) and the distance from the project site.

B. For all field-applied adhesives, sealants, paints and coatings relating to work of this Section, indicate the Volatile Organic Compound (VOC) content in grams/liter and whether the product meets the requirements of the California Department of Health Services (CDHS) Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, including 2004 Addenda.

C. Provided cut sheets with the Contractor's or subcontractor's stamp, confirming that the submitted products are the products installed in the Project.

D. All steel/iron products within this specification shall be produced in the Unites States; specifically, all manufacturing processes with respect to any steel or iron items herein take place in the United States.

1.3 SUMMARY

A. Section Includes:

1. Structural steel.
2. Grout.

B. Related Sections:

1. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.

2. Division 05 Section "Architecturally Exposed Structural Steel Framing" for additional requirements for architecturally exposed structural steel.

3. Division 05 Section "Steel Decking" for field installation of shear connectors through deck.

4. Division 05 Section "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame, miscellaneous steel fabrications and other metal items not defined as structural steel.

5. Division 05 Section "Metal Stairs."

1.4 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.5 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering design by a qualified professional engineer licensed in the State of Connecticut, to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC 360.
2. Use ASD; data are given at service-load level.

B. Moment Connections: Type FR, fully restrained and designed by a qualified professional engineer licensed in the State of Connecticut.

C. Brace Frame Connections: Design for loading given on the drawings. Connections shall be designed by a qualified professional engineer licensed in the State of Connecticut.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.

2. Include embedment drawings.

3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.

4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.

5. Identify members and connections of the seismic-load-resisting system.

6. For structural-steel connections indicated to comply with design loads, include structural design data signed and sealed by the qualified professional engineer responsible for their preparation.

7. Submit shop drawings of all members to be furnished. Detail drawings of the members and their connections shall follow standard practice as set forth in the AISC "Manual of Structural Steel Detailing" (Second Edition). In particular, welding shall be shown, using standard AWS welding symbols. Show on detail drawings the paint to be used.

8. Shop drawings will not be accepted for review by the Engineer unless there is substantial evidence that the Construction manager on the project has reviewed the submittal for compliance with the contract documents and has addressed questions to be responded to by the Contractor. All coordination items with other trades and submittals are to be performed and the submittal marked accordingly before submission. Failure to provide the above will result in the submittal being returned and not reviewed.

9. Contractor shall perform review and schedule shop drawing submittals to permit a minimum of 10 calendar days for review by the Engineer. Shop Drawings will be returned to the Architect for their required review and processing.

10. Shop drawings will not be reviewed unless accompanied by erection drawings which locates and identifies the members. Copies or reproductions of contract drawings will not be accepted or reviewed as shop drawings.

11. Shop drawings shall be submitted electronically in PDF format. Refer to section 01 33 00 SUBMITTAL PROCEDURES for additional requirements.

12. The following is the definitions for the Shop Drawing stamp disposition:

    No Exceptions Taken - Re-submission is not required unless document is revised.

    Make Corrections Noted - If checked, fabrication may be undertaken. Contractor is responsible for making noted corrections. Re-submission of record copies are required.

Revise and Resubmit - If checked, fabrication may not be undertaken. Resubmit corrected copies for final review, with all changes clouded.

Rejected - Resubmit for review.

Corrections or comments made on shop drawings during this review do not relieve the Contractor from compliance with the requirements of the project drawings and specifications. This check is only for the review of general conformance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes, techniques and sequence of construction, coordinating his work with that of other trades, and performing his work in accordance with OSHA requirements and other sections of the Project Specifications.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand critical welds.

D. Qualification Data: For qualified Installer and fabricator. Welding certificates.

E. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

F. Mill test reports for structural steel, including chemical and physical properties.

G. Product Test Reports: For the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength bolt-nut-washer assemblies.
4. Shear stud connectors.
5. Shop primers.
6. Nonshrink grout.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category ACSE.

C. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint Endorsement P2.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

E. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 341 and AISC 341s1.
3. AISC 360.
4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.9 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

C. Tolerances: Structural steel fabricator shall coordinate with the requirements for tolerances as required by the selected building finish systems, and to construct to those tolerances if they are stricter than the AISC standards.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 35 percent.

B. W-Shapes: ASTM A 992.

C. Channels, Angles: ASTM A 36.

D. Plate and Bar: ASTM A 36.

E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

F. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
1. Finish: Black except where indicated to be galvanized.

G. Steel Castings: ASTM A 216/A 216M, Grade WCB with supplementary requirement S11.

H. Steel Forgings: ASTM A 668/A 668M.

I. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436 , Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.

B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain finish.

C. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436 Type 1, hardened carbon-steel washers.

1. Finish: Hot-dip or mechanically deposited zinc coating.

2. Direct-Tension Indicators: ASTM F 959, Type 325 (ASTM F 959M, Type 8.8), compressible-washer type with mechanically deposited zinc coating finish.

D. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

E. Unheaded Anchor Rods: ASTM F 1554, Grade 36

1. Configuration: Straight.
2. Nuts: ASTM A 563 heavy-hex carbon steel.
3. Plate Washers: ASTM A 36 carbon steel.
4. Washers: ASTM F 436, Type 1, hardened carbon steel.
5. Finish: Plain

F. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

1. Nuts: ASTM A 563 heavy-hex carbon steel.
2. Plate Washers: ASTM A 36 carbon steel.
3. Washers: ASTM F 436, Type 1, hardened carbon steel.
4. Finish: Plain or Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

G. Threaded Rods: ASTM A 36.

1. Nuts: ASTM A 563 heavy-hex carbon steel.
2. Washers: ASTM A 36/A 36M carbon steel.
3. Finish: Plain.

H. Clevises and Turnbuckles: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1035.

I. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1030.

2.3 PRIMER

A. Primer: Comply with Division 09 painting Sections and Division 09 Section "High-Performance Coatings."

B. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

C. Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning.

F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

G. Steel Wall-Opening Framing: Select true and straight members for fabricating steel wall-opening framing to be attached to structural steel. Straighten as required to provide uniform, square, and true members in completed wall framing.

H. Welded Door Frames: Build up welded door frames attached to structural steel. Weld exposed joints continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secure removable stops to frames with countersunk machine screws, uniformly spaced not more than 10 inches (250 mm) o.c. unless otherwise indicated.

I. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members..

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Slip critical.

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils (0.038 mm).

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.
2. Galvanize lintels shelf angles and welded door frames attached to structural-steel frame and located in exterior walls.

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges." Level and plumb individual members of structure within specified AISC tolerances, unless stricter tolerances are otherwise required by finish building systems being provided on the project. Contractor is responsible to coordinate all construction

tolerances, and to construct to the tolerances as required with all the selected building finish systems supported by or adjacent to the structural steel.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

H. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened for all shop connections and TC bolts for field connections unless noted as Slip Critical on drawings.

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

    a. Liquid Penetrant Inspection: ASTM E 165.
    b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
    c. Ultrasonic Inspection: ASTM E 164.
    d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

END OF SECTION 05 1200

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SECTION 05 4000 – COLD FORMED METAL FRAMING

PART 1 - GENERAL

A. SECTION INCLUDES

B. This Section includes the following:

1. Interior load-bearing wall framing.
2. Floor joist framing.

1.2 RELATED REQUIREMENTS

A. Related Documents: Division 9 “Gypsum Board Assemblies” for exterior and interior non-loadbearing framing.

B. The General Conditions state that the Contract Documents are complementary. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the intent of this Section.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: As indicated in the General Notes.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
   a. Interior Load-Bearing Wall Framing: Horizontal deflection of 1/240 of the wall height under a horizontal load of 5 lbf/sq. ft.
   b. Floor Joist Framing: Vertical deflection of 1/480 for live loads and l/360 for total loads of the span.
3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
   a. Upward and downward movement of 1-1/2 inches.

B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."

1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

C. All steel/iron products within this specification shall be produced in the Unites States; specifically, all manufacturing processes with respect to any steel or iron items herein take place in the United States.

1.4 SUBMITTALS

A. Product Data: For each type of cold-formed metal framing product and accessory indicated.

B. Shop Drawings:

1. Submit shop drawings of all members to be furnished. Detail drawings of the members and their connections shall follow standard practice as set forth in the AISC "Manual of Structural Steel Detailing" (Second Edition). In particular, welding shall be shown, using standard AWS welding symbols. Show on detail drawings the paint to be used.

2. Shop drawings will not be accepted for review by the Engineer unless there is substantial evidence that the General Contractor or Construction manager on the project has reviewed the submittal for compliance with the contract documents and has addressed questions to be responded to by the Contractor. All coordination item with other trades and submittals are to be performed and the submittal marked accordingly before submission. Failure to provide the above will result in the submittal being returned and not reviewed.

3. Contractor shall perform review and schedule shop drawing submittals to permit a minimum of 15 calendar days for review by the Engineer. Shop Drawings will be returned to the Architect for their required review and processing.

4. Shop drawings will not be reviewed unless accompanied by erection drawings which locates and identifies the members. Copies or reproductions of contract drawings will not be accepted or reviewed as shop drawings.

5. Shop drawings shall be submitted in the form of an electronic file (PDF).

6. The following is the definitions for the Shop Drawing stamp disposition:

a. No Exceptions Taken - Re-submission is not required unless document is revised.
b. Make Corrections Noted - If checked, fabrication may be undertaken. Contractor is responsible for making noted corrections. Re-submission of record copies are required.
c. Revise and Resubmit - If checked, fabrication may not be undertaken. Resubmit corrected copies for final review, with all changes clouded.
d. Rejected - Resubmit for review.
e. Corrections or comments made on shop drawings during this review do not relieve the Contractor from compliance with the requirements of the project drawings and specifications. This check is only for the review of general conformance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes, techniques and sequence of construction, coordinating his work with that of other trades, and performing his work in accordance with OSHA requirements and other sections of the Project Specifications.

C. CT HPB documentation:

1. For all installed products and materials of the Section, submit the following information:

a. Cost breakdowns for the materials included in the Contractor or subcontractor's work. Cost breakdowns shall include total installed cost and material-only cost.
b. The percentages (by weight) of post-consumer and/or pre-consumer recycled content in the supplied product(s).
c. Indication of location (city, state) of the manufacturing location of the supplied product(s) and the distance from the project site.
d. Indication of location (city, state) of the extraction, harvest or recovery location of the raw materials used to manufacture the supplied product(s) and the distance from the project site.

2. For all field-applied adhesives, sealants, paints and coatings relating to work of this Section, indicate the Volatile Organic Compound (VOC) content in grams/liter and whether the product meets the requirements of the California Department of Health Services (CDHS) Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, including 2004 Addenda.

3. Provided cut sheets with the Contractor's or subcontractor's stamp, confirming that the submitted products are the products installed in the Project.

D. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:

1. Steel sheet.
2. Expansion anchors.

3. Power-actuated anchors.
4. Mechanical fasteners.
5. Vertical deflection clips.
6. Horizontal drift deflection clips
7. Miscellaneous structural clips and accessories.

E. Research/Evaluation Reports: For cold-formed metal framing.

1.5 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.

D. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements and metallic-coating thickness.

E. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

F. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

G. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

H. Comply with AISI's "Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings."

I. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2- PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:

1. Clark Steel Framing.
2. Dietrich Metal Framing; a Worthington Industries Company.
3. Innovative Steel Systems.
4. MarinoWare; a division of Ware Industries.
5. Steel Construction Systems.
6. Steeler, Inc.
7. Super Stud Building Products, Inc.
8. United Metal Products, Inc.

2.2 MATERIALS

A. Recycled Content: Provide cold-formed metal framing and misc metal accessories with post-consumer recycled content plus one-half of pre-consumer recycled content calculated by weight not less than 35 percent.

B. Regional Materials: Provide cold-formed metal framing that is regionally manufactured within a 500 mile radius of the project site and that are made from regionally extracted, harvested, or recovered materials from a 500 mile radius of the project site.

For adhesives, sealants, paints and coatings used inside the weatherproofing system and applied on-site, provide products that comply with the VOC and chemical component limitations as defined in Section 01 35 20 13 – LEED Requirements Summary including, but not limited to the following:

1. Sealants: 250g/l VOC (includes grout)
2. Metal Primers: 50 g/L VOC
2. Anti-Corrosion Metal Primer: 250 g/L VOC (galvanizing repair paint)

C. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: As required by structural performance.
2. Coating: G60.

D. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. 5

2.3 LOAD-BEARING WALL FRAMING

E. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inches.
2. Flange Width: 1-5/8 inches.

F. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:

1. Minimum Base-Metal Thickness: Matching steel studs.
2. Flange Width: 2 inches.

G. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches.

H. Steel Double-L Headers: Manufacturer's standard L-shapes used to form header beams, of web depths indicated, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inch.
2. Top Flange Width: 1-5/8 inches.

2.4 FLOOR JOIST FRAMING

I. Steel Joists: Manufacturer's standard C-shaped steel joists, of web depths indicated, [unpunched,] [punched,] [punched, with enlarged service holes,] with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: as noted on plans.
2. Flange Width: 2 inches, minimum.

J. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness Matching steel joists.
2. Flange Width: 2 inches, minimum.

2.4 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers, knee braces, and girts.
9. Hole reinforcing plates.
10. Backer plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

C. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

D. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.

B. Shims: Load bearing, high-density multimonomer plastic, nonleaching.

C. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.7 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.

4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.

2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
   a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
   b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

H. Install insulation, specified in Division 07 Section "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 LOAD-BEARING WALL INSTALLATION

K. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:

1. Anchor Spacing: 32 inches.

L. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:

1. Stud Spacing: 12 inches.

M. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

N. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

O. Align floor and roof framing over studs. Where framing cannot be aligned, continuously reinforce track to transfer loads.

P. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.

Q. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

R. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

S. Install horizontal bridging in stud system, spaced [48 inches] [as indicated] [as indicated on Shop Drawings]. Fasten at each stud intersection.

1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

T. Install steel sheet diagonal bracing straps to both stud flanges, terminate at and fasten to reinforced top and bottom tracks. Fasten clip-angle connectors to multiple studs at ends of bracing and anchor to structure.

U. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 JOIST INSTALLATION

V. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.

W. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.

1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches .
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.

X. Space joists not more than 2 inches from abutting walls, and as follows:

1. Joist Spacing: 12 inches.

Y. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.

Z. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated[on Shop Drawings].

1. Install web stiffeners to transfer axial loads of walls above.

AA. Install bridging at intervals indicated[on Shop Drawings]. Fasten bridging at each joist intersection as follows:

1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.
2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.

BB. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

CC. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.5 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 4000

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SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel and aluminum items.
   1. Steel framing and supports for countertops.
   2. Steel tube reinforcement for low partitions.
   3. Steel framing and supports for mechanical and electrical equipment.
   4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   5. Slotted channel framing.
   6. Shelf angles.
   7. Elevator pit sump covers.
   8. Metal bollards.
   9. Downspout guards.
   10. Metal downspout boots.
   11. Loose steel lintels.
   12. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

1.02 RELATED REQUIREMENTS

A. Section 03 3025 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

B. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.

C. Section 05 1200 - Structural Steel Framing: Structural steel column anchor bolts.

D. Section 05 0513 - Shop-Applied Coatings for Metal: Shop galvanizing, prime coat, and topcoat finishes.

E. Section 05 5214 - Pipe and Tube Railings.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

B. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

D. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

I. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

J. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

K. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

L. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021.

M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

N. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

O. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer licensed in the State of Connecticut.
      a. Include the following, as applicable:
         1) Design criteria.
         2) Engineering analysis depicting stresses and deflections.
         3) Member sizes and gauges.
         4) Details of connections.
         5) Support reactions.
         6) Bracing requirements.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.05 QUALITY ASSURANCE

A. Design indicated items under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

C. Stainless Steel, General: ASTM A666, Type 304.

D. Slotted Channel Framing: ASTM A653/A653M, Grade 33.

E. Slotted Channel Fittings: ASTM A1011/A1011M.

F. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.

B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking and masonry; galvanized finish.

C. Lintels: As detailed; galvanized finish.

D. Elevator Pit Sump Covers:
   1. Fabricate from 1/4-inch 0.25 inch galvanized steel diamond plate with cut outs as indicated on drawings for drainage and pump discharge piping and electrical connection.
   2. Provide steel angle supports unless otherwise indicated.

E. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; galvanized finish.

2.05 DOWNSPOUT BOOTS

A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots, integral cleanout, cleanout cover, and tamper proof fasteners.
   1. Configuration: Angular.
   2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch, minimum.
   3. Finish: Manufacturer's standard factory applied powder coat finish.
   4. Color: To be selected by Architect from manufacturer's full range.
   5. Accessories: Manufacturer's standard stainless-steel fasteners, stainless steel building wall anchors, integral neoprene gaskets, and rubber coupling.

2.06 FINISHES - STEEL

A. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating. (Provide minimum 530 g/sq m galvanized coating.)

B. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

C. Galvanizing and Prime Coat of Indicated Items: See Section 05 0513 - Shop-Applied Coatings for Metal.

D. Galvanizing, Prime Coat, and Top Coat of Indicated Items: See Section 05 0513 - Shop-Applied Coatings for Metal.

2.07 FINISHES - ALUMINUM

A. Exterior Aluminum Surfaces: high performance organic coating.

B. Interior Aluminum Surfaces: Class I natural anodized.

C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils 0 inch thick.

D. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system; color as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Obtain approval prior to site cutting or making adjustments not scheduled.

E. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 5000

DOCUMENT 05 5005 - METAL BAR GRATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Division 00 Bidding and Contracting Requirements, and Division 01 General Requirements Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pressure-locked steel gratings.

B. Related Requirements:

1. Section 05 0513 "Shop-Applied Coatings for Metal" for hot dip galvanizing and primer and topcoats to be applied over HD galvanizing.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data:

1. For the following:

a. Metal Gratings.

2. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

   a. Metal Gratings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For professional engineer.

1.6 FIELD CONDITIONS

A. Field Measurements:

1. Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

B. Temperature Change:

1. 120 deg F (), ambient; 180 deg F (), material surfaces.

2.2 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use.

B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1 (A4).

C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

D. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

E. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

F. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

G. Post-Installed Anchors:

1. Torque-controlled expansion anchors or chemical anchors

H. Material for Interior Locations:

1. Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

I. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

5. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

F. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

1. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

2. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

3. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 PRESSURE-LOCKED STEEL BAR GRATINGS

A. Metal Bar Grating Standards: Comply with NAAMM MBG 531 "Metal Bar Grating Manual".

B. Pressure-Locked Steel Grating: Fabricated by swaging crossbars between bearing bars:

1. Bearing Bar Spacing: 0.4375 inches.

2. Bearing Bar Depth: As per delegated design.

3. Bearing Bar Thickness: 0.1875 inches.

4. Crossbar Spacing: 4.0 inches.

C. Traffic Surface:

1. Type: Anti-slip, non-gritted, steel surface on steel substrate.

2. Surface Texture: Grade 2, medium.

3. Surface: All metal plasma stream deposition process bonds surface to substrate. Anti-slip primarily martensitic steel surface consisting of a random hatch matrix.

4. Surface Hardness, Rockwell C Scale, ASTM E 140 and E 384: Minimum of 55.

5. Bond Strength, Surface to Substrate, ASTM C 633: Minimum of 4,000 psi.

6. Coefficient of Friction, Anti-slip Surface: Minimum of 0.6.

7. Manufacturer: SlipNOT Metal Safety Flooring, Division of W.S. Molnar Company.

8. Grating designation: SlipNOT Grip Grate.

D. Accessories:

1. Banding: Provide banded edges on all locations where a bearing bar does not exist at the perimeter.

2. Anchors: Provide clips and bolts to anchor grating to steel support beams or perimeter support angles.

3. Locations: Grating shall be provided at, but not limited to, the following locations:
Ground level rectangular areaway gratings.
FINISHES, GENERAL
Finish metal fabrications after assembly.
Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.7 STEEL FINISH

A. Hot dip galvanizing with a coating weight of not less than 1.8 oz./sq. ft. of coating surface. Prime paint gratings after galvanizing and shop apply topcoat of high-performance exterior paint or powder coating.

B. Finish color shall be black.

C. Refer to Section 05 0513 "Shop-Applied Coatings for Metal" for the following coatings:

1. Hot-dip galvanizing with shop primer, and shop-applied topcoats.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 INSTALLING BEARING AND LEVELING PLATES

Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve

bond to surfaces. Clean bottom surface of plates.

Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 9113 "Exterior Painting."

D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF DOCUMENT 05 5000

SECTION 05 5113
METAL PAN STAIRS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Preassembled steel stairs with concrete-filled treads.
   2. Steel tube railings attached to both new and existing to remain metal stairs.
   3. Steel tube handrails attached to walls adjacent to new and existing to remain metal stairs.

B. Related Requirements:
   1. Section 03 3025 - Cast-in-Place Concrete for concrete fill for stair treads and platforms.
   2. Section 05 5214 - Pipe and Tube Railings for pipe and tube railings.
   3. Section 09 6500 - Resilient Flooring for finish flooring on stair risers, treads, and landings.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

F. ASTM A510/A510M - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel; 2020.

G. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2025.

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

I. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

J. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

K. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

L. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2025.

M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

N. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

O. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal; 1997 (Reapproved 2024).

P. ASTM E488/E488M - Standard Test Methods for Strength of Anchors in Concrete Elements; 2022.

Q. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.

R. ASTM F1941/F1941M - Standard Specification for Electrodeposited Coatings on Mechanical Fasteners, Inch and Metric; 2016 (Reapproved 2025).

S. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

T. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018, with Errata (2022).

U. NAAMM AMP 510 - Metal Stairs Manual; 1992.

V. SSPC-PA 1 - Shop, Field, and Maintenance Coating of Metals; 2024, with Errata (2025).

W. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

X. SSPC-SP 3 - Power Tool Cleaning; 2024.

Y. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts 2021a.

1.03 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal stairs. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Coordinate locations of hanger rods and struts with other work so that they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.

1.04 ACTION SUBMITTALS

A. Product Data: For metal pan stairs and the following:
   1. Nonslip aggregates and nonslip-aggregate finishes.
   2. Abrasive nosings.
   3. Paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Verification: For each type and finish of nosing.

D. Delegated-Design Submittal: For stairs and railings, including analysis data signed and sealed by the qualified professional engineer licensed in the State of Connecticut responsible for their preparation.

1.05 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel".
   2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel".

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 - Quality Requirements, to design stairs and railings.

B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Uniform Load: 100 lbf/sq. ft.
   2. Concentrated Load: 300 lbf applied on an area of 4 sq. in.
   3. Uniform and concentrated loads need not be assumed to act concurrently.
   4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
   5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch whichever is less.

C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Handrails and Top Rails of Guards:
      a. Uniform load of 50 lbf/ft. applied in any direction.
      b. Concentrated load of 200 lbf applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Infill of Guards:
      a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
      b. Infill load and other loads need not be assumed to act concurrently.

2.02 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

D. Steel Tubing: ASTM A500/A500M (cold formed) or ASTM A513/A513M.

E. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008/A1008M, either commercial steel, Type B, or structural steel, Grade 25 unless another grade is required by design loads; exposed.

F. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011/A1011M, either commercial steel, Type B, or structural steel, Grade 30 unless another grade is required by design loads.

G. Galvanized-Steel Sheet: ASTM A653/A653M, G90coating, either commercial steel, Type B, or structural steel, Grade 33 unless another grade is required by design loads.

H. Woven-Wire Mesh: Square pattern, 2-inch welded-wire mesh, made from 0.236-inch nominal-diameter steel wire complying with ASTM A510/A510M.

I. Aluminum Extrusions: ASTM B221 Alloy 6063-T6.

J. Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.

2.03 ABRASIVE NOSINGS

A. Cast-Metal Units: Cast iron, with an integral abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in lengths necessary to accurately fit openings or conditions.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. American Safety Tread Co., Inc.
      b. Balco, Inc.
      c. Safe-T-Metal Company, Inc.
      d. Wooster Products Inc.
   2. Configuration: Cross-hatched units, 3 inches wide without lip.

B. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.

C. Apply bituminous paint to concealed surfaces of cast-metal units set into concrete.

D. Apply clear lacquer to concealed surfaces of extruded units set into concrete.

2.04 FASTENERS

A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.

B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A with hex nuts, ASTM A563 and, where indicated, flat washers.

C. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 and, where indicated, flat washers.
   1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for stairs indicated to be galvanized.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
   1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M Class Fe/Zn 5, unless otherwise indicated.

2.05 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 09 9113 - Exterior Painting and Section 09 9123 - Interior Painting.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
   1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

F. Concrete Materials and Properties: Comply with requirements in Section 03 3025 - Cast-in-Place Concrete (Commissary) for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.

G. Nonslip-Aggregate Concrete Finish: Factory-packaged abrasive aggregate made from fused, aluminum-oxide grits or crushed emery; rustproof and non-glazing; unaffected by freezing, moisture, or cleaning materials.

H. Welded Wire Reinforcement: ASTM A 185/A 185M, 6 by 6 inches, W1.4 by W1.4, unless otherwise indicated.

2.06 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
   1. Join components by welding unless otherwise indicated.
   2. Use connections that maintain structural value of joined pieces.

B. Preassembled Stairs: Assemble stairs in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. Weld exposed corners and seams continuously unless otherwise indicated.
   5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 4 welds: good quality, uniform undressed weld with minimal splatter.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.

2.07 STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual", Commercial Class, unless more stringent requirements are indicated.

B. Stair Framing:
   1. Fabricate stringers of steel channels unless indicated otherwise on Drawings.
      a. Provide closures for exposed ends of channel stringers.
   2. Construct platforms of steel plate or channel headers and miscellaneous framing members as needed to comply with performance requirements indicated.
   3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
   4. Where stairs are enclosed by gypsum board shaft-wall assemblies, provide hanger rods or struts to support landings from floor construction above or below. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.
   5. Where masonry walls support metal stairs provide temporary supporting struts designed for erecting steel stair components before installing masonry.

C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than
   1. 0.067 inch.
   2. Steel Sheet: Uncoated cold-rolled steel sheet.
   3. Steel Sheet: Galvanized-steel sheet, where indicated.
   4. Directly weld metal pans to stringers; locate welds on top of subtreads where they are concealed by concrete fill. Do not weld risers to stringers.
   5. Shape metal pans to include nosing integral with riser.
   6. Attach abrasive nosings to risers.
   7. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.

8. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.
    a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.

2.08 STAIR RAILINGS

A. Comply with applicable requirements in Section 05 5214 - Pipe and Tube Railings.
    1. Rails may be bent at corners, rail returns, and wall returns, instead of using prefabricated fittings.
    2. Connect posts to stair framing by direct welding unless otherwise indicated.

B. Steel Tube Railings: Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.
    1. Gates: Form gates from steel tube of same size and shape as top rails, with infill to match guards. Provide with cam-type, self-closing hinges for fastening to wall and overlapping stop with rubber bumper to prevent gate from opening in direction opposite egress.

C. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
    1. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint as shown in NAAMM AMP 521.

D. Form changes in direction of railings as follows:
    1. By bending.

E. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

F. Close exposed ends of railing members with prefabricated end fittings.

G. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

H. Connect posts to stair framing by direct welding unless otherwise indicated.

I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
    1. For galvanized railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.
    2. For nongalvanized railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
    3. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

J. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

2.09 FINISHES

A. Finish metal stairs after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
2. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning".

D. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel", for shop painting.

PART 3 EXECUTION

3.01 INSTALLING METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Field Welding: Comply with requirements for welding in "Fabrication, General" Article.

G. Place and finish concrete fill for treads and platforms to comply with Section 03 3025 - Cast-in-Place Concrete.
   1. Install abrasive nosings with anchors fully embedded in concrete. Center nosings on tread width.

3.02 INSTALLING RAILINGS

A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:
   1. Anchor posts to steel by welding to steel supporting members for both new and existing to remain stringers as identified on the Contract Documents.
   2. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with post-installed anchors and bolts.

B. Attach handrails to wall with wall brackets. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as required to comply with performance requirements.

C. For attaching new railing assemblies to the existing stair stringers as identified in the Contract Documents, fully weld and re-finish as necessary so the existing to remain stair stringer and treads match the new stairwell conditions.

3.03 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 9113 - Exterior Painting and Section 09 9123 - Interior Painting.

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 5113

SECTION 05 5214
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Steel pipe and tube railings.

B. Related Requirements:
   1. Section 05 0513 - Shop-Applied Coatings for Metal for fabrications specified to receive galvanized and prime paint coating in preparation for field applied finish coat.
   2. Section 05 5113 - Metal Pan Stairs for steel tube railings associated with metal pan stairs.
   3. Section 09 9113 - Exterior Painting for exterior painted railings.
   4. Section 09 9123 - Interior Painting for interior painted railings.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2022).

C. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

H. ASTM A510/A510M - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel; 2020.

I. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2025.

J. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

K. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

L. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.

M. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal; 1997 (Reapproved 2024).

N. ASTM E488/E488M - Standard Test Methods for Strength of Anchors in Concrete Elements; 2022.

O. ASTM E894 - Standard Test Method for Anchorage of Permanent Metal Railing Systems and Rails for Buildings; 2023.

P. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

Q. ASTM F1941/F1941M - Standard Specification for Electrodeposited Coatings on Mechanical Fasteners, Inch and Metric; 2016 (Reapproved 2025).

R. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

S. SSPC-PA 1 - Shop, Field, and Maintenance Coating of Metals; 2024, with Errata (2025).

T. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

U. SSPC-SP 3 - Power Tool Cleaning; 2024.

V. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

W. NACE No. 3 - Joint Surface Preparation Standard Commercial Blast Cleaning 1994 (Reaffirmed 2006).

X. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.03 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.04 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Manufacturer's product lines of mechanically connected railings.
   2. Railing brackets.
   3. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.
   1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
   2. Fittings and brackets.
   3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.

D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer licensed in the State of Connecticut responsible for their preparation.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

D. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E894 and ASTM E935.

E. Evaluation Reports: For post-installed anchors, from ICC-ES.

1.06 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Source Limitations: Obtain each type of railing through one source from a single manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.08 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer licensed in the State of Connecticut, as defined in Section 01 4000 - Quality Requirements, to design railings, including attachment to building construction.

B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Handrails and Top Rails of Guards:
      a. Uniform load of 50 lbf/ ft. applied in any direction.
      b. Concentrated load of 200 lbf/ft applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Infill of Guards:
      a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
      b. Infill load and other loads need not be assumed to act concurrently.

2.02 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
   1. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.03 STEEL AND IRON

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

B. Tubing: ASTM A500/A500M (cold formed) or ASTM A513/A513M.

C. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
   1. Provide galvanized finish for exterior installations and where indicated.

D. Plates, Shapes, and Bars: ASTM A36/A36M.

E. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

F. Wire Mesh: Intermediate-crimp, square pattern, 1 inch by 3 inch woven-wire mesh, made from 0.134-inch-diameter wire complying with ASTM A510/A510M

2.04 FASTENERS

A. General: Provide the following:
   1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F 2329 for zinc coating.
   2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:
   1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
   1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M Class Fe/Zn 5, unless otherwise indicated.

2.05 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Shop Primers: Provide primers that comply with Section 09 9123 "Interior Painting."

E. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

F. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

G. Intermediate Coats and Topcoats: Provide products that comply with Section 09 9123 - Interior Painting.

H. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

I. Non-shrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

J. Anchoring Cement: Factory-packaged, non-shrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
   1. Water-Resistant Product: At exterior locations and where indicated provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.06 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove flux immediately.
   4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
   1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.

J. Form Changes in Direction as Follows:
   1. By radius bends of radius indicated or by inserting prefabricated elbow fittings of radius indicated.

K. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

L. Close exposed ends of railing members with prefabricated end fittings.

M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
   1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

P. For railing posts set in concrete, provide stainless-steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

Q. For removable railing posts, fabricate slip-fit sockets from stainless-steel tube or pipe whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fortieth of post height. Provide socket covers designed and fabricated to resist being dislodged.
   1. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.

R. Wire Mesh Infill Panels: Fabricate infill panels from wire mesh crimped into 1-by-1/2-by-1/8-inch metal channel frames. Make wire mesh and frames from the same metal as railings in which they are installed.
   1. Orient wire mesh with wires horizontal and vertical.

S. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.07 STEEL AND IRON FINISHES

A. Galvanized Railings:
   1. Hot-dip galvanize indicated steel railings, including hardware, after fabrication.
   2. Comply with ASTM A123/A123M for hot-dip galvanized railings.
   3. Comply with ASTM A153/A153M for hot-dip galvanized hardware.
   4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
   5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Refer to Section 05 0513 - Shop-Applied Coatings for Metal for additional information and requirements for galvanized railings and components to receive finish coat per “Exterior Painting”.

D. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

E. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, galvanize anchors to be embedded in exterior concrete or masonry.

F. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
   1. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No.3, "Commercial Blast Cleaning."
   2. Railings Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No.3, "Commercial Blast Cleaning."
   3. Other Railings: SSPC-SP 3, "Power Tool Cleaning."

G. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces embedded in concrete or masonry.
   1. Shop prime uncoated railings with primers specified in Section 09 9123 - Interior Painting unless zinc-rich primer is indicated.
   2. Do not apply primer to galvanized surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.02 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
   1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
   2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
   3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
   1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.03 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.04 ANCHORING POSTS

A. Use metal sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material.

C. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
   1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.05 ATTACHING RAILINGS

A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends.

C. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

D. Secure wall brackets and railing end flanges to building construction as follows:
   1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
   2. For hollow masonry anchorage, use toggle bolts.
   3. For steel-framed partitions, use hangers or lag bolts set into fire-retardant-treated wood backing between studs. Coordinate with stud installation to locate backing members.

3.06 ADJUSTING AND CLEANING

A. Clean by washing thoroughly with clean water and soap and rinsing with clean water.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 9123 - Interior Painting.

D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.

3.07 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 05 5214

DOCUMENT 05 7305 - SITE DECORATIVE METAL RAILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Exterior steel and iron decorative metal handrails and railings fabricated from stock and custom components.

1.2 RELATED REQUIREMENTS

A. Section 05 0513 - Shop-Applied Coatings for Metal: Hot-dip galvanizing, and primer coat applied to decorative metal railings.

B. Section 09 9113 - Exterior Painting: Colored topcoat applied to decorative metal railings.

1.3 PERFORMANCE REQUIREMENTS

A. General: Design and engineer handrails and railings to withstand structural loads required by the applicable Building Code(s). Provide handrails and railings capable of withstanding structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors, and connections.

1.4 SUBMITTALS

A. Product Data: For manufacturer's product lines of handrails and railings assembled from standard components.
   1. Include Product Data for grout, anchoring cement, and paint products.
   2. Shop Drawings: Show fabrication and installation of handrails and railings. Include plans, elevations, sections, details, and attachments to other Work.
      a) For installed handrails and railings indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
      b) Include setting drawings, templates, and directions for installing anchor bolts and other anchorages.
   3. Patterns, models, or plaster castings made from proposed patterns for each design of custom casting required.
   4. Samples for Verification: For each type of exposed finish required, prepared on components indicated below and of same thickness and metal indicated for the Work. If finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
      a) 6-inch-long sections of each different linear railing member, including handrails, top rails, posts, and balusters.
      b) Fittings and brackets.
      c) 6-inch square samples of plates.

d) Welded connections.
e) Assembled Samples of railings, made from full-size components, including top rail, post, handrail, and infill. Show method of finishing members at intersections. Samples need not be full height.

5. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names, and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of handrails and railings that are similar to those indicated for this Project in material, design, and extent.

B. Source Limitations: Obtain all decorative handrails and railings, and their components, through one source from a single manufacturer/fabricator.

C. Mockups: Before installing handrails and railings, build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in the location indicated or, if not indicated, as directed by Architect.
2. Build mockups for each form and finish of railing consisting of two posts, top rail, infill area, and anchorage system components that are full height and are not less than 48 inches in length.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Obtain Architect's approval of mockups before fabricating decorative handrails and railings.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store decorative metal inside a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.

B. Deliver and store cast-metal products in wooden crates surrounded by sufficient excelsior to ensure that products will not be cracked or otherwise damaged.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 SCHEDULING

A. Schedule installation so handrails and railings are mounted only on completed walls. Do not support temporarily by any means that do not satisfy structural performance requirements.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Subject to compliance with requirements, provide products by Julius Blum and Company, Inc., or comparable product from one of the following:
   1. Handrails and Railings:
      a) Allen Architectural Metals, Inc.
      b) J.G. Braun Co.
      c) Evans Metal Products.
      d) American Ornamental Iron, Inc.
      e) Decorative Iron, Inc.
      f) Sterling Dula Architectural Products.

2.2 METALS

A. General: Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view on finished units.

2.3 STAINLESS STEEL

A. Tubing: ASTM A554, Grade MT 316.

B. Pipe: ASTM A312/A312M, Grade TP 316.

C. Sheet, Strip, Plate, and Flat Bar: ASTM A666 or ASTM A240/A240M, Type 316.

2.4 MISCELLANEOUS MATERIALS

A. Brackets and Trim: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

B. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.5 FASTENERS

A. General: Provide the following:
   1. Galvanized Steel Components: Type 304 stainless-steel fasteners.
   2. Dissimilar Metals: Type 304 stainless-steel fasteners.
   3. Fasteners for Interconnecting Handrail and Railing Components: Use stainless steel fasteners unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.
      a) Provide concealed fasteners for interconnecting railing components and for attaching them to other Work, unless otherwise indicated.

2.6 GROUT AND ANCHORING CEMENT

A. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for exterior applications.

2.7 FABRICATION

A. Assemble handrails and railings in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

B. Form changes in direction of railing members as follows:
   1. As detailed.
   2. By bending.
   3. By any method indicated above, applicable to change in direction involved.
   4. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain profile of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
   5. Welded Connections: Fabricate handrails and railings for connecting members by welding. Cope components at perpendicular and skew connections to provide close fit, or use fittings designed for this purpose. Weld connections continuously to comply with the following:
      a) Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
      b) Obtain fusion without undercut or overlap.
      c) Remove flux immediately.
      d) At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
   6. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

7. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
8. Cut, reinforce, drill, and tap components, as indicated, to receive finish hardware, screws, and similar items.
9. Provide weep holes or another means to drain entrapped water in hollow sections of railing members that are exposed to moisture from condensation or other sources.
10. Close exposed ends of railing members with prefabricated end fittings.

2.8 FINISHES, GENERAL

A. Comply with NAAMM (MFPM)'s "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.9 STEEL FINISH

A. Primer galvanized finish per Division 05 Section “Shop-Applied Coatings for Metal”.

B. Finish: Field painted finish per Division 09 Section “Exterior Painting”.

C. Railing Color: As indicated on Drawings, and as approved by Landscape Architect.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing handrails and railings. Set handrails and railings accurately in location, alignment, and elevation, measured from established lines and levels and free from rack.
1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.

3. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
4. Adjust handrails and railings before anchoring to ensure alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.
5. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing handrails and railings and for properly transferring loads to in-place construction.

3.2 ANCHORING POSTS

A. Core-drill holes not less than 5 inches deep and 3/4 inch greater than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with the following anchoring material, mixed and placed to comply with anchoring material manufacturer's written instructions:
   1. Non-shrink, nonmetallic grout.
   2. Cover anchorage joint with a flange of same metal as post, attached to post as follows:
      a) By set screws.

3.3 CLEANING

A. Clean copper alloys according to written recommendations of metal finisher in a manner that leaves an undamaged and uniform finish matching approved Sample.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.

3.4 PROTECTION

A. Protect finishes of handrails and railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at the time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit or provide new units.

END OF DOCUMENT 05 7305

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough opening framing for doors, windows, and roof openings.

B. Sheathing.

C. Roof-mounted curbs.

D. Roofing nailers.

E. Roofing cant strips.

F. Fire retardant treated wood materials.

G. Miscellaneous framing and sheathing.

H. Communications and electrical room mounting boards.

I. Concealed wood blocking, nailers, and supports.

J. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.

B. Section 07 6200 - Sheet Metal Flashing and Trim: Sill flashings.

C. Section 09 2900 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

E. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

F. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).

G. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2019a.

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

I. AWPA U1 - Use Category System: User Specification for Treated Wood; 2024.

J. PS 1 - Structural Plywood; 2023.

K. PS 2 - Performance Standard for Wood Structural Panels; 2018.

L. PS 20 - American Softwood Lumber Standard; 2021.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Provide sustainably harvested wood; see Section 01 6000 - Product Requirements for requirements.

2.02 CONSTRUCTION PANELS

A. Roof Sheathing: PS 2 type, rated Structural I Sheathing.
   1. Bond Classification: Exterior.
   2. Span Rating: 60.
   3. Performance Category: 3/4 PERF CAT.

B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

C. Plywood Wall Panels for Impact Resistance: PS 1, A-D, or better; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.03 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

B. Subfloor Adhesives: Waterproof, air cure type, cartridge dispensed; adhesives designed for subfloor applications and complying with either ASTM C557 or ASTM D3498.
   1. Manufacturers:
      a. Franklin International, Inc; Titebond PROvantage Weatherproof Subfloor Adhesive: www.titebond.com/#sle.

b. Huber Engineered Woods, LLC; AdvanTech Subfloor Adhesive: www.huberwood.com/#sle.
c. Liquid Nails, a brand of PPG Architectural Coatings; LIQUID NAILS Subfloor & Deck Construction Adhesive (LN-902/LNP-902): www.liquidnails.com/#sle.

2.04 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.

B. Fire Retardant Treatment:
   1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat exterior rough carpentry items.
      c. Do not use treated wood in direct contact with the ground.
   2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Interior rough carpentry items are to be fire retardant treated.
      c. Treat rough carpentry items as indicated.
      d. Do not use treated wood in applications exposed to weather or where the wood may become wet.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated and as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for all wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports for all interior upper and lower casework and shelving.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.
   10. Wall mounted signage and directories.
   11. Digital signage locations and wall mounted monitors.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.

B. Exterior and Interior Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. Nail panels to framing; staples are not permitted.
   2. At interior roof sheathing locations, install adjacent boards without gaps.

C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size and Location: As indicated on drawings.

D. Plywood Wall Panels for Impact resistance: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. Size and Location: As indicated on drawings.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

3.07 CLEANING

A. Waste Disposal: See Section 01 7429 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.

4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 1000

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SECTION 07 0150.19
PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Replacement of existing roofing system in preparation for new roofing system.

B. Removal and/or modifications of existing flashing and counter-flashings.

C. Temporary roofing protection.

1.02 RELATED REQUIREMENTS

A. Section 07 6200 - Sheet Metal Flashing and Trim: Replacement of flashing and counter-flashings.

1.03 REFERENCE STANDARDS

A. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).

B. ASTM D312/D312M - Standard Specification for Asphalt Used in Roofing; 2016a (Reapproved 2023).

C. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a (Reapproved 2021).

D. ASTM D4601/D4601M - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing; 2004 (Reapproved 2020).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with affected mechanical and electrical work associated with roof penetrations.

B. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Attendees:
      a. Architect.
      b. Contractor.
      c. Owner.
      d. Installer.
      e. Roofing system manufacturer's field representative.
      f. Inspection and Testing Agency Representatives.
   2. Meeting Agenda: Provide agenda to participants prior to meeting in preparation for discussions on the following:
      a. Removal and installation schedule.
      b. Necessary preparatory work.
      c. Protection before, during, and after roofing system installation.
      d. Removal of existing roofing system.
      e. Installation of new roofing system.
      f. Temporary roofing and daily terminations.
      g. Transitions and connection to and with other work.
      h. Inspections of installed systems.

C. Schedule work to coincide with commencement of installation of new roofing system.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Submit for each type of material.

C. Shop Drawings: Indicate size, configuration, and installation details.

D. Preconstruction Test Reports.

E. Materials Removal Company Qualification Statement.

F. Installer's Qualification Statement.

G. Preconstruction Testing Agency Qualification Statement.

1.06 QUALITY ASSURANCE

A. Materials Removal Company Qualifications: Company specializing in performing work of type specified with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Preconstruction Testing: Conduct testing by an independent test agency, in accordance with provisions of Section 01 4000 - Quality Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.08 FIELD CONDITIONS

A. Existing Roofing Systems:
   1. Ballasted, built-up bituminous roofing membrane.

B. Do not remove existing roofing assemblies when weather conditions threaten the integrity of building contents or intended continued occupancy.

C. Maintain continuous temporary protection prior to and during installation of new roofing system.

D. Provide notice at least three days before starting activities that will affect normal building operations.

E. Owner will occupy building areas directly below re-roofing area.
   1. Provide Owner with at least 48 hours written notice of roofing activities that may affect their operations and to allow them to prepare for upcoming activities as necessary.
   2. Do not disrupt Owner's operations or activities.
   3. Maintain access of Owner's personnel to corridors, existing walkways, and adjacent buildings.

1.09 WARRANTY

A. See Section 01 7700 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 COMPONENTS

A. See the following sections for additional information on components relating to this work:
   1. Replacement and removal of existing roofing system in preparation for entire new roofing system, see Section 07 5323.
   2. Remove and/or modify existing flashing and counter-flashings in preparation for replacement of these materials as part of this work, see Section 07 6200 for material requirements.

2.02 MATERIALS

A. Patching Materials: Provide necessary materials in accordance with requirements of existing roofing system.

B. Temporary Roofing Protection Materials:
   1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.
   2. Plastic Sheeting: Provide polyethylene sheets; use weights to retain sheeting in position.

C. Roofing Recover Materials:

1. Contractor's responsibility to select appropriate materials for roofing re-cover as determined necessary for this work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.

3.02 PREPARATION

A. Sweep roof surface clean of loose matter.

B. Remove loose refuse and dispose of properly off-site.

C. In areas of existing perlite insulation, this will require that the deck will have to be broomed clean, blown free of all dust, wiped down with wet rags and then re-blown off again to remove any dust remaining prior to installation of new vapor barrier primer.

3.03 MATERIAL REMOVAL

A. Remove only existing roofing materials that can be replaced with new materials the same day.

B. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets.

C. Remove vapor retarder, sheathing paper, and underlay.

3.04 INSTALLATION

A. Coordinate scope of this work with requirements for installation of new roofing system, see Section 07 5323 and Section 07 6200 for additional requirements.

3.05 PROTECTION

A. Provide temporary protective sheeting over uncovered roof surfaces.

B. Provide for surface drainage from sheeting to existing drainage facilities or to a location on the ground that has been reviewed with and approved by the Owner.

C. Do not permit traffic over unprotected or repaired deck surface.

D. Install cover board for any areas left open more than 24 hours.

END OF SECTION 07 0150.19

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SECTION 07 0553
FIRE AND SMOKE ASSEMBLY IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Identification markings for fire and smoke rated partitions, and fire rated walls.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of marking, indicating font, foreground and background colors, wording, and overall dimensions.

C. Schedule: Completely define scope of proposed marking, and indicate location of affected walls and partitions, and number of markings.

D. Samples: Submit two samples of each type of marking proposed for use, of size similar to that required for project, illustrating font, wording, and method of application.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 FIELD CONDITIONS

A. Do not install painted markings when ambient temperature is lower than recommended by coating manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Partition Identification Labels:
   1. Fire Wall Signs, Inc: www.firewallsigns.com/#sle.
   2. Safety Supply Warehouse, Inc: www.safetysupplywarehouse.com/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).

B. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with paint and a code compliant stencil. See Section 09 9123 for products.

C. Languages: Provide sign markings in English and Spanish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 PREPARATION

A. See Section 09 9123 for substrate preparation for painted markings.

3.03 INSTALLATION

A. Locate markings as required by ICC (IBC).

B. Install applied markings in accordance with Section 09 9123.

C. Install neatly, with horizontal edges level.

D. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

END OF SECTION 07 0553

SECTION 07 1300
SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet Waterproofing:
   1. Self-adhered modified bituminous sheet membrane.
   2. Self-adhered HDPE sheet membrane.

1.02 REFERENCE STANDARDS

A. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems; 2018.

B. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

1.03 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Provide data for membrane.

C. Shop Drawings: Indicate all special joint or termination conditions and conditions of interface with other materials, including clear dimensions of all overlaps.

D. Installer's Qualification Statement.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees Fahrenheit for 24 hours before and during application and until liquid or mastic accessories have cured.

1.06 WARRANTY

A. See Section 01 7700 - Closeout Submittals, for additional warranty requirements.

B. Contractor shall correct defective Work within a five-year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.

C. Provide five-year manufacturer warranty for waterproofing failing to resist penetration of water.

PART 2 PRODUCTS

2.01 MEMBRANE MATERIALS

A. Self-Adhered Modified Bituminous Sheet Membrane:
   1. Thickness: 60 mil, 0.060 inch, minimum.
   2. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
   3. Manufacturers:
      a. Basis of Design: GCP Applied Technologies; Bituthene 3000: www.gcpat.com/#sle.
      b. Henry Company; Blueskin WP 200: www.henry.com/#sle.
      c. Soprema Inc; Colphene 3000.
      d. Substitutions: See Section 01 6000 - Product Requirements and 01 2500 – Substitution Requirements.

2.02 ACCESSORIES

A. Membrane Sealant: As recommended by membrane manufacturer.

B. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.

C. Protection Board: Rigid insulation as specified in Section 07 2105.

D. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
   1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.

E. Flexible Flashings: Type recommended by membrane manufacturer.

F. Termination Bars: Stainless steel; compatible with membrane and adhesives.

G. Adhesives: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify substrate surfaces are durable and free of matter detrimental to adhesion or application of waterproofing system.

3.02 PREPARATION

A. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.

B. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.

C. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.

D. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.

E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer and protect conditioner from rain or frost until dry.

F. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate according to ASTM D5295/D5295M.
   1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease, and oil.
   2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling, and delamination as described in the reference standard.
   3. Remove and replace areas of defective concrete as specified in Section 03 3000.
   4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in the referenced standard.
   5. Test concrete surfaces as described in the referenced standards. Verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 INSTALLATION - MEMBRANE

A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

B. Roll out membrane and minimize wrinkles and bubbles.

C. Self-Adhering Membrane: Remove release paper layer and roll out onto substrate with a mechanical roller to provide full contact bond.

D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.

E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.

F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.

G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.

H. Seal membrane and flashings to adjoining surfaces.
   1. Install termination bar along edges.

3.04 INSTALLATION - PROTECTION BOARD

A. Place protection board directly against membrane; butt joints. Scribe and cut boards around projections, penetrations, and interruptions.

END OF SECTION 07 1300

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SECTION 07 3113
ASPHALT SHINGLES

SUMMARY

1.01 THIS SECTION INCLUDES THE FOLLOWING:

A. Asphalt shingles for sloped roofs.

B. Ridge vents.

C. Underlayment and self-adhering sheet underlayment.

D. All hoisting and scaffolding necessary for the completion of the roof work.

E. Waste disposal.

1.02 RELATED SECTIONS INCLUDE THE FOLLOWING:

A. Section 01 2500 Substitution Procedures.

B. Section 06 1000 Rough Carpentry.

C. Section 07 0150.19 Preparation for Re-Roofing.

D. Section 07 2100 Thermal Insulation.

E. Section 07 7200 Roof Accessories.

1.03 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of asphalt shingle indicated.

C. Samples for Verification: For the following products, of sizes indicated, to verify color selected.
   1. Asphalt Shingle: Full-size asphalt shingle strip.
   2. Ridge Vent: 12-inch- long Sample.
   3. Ridge Cap Shingles: Full-size ridge and hip cap asphalt shingle.
   4. Underlayment: 12 inches square.
   5. Self-Adhering Underlayment: 12 inches square.

D. Qualification Data: For Installer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for asphalt shingles.

F. Research/Evaluation Reports: For asphalt shingles.

G. Maintenance Data: For asphalt shingles to include in maintenance manuals.

H. Warranties: Special warranties specified in this Section.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual that is approved, authorized, or licensed by asphalt shingle roofing system manufacturer to install roofing system indicated.

B. Fire-Test-Response Characteristics: Provide asphalt shingle and related roofing materials with the fire- test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108 or UL 790, for application and roof slopes indicated.

C. Wind-Resistance-Test Characteristics: Provide asphalt shingles and related products identical to those tested according to ASTM D 7158 Class H 150 mph wind resistance and passed. Identify each bundle of asphalt shingles with appropriate markings from the applicable testing and inspecting agency.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, well-ventilated, weathertight location according to asphalt shingle manufacturer's written instructions. Store underlayment rolls on end on pallets or other raised surfaces. Do not double-stack rolls.
   1. Handle, store, and place roofing materials in a manner to avoid significant or permanent damage to roof deck or structural supporting members.

B. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

1.07 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit asphalt shingle roofing to be performed according to manufacturer's written instructions and warranty requirements.

B. Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended by manufacturer.

1.08 WARRANTY

A. Standard Warranty: Standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Manufacturing defects.
      b. Structural failures including failure of asphalt shingles to self-seal after a reasonable time.
   2. Material Warranty Period: 50 years, pro-rated, with the first 20 years non-prorated.
   3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds up to 130 mph for 15 years from date of Substantial Completion.
   4. Algae-Discoloration Warranty Period: Asphalt shingles will not discolor 10 years from date of Substantial Completion.

B. Special Extended Warranty: Amend manufacturer’s standard form in which manufacturer agrees to repair or replace asphalt shingle roofing system that fails in materials or workmanship within specified warranty period. Warranty includes unlimited manufacturer’s guarantee for water tightness covering material and labor costs on the entire roofing system including repair or replacement, tear-off protection, disposal, and workmanship defects.
   1. Failures include, but are not limited to, the following:
      a. Workmanship defects.
      b. Manufacturing defects.
      c. Water leaks.
      d. Structural failures including failure of asphalt shingles to self-seal after a reasonable time.
   2. Warranty includes asphalt shingles, hip and ridge shingles, underlayment, self-adhering sheet underlayment, ridge vents, flashing and metal drip edges required for a complete roofing installation.
   3. Workmanship Warranty Period: **30** years from date of Substantial Completion.

C. Special Project Warranty: Roofing Installer's Warranty, signed by roofing Installer, covering the Work of this Section, in which roofing Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

1.09 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Asphalt Shingles: 100 sq. ft of each type, in unbroken bundles.

1.10 MOCK-UPS

A. Construct mock-up of typical asphalt shingles application in minimal area of 5' x 5' at approved location approved by Owner and Architect. Include all associated underlayments and associated scopes of work (edging, air/moisture barriers, etc.).

B. Mock-up may remain as part of the Work if it is approved by Owner and Architect.

PART 2 - PRODUCTS

2.01 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

A. Laminate Strip Asphalt Shingles: ASTM D 3462, laminated multi ply overlay construction, glass fiber reinforced, mineral granule, surfaced and self-sealing, and rated to perform at 130 mph.
   1. Basis-of-Design Product:
      a. Provide CertainTeed; Landmark Pro Max Def
      b. Color: As selected by Architect from manufacturer's full range.
   2. Other Manufacturer’s, subject to compliance with Basis of Design:
      a. GAF; Timberline HD.
      b. Owens Corning; TruDefinition Duration.
      c. Other substitutions refer to Section 01 2500 Substitution Procedures.
   3. Butt Edge: Straight cut.
   4. Strip Size: Manufacturer's standard.
   5. Weight/Square: 300 lbs.
   6. Algae Resistance: Granules treated to resist algae discoloration.
   7. Color: As selected by Architect from manufacturer's full range.

B. Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.02 UNDERLAYMENT MATERIALS

A. Synthetic Underlayment: Meeting the physical requirements of ASTM D 226 or ASTM D 4869, UV stabilized polypropylene, breathable non-woven construction.
   1. Obtain minimum 15 lb. felt underlayment from same manufacturer of asphalt shingles, or equal product approved in writing by manufacturer, as required to maintain specified warranty of system.
   2. Products: Subject to compliance with requirements, provide the following or equal:
      a. CertainTeed; DiamondDeck High-Performance Synthetic Underlayment.
      b. GAF; Tiger Paw.
      c. Owens Corning; Deck Defense.

B. Self-Adhering Sheet Underlayment, Polyethylene Faced: ASTM D 1970, minimum of 60-mil-thick x 36" wide, slip- resisting, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release paper backing; cold applied.
   1. Obtain self-adhering sheet underlayment from same manufacturer of asphalt shingles, or equal product approved in writing by manufacturer, as required to maintain specified warranty of system.
   2. Provide cement, fasteners, and all accessories recommended by the manufacturer for a complete system.

3. Products: Subject to compliance with requirements, provide one of the following:
4. CertainTeed; WinterGuard Granular.
    a. GAF; WeatherWatch.
    b. GCP Applied Technologies; Grace Ice and Water Shield.
    c. Owens Corning; WeatherLock M.

2.03 RIDGE VENTS

A. Rigid Ridge Vent: Manufacturer's standard rigid section high-density polypropylene or other UV- stabilized plastic ridge vent with nonwoven geotextile filter strips; for use under ridge shingles.
    1. Products: Subject to compliance with requirements, provide one of the following:
        a. Air Vent Inc., a CertainTeed Company; ShingleVent II.
        b. Cor-A-Vent; V-600.
        c. Quarrix Building Products; Ridge Vent.
    2. Minimum Net Free Area: 18 sq. in. /ft.
    3. Width: 12 inches.

2.04 ACCESSORIES

A. Roofing Nails: ASTM F 1667; hot-dip galvanized steel wire shingle nails, minimum 0.120-inch-diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch- diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through plywood sheathing.
    1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

2.05 METAL FLASHING AND TRIM

A. General: Comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim."

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.
    1. Step Flashings: Fabricate with a headlap of 2 inches and a minimum extension of 5 inches over the underlying asphalt shingle and up the vertical surface.
    2. Drip Edges: Fabricate in lengths not exceeding 10 feet with 2-inch roof deck flange and 1-1/2- inch fascia flange with 3/8-inch drip at lower edge.

C. Vent Pipe Flashings: ASTM B 749, Type L51121, at least 1/16 inch thick. Provide sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof and extending at least 4 inches from pipe onto roof.

D. Copper Flashing:
    1. Metal counterflashing: 24 gauge pre-finished steel or .032" min. aluminum formed with hemmed lower edge.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
    1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking, or metal clips and that installation is within flatness tolerances.
    2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provision has been made for flashings and penetrations through asphalt shingles.
    3. For the record, prepare a written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 UNDERLAYMENT INSTALLATION

A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

B. Single-Layer Synthetic Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with roofing nails.
   1. Install underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 3 inches in direction to shed water. Lap ends of felt not less than 6 inches over self-adhering sheet underlayment.
   2. Install fasteners at no more than 36 inch o.c.

C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install at locations indicated on Drawings, lapped in direction to shed water. Lap sides not less than 3- 1/2 inches. Lap ends not less than 6 inches staggered 24 inches between courses. Roll laps with roller. Cover underlayment within seven days.

D. Concealed Valley Lining: For woven valleys. Comply with recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
   1. Lap roof-deck underlayment over valley lining at least 6 inches.
   2. Install a 36-inch- wide strip of granular-surfaced valley lining, with granular-surface face up, centered in valley and fastened to roof deck.
   3. Lap ends of strips at least 12 inches in direction to shed water, and seal with asphalt roofing cement.
   4. Fasten to roof deck.

3.03 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim."

B. Step Flashings: Install with a headlap of 2 inches and extend over the underlying asphalt shingle and up the vertical surface. Fasten to roof deck only.

C. Rake Drip Edges: Install rake drip edge flashings over underlayment and fasten to roof deck.

D. Eave Drip Edges: Install eave drip edge flashings over underlayment and fasten to roof sheathing.

E. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.04 ASPHALT SHINGLE INSTALLATION

A. Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
   1. Fasten asphalt shingles to roof sheathing with roofing nails.
   2. Fasten asphalt shingles with a minimum of six fasteners per shingle in accordance with the Connecticut State Building Code. STAPLING OF SHINGLES IS NOT ALLOWED.

B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
   1. Extend asphalt shingles 1/2 inch over fascia at eaves and rakes.
   2. Install starter strip along rake edge.

C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with 5- inch offset pattern at succeeding courses, maintaining uniform exposure.

D. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

E. Fasten asphalt shingle strips with a minimum of six roofing nails located according to manufacturer's written instructions.
   1. Where roof slope is less than 4:12, seal asphalt shingles with asphalt roofing cement spots.
   2. When ambient temperature during installation is below 50 deg F, seal asphalt shingles with asphalt roofing cement spots.

F. Woven Valleys: Extend succeeding asphalt shingle courses from both sides of valley 12 beyond center of valley, weaving intersecting shingle-strip courses over each other. Use one-piece shingle strips without joints in valley.
   1. Do not nail asphalt shingles within 6 inches of valley center.

G. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

H. Ridge Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.
   1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

3.05 WASTE DISPOSAL

A. Disposal: At completion of roofing work, transport demolished materials and waste off Owner's property.

END OF SECTION 07 3113

SECTION 07 2105
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation over roof deck and over roof sheathing, and exterior wall behind indicated wall finish.

B. Batt insulation and vapor retarder in ceiling, and roof construction.

C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.

B. Section 07 1300 – Sheet Waterproofing for under slab waterproofing requirements.

1.03 REFERENCE STANDARDS

A. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2022.

B. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).

C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

D. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).

F. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

G. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

I. ASTM E2357 - Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies; 2024.

J. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation Over Roof Deck: Polyisocyanurate board.

B. Insulation at interior locations top side of bell tower slabs: Extruded polystyrene (XPS) board.

C. Insulation on attic side of central nave gypsum board membrane: unfaced batt insulation.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type and Compressive Resistance: Type IV, 25 psi, minimum.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   4. Thermal Resistance, R-value (RSI-value): As indicated on drawings.
   5. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
   6. Board Edges: Square.
   7. Products:
      a. DuPont de Nemours, Inc; Styrofoam Brand Square Edge: building.dupont.com/#sle.
      b. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: www.ocbuildingspec.com/#sle.
      c. DiversiFoam Products; CertiFoam 25.
      d. Substitutions: See Section 01 6000 - Product Requirements.

B. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
   1. Classifications:
      a. Type II: Faced with either organic felt facers or glass fiber mat facers on both major surfaces of the core foam.
         1) Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi, minimum.
         3) Thermal Resistance: As indicated on drawings.
   2. Board Size: 48 inch by 96 inch (1220 mm by 2440 mm).
   3. Board Thickness: As indicated on drawings.
   4. Tapered Board: Slope as indicated; minimum thickness 5 inch; fabricate of fewest layers possible.
   5. Board Edges: Square.
   6. Products:
      a. Atlas Roofing Corporation; ACFoam-II Polyiso Roof Insulation: www.atlasroofing.com/#sle.
      b. Hunter Panels; H-Shield: www.hunterpanels.com/#sle.
      c. Firestone Building Products Company, LLC; ISO 95+ GL.

2.03 BATT INSULATION MATERIALS

A. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; friction fit where applicable; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
   1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
   2. Provide foil facing on interior side facing applications behind insulated spandrel glazing.
   3. Thickness: thickness to fill the curtainwall assembly depth without compressing the insulation; refer to drawings and specifications for curtainwall assembly depths.
   4. Products:
      a. Basis of Design: ROCKWOOL (ROXUL, Inc.); Curtainrock 40.
      b. Johns Manville: MinWool Curtainwall 80.
      c. Owens Corning: Thermafiber Firespan 40.

2.04 BATT INSULATION MATERIALS

A. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; laid flat fit edge to edge; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
   1. Type I Class A.
   2. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
   3. Provide unfaced insulation at attic side of central nave gypsum board membrane.
   4. Thickness: thickness as required to satisfy R-30 minimum.
   5. Products:
      a. Basis of Design: ROCKWOOL (ROXUL, Inc.); Comfortbatt Thermal Batt Insulation R30.
      b. Knauf Insulation: EcoRoll Insulation R-30.
      c. Owens Corning: Thermafiber UltraBatt R-30.

2.05 ACCESSORIES

A. Sheet Waterproofing: Specified in Section 07 1300.

B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application:
      a. Sealing of interior circular penetrations, such as pipes or cables.
      b. Securing foil-faced insulation to curtainwall cavity locations.
   2. Width: As required for application.
   3. Temperature Resistance: Range of minus 40 to 212 degrees Fahrenheit.

C. Flashing Tape: Special polyolefin film with high performance adhesive.
   1. Application: Interior window and door sill flashing tape.
   2. Width: As required for application.
   3. Temperature Resistance: Minus 40 degrees Fahrenheit to 212 degrees Fahrenheit
   4. Products:
      a. Protecto Wrap Company; Protecto Super Stick Building Tape: www.protectowrap.com/#sle.
      b. Protecto Wrap Company; Protecto Seal 45 Butyl: www.protectowrap.com/#sle.
      c. Protecto Wrap Company; Protecto Seal PW 100/40: www.protectowrap.com/#sle.
      d. Protecto Wrap Company; Protecto BT20XL Butyl: www.protectowrap.com/#sle.
      e. Protecto Wrap Company; Protecto BT25XL: www.protectowrap.com/#sle.
      f. Substitutions: See Section 01 6000 - Product Requirements.

D. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.

E. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.

F. Insulation Fasteners: Lengths of unfinished, 13 gage, 0.072 inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely supporting insulation in place.

G. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

H. Wire Mesh: Galvanized steel, hexagonal wire mesh.

I. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in curtainwall behind spandrel glazing and in exterior wall and roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Tape insulation batts in place at curtainwall locations.

F. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

G. Tape seal tears or cuts in vapor retarder.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Coordination of Air Barrier Association of America (ABAA) Tests and Inspections:
   1. Provide testing and inspection required by ABAA Quality Assurance Program (QAP).
   2. Notify ABAA in writing of schedule for air barrier work and allow adequate time for testing and inspection.
   3. Cooperate with ABAA testing agency.
   4. Allow access to air barrier work areas and staging.
   5. Do not cover air barrier work until tested, inspected, and accepted.

3.04 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 07 2105

SECTION 07 4213
EXTERIOR METAL PANEL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior cladding consisting of formed metal composite material (MCM) sheet, secondary supports, and anchors to structure, attached to backup.

B. Metal soffit panels system and associated trim pieces and installation hardware.

C. Matching flashing and trim.

1.02 RELATED REQUIREMENTS

A. Section 01 3573 - Delegated Design Procedures.

B. Section 05 4000 – Cold Form Metal Framing.

C. Section 06 1000 – Rough Carpentry.

D. Section 07 5216 – Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing.

E. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashing components integrated with this wall system.

F. Section 07 7123 – Manufactured Gutters and Downspouts.

G. Section 07 9200 – Joint Sealants.

1.03 REFERENCE STANDARDS

A. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2025b.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2023.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

G. ASTM D1781 - Standard Test Method for Climbing Drum Peel for Adhesives; 1998 (Reapproved 2021).

H. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2023.

I. ASTM D4145 - Standard Test Method for Coating Flexibility of Prepainted Sheet; 2010 (Reapproved 2022).

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

K. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

L. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

M. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Meeting: Convene one week before starting work of this section to verify project requirements, coordinate with installers of other work, establish condition and completeness of building substrate, and review manufacturers' installation instructions and warranty requirements.
   1. Require attendance by the installer and relevant subcontractors.
   2. Include MCM sheet manufacturer’s representative and wall system manufacturer’s representative to review storage and handling procedures.
   3. Review in detail truck transportation, parking, vertical transportation, schedule, personnel, installation of adjacent materials and substrate.
   4. Review procedures for protection of work and other construction.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data - MCM Sheets: Manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
   1. Finish manufacturer's data sheet showing physical and performance characteristics.
   2. Storage and handling requirements and recommendations.
   3. Fabrication instructions and recommendations.
   4. Specimen warranty for finish, as specified herein.

C. Product Data - Soffit System: Manufacturer's data sheets on each product to be used, including:
   1. Physical characteristics of components shown on shop drawings.
   2. Storage and handling requirements and recommendations.
   3. Installation instructions and recommendations.
   4. Specimen warranty for wall system, as specified herein.

D. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, connections, details and location of joints, sealants and gaskets, method of anchorage, support clips, exposed fasteners, number of anchors, supports, reinforcement, trim, flashings, and accessories.
   1. Indicate panel numbering system.
   2. Differentiate between shop and field fabrication.
   3. Indicate substrates and adjacent work with which the wall system must be coordinated.
   4. Include large-scale details of anchorages and connecting elements.
   5. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches.
   6. Include design engineer's stamp or seal, licensed in the State of Connecticut, on shop drawings for attachments and anchors.

E. Selection Samples: For each finish product specified, submit at least three sample color chips representing manufacturer's full range of available colors and patterns.
   1. Sealant Color: Color to match wall panels.

F. Delegated Design Data: Submit structural calculations stamped by design engineer, licensed in the State of Connecticut, for Architect's information and project record.

G. Manufacturer's Field Reports: Provide within 48 hours of field review. State what was observed and what changes, if any, were requested or required.

H. Installer's qualification statement.

I. Testing agency's qualification statement.

J. Maintenance Data: Care of finishes and warranty requirements.

K. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

L. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.06 QUALITY ASSURANCE

A. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.

B. Design Engineer's Qualifications: Design structural supports and anchorages under direct supervision of a Structural Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Manufacturer Qualifications: Company specializing in manufacturing wall panel systems specified in this section.
   1. With not less than three years of documented experience.

D. Installer Qualifications: Company specializing in performing work of the type specified in this section.
   1. With minimum three years of documented experience.
   2. Approved by wall panel system manufacturer.

E. Testing Agency Qualifications: Independent agency experienced in testing assemblies of the type required for this project and having the necessary facilities for full-size mock-up testing of the type specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
   1. Protect finishes by applying heavy-duty removable plastic film during production.
   2. Package for protection against transportation damage.
   3. Provide markings to identify components consistently with drawings.
   4. Exercise care in unloading, storing, and installing panels to prevent bending, warping, twisting, and surface damage.

C. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
   1. Store in well-ventilated space out of direct sunlight.
   2. Protect from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
   3. Store at a slope to ensure positive drainage of accumulated water.
   4. Do not store in enclosed space where ambient temperature can exceed 120 degrees Fahrenheit.
   5. Avoid contact with other materials that might cause staining, denting, or other surface damage.

1.08 WARRANTY

A. See Section 01 7700 - Closeout Procedures for additional warranty requirements.

B. Correct defective work within a five-year period after Date of Substantial Completion, including defects in integrity of seals for insulated metal wall panel systems.

C. Correct defective work within a twenty-year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Composite Material (MCM) Sheet Manufacturers:
   1. Basis of Design: ALUCOBOND USA; ALUCOBOND PLUS: www.alucobondusa.com/#sle.
   2. Citadel Architectural Products, Inc; Envelope 2000: www.citadelap.com/#sle.
   3. Fairview Architectural LLC; VitraBond (Fire Rated): www.fairview-na.com/#sle.

B. Soffit System Manufacturers:
   1. Basis of Design: Longboard Cladding; 2-1/2” V-Groove planks extruded aluminum 6063 T5.
      a. Color: Selected by the Architect from the manufacturer’s standard line of wood grain finishes; color family: Light Cherry.
      b. Gloss: 30 ± 5.
      c. Thickness: 1/16 inch base metal thickness.
      d. Profile: 2-1/2 inch V-Groove X 12 feet plank.
   2. Knotwood Stunning Aluminum; 6” cladding.
   3. Luxyclad Aluminum Architectural Systems; 4” v-groove.

2.02 SOFFIT SYSTEM

A. Soffit System: Metal panels, fasteners, anchors, standard trim accessories designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage, or failure.
   1. Provide structural design by or under direct supervision of a Structural Engineer licensed in the State of Connecticut.
   2. Anchor panels supporting framing without exposed fasteners.

B. Performance Requirements:
   1. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees Fahrenheit to 180 degrees Fahrenheit without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
   2. Wind Performance: Provide system tested in accordance with ASTM E330/E330M without permanent deformation or failures of structural members under the following conditions:
      a. Design Wind Pressure: As specified in local codes.
      b. Maximum deflection of perimeter framing member of L/175 normal to plane of the wall; maximum deflection of individual panels of L/60.
      c. Maximum anchor deflection in any direction of 1/16 inch at connection points of framing members to anchors.
   3. Water Penetration: No water penetration under static pressure when tested in accordance with ASTM E331 at a differential of 10 percent of inward acting design load, 6.27 psf (300 Pa) minimum, after 15 minutes.
      a. Water penetration is defined as the appearance of uncontrolled water on the interior face of the wall.
      b. Design to drain leakage and condensation to the exterior face of the wall.
   4. Fire Performance: Tested in accordance with and complying with acceptance criteria of NFPA 285.

2.03 PANELS

A. Panels: 1 inch deep pans formed of metal composite material sheet by routing back edges of sheet, removing corners, and folding edges.
   1. Reinforce corners with riveted aluminum angles.
   2. Provide concealed attachment to supporting structure by adhering attachment members to back of panel; attachment members may also function as stiffeners.

3. Maintain maximum panel bow of 0.8 percent of panel dimension in width and length; provide stiffeners of sufficient size and strength to maintain panel flatness without showing local stresses or read-through on panel face.
4. Secure members to back face of panels using structural silicone sealant approved by MCM sheet manufacturer.
5. Fabricate panels under controlled shop conditions.
6. Where final dimensions cannot be established by field measurement before commencement of manufacturing, make allowance for field adjustments without requiring field fabrication of panels.
7. Fabricate as indicated on drawings and as recommended by MCM sheet manufacturer.
    a. Make panel lines, breaks, curves, and angles sharp and true.
    b. Keep plane surfaces free from warp or buckle.
    c. Keep panel surfaces free of scratches or marks caused during fabrication.

2.04 MATERIALS

A. Metal Composite Material (MCM) Sheet: Two sheets of aluminum sandwiching a core of extruded thermoplastic material; no foamed insulation material content.
    1. Overall Sheet Thickness: 0.118 inch, minimum.
    2. Bond and Peel Strength: No adhesive failure of the bond between the core and the skin nor cohesive failure of the core itself below 22.4 inch-pound/inch (100 N-mm/mm) with no degradation in bond performance, when tested in accordance with ASTM D1781, simulating resistance to panel delamination, after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees Fahrenheit.
    3. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
    4. Flammability: Self-ignition temperature of 650 degrees Fahrenheit or greater when tested in accordance with ASTM D1929.

B. Metal Framing Members: Include sub-girts, zee-clips, base and sill angles and channels, hat-shaped and rigid channels, and furring channels required for complete installation.
    1. Provide material strength, dimensions, configuration as required to meet the applied loads applied and in compliance with applicable building code.
    2. Sheet Steel Components: ASTM A653/A653M galvanized to G90/Z275 or zinc-iron alloy-coated to A60/ZF180; or ASTM A792/A792M aluminum-zinc coated to AZ60/AZM180.
    3. Stainless Steel Sheet Components: ASTM A480/A480M.
    4. Aluminum Components: ASTM B209/B209M; or ASTM B221 (ASTM B221M).

2.05 FINISHES

A. Factory Finish: Two coat fluoropolymer resin coating, approved by coating manufacturer for length of warranty specified for project, and applied by coil manufacturing facility that specializes in coil applied finishes.
    1. Coating Flexibility: Pass ASTM D4145 minimum 1T Bend at time of manufacturing.
    2. Long-Term Performance: Not less than that specified under WARRANTY in PART 1.

B. Color/Texture: As selected by Architect from manufacturer's full range.

2.06 ACCESSORIES

A. Flashing: Sheet aluminum; 0.040 inch thick, minimum; finish and color to match MCM sheet; see Section 07 6200 for additional requirements.

B. Trim Pieces: include the following manufacturer standard trim pieces:
    1. Basis of Design: Longboard Architectural Products.
        a. J-Track end panel closure pieces.
        b. Starter strips.
        c. Termination trim strips.

d. Associated accessories for installation of trim.

C. Fasteners:
1. Exposed Fasteners: Stainless steel; permitted only where absolutely unavoidable and subject to prior approval of the Architect.
2. Screws: Self-drilling or self-tapping Type 410 stainless steel or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal wall panels.
3. Bolts: Stainless steel.
4. Fasteners for Flashing and Trim: Blind fasteners of high-strength aluminum or stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine dimensions, tolerances, and interfaces with other work.

B. Examine substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Notify Architect in writing of conditions detrimental to proper and timely completion of work, and do not proceed with erection until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect adjacent work areas and finish surfaces from damage during installation.

3.03 INSTALLATION

A. Do not install products that are defective, including warped, bowed, dented, and broken members, and members with damaged finishes.

B. Comply with instructions and recommendations of MCM sheet manufacturer and wall system manufacturer, as well as with approved shop drawings.

C. Install wall system securely allowing for necessary thermal and structural movement; comply with wall system manufacturer's instructions for installation of concealed fasteners.

D. Do not handle or tool products during erection in manner that damages finish, decreases strength, or results in visual imperfection or failure in performance. Return component parts that require alteration to shop for refabrication, if possible, or for replacement with new parts.

E. Do not form panels in field unless required by wall system manufacturer and approved by the Architect; comply with MCM sheet manufacturer's instructions and recommendations for field forming.

F. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.

G. Where joints are designed for field-applied sealant, seal joints completely with specified sealant.

H. Install flashings as indicated on shop drawings. At flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.

I. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:
1. Variation From Plane or Location: 1/2 inch in 30 feet of length and up to 3/4 inch in 300 feet, maximum.
2. Deviation of Vertical Member From True Line: 0.1 inch in 25 feet run, maximum.
3. Deviation of Horizontal Member From True Line: 0.1 inch in 25 feet run, maximum.

4. Offset From True Alignment Between Two Adjacent Members Abutting End To End, In Line: 0.03 inch, maximum.

J. Replace damaged products.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Wall System Manufacturer's Field Services: Provide field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with instructions.

3.05 CLEANING

A. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.

B. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

C. Remove temporary coverings and protection of adjacent work areas.

D. Clean installed products in accordance with manufacturer's instructions.

3.06 PROTECTION

A. Protect installed panel system from damage until Date of Substantial Completion.

END OF SECTION 07 4213

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SECTION 07 5200
SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modified bituminous roofing membrane, conventional application.

B. Insulation, flat and tapered.

C. Vapor retarders.

D. Deck sheathing.

E. Cover boards.

F. Roofing cant strips.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood cant strips.

B. Section 07 0150.19 - Preparation for Re-Roofing.

C. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashing.

D. Section 07 7100 - Roof Specialties: Prefabricated roofing expansion joint flashing.

E. Section 07 7200 - Roof Accessories: Roof-mounted units.

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

C. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2017.

D. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

E. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).

F. ASTM D312/D312M - Standard Specification for Asphalt Used in Roofing; 2016a (Reapproved 2023).

G. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method; 1983 (Reapproved 2018).

H. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

I. ASTM D4601/D4601M - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing; 2004 (Reapproved 2020).

J. ASTM D5957 - Standard Guide for Flood Testing Horizontal Waterproofing Installations; 1998 (Reapproved 2021).

K. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2025.

L. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

M. ASTM G154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials; 2023.

N. ASTM G155 - Standard Practice for Operating Xenon Arc Lamp Apparatus for Exposure of Materials; 2021.

O. FM (AG) - FM Approval Guide; Current Edition.

P. FM 4470 - Examination Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction; 2022.

Q. FM 4474 - American National Standard for Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures; 2020.

R. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2024).

S. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; 2016, with Editorial Revision (2022).

T. NRCA (RM) - The NRCA Roofing Manual; 2026.

U. UL (FRD) - Fire Resistance Directory; Current Edition.

V. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

W. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings; Current Edition, Including All Revisions.

X. UL 1897 - Uplift Tests for Roof-Covering Systems; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

Y. ANSI/FM 4474 - American National Standard for Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures 2004 (R2010).

Z. ASTM D3746 - Test Method for Impact Resistance of Bituminous Roofing Systems. 1985 (Reapproved 2008).

AA. ASTM D4272 - Test Method for Total Energy Impact of Plastic Films by Dart Drop. 2014.

BB. ASTM G152 - Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials. 2013.

CC. AA. UL (FRD)- Fire Resistance Directory Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of associated flashings and counterflashings installed by other sections.

B. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.
   2. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Provide manufacturer's catalog data for membrane and bitumen materials, base flashing materials, insulation, vapor retarder, and surfacing.

C. Shop Drawings: Indicate all joint and termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout. Include all related accessories in the shop drawings (term bars, etc.).

D. Samples: Submit two samples 12 by 12 inches (304 by 304 mm) in size illustrating granule surfaced sheet and insulation.

E. Wind Uplift Resistance Submittal: For roofing system indicating compliance with wind uplift performance requirements.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture; ballast materials may be stored outdoors.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane when environmental conditions are outside the ranges recommended by manufacturer.

B. Do not apply roofing membrane during unsuitable weather.

C. Do not apply roofing membrane when ambient temperature is below 40 degrees Fahrenheit.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

F. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.09 WARRANTY

A. See Section 01 7700 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a 2-year period after Date of Substantial Completion.
   1. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system from edge to edge, such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and roof pavers, for the warranty period. Warranty to be non-pro-rated with no dollar limit.

C. Provide twenty-year manufacturer's material and labor warranty to cover failure to prevent penetration of water and other roofing failures.
   1. Manufacturer's warranty includes all components of roofing system, edge to edge, including roofing membrane, base flashings, roof insulation, fasteners, cover boards, vapor retarder, substrate board, and roof pavers. Warranty to be non-pro-rated with no dollar limit.

2. Warranty shall provide coverage for maximum peak gust for specified wind speed, reference structural drawings for wind speed requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Modified Bituminous Membrane Roofing:
   1. Basis of Design: Tremco, Inc.
   2. Firestone Building Products Company: www.firestonebpco.com/#sle.
   3. GAF: www.gaf.com/#sle.
   4. MBTechnology: www.mbtechnology.com/#sle.

B. Insulation: See Section 07 2105 - Thermal Insulation.

2.02 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings shall remain watertight.
   1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
   2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM 4470.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Wind Uplift Resistance: Design roofing system to resist the following wind-uplift pressures when tested according to ANSI/FM 4474, UL 580, or UL 1897:
   1. As indicated on Drawings.

D. Factory Mutual Wind Uplift Classification Criteria: Provide roof system meeting minimum requirements of FM roof system classification Factory Mutual Approved Class 1-90 roof system in compliance with FM DS 1-29.

E. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency.
   1. Identify products with appropriate markings from an applicable testing agency.

2.03 ROOFING - CONVENTIONAL APPLICATION

A. Modified Bituminous Roofing: Two-ply membrane over base sheet, with insulation.

B. Roofing Assembly Requirements:
   1. External Fire Exposure Classification: ASTM E108 Class A, UL (FRD) listed.
   2. Internal Fire Spread Classification: Factory Mutual Class 1, FM-approved.
   3. Wind Resistance Classification: Factory Mutual 1-90, in accordance with FM DS 1-28.
   4. Insulation Thermal Resistance (R-Value): 5.6 per inch, minimum; provide insulation of thickness required.
   5. Surfacing: Mineral granules.

C. Acceptable Insulation Types - Constant Thickness Application:
   1. Minimum 2 layers of polyisocyanurate board.

D. Acceptable Insulation Types - Tapered Application:
   1. Tapered polyisocyanurate board.

2.04 MEMBRANE AND SHEET MATERIALS

A. Membrane: Polymer modified asphalt, reinforced with non-woven fabric; granule surfaced; with the following characteristics:

B. Base Sheet: ASTM D4601/D4601M Type I; asphalt-coated glass fiber; unperforated.

C. Fire-Resistant Vapor Retarder: Reinforced Kraft paper laminate complying with requirements of fire rating classification; compatible with roofing and insulation materials.

D. Flexible Flashing Material: Same material as membrane.

2.05 BITUMINOUS MATERIALS

A. Bitumen: Asphalt, ASTM D312/D312M Type IV; for adhering insulation, use Type III.

B. Asphalt Primer: ASTM D41/D41M, asphalt type.

C. Asphalt Roof Cement: ASTM D4586/D4586M, Type II, asbestos-free.

2.06 DECK SHEATHING

A. Deck Sheathing: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
   1. Products:
      a. Basis-of-Design: Georgia-Pacific; DensDeck, DensDeck Prime, or DensDeck DuraGuard: www.densdeck.com/#sle.
      b. USG Corporation; Securock Ultralight Glass-Mat Roof Board: www.usg.com/#sle.

B. Cover Boards: ASTM C1177/C1177M, glass-mat, water-resistant gypsum board or ASTM C1278/C1278M fiber-reinforced gypsum board.
   1. Manufacturers:
      a. Basis-of-Design: Georgia-Pacific; DensDeck, DensDeck Prime, or DensDeck DuraGuard: www.densdeck.com/#sle.
   2. Thickness: minimum 1/2 inch.
   3. Surface finish: Factory primed.

2.07 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
   1. Classifications:
      a. Type II:
         1) Class 2 - Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi, minimum.
   2. Board Size: 48 by 96 inches (1,220 by 2,440 mm).
   3. Board Thickness: 3.0 inch maximum.
   4. Tapered Board: Slope as indicated; minimum thickness 5 inch; fabricate of fewest layers possible.
   5. Board Edges: Square.

2.08 SURFACING MATERIALS - CONVENTIONAL APPLICATION

A. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
   1. Composition: Asphaltic with mineral granule surface.
   2. Size: As indicated on drawings.
   3. Surface Color: White.

2.09 ACCESSORIES

A. Cant Strips: Wood, pressure preservative treated; see Section 06 1000.

B. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self-adhering.

C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
   1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

D. Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION - CONCRETE DECK

A. Fill surface honeycombs and any defects or surface variations with latex filler.

B. Do not begin work until elevated concrete substrate has cured at least 28 days and moisture content is five percent or less.
   1. Test as Follows:
      a. Concrete Moisture Content: No beading water under plastic after 16 hours when tested in accordance with ASTM D4263.
      b. Relative Humidity in Concrete: Not greater than 75 percent when tested in accordance with ASTM F2170.

C. Conventional Application: Apply fire-retardant vapor retarder with adhesive.

3.03 PREPARATION - METAL DECK

A. Install deck sheathing on metal deck.
   1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
   2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
   3. Tape joints.
   4. Mechanically fasten sheathing to roof deck, in accordance with Factory Mutual recommendations and roofing manufacturer's instructions.

B. Conventional Application: Apply fire-resistant vapor retarder.

3.04 INSTALLATION - VAPOR RETARDER, CONVENTIONAL

A. Fire-retardant Vapor Retarder: Apply to deck surface with adhesive in accordance with roofing and vapor retarder manufacturers' instructions.

B. Extend vapor retarder under cant strips and blocking.

C. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

3.05 INSULATION INSTALLATION

A. Ensure vapor retarder is clean and dry, continuous, and ready for application of roofing system.

B. Attachment of Insulation: Mechanically fasten each layer of insulation to deck in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
   1. Use fastener type and fastening pattern as required to achieve wind resistance specified.

C. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.

D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

F. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.

G. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.

H. Do not apply more insulation than can be covered with membrane in same day.

3.06 INSTALLATION - MEMBRANE

A. Apply modified bituminous membrane roofing system in accordance with manufacturer's recommendations and NRCA (RM) applicable requirements, including ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing".

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Install membrane; lap and seal edges and ends to be permanently waterproof.

D. Install smooth, free from air pockets, wrinkles, fish-mouths, or tears. Ensure full bond of membrane to substrate.

E. At end of day's operation, install waterproof cut-off. Remove cut-off before resuming roofing.

F. At intersections with vertical surfaces:
   1. Extend membrane over cant strips and up a minimum of 8 inches onto vertical surfaces.
   2. Apply flexible flashing over membrane.

G. Around roof penetrations, mop in and seal flanges and flashings with flexible flashing.

H. Install roofing expansion joints. Make joints watertight.

I. Coordinate installation of roof drains and related flashings.

3.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, roof membrane application, flashings, protection, and drainage components, and to furnish reports to Architect.

C. Perform the following tests:
   1. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
      a. Perform tests before overlying construction is placed.
      b. Flood to an average depth of 2-1/2 inch with a minimum depth of 1 inch and not exceeding a depth of 4 inch. Maintain 2 inches of clearance from top of base flashing.
      c. Flood each area for 24 hours.
      d. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.
         1) Cost of retesting is the responsibility of the Contractor.
      e. Testing agency shall prepare survey report indicating locations of initial leaks, if any, and final survey report.

D. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
   1. Notify Architect and Owner 48 hours in advance of date and time of inspection.

E. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

F. Roofing system will be considered defective if it does not pass tests and inspections.

1. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

G. Require site attendance of roofing material manufacturers periodically during installation of the Work.

3.08 CLEANING

A. Remove bituminous markings from finished surfaces.

B. In areas where finished surfaces are soiled by bitumen or other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

C. Repair or replace defaced or damaged finishes caused by work of this section.

3.09 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

3.10 ROOFING INSTALLER'S WARRANTY

A. WHEREAS of , herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
1. Owner:
2. Address:
3. Building Name/Type:
4. Address:
5. Area of Work:
6. Acceptance Date: .
7. Warranty Period:
8. Expiration Date: .

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
   a. lightning;
   b. peak gust wind speed exceeding mph (m/s);
   c. fire;
   d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
   e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
   f. vapor condensation on bottom of roofing; and
   g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this day of
1. , .
2. Authorized Signature: .
3. Name: .
4. Title: .

END OF SECTION 07 5200

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SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings and counterflashings.

B. Sealants for joints within sheet metal fabrications.

C. Formed sill flashings for storefront and curtain wall.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Metal flashings embedded in masonry.

B. Section 06 1000 - Rough Carpentry: for wood nailers and curbs.

C. Section 07 3113 - Asphalt Shingles: Non-metallic flashings associated with shingle roofing.

D. Section 07 7100 - Roof Specialties: Manufactured copings and flashings.

E. Section 07 7123 - Manufactured Gutters and Downspouts.

F. Section 07 7200 - Roof Accessories: Manufactured metal roof curbs.

G. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2026.

E. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

F. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products; 2020.

G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

I. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

K. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

L. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

M. NRCA (RM) - The NRCA Roofing Manual; 2026.

N. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

O. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

P. AAMA 711 - Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products; 2020.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

B. Coordinate with work included in different Sections that depend on each other for proper installation, connection, and performance, as components of the exterior wall enclosure.

C. Components include, but are not limited to:
1. Substrate framing; cold-formed metal framing.
2. Sheathing.
3. Air and vapor barrier.
4. Thermal insulation.
5. Sheet metal flashing and trim.
6. Storefront.
7. Curtain Walls.

D. See wall assemblies indicated on drawings.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details of project specific conditions.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Maintain one copy of each document on site.

C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7429 - Construction Waste Management and Disposal for packaging waste requirements.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA (RM) and SMACNA (ASMM) requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint

sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

2.02 MANUFACTURERS

A. Sheet Metal Flashing and Trim Manufacturers:
   1. Fairview Architectural LLC: www.fairview-na.com/#sle.
   2. OMG Roofing Products: www.omgroofing.com/#sle.
   3. Petersen Aluminum Corporation: www.pac-clad.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Exterior Penetration Flashing Panel Manufacturers:
   1. Quickflash Weatherproofing Products, Inc: www.quickflashproducts.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SHEET MATERIALS

A. Anodized Aluminum: ASTM B209/B209M; 20 gauge, 0.032 inch thick; clear anodized finish.
   1. Clear Anodized Finish: AAMA 611, AA-M12C22A41, Class I, clear anodic coating not less than 0.7 mil, 0.0007 inch thick.

B. Pre-Finished Aluminum: ASTM B209/B209M; 18 gauge, 0.040 inch thick; plain finish shop pre-coated with silicone modified polyester coating.
   1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.
   2. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   3. Color: As selected by Architect from manufacturer's standard colors.

C. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304 alloy, dead soft temper, 26 gage, 26 inch thick; smooth flat surface, cold-rolled No. 2D - Dull finish.

2.04 FLEXIBLE FLASHING

A. Location: Beneath sheet aluminum sill trim as indicated on drawings.

B. Flexible Stainless Steel Self-Adhering Flashing: 2 mil stainless steel, Type 304, 10 mils of butyl adhesive.
   1. Basis-of-Design Product: York Manufacturing, Inc.; York 304 SS.
      a. Additional Manufacturers:
         1) GE Silicones, Inc.; GE Elemax SS Flashing.
         2) Vapro Shield, Inc.; Vapro-SS Flashing.
   2. Characteristics:
      a. Type: Stainless steel core with one uncoated (bare) stainless steel face (outward facing) with a butyl block copolymer adhesive (inward facing).
      b. Stainless Steel: Type 304, ASTM A240/A240M. Domestically sourced per DFARS 252.225-7008 and/or DFARS 252.225-7009.
      c. Adhesive: Block copolymer.
      d. No primer required.
      e. UV Resistant.
      f. 20-year warranty.
      g. Fire Resistant: ASTM E84 Class A material.
      h. Mold Resistant: Passes ASTM D3273.
      i. Passes AAMA 711.
      j. Passes Air Barrier Material Test: ASTM E2178.
      k. Contributes towards LEED by satisfying EA Credit 1 (optimize energy performance) and EQ Credit 4.1 (low emitting materials).
      l. Size: Manufacturer's standard width rolls.

2.05 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch 17.72 inch long legs; seam for rigidity, seal with sealant.

F. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.06 WALL SHEET METAL FABRICATIONS

A. Sill Flashings: Fabricate from the following material.
   1. Aluminum Plate: 1/8-inch thickness.
      a. Colors: Custom to match the following systems where installed:
         1) Aluminum-framed storefront.
         2) Glazed aluminum curtain walls.

B. Aluminum Fin Trim at Jamb/Head:
   1. Aluminum Plate: 1/8-inch thickness.
      a. Colors: Custom to match the following systems where installed:
         1) Aluminum-framed storefront.
         2) Glazed aluminum curtain walls.

C. Through Wall Overflow Scuppers: Fabricate from the following material:
   1. Stainless Steel: 26 gauge.

2.07 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Comply with drawing details.

B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.

C. Apply plastic cement compound between metal flashings and felt flashings.

D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Seal metal joints watertight.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION 07 6200

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SECTION 07 7123
MANUFACTURED SCUPPERS, GUTTERS, AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-finished aluminum downspouts.

B. Custom pre-finished aluminum scuppers.

C. Main entry canopy custom pre-finished aluminum formed gutters and painted downspouts.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 – Exterior Painting.

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM B32 - Standard Specification for Solder Metal; 2020.

C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

F. AWS 5.7/A5.7M 2007: Specification for Copper and Copper-Allow Bare Welding Rods and Electrodes.

G. ANSI/AWS A5.8 Specification for Filler Metals for Brazing.

H. ANSI/AWS A5.31 Specification for Fluxes for Brazing and Braze Welding.

I. ANSI/AWS B2.2 Standard for Brazing Procedure and Performance Qualification.

J. ANSI/AWS C3.4 Specification for Torch Brazing.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 inch 5 years.

B. Comply with applicable code for size and method of rainwater discharge.

C. Maintain one copy of each document on site.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Provide data on all prefabricated components and components of custom fabricated items, including welding details of new scupper boxes to existing to remain gutter assemblies.

C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details of all scupper boxes, gutters, and downspout assemblies.

D. Samples: Submit two samples, 6" long illustrating component design, finish, color, and configuration of each type of component and assembly.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Prefabricated Gutters and Downspouts:
   1. ATAS International, Inc; Water Control System: www.atas.com/#sle.
   2. Cheney Flashing Company: www.cheneyflashing.com/#sle.
   3. Drexel Metals Inc: www.drexmet.com/#sle.
   4. OMG Roofing Products: www.omgroofing.com/#sle.
   5. SAF Perimeter Systems, a division of Southern Aluminum Finishing Company, Inc: www.saf.com/persys/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: Painted with approved paint as selected by the Architect from manufacturer's standard colors.

2.03 COMPONENTS

A. Scuppers: custom sizes and profiles.

B. Gutters: SMACNA rectangular style profile.

C. Downspouts: SMACNA Round profile.

D. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: In accordance with SMACNA requirements.
   2. Gutter Supports: Straps.
   3. Downspout Supports: Installed directly to exterior wall assembly with masonry anchors.

E. Fasteners: Galvanized steel, with soft neoprene washers, painted the same color as the downspouts.

2.04 FABRICATION

A. Form scupper boxes, gutters, and downspouts of profiles and sizes indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate scupper boxes, gutters, and downspout accessories - seal watertight.

2.05 FINISHES

A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coats, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that surfaces are ready to receive work.

3.02 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

B. Reference drawings for scupper details and integration into existing to remain copper gutter assemblies.

3.03 INSTALLATION

A. Install new scupper boxes, gutters, downspouts, and accessories in accordance with manufacturer's instructions. Fully braze new scupper boxes to existing gutters.

B. Fully braze seal all existing internal wall copper downspouts prior to installation of new scupper boxes.

C. Slope gutters 1/8 inch per foot (0.12 inch/m).

END OF SECTION 07 7123

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SECTION 07 7200
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof curbs.

B. Snow guards.

C. Roof Edge Protection Systems.

1.02 REFERENCE STANDARDS

A. 29 CFR 1910.29 - Fall Protection Systems and Falling Object Protection - Criteria and Practices; Current Edition.

B. 29 CFR 1926.502 - Fall protection systems criteria and practices; Current Edition.

C. ASCE 7-16 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

H. FM (AG) - FM Approval Guide; Current Edition.

I. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

J. UL (DIR) - Online Certifications Directory; Current Edition.

K. OSHA 29 CFR 1926.502 - Safety and Health Regulations for Construction, Subpart M-Fall Protection.

L. OSHA 29 CFR 1910.29 - Occupational Health and Safety Standards for General Industry, Subpart D Fall Protection Systems and Falling Object Protection.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.

C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
   1. Non-penetrating Rooftop Supports: Submit design calculations for loadings and spacings.
   2. Snow Guards: Submit design calculations for loadings and spacings based on manufacturer testing.
   3. Submit shop drawings sealed and signed by a Professional Engineer experienced in design of this type of work and licensed in the State of Connecticut.

D. Warranty Documentation:
   1. Submit manufacturer warranty.

2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

E. Certification: Provide manufacturer's certifications that the ultimate strength of the fall protection system is equal to or greater than those specified.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five-year period after Date of Substantial Completion.

1.06 NON-PENETRATING ROOD EDGE PROTECTION SYSTEM PERFORMANCE REQUIREMENTS

A. Structural performance of cable and stanchion supports:
1. Capable of withstanding a concentrated load of 200 pounds (90.6 kg), applied to the top rail at any point and in any direction.
2. Capable of withstanding a uniform load of 50 pounds per linear foot (74.3 kg/m) applied to the top rail horizontally with a simultaneous load of 100 pounds per linear foot (148.6 kg/m) applied vertically downward.
3. Design need not provide for both concentrated and uniform loads to be applied concurrently.

B. Structural performance of railing infill:
1. Capable of withstanding a horizontal concentrated load of 200 pounds (90.6 kg), applied to one foot (30.5mm) square area at any point on the infill.
2. Infill includes cable, intermediate posts and other elements.
3. Design need not provide for infill loads to be applied concurrently with top rail loading.

PART 2 PRODUCTS

2.01 ROOF CURBS

A. Manufacturers:
1. AES Industries Inc: www.aescurb.com/#sle.
2. The Pate Company: www.patecurbs.com/#sle.
3. LMCurbs; Roof Curbs: www.lmcurbs.com/#sle.
4. MKT Metal Manufacturing: www.mktduct.com/#sle.
5. Roof Products & Systems (RPS): www.rpscurbs.com/#sle.
6. Substitutions: See Section 01 6000 - Product Requirements.

B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
1. Applications: Roof curbs used for roof penetrations/openings as indicated on drawings.
2. Roof Curb Mounting Substrate: Curb substrate consists of concrete or metal decking.
3. Sheet Metal Material:
   a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
      1) Finish: Mill finish.
      2) Color: As selected by Architect from manufacturer's standard line of colors.
4. Provide layouts and configurations indicated on drawings.

C. Curbs Adjacent to Roof Openings: Provide curb on each side of opening, with top of curb horizontal for equipment mounting.
   1. Provide preservative treated wood nailers along top of curb.
   2. Insulate inside curbs with 1-1/2 inch thick fiberglass insulation.
   3. Height Above Finished Roof Surface: 8 inches, minimum.

D. Equipment Rail Curbs: Straight curbs on each side of equipment, with top of curbs horizontal and level with each other for equipment mounting.
   1. Provide preservative treated wood nailers along top of rails.
   2. Height Above Finished Roof Surface: 8 inches, minimum.
   3. Products:
      a. MKT Metal Manufacturing; Equipment Rails: www.mktduct.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

E. Equipment Support: Straight curbs on each side of equipment, with top of curbs parallel with metal roofing system and each other for equipment mounting.
   1. Height Above Metal Roofing System: 5 inches, minimum.

F. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum 8 inches square unless otherwise indicated.
   1. Provide sliding channel welded along top edge with adjustable height steel bracket, fabricated to fit item supported.
   2. Height Above Finished Roof Surface: 8 inches, minimum.

2.02 NON-PENETRATING ROOFTOP SUPPORTS/ASSEMBLIES

A. Non-Penetrating Rooftop Support/Assemblies: Manufacturer-engineered and factory-fabricated, with pedestal bases that rest on top of roofing membrane, and not requiring any attachment to roof structure and not penetrating roofing assembly.
   1. Design Loadings and Configurations: As required by applicable codes.
   2. Height: Provide minimum clearance of 6 inches under supported items to top of roofing.
   3. Support Spacing and Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
   4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
   5. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.
   6. Products:
      a. Metal Roof Innovations, Ltd. S-5! Attachment Solutions: www.s-5.com/#sle.
      b. PHP Systems/Design: www.phpsd.com/#sle.
      c. Portals Plus: www.portalsplus.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

B. Pipe Supports: Provide attachment fixtures complying with MSS SP-58 and as indicated.
   1. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.
   2. See relevant piping system specification section for additional requirements.

C. Duct Supports: Provide extruded aluminum supports and sized in accordance with diameter of supported ducts, and with base that is non-penetrating of roofing membrane.

D. Non-Penetrating Pedestals: Steel pedestals with square, round, or rectangular bases.
   1. Bases: High density polypropylene.
   2. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
   3. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
   4. Products:

a. Portals Plus; Pedestal Plus: www.portalsplus.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SNOW GUARDS

A. Asphalt Roof Snow Guards: snow guards that attach directly to the roof deck for asphalt shingle roofing systems.
1. Components:
a. Snow guard system of individual metal snow guards and slotted strap assembly.
b. Fasteners: to be a metal compatible with snow guards and roof deck system. Minimum two fasteners per snow guard.
c. Sealants: approved by the manufacturer.
2. Spacing: per manufacturer’s recommendations.
3. Materials: stainless steel or hot dipped galvanized steel.
4. Finish: mill finish from manufacturer's standard line of colors to be selected by the Architect.
5. Products:
a. Basis of Design: Berger PRO#100 Snow Guard for Shingle/Slate/Tile/Composite Roofing.
b. Alpine Snow Guards; Snow Bird Hybrid Pad-Style Snow Guard.
c. Rocky Mountain Snow Guards, Inc.; ST9 Snow Guard.

2.04 NON-PENETRATING ROOF EDGE PROTECTION SYSTEMS

A. Basis of Design: RailGuard 200 Fit-Rite Safety Rail: Configurable and customizable safety guardrail system.
1. Description
a. Rails: Nominal 1.25 inch schedule 40 galvanized steel pipe.
b. Length: Shipped in 21 foot sections for fitting on-site.
c. Height: 42 inches.
d. Mid-rail: 20 inches.
e. Finish: Epoxy powder coated color as selected by the Architect.
2. Stanchions
a. Kit: Straight stanchion kit.
b. Finish: Epoxy powder coated color as selected by the Architect.
3. Rail Fittings: Provide in configurations and quantity for a complete custom layout.
4. Base Style
a. Non-penetrating weighted bases.
b. Four adhesive pads with directional non-skid resistant ridge pattern and minimum 28 sq. inches (180 sq.cm) of substrate contact each: shall be adhered to the bottom of base plate to resist slippage on hard surfaces.
5. Gate System; Self-closing adjustable gate
a. Width: 36-42 inches in location designed by the Architect during the shop drawing review period.
b. Finish: Epoxy powder coated color as selected by the Architect.

B. Other Acceptable Manufacturers:
1. SafePro Safety Products; SafePro Ballasted Guardrail System.
2. Diversified Fall Protection; Lorguard Galvanized Guard Rail System.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

B. Before installation, inspect all parts to insure no damaged parts are used.

3.04 CLEANING

A. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 07 7200

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SECTION 07 8400
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 7000 - Execution and Closeout Requirements: Cutting and patching.

B. Section 07 0553 - Fire and Smoke Assembly Identification.

C. Section 07 8100 - Applied Fire Protection.

D. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

B. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

C. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

D. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).

E. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2024.

F. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-Story Test Apparatus; 2025b.

G. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2024.

H. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a, with Editorial Revision (2024).

I. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

J. FM (AG) - FM Approval Guide; Current Edition.

K. FM 4991 - Approval Standard of Firestop Contractors; 2013.

L. ITS (DIR) - Directory of Listed Products; Current Edition.

M. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

N. UL (DIR) - Online Certifications Directory; Current Edition.

O. UL (FRD) - Fire Resistance Directory; Current Edition.

P. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

Q. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate construction of openings and penetrating items to ensure that firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate firestopping systems.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.
   1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Certificate from authority having jurisdiction indicating approval of materials used.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Installer Certificates: From Installer indicating that firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.06 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Single Source Responsibility: All firestopping work is to be by a single Installer.

D. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Trained by manufacturer.
   2. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
   3. Verification of minimum three years documented experience installing work of this type.
   4. Verification of at least five satisfactorily completed projects of comparable size and type.
   5. Licensed by local authorities having jurisdiction (AHJ).

1.07 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop/#sle.
   2. A/D Fire Protection Systems Inc: www.adfire.com/#sle.

3. Everkem Diversified Products, Inc: www.everkemproducts.com/#sle.
4. Grabber Construction Products, Inc: www.grabberman.com/#sle.
5. Hilti, Inc: www.us.hilti.com/#sle.
6. HoldRite, a Brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
7. Nelson FireStop Products: www.nelsonfirestop.com/#sle.
8. Passive Fire Protection Partners: www.firestop.com/#sle.
9. Rectorseal Metacaulk: www.rectorseal.com.
10. Specified Technologies Inc: www.stifirestop.com/#sle.
11. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
12. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.

C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

E. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

B. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

C. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.
   2. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
   1. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

E. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
   1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

F. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.

G. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg.
1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.

H. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.

2.04 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

B. Examine substrates and conditions, with Installer present, for compliance with requirements for performance of the Work.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

C. Install backing materials to prevent liquid material from leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by Owner's Independent Testing Agency.

C. Do not cover installed firestopping until inspected by authorities having jurisdiction.

D. Install labeling required by code.

3.04 IDENTIFICATION

A. See Section 07 0553 - Fire and Smoke Assembly Identification.

3.05 FIELD QUALITY CONTROL

A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174 and ASTM E2393.

B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.06 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.07 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

3.08 FIRESTOPPING SYSTEM SCHEDULE

A. Contractor to provide firestopping system schedule.

END OF SECTION 07 8400

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SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

D. Owner-provided field quality control.

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping: Firestopping sealants.

B. Section 08 8000 - Glazing: Glazing sealants and accessories.

C. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

D. Section 09 2216 - Non-Structural Metal Framing: Sealing between framing and adjacent construction in acoustical and sound-rated walls and ceilings.

E. Section 09 3013 – Ceramic Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

I. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.

K. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2020).

L. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

M. SWRI (VAL) - SWR Institute Validated Products Directory; Current Edition.

N. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3300 – Submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Substrates for which use of primer is required.
6. Substrates for which laboratory adhesion and/or compatibility testing is required.
7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
8. Sample product warranty.
9. Certification by manufacturer indicating that product complies with specification requirements.
10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit two manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

G. Installation Plan: Submit at least four weeks prior to start of installation.

H. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

I. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

J. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

K. Installation Log: Submit filled out log for each length or instance of sealant installed.

L. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

M. Manufacturer's qualification statement.

N. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
1. Adhesion Testing: In accordance with ASTM C794.
2. Compatibility Testing: In accordance with ASTM C1087.

3. Allow sufficient time for testing to avoid delaying the work.
4. Deliver to manufacturer sufficient samples for testing.
5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

F. Installation Plan: Include schedule of sealed joints, including the following.
   1. Installation Log Form: Include the following data fields, with known information filled out.
      a. Date of installation.
      b. Name of installer.
      c. Actual joint width; provide space to indicate maximum and minimum width.
      d. Actual joint depth to face of backing material at centerline of joint.
      e. Air temperature.

G. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
   1. Identification of testing agency.
   2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
      a. Test date.
      b. Copy of test method documents.
      c. Age of sealant upon date of testing.
      d. Test results, modeled after the sample form in the test method document.
      e. Indicate use of photographic record of test.

H. Field Quality Control Plan:
   1. Field testing agency's qualifications.
   2. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

I. Field Adhesion Test Procedures:
   1. Allow sealants to fully cure as recommended by manufacturer before testing.
   2. Have a copy of the test method document available during tests.
   3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
   4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer and report any deficiencies.
   5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
   6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

J. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
   1. Sample: At least 18 inches long.
   2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
   3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.

1.06 WARRANTY

A. See Section 01 7700 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a five-year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
   1. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
   2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com/#sle.
   3. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
   1. Dow: www.dow.com/#sle.
   2. Pecora Corporation: www.pecora.com/#sle.
   3. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
      a. Wall control joints.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Joints between different exposed materials.
      d. Openings below ledge angles in masonry.
      e. Other joints indicated below.
      f. Existing to remain rose windows.
   2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
      a. Joints between door, window, and other frames and adjacent construction.
      b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
      c. Other joints indicated below.
      d. Existing to remain rose windows.
   3. Do not seal the following types of joints.
      a. Intentional weepholes in masonry.
      b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
      c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
      d. Joints where installation of sealant is specified in another section.
      e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.

1. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.

D. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

2.03 JOINT SEALANTS - GENERAL

A. Colors: As indicated on drawings.

2.04 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   3. Color: To be selected by Architect from manufacturer's full range.

B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
   1. Color: To be selected by Architect from manufacturer's full range..
   2. Manufacturers:
      a. ADFAST Corporation; ADSEAL KB 4800 Series: www.adfastcorp.com/#sle.
      b. Everkem Diversified Products, Inc; TruSil 100: www.everkemproducts.com/#sle.
      c. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
      d. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Architect from manufacturer's full range.
   4. Service Temperature Range: Minus 40 to 180 degrees Fahrenheit.
   5. Manufacturers:
      a. Master Builders Solutions; MasterSeal NP1: www.master-builders-solutions.com/en-us/#sle.
      b. Pecora Corporation; DynaTrol II: www.pecora.com/#sle.
      c. Polycoat Products; Poly-Caulk PX27GG (Gun Grade); www.polycoatusa.com/#sle.
      d. Sherwin-Williams Company; Stampede-1/-TX Polyurethane Sealant: www.sherwin-williams.com/#sle.
      e. Sika Corporation; Sikaflex-1a: www.usa.sika.com/#sle.
      f. Tremco Commercial Sealants & Waterproofing; Dymeric 240 FC: www.tremcosealants.com/#sle.
      g. W. R. Meadows, Inc; POURTHANE NS: www.wrmeadows.com/#sle.
      h. Substitutions: See Section 01 6000 - Product Requirements.

D. Tamper-Resistant Polyurethane Sealant: ASTM C920, Grade NS, Uses M, G, and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
   2. Hardness Range: 50 to 60, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Architect from manufacturer's standard range.
   4. Service Temperature Range: Minus 40 to 180 degrees Fahrenheit.
   5. Manufacturers:
      a. Pecora Corporation: www.pecora.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
   1. Color: To be selected by Architect from manufacturer's full range.
   2. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).
   3. Manufacturers:
      a. Everkem Diversified Products, Inc; EcoTex 25: www.everkemproducts.com/#sle.
      b. Franklin International, Inc; Titebond GREENchoice Acoustical Smoke & Sound Sealant: www.titebond.com/#sle.
      c. Hilti, Inc; CP 506 Smoke and Acoustical Sealant: www.us.hilti.com/#sle.
      d. Master Builders Solutions; MasterSeal NP 520: www.master-builders-solutions.com/en-us/#sle.
      e. Pecora Corporation; AC-20 +Silicone: www.pecora.com/#sle.
      f. Sherwin-Williams Company; White Lightning 3006 Siliconized Acrylic Latex Caulk: www.sherwin-williams.com/#sle.
      g. Specified Technologies Inc; Smoke N' Sound Acoustical Sealant: www.stifirestop.com/#sle.
      h. Top Gun, a brand of PPG Architectural Coatings; Top Gun 200: www.ppgpaints.com/#sle.
      i. Tremco Commercial Sealants & Waterproofing; Tremflex 834: www.tremcosealants.com/#sle.
      j. Substitutions: See Section 01 6000 - Product Requirements.

F. Acrylic Latex Sealant: ASTM C834; for use as acoustical sealant and in firestopping systems for expansion joints and through penetrations.
   1. Color: To be selected by Architect from manufacturer's full range.
   2. Fire Rated System: Complies with UL 263 and ASTM E119 with UL fire resistance classifications.
   3. Manufacturers:
      a. Pecora Corporation; AC-20 FTR (Fire and Temperature Rated): www.pecora.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

G. Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag; not expected to withstand continuous water immersion or traffic.
   1. Hardness Range: 10 to 30, Shore A, when tested in accordance with ASTM C661.
   2. Color: To be selected by Architect from manufacturer's full range.
   3. Service Temperature Range: Minus 13 to 180 degrees Fahrenheit.
   4. Manufacturers:
      a. Pecora Corporation; Pecora BC-158 Butyl Rubber Sealant: www.pecora.com/#sle.
      b. Sherwin-Williams Company; Storm Blaster All Season Sealant: www.sherwin-williams.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.05 SELF-LEVELING SEALANTS

A. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.
   1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.
   2. Manufacturers:
      a. ARDEX Engineered Cements; ARDEX ARDIFIX: www.ardexamericas.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
   1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
   2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
   3. Open Cell: 40 to 50 percent larger in diameter than joint width.
   4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
   5. Manufacturers:
      a. ADFAST Corporation; ADSEAL BR-2600 (Backer Rod): www.adfastcorp.com/#sle.
      b. Nomaco, Inc: www.nomaco.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
   3. Record each test on Preinstallation Adhesion Test Log as indicated.
   4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
   5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

3.05 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION 07 9200

SECTION 07 9200 - JOINT SEALANTS (SITE APPLICATIONS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Nonstaining silicone joint sealants.

B. Related Requirements:

1. Section 04 4205 “Exterior Stone Cladding" for stone masonry veneer and stone treads.
2. Section 32 3200 "Site Cast-in-Place Concrete" for sealing joints in walkways.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.
4. Proposed test.
5. Number of samples required.

D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

F. Field-Adhesion-Test Reports: For each sealant application tested.

G. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section. Prepare surfaces and install sealants in same manner as will be used on permanent installation.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Verify that substrates have set or cured properly. Do not begin test until substrate conditions are satisfactory to sealant manufacturer's recommendations.
3. Conduct field tests for each kind of sealant and joint substrate. Allow sealant to properly cure prior to testing; 14 days minimum or as recommended by manufacturer.
4. Notify Architect seven days in advance of dates and times when test joints will be erected.
5. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

6. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
7. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.8 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Dow Corning Corporation; DOW CORNING® 756 SMS BUILDING SEALANT or a comparable product by one of the following:
   a. Pecora Corporation.
   b. Tremco Incorporated.

2.3 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Alcot Plastics Ltd.
   b. BASF Corporation; Construction Systems.
   c. Construction Foam Products; a division of Nomaco, Inc.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    a. Concrete.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
    a. Metal.
    b. Granite.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

1. Comply with results of preconstruction adhesion tests.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints. Install sealant backings and bond-breaker tape to prevent 3-sided adhesion of sealant.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Joint geometry: joint depth of one-half joint width, in an hourglass shape.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
4. Provide flush joint profile at locations indicated on Drawings according to Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated on Drawings according to Figure 8C in ASTM C 1193.
    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
    a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
    b. Perform one test for each 1000 feet (300 m) of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:
   a. Whether sealants filled joint cavities and are free of voids.
   b. Whether sealant dimensions and configurations comply with specified requirements.
   c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Perimeter joints between materials listed above and frames of doors and louvers.
b. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
   a. Other joints as indicated on Drawings.

4. Joint Sealant: Butyl-rubber based.
5. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF DOCUMENT 07 9200

SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Standard and interior and exterior hollow metal doors and frames.
   2. Light frames and glazing installed in hollow metal doors.
   3. Factory finishing hollow metal doors and frames and factory machining for hardware.

B. Related Sections:
   1. Section 04 2000 - Unit Masonry for embedding anchors for hollow metal work into masonry construction.
   2. Section 08 1416 - Flush Wood Doors.
   3. Section 08 8000 - Glazing for glass view panels in hollow metal doors.
   4. Section 08 7100 - Door Hardware.
   5. Sections 09 9113 - Exterior Painting and 09 9123 - Interior Painting for field painting hollow metal doors and frames.
   6. Division 26 "Electrical" Sections for electrical connections including conduit and wiring for door controls and operators installed on frames with factory installed electrical knock out boxes.
   7. Division 28 Section "Access Control" for access control devices installed at door openings and provided as part of a security access control system.

1.02 REFERENCE STANDARDS

A. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2024.

B. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2024.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

E. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames; 2022.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

G. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process; 2022a.

H. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

I. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2024.

J. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

K. NAAMM HMMA 867 - Guide Specifications for Laminated Core Hollow Metal Doors and Frames; 2016.

L. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

M. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2025.

N. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies; 2022.

O. NFRC 102 - Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems; 2026.

P. NFRC 400 - Procedure for Determining Fenestration Product Air Leakage; 2023.

Q. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

R. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

S. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

T. ANSI/NFRC 400 - Procedure for Determining Fenestration Product Air Leakage; 2017.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Include the following:
   1. Elevations of each door design.
   2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
   3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
   4. Locations of reinforcement and preparations for hardware.
   5. Details of anchorages, joints, field splices, and connections.
   6. Details of accessories.
   7. Details of moldings, removable stops, and glazing.
   8. Details of conduit and preparations for power, signal, and control systems.

D. Sustainable Design Submittals:
   1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.

1.04 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C (neutral pressure at 40” above sill) or UL 10C.
   1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
   2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 degrees Fahrenheit above ambient after 30 minutes of standard fire-test exposure.
   3. Smoke Control Door Assemblies: Comply with NFPA 105.
      a. Smoke "S" Label: Doors to bear "S" label and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.

E. Energy Efficient Exterior Openings: Comply with minimum thermal ratings, based on ASTM C1363. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.
   1. Thermal Performance (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM C1363 and meet or exceed the following requirements:
      a. Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.29, R-Value 3.4, including insulated door, thermal-break frame and threshold.
   2. Air Infiltration (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283/E283M to meet or exceed the following requirements:
      a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).

F. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
   1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.07 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.08 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CECO Door Products.
2. Curries Company.
3. Steelcraft.
4. Or approved equal by Architect, in compliance with Section 01 2500 - Substitution Procedures.

2.02 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 38 percent.

D. Frame Anchors: ASTM A653/A653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.03 HOLLOW METAL DOORS

A. General: Provide 1-3/4-inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924/A924M, A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, ANSI/SDI A250.4 for physical performance level, and NAAMM HMMA 867 for door construction.
   1. Design: Flush panel.
   2. Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with NAAMM HMMA 867 "Laminated Core".
      a. Provide 22-gauge steel stiffeners at 6 inches on-center internally welded at 5 inches on- center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
      b. Thermal properties to rate at a fully operable minimum U-Factor 0.29 and R-Value 3.4, including insulated door, thermal-break frame and threshold.
         1) Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.36 and R-Value 2.7, including insulated door, kerf type frame, and threshold.
   3. Level/Model: Level 2 and Physical Performance Level A (Heavy Duty), Minimum 16 gauge 0.053 inch - 1.1-mm) thick steel, Model 2.
   4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches.
   5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
   6. Hinge Reinforcement: Minimum 7-gauge (3/16-inch) plate 1-1/4 inches x 9 inches.
   7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A1008/A1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Design: Flush panel.

2. Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.
3. Core Construction: Manufacturer's standard vertical steel-stiffener core. Minimum 22-gauge steel-stiffeners at 6 inches on-center construction attached by spot welds spaced not more than 5 inches on centers. Spaces between stiffeners filled with fiberglass insulation (minimum density 0.8 lb/cubic ft.).
    a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
4. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch (-1.0-mm)) thick steel, Model 2.
5. Vertical Edges: Vertical edges to have the face sheets joined by a continuous weld extending the full height of the door. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches.
6. Vertical Edges: Vertical edges to have the face sheets spot welded and filled full height with an epoxy filler. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches.
7. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
8. Hinge Reinforcement: Minimum 7-gauge (3/16-inch) plate 1-1/4 inches x 9 iinches or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
9. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Doors within Curtain Walls:
1. Doors within curtain walls and associated frames are to be provided by the curtain wall vendor to ensure compatibility and compliance between frame and door systems.
2. Contractor will coordinate across vendors and provide consolidated information for complete package of information.

2.04 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Thermal Break Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 102, and resistance to air infiltration in accordance with NFRC 400. Where indicated provide thermally broken frame profiles available for use in both masonry and drywall construction. Fabricate with 1/16-inch positive thermal break and integral vinyl weather-stripping.

C. Weather-stripped Frames: Subject to the same compliance standards and requirements as standard hollow metal frames, provide where indicated weather-stripped profiles with 1/8-inch integral kerf formed into the frame soffit able to receive manufacturer's listed gasket material. Available for use in both masonry and drywall construction, with fire rating up to 3 hours complying with NFPA 105, UL 1784, and ASTM E283/E283M Test criteria.

D. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A653/A653M, Coating Designation A60.
1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 14 gauge (0.067-inch (1.7-mm)) thick steel sheet.
3. Accessories: provide full door weather-stripping and gaskets at all exterior doors.

E. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A1008/A1008M.
1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.

2. Frames: Minimum 16 gauge (0.053-inch (1.3-mm)) thick steel sheet.

F. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

G. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6, Table 4 with reinforcement plates from same material as frames.

2.05 FRAME ANCHORS

A. Jamb Anchors:
1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042-inch-thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.06 LIGHT OPENINGS AND GLAZING

A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator’s shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.

B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.

C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.

D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

E. Glazing: Comply with requirements in Section 08 8000 - Glazing and with the hollow metal door manufacturer's written instructions.
1. Factory Glazing: Factory install glazing in doors as indicated. Doors with factory installed glass to include all of the required glazing material.

2.07 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

C. Gasket Assemblies: provide full frame gasket assemblies at all exterior doors. Submit product data and shop drawings on each assembly. Basis of Design Manufacturer: Zero Industries.

2.08 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:
   1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
   2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
   3. Astragals: Provide overlapping astragals as noted in door hardware sets in Section 08 7100 - Door Hardware on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
   4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Section 08 7100 - Door Hardware.
   5. Electrical Raceways: Provide hollow metal doors to receive electrified hardware with concealed wiring harness and standardized Molex plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the through-wire transfer hardware or wiring harness specified in hardware sets in Section 08 7100 - Door Hardware. Wire nut connections are not acceptable.

D. Hollow Metal Frames:
   1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
      a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
   3. Welded Frames: Weld joints continuously through full throat width of frames, including rabbets, soffits, and stops; grind, fill, dress, and make smooth, flush, and invisible.
      a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
   4. Knocked Down Frames: Provide frames with locking corner tabs which permit field assembly. Factory install compression type anchors and countersunk screw holes to secure the bottom of the jambs.
   5. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   6. Equal Rabbet Frames: Provide frames with equal rabbet dimensions unless glazing and removable stops require wider dimensions on glass side of frame.
   7. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
   8. Continuous Hinge Reinforcement: Provide welded continuous 12-gauge straps for continuous hinges specified in hardware sets in Section 08 7100 - Door Hardware.
   9. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
   10. Hospital (Terminated) Stops: Where indicated on the drawings, provide frame stops that terminate six inches above the bottom of each jamb. Close the bottom of the stop at a 45-degree angle.
   11. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.

12. Electrical Thru-Wiring: Provide hollow metal frames receiving electrified hardware with loose wiring harness (not attached to open throat components or installed in closed mullion tubes) and standardized Molex plug connectors on one end to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electric through-wire transfer hardware or wiring harness specified in hardware sets in Section 08 7100 - Door Hardware.
13. Electrical Knock Out Boxes: Factory weld 18 gauge electrical knock out boxes to frame for electrical hardware preps; including but not limited to, electric through wire transfer hardware, electrical raceways and wiring harnesses, door position switches, electric strikes, magnetic locks, and jamb mounted card readers as specified in hardware sets in Section 08 7100 - Door Hardware.
    a. Provide electrical knock out boxes with a dual 1/2-inch and 3/4-inch knockouts.
    b. Conduit to be coordinated and installed in the field (Division 26) from middle hinge box and strike box to door position box.
    c. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Section 08 7100 - Door Hardware.
    d. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.
14. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
15. Jamb Anchors: Provide number and spacing of anchors as follows:
    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
    b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
16. Door Silencers: Except on weather-stripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Section 08 7100 - Door Hardware.
17. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Section 08 7100 - Door Hardware.
    1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
    2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.

3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.09 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames".

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
   1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
   2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
   3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
   4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
   1. Non-Fire-Rated Standard Steel Doors:
      a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.

b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.04 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 08 1113

SECTION 08 3113
ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Wall access doors and frames.
   2. Ceiling access doors and frames.

B. Related Sections include the following:
   1. Section 04 2000 - Unit Masonry for anchoring and grouting access door frames set in masonry construction.
   2. Section 09 9123 - Interior Painting for field-painting factory-primed access doors and frames.
   3. Section 22 0523 "General Duty Valves for Plumbing Piping".
   4. Section 23 2113 "Hydronic Piping".
   5. Section 23 3300 "Air Duct Accessories" for heating and air-conditioning duct access doors.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2022.

E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

F. NAAMM AMP 500-06 - Metal Finishes Manual; 2006.

G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

H. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

I. NFPA 288 - Standard Methods of Fire Tests of Horizontal Fire Door Assemblies Installed in Horizontal Fire Resistance-Rated Assemblies; 2022.

J. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

K. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of access door and frame indicated. Include construction details, fire ratings, materials, individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material, at least 3 by 5 inches (75 by 125 mm) in size, in specified finish.

D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, general locations, sizes, construction details, latching or locking provisions, and other data pertinent to installation.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing and inspecting agency.
   1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, section 5.2.3.1.
   2. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

B. Ceiling Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted items including access doors and frames, lighting fixtures, diffusers, grilles, speakers, sprinklers, and special trim are shown and coordinated with each other.
   1. Method of attaching door frames to surrounding construction.
   2. Ceiling-mounted items including access doors and frames, lighting fixtures, diffusers, grilles, speakers, sprinklers, and special trim.

1.05 QUALITY ASSURANCE

A. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:
   1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

B. Source Limitations: Obtain door(s) and frame(s) through one source from a single manufacturer.

C. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
   2. NFPA 288 for fire-rated access door assemblies installed horizontally.

D. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.06 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Babcock-Davis.
   2. Activar Construction Products Group Inc. - JL Industries.
   3. Karp Associates, Inc.
   4. Larsen's Manufacturing Company.
   5. Milcor Inc.
   6. Nystrom, Inc.

2.02 MATERIALS

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Steel Sheet: Uncoated or electrolytic zinc-coated, ASTM A879/A879M with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.

D. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

E. Drywall Beads: Edge trim formed from 0.0299-inch (0.76-mm) zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum board.

F. Frame Anchors: Same type as door face.

G. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F 2329.

H. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A666, Type 304. Remove tool and die marks and stretch lines or blend into finish.

2.03 FINISHES

A. Comply with NAAMM AMP 500-06 "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel and Metallic-Coated-Steel Finishes:
   1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

E. Stainless-Steel Finishes:
   1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
   2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
      a. Run grain of directional finishes with long dimension of each piece.
      b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
      c. Directional Satin Finish: No. 4.

2.04 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Flush Access Doors with Concealed Flanges: Fabricated from steel sheet, unless otherwise indicated.
   1. Locations: Non-fire-resistance rated gypsum board and ceiling surfaces.
   2. Assembly Description: Fabricate door to fit flush to frame. Provide frame with gypsum board beads for concealed flange installation.
   3. Uncoated Steel Sheet for Door: Minimum 0.060-inch- (1.52-mm-) thick sheet metal, set flush with surrounding finish surfaces.
      a. Finish: Factory prime.
   4. Frame Material: Same material and thickness as door.
   5. Hinges: Continuous piano hinge.
   6. Lock: Key-operated cylinder lock.
   7. Provide stainless-steel doors of minimum nominal 0.062 inch thickness for all access doors installed in ceramic wall tile.

B. Flush Access Doors with Exposed Flanges: Fabricated from metallic-coated steel sheet, unless otherwise indicated.
   1. Locations: Non-fire-resistance rated masonry wall surfaces.
   2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
   3. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch.

a. Finish: Factory prime.

4. Frame Material: Same material, thickness, and finish as door.
5. Hinges: Continuous piano hinge.
6. Hardware: Key-operated cylinder lock.
7. Provide stainless-steel doors and frames of minimum nominal 0.062 inch thickness for all access doors installed in ceramic wall tile.

2.05 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.

1. Exposed Flanges: As indicated.
2. For trimless frames with drywall bead for installation in gypsum board assembly, provide edge trim for gypsum board securely attached to perimeter of frames.
3. Provide mounting holes in frames for attachment of units to metal framing.
4. Provide mounting holes in frame for attachment of masonry anchors. Furnish adjustable metal masonry anchors.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

1. For cylinder lock, furnish two keys per lock and key all locks alike and keyed into building-wide keying system.

PART 3 EXECUTION

3.01 PREPARATION

A. Advise installers of other work about specific requirements relating to access door and floor door installation, including sizes of openings to receive access door and frame, as well as locations of supports, inserts, and anchoring devices.

3.02 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces.

3.04 ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08 3113

SECTION 08 4313
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 8000 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2025.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2026.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

G. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

H. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

J. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

C. Coordinate with work included in different Sections that depend on each other for proper installation, connection, and performance, as components of the exterior wall enclosure.

D. See wall assemblies indicated on drawings.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
   1. Include design engineer's stamp or seal on shop drawings for attachments and anchors. Engineer must be licensed in the State of Connecticut.

D. Samples: Submit two samples 12 x 12 inches (300 x 300 mm) in size illustrating finished aluminum surface, finish color, glass, glazing materials, sealants, etc.

E. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

F. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

G. Installer's Qualification Statement.

H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees Fahrenheit. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 7700 - Closeout Procedures for additional warranty requirements.

B. Correct defective Work within a one-year period after Date of Substantial Completion.

C. Provide five-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

D. Provide ten-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Manufacturer: EFCO Series System 402.

B. Other Acceptable - Aluminum-Framed Storefronts Manufacturers:
   1. Kawneer North America: www.kawneer.com/#sle.
   2. Oldcastle Building Envelope: www.oldcastlebe.com/#sle.
   3. Wausau Window and Wall Systems; www.wausauwindow.com/#sle.

2.02 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage, and attachment devices.
   1. Glazing Rabbet: For 1 inch insulating glazing.
   2. Glazing Position: As indicated on drawings.
   3. Vertical Mullion Dimensions: As indicated on drawings.

4. Finish: Superior performing organic coatings.
    a. Factory finish all surfaces that will be exposed in completed assemblies.
    b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees Fahrenheit over a 12-hour period without causing detrimental effect to system components, anchorages, and other building elements.
9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
11. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and heel bead of glazing compound.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
    a. Design Wind Loads: Comply with requirements of applicable code and design load data provided on the Drawings.
    b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Air Leakage: 0.06 cfm/sq ft (0.3 L/sec sq m) maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf (75 Pa) pressure difference.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
1. Glazing Stops: Flush.
2. Cross-Section: As indicated on drawings.

B. Glazing: See Section 08 8000.

2.04 MATERIALS

A. Extruded Aluminum: 6063-T6 alloy and temper; ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Fasteners: Stainless steel.

D. Exposed Flashings: Aluminum sheet, 20-gauge, 0.032 inch minimum thickness; finish to match framing members.

E. Concealed Flashings: Stainless steel, 26-gauge, 0.0187 inch minimum thickness.

F. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

G. Sealant for Setting Thresholds: Non-curing butyl type.

H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

I. Glazing Accessories: See Section 08 8000.

2.05 FINISHES

A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.

B. Color: To match curtain wall, unless noted otherwise, selected from the manufacturer’s standard line of colors.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form watertight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Install glass in accordance with Section 08 8000, using glazing method required to achieve performance criteria.

J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for general testing and inspection requirements.

B. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
   1. Perform a minimum of two tests in each designated area as indicated on drawings.
   2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.

C. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION 08 4313

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SECTION 08 4413
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed curtain wall, with vision glazing.

B. Associated closure trim pieces and components.

1.02 RELATED REQUIREMENTS

A. Section 01 3573 - Delegated Design Procedures.

B. Section 05 1200 - Structural Steel Framing: Steel attachment members.

C. Section 07 2726 - Fluid-Applied Membrane Air Barriers: Sealing framing to air barrier installed on adjacent construction.

D. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

E. Section 08 8000 - Glazing.

1.03 REFERENCE STANDARDS

A. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure; 2017.

B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2025.

C. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2024.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2026.

F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

I. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

J. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

K. ASTM C1249 - Standard Guide for Secondary Seal for Sealed Insulating Glass Units for Structural Sealant Glazing Applications; 2018 (Reapproved 2023).

L. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

M. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

N. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

O. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

P. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

Q. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

C. Coordinate with work included in different Sections that depend on each other for proper installation, connection, and performance, as components of the exterior wall enclosure.

D. See wall assemblies indicated on drawings.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, internal drainage details, glazing, flashing, break metal panels, and infill.

C. Shop Drawings: Indicate all system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.

D. Shop Drawings: Provide details of proposed structural sealant glazing (SSG) and weather sealant joints indicating dimensions, materials, bite, thicknesses, profile, break metal infill panels and connections, and support framing. Indicate gravity and wind load connections on shop drawings.

E. Samples: Submit two samples 4" by 4" inches in size illustrating finished aluminum surface, finish color, glazing, infill panels, sealants and glazing materials.

F. Delegated Design Data: Provide framing member structural and physical characteristics and engineering calculations and identify dimensional limitations; include load calculations at points of attachment to building structure. Submit structural calculations stamped by design engineer, licensed in the State of Connecticut, for Architect's information and project record.

G. Test Reports: Submit results of full-size mock-up testing. Reports of tests previously performed on the same design are acceptable.

H. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

I. Manufacturer's Qualification Statement.

J. Installer's Qualification Statement.

K. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design curtain wall and its structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
    a. Insulating Glass Certification Council (IGCC).

C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees Fahrenheit. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 7700 - Closeout Procedures for additional warranty requirements.

B. Provide five-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

C. Provide five-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: EFCO Series System 5600-401 Outside Glazed with Duracast Fiberglass Pressure Plate:
    1. TYPE-2: Series 5600-401 outside glazed front set, Aluminum curtain wall system with Duracast Fiberglass Pressure Plate 2 ¼” x 6".

B. Other Acceptable - Glazed Aluminum Curtain Walls Manufacturers:
    1. Kawneer North America; 1600 Wall System 1 IR: www.kawneer.com/#sle.
    2. Oldcastle Building Envelope: www.oldcastlebe.com/#sle.
    3. Wausau Window and Wall Systems; SuperWall: www.wausauwindow.com/#sle.

2.02 CURTAIN WALL

A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
    1. Outside glazed, with pressure plate and mullion cover.
    2. Fabrication Method: Field fabricated stick system.
    3. Glazing Method: Field glazed system.
    4. Finish: Superior performing organic coatings.
        a. Factory finish surfaces that will be exposed in completed assemblies.
        b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
        c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
    5. Provide flush joints and corners, weathersealed, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
    6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.

7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
8. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.

B. Structural Performance Requirements: Design and size components to withstand the following load requirements without damage or permanent set.
1. Design Wind Loads: Comply with requirements on Structural Drawings.
   a. Measure performance by testing in accordance with ASTM E330/E330M, using test loads equal to 1.5 times the design wind loads and 10 second duration of maximum pressure.
   b. Member Deflection: For spans less than 13 feet 6 inches, limit member deflection to flexure limit of glass in any direction, and maximum of 1/175 of span or 3/4 inch, whichever is less and with full recovery of glazing materials.
   c. Member Deflection: For spans over 13 feet 6 inches and less than 40 feet, limit member deflection to flexure limit of glass in any direction, and maximum of 1/240 of span plus 1/4 inch, with full recovery of glazing materials.
2. Movement: Accommodate the following movement without damage to components or deterioration of seals:
   a. Expansion and contraction caused by 180 degrees Fahrenheit surface temperature.
   b. Expansion and contraction caused by cycling temperature range of 170 degrees Fahrenheit over a 12 hour period.
   c. Movement of curtain wall relative to perimeter framing.
   d. Deflection of structural support framing, under permanent and dynamic loads.

C. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on indoor face when tested as follows:
1. Test Pressure Differential: 10 psf (480 Pa).
2. Test Method: ASTM E331.

D. Air Leakage: 0.06 cfm/sq ft (0.3 L/sec sq m) maximum leakage of wall area when tested in accordance with ASTM E283/E283M at 6.27 psf (300 Pa) pressure difference across assembly.

E. Thermal Performance Requirements:
1. Overall U-value Including Glazing: U 0.335, maximum.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
1. Framing members for interior applications need not be thermally broken.

B. Glazing: See Section 08 8000.

C. Infill Panels:
1. Provide SSG mullions directly shear-block fastened to the vertical members for the horizontal support face of the infill panels. Note: these mullions do not present themselves on the exterior face of glazing.
2. Factory finished break metal panels to fit within curtainwall openings and snap into place. Edges should be clean and folded and sit firmly into the openings for full closure of all insulation behind spandrel glazing.

D. Interior Closure Trim:
1. At interior closure trim locations identified on the details, provide bent aluminum plate or extruded closure trim provided by curtainwall supplier at all locations per drawings.
   a. Depth of trim varies, verify gaps in the field prior to generating shop drawings.

b. Finish to match adjacent curtainwall in all respects.
c. No exposed fasteners.

2.04 MATERIALS

A. Extruded Aluminum: 6063-T6 alloy and temper; ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Structural Supporting Anchors: See Section 05 1200.

D. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.

E. Fasteners: Stainless steel; type as required or recommended by curtain wall manufacturer.

F. Exposed Flashings: Aluminum sheet, 20-gauge, 0.032 inch minimum thickness; finish to match framing members.

G. Concealed Flashings: Stainless steel, 26-gauge, 0.0187 inch minimum thickness.

H. Weatherseal Sealant: Silicone, with adhesion in compliance with ASTM C794; compatible with glazing accessories.

I. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, and compatible with flashing material.

J. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

K. Anchors: Perimeter and floor line anchors shall be aluminum or steel. All steel anchors shall be properly insulated from the aluminum.

L. Duracast Pressure Plate:
1. Material shall be a fiberglass composite with a Flexural strength of no less than 82 ksi 82003 psi along the lineal's major axis.
2. Material thermal conductivty shall be no more than 2 $\cdot in/hr \cdot ft^{2} \cdot °F$ (0.289 $W/m^{2} \bullet K$)

M. Spandrel panel infill:
1. Breakmetal panel: 0.062 gauge, finish to match adjacent curtainwall finish, no exceptions.

2.05 FINISHES

A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch. Color as selected from one of the following:
1. EFCO Ultrapon Color Card
2. Sherwin-Williams Coil Coatings Fluropon Color Card – Fluropon, Fluropon Classic, Fluropon Classic II, or Fluropon Premiere.
3. Sherwin-Williams Coil Coatings Metal Trends Color Card - Sherwin-Williams Coil Coatings Fluropon Color Card – Fluropon Metal Trends Color Collection.

B. Color: To be selected by Architect from manufacturer's standard range.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other related work.

B. Verify that curtain wall openings and adjoining water-resistive and air barrier seal materials are ready to receive work of this section.

C. Verify that anchorage devices have been properly installed and located.

3.02 INSTALLATION

A. Install curtain wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form watertight dam.

G. Coordinate installation of firestopping at each floor slab edge.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Install operating sash.

J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inches every 3 feet non-cumulative or 0.5 inches per 100 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

C. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch and minimum of 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. Provide services of curtain wall manufacturer's field representative to observe for proper installation of system and submit report.

B. See Section 01 4000 - Quality Requirements for general testing and inspection requirements.

C. Water-Spray Test: Provide water spray quality test of installed curtain wall components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
   1. Perform a minimum of two tests in each designated area as indicated on drawings.
   2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.

D. Provide field testing of installed curtain wall system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
   1. Perform a minimum of two tests in each designated area as indicated on drawings.
   2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
   3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf (200 Pa).
      a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce (14 gram) that is not contained in an area with provisions to drain to exterior or collected on surface of interior horizontal framing member.
   4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf (75 Pa).

E. Repair or replace curtain wall components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, take care to remove dirt from corners, and wipe surfaces clean.

C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION 08 4413

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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Automatic operators.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 01 Section “Product Allowances”.
2. Division 01 Section “Closeout Procedures”
3. Division 06 Section “Rough Carpentry”.
4. Division 08 Section “Operations and Maintenance”.
5. Division 08 Section “Door Schedule”.
6. Division 08 Section “Hollow Metal Doors and Frames”.
7. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ANSI/SDI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies.
3. ASTM E1886 - Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials.
4. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure difference.

5. ASTM E1996 - Standard specification for performance of exterior windows, curtain walls, doors and storm shutters impacted by Windborne Debris in Hurricanes.
6. FEMA P-361 2015/2021 - Design and Construction Guidance for Community Safe Rooms.
7. ICC 500-2014/2020, ICC/NSSA Standard for the Design and Construction of Storm Shelters.
8. ICC/IBC - International Building Code.
9. NFPA 70 - National Electrical Code.
10. NFPA 80 - Fire Doors and Windows.
11. NFPA 101 - Life Safety Code.
12. NFPA 105 - Installation of Smoke Door Assemblies.
13. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
14. TAS-201-94 - Impact Test Procedures.
15. TAS-202-94 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components using Uniform Static Air Pressure.
16. TAS-203-94 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.
17. State Building Codes, Local Amendments.
18. 521 CMR - Massachusetts Architectural Board Regulations.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. CAN/ULC-S104 - Standard Method for Fire Tests of Door Assemblies.
4. ANSI/UL 294 - Access Control System Units.
5. ULC-S319 - Electronic Access Control Systems.
6. ULC-60839-11-1, Alarm and Electronic Security Systems - Part 11-1: Electronic Access Control Systems - System and Components Requirements.
7. CAN-ULC-S132 -- Standard Method of Tests for Emergency Exit and Emergency Fire Exit Hardware.
8. CAN-ULC-S533 - Egress Door Securing and Releasing Devices.
9. UL 305 - Panic Hardware.
10. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.
11. ULC-S533 - Egress Door Securing and Releasing Devices.
12. ANSI/UL 437- Key Locks.
13. ULC-S328, - Burglary Resistant Key Locks.

F. Registrations: All hardware specified herein shall be registered with the following agencies, as applicable:

1. Federal Communications Commission (FCC).
2. Industry Canada (IC).
3. California State Fire Marshall.

4. Florida Department of Business & Professional Regulation.
5. New York State Office of Mental Health (OMH).

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during

the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.

b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Manufacturers:

a. Hager Companies (HA) - BB Series, 5-knuckle.
b. Ives (IV) - 5BB Series, 5-knuckle.
c. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

a. Hager Companies (HA).
b. Ives (IV).
c. Pemko (PE).

2.4 DOOR OPERATING TRIM

A. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls, where applicable, shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.

5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
6. Manufacturers:

    a. Ives (IV).
    b. Rockwood (RO).

2.5 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Standard.

C. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

F. Construction Keying: Provide construction master keyed cylinders.

G. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

2.7 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.
b. Sargent Manufacturing (SA) - 8200 Series.

2.8 CYLINDRICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

a. Meets ANSI/BHMA A156.41 for single motion egress.
b. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
c. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
d. Meets Florida Building Code FL2998 and UL Certification Directory ZHEM.R21744 for latching hardware for hurricane requirements.

e. Meets UL Certification Directory ZHLL.R21744 for products used in windstorm rated assemblies.
f. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.13 requirements to 20 million cycles or greater.
g. Exceeds ANSI/BHMA A156.2 requirements by 2.6 times for 3,100 in-lb. abusive locked lever torque with no entry while maintaining egress.
h. Exceeds ANSI/BHMA A156.2 requirements by 8 times for 1,600 lbs. offset lever pull with no entry for protection against attacks.
i. Exceeds ANSI/BHMA A156.3 requirements by 2 times for latch retraction with 100 lb. preload while maintaining operation in warped doors.
j. Exceeds ANSI/BHMA A156.3 requirements by 20 times for no access with minimum 100 vertical impacts for protection against vandalism attempts.
k. Independent return springs allow lock to exceed ANSI/BHMA A156.2 Grade 1 cycle requirements without lever sag.
l. Ten-year limited warranty for mechanical functions.

2. Manufacturers:

a. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) - 5400LN Series.
b. Corbin Russwin Hardware (RU) - CLX3300 Series.
c. dormakaba Best (BE) - 9K Series.
d. Sargent Manufacturing (SA) - 10X Line.
e. Schlage (SC) - ND Series.
f. No Substitution.

B. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

a. Meets ANSI/BHMA A156.41 for single motion egress.
b. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
c. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
d. Meets Florida Building Code FL2998 and UL Certification Directory ZHEM.R21744 for latching hardware for hurricane requirements.
e. Meets UL Certification Directory ZHLL.R21744 for products used in windstorm rated assemblies.
f. Exceeds ANSI/BHMA A156.2 requirements by 2.6 times for 3,100 in-lb. abusive locked lever torque with no entry while maintaining egress.
g. Exceeds ANSI/BHMA A156.2 requirements by 8 times for 1,600 lbs. offset lever pull with no entry for protection against attacks.

h. Exceeds ANSI/BHMA A156.3 requirements by 2 times for latch retraction with 100 lb. preload while maintaining operation in warped doors.
i. Exceeds ANSI/BHMA A156.3 requirements by 20 times for no access with minimum 100 vertical impacts for protection against vandalism attempts.
j. Independent return springs allow lock to exceed ANSI/BHMA A156.2 Grade 1 cycle requirements without lever sag.
k. Ten-year limited warranty for mechanical functions.

2. Manufacturers:

a. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) - 5400LN Series.
b. Schlage (SC) - ND Series.
c. No Substitution.

2.9 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as

required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

    a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
    b. Sargent Manufacturing (SA) - 80 Series.
    c. dormakaba Best (PR) - Apex 2000 Series.

2.11 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Heavy duty surface mounted door closers shall have a 30-year warranty.

2. Manufacturers:

   a. Corbin Russwin Hardware (RU) - DC6000 Series.
   b. Norton Rixson (NO) - 7500 Series.
   c. Sargent Manufacturing (SA) - 351 Series.

2.12 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

    a. Hager Companies (HA).
    b. Rockwood (RO).
    c. Trimco (TC).

2.13 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Hager Companies (HA).
    b. Rockwood (RO).
    c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

    a. Norton Rixson (RF).
    b. Sargent Manufacturing (SA).

2.14 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).
3. Reese Enterprises, Inc. (RE).

2.15 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.16 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

Hardware Sets

Set: 1.0
MAIN DOUBLE EXTERIOR

Doors: 100

2 Continuous Hinge	GFM__SLF-HD1 PT		PE	087100	
2 Electric Power Transfer	EL-CEPT	US4	SU	087100	⚡
1 Concealed Vert Rod Exit, Nightlatch	55 56 60 AD8410 106 x Less Pull	US4	SA	087100	⚡
1 Concealed Vert Rod Exit, Exit Only	55 56 AD8410 EO	US4	SA	087100	⚡
1 Core	6300	US4	SA	087100	
2 Door Pull	RM3311-24 Mtg-Type 12XHD	US4	RO	087100	
2 Conc Overhead Stop	1-X36	US4	RF	087100	
1 Automatic Opener	D6031-36 x Plates / Brackets as required	690	NO	087113	⚡

2	Sweep	3452GNB		PE	087100
1	Threshold	253x3AFG MSES25SS		PE	087100
2	ElectroLynx Frame Harness	QC-C1500P		MK	087100
2	ElectroLynx Door Harness	QC-CXXXP x Length as required		MK	087100
2	Door Switch	505		NO	087100
2	Position Switch	DPS-M-BK		SU	087100
1	Power Supply	AQD4-8C8R2		SU	087100

Notes: Operational Narrative:
1. Doors normally closed and secure.
2. ADA access by actuator switch. In locked condition, actuator energized only upon valid card reader presentation.
3. Egress free for immediate exit. ADA egress by actuator switch.
4. REX switch in push rail allows authorized exit without alarm condition.
5. Door position switches monitor open/closed status.
6. Exit device latches release (fail secure) in event of power loss. Keyed cylinder override for emergency access.

Set: 2.0

ENTRY VESTIBULE DOUBLE DOOR

Doors: 101

2	Continuous Hinge	GFM__SLF-HD1 PT		PE	087100
2	Electric Power Transfer	EL-CEPT	US4	SU	087100
1	Concealed Vert Rod Exit, Nightlatch	55 56 60 AD8410 106 x Less Pull	US4	SA	087100
1	Concealed Vert Rod Exit, Exit Only	55 56 AD8410 EO	US4	SA	087100
1	Core	6300	US4	SA	087100
2	Door Pull	RM3311-24 Mtg-Type 12XHD	US4	RO	087100
2	Conc Overhead Stop	1-X36	US4	RF	087100
1	Automatic Opener	D6031-36 x Plates / Brackets as required	690	NO	087113
2	Sweep	3452GNB		PE	087100
2	ElectroLynx Frame Harness	QC-C1500P		MK	087100
2	ElectroLynx Door Harness	QC-CXXXP x Length as required		MK	087100
2	Door Switch	505		NO	087100
2	Position Switch	DPS-M-BK		SU	087100

1 Power Supply	AQD4-8C8R2		SU	087100	⚡

Notes: Operational Narrative:
1. Doors normally closed and secure.
2. ADA access by actuator switch. In locked condition, actuator energized only upon valid card reader presentation.
3. Egress free for immediate exit. ADA egress by actuator switch.
4. REX switch in push rail allows authorized exit without alarm condition.
5. Door position switches monitor open/closed status.
6. Exit device latches release (fail secure) in event of power loss. Keyed cylinder override for emergency access.

Set: 3.0

SINGLE EXTERIOR ENTRY DOORS

Doors: 100A, 100B

1 Continuous Hinge	GFM__SLF-HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT	US4	SU	087100	⚡
1 Rim Exit Device, Storeroom	55 56 60 AD8504 Less Pull	US4	SA	087100	⚡
1 Core	6300	US4	SA	087100	
1 Door Pull	RM3311-24 Mtg-Type 12XHD	US4	RO	087100	
1 Conc Overhead Stop	1-X36	US4	RF	087100	
1 Surface Closer	351 P10 x Drop Plate / Brackets as required	EAB	SA	087100	
1 Sweep	3452GNB		PE	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 ElectroLynx Frame Harness	QC-C1500P		MK	087100	⚡
1 ElectroLynx Door Harness	QC-CXXXP x Length as required		MK	087100	⚡
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply	AQD4-8C8R2		SU	087100	⚡

Notes: Operational Narrative:
1. Doors normally closed and secure.
2. ADA access by actuator switch. In locked condition, actuator energized only upon valid card reader presentation.
3. Egress free for immediate exit. ADA egress by actuator switch.
4. REX switch in push rail allows authorized exit without alarm condition.
5. Door position switches monitor open/closed status.

6. Exit device latches release (fail secure) in event of power loss. Keyed cylinder override for emergency access.

Set: 4.0

DOUBLE EXTERIOR EGRESS SIDE DOORS

Doors: 101C, 101E

2 Continuous Hinge	GFM__HD1 PT		PE	087100	
1 Surface Vert Rod Exit	55 56 60 8706 ETL	US4	SA	087100	
1 Surface Vert Rod Exit, Exit Only	55 8710 EO	US4	SA	087100	
1 Core	6300	US4	SA	087100	
2 Surface Closer	351 CPS	EAB	SA	087100	
2 Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO	087100	
1 Gasketing	303GV TKSP		PE	087100	
1 Rain Guard	346G TKSP		PE	087100	
2 Sweep	3452GNB		PE	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	

Notes: Operational Narrative:
1. Doors normally closed and secure.
2. Egress free for immediate exit. ADA egress by actuator switch.

Set: 5.0

EXTERIOR SINGLE EGRESS DOORS

Doors: 002, 002A, 005A, 101A, 101B,

1 Continuous Hinge	GFM__HD1		PE	087100	
1 Rim Exit Device, Storeroom	60 8804 ETL	US4	SA	087100	
1 Core	6300	US4	SA	087100	
1 Surface Closer	351 CPS	EAB	SA	087100	
1 Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO	087100	
1 Gasketing	303GV TKSP		PE	087100	
1 Rain Guard	346G TKSP		PE	087100	
1 Sweep	3452GNB		PE	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	

Set: 6.0

STAIRWELL DOORS

Doors: 100C, 100D, 200A, 200B, 200C

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK	087100
1 Rim Exit Device, Classroom	12 60 8813 ETL	US4	SA	087100
1 Core	6300	US4	SA	087100
1 Surface Closer	351 P10 / O	EAB	SA	087100
1 Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO	087100
1 Wall Stop	406	US4	RO	087100
1 Gasketing	S88BL		PE	087100

Set: 7.0

MAIN ELECTRICAL

Doors: 007

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK	087100
1 Rim Exit Device, Storeroom	12 60 8804 ETL	US4	SA	087100
1 Core	6300	US4	SA	087100
1 Surface Closer	351 P10 / O	EAB	SA	087100
1 Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO	087100
1 Wall Stop	406	US4	RO	087100
1 Gasketing	S88BL		PE	087100

Set: 8.0

WATER SERVICE

Doors: 008

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK	087100
1 Storeroom/Closet Lock	60 10XG04 LL	US4	SA	087100
1 Core	6300	US4	SA	087100
1 Surface Closer	351 P10 / O	EAB	SA	087100
1 Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO	087100
1 Wall Stop	406	US4	RO	087100
1 Gasketing	S88BL		PE	087100

Set: 9.0

MAIN MECHANICAL ROOM

Doors: 005

3	Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK 087100
1	Storeroom/Closet Lock	60 10XG04 LL	US4	SA 087100
1	Core	6300	US4	SA 087100
1	Surface Closer	351 P10 / O	EAB	SA 087100
1	Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO 087100
1	Wall Stop	406	US4	RO 087100
3	Silencer	608-RKW		RO 087100

Set: 10.0

UNISEX RESTROOMS

Doors: 106

3	Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK 087100
1	Privacy Lock	V21 8265 LNL	US4	SA 087100
1	Surface Closer	351 P10 / O	EAB	SA 087100
1	Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO 087100
1	Mop Plate	K1050 4" x 1" LDW x CSK BEV	US4	RO 087100
1	Wall Stop	406	US4	RO 087100
3	Silencer	608-RKW		RO 087100
1	Coat Hook	RM802	US4	RO 087100

Set: 11.0

RESTROOMS

Doors: 105, 107

3	Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK 087100
1	Surface Closer	351 P10 / O	EAB	SA 087100
1	Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO 087100
1	Mop Plate	K1050 4" x 1" LDW x CSK BEV	US4	RO 087100
1	Wall Stop	406	US4	RO 087100
3	Silencer	608-RKW		RO 087100

Set: 12.0

CUSTODIAL

Doors: 104, 109

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US4	MK	087100
1 Storeroom/Closet Lock	60 10XG04 LL	US4	SA	087100
1 Core	6300	US4	SA	087100
1 Surface Closer	351 CPS	EAB	SA	087100
1 Kick Plate	K1050 10" x 2" LDW x CSK BEV	US4	RO	087100
3 Silencer	608-RKW		RO	087100

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SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units for non-rated assemblies.

B. Glazing units.

C. Plastic films.

D. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 2105 - Thermal Insulation: for insulation behind spandrel glazing.

B. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.

C. Section 08 1113 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

D. Section 08 4313 – Aluminum-framed Storefronts.

E. Section 08 4413 - Glazed Aluminum Curtain Walls.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM C1036 - Standard Specification for Flat Glass; 2025.

G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

H. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024.

I. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

J. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

K. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

L. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

M. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2024.

N. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

O. GANA (GM) - GANA Glazing Manual; 2022.

P. GANA (SM) - GANA Sealant Manual; 2008.

Q. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

R. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (Reaffirmed 2016).

S. ITS (DIR) - Directory of Listed Products; Current Edition.

T. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

U. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies; 2022.

V. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

W. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

X. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

Y. UL (DIR) - Online Certifications Directory; Current Edition.

Z. UL 9 - Standard for Fire Tests of Window Assemblies; Current Edition, Including All Revisions.

AA. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

BB. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

CC. UL 972 - Standard for Burglary Resisting Glazing Material; Current Edition, Including All Revisions.

DD. ASTM E283-04 – Standard Test Method for determining Rate of Air Leakage Through Exterior Windows.

EE. GANA (LGRM) - Laminated Glazing Reference Manual 2009.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting at least one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 6 by 6 inch (150 by 150 mm) in size of glass units, showing coloration and design.

E. Samples: Submit 3 inch long bead of glazing sealant, color as selected.

F. Certificate: Certify that products of this section meet or exceed specified requirements.

G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
    a. Insulating Glass Certification Council (IGCC).
    b. Safety Glazing Certification Council (SGCC).

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years documented experience.

1.07 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees Fahrenheit.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following:
1. Basis of Design: Viracon, Inc.
2. Oldcastle Building Envelope.
3. Pilkington North America.
4. Vitro Architectural Glass (formerly PPG Glass)

B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type with the exception of Security Glass lite to be sole sourced as indicated.

C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Design Pressure: Calculated in accordance with applicable codes and design load data provided on the Drawings.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7
4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
5. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with weather barrier related materials described in other sections.
    a. Refer to Section 07 2726.
2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.

3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
5. Impact Resistant Safety Glass: Complies with ANSI Z97.1 - Class B, or 16 CFR 1201 - Category I criteria.
6. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality - Q3, with color and performance characteristics as indicated.
7. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.
2. Polyvinyl Butyral (PVB) Interlayer: 0.030 inch thick, minimum.

2.04 INSULATING GLASS UNITS

A. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Warm-Edge Spacers: Low conductivity thermoplastic and stainless steel.
a. Spacer Width: As required for specified insulating glass unit.
4. Spacer Color: Black.
5. Edge Seal:
a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
6. Color: Black.
7. Purge interpane space with dry air, hermetically sealed.

2.05 GLAZING COMPOUNDS

A. Butyl Sealant: Single component; ASTM C920 Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

B. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.06 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot (0.98 inch for each square meter) of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Continuous by one half the height of the glazing stop by thickness to suit application, self-adhesive on one face.

C. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

2.07 GLAZING UNITS SCHEDULE

A. Type 1 – Insulating Glass Units: Vision glass, double glazed.
   1. Applications: exterior glazing, where located on drawings.
   2. Solar Control Low-E Clear insulating glass.
   3. Overall Unit Thickness: 1 inch.
   4. Thickness of Each Glass Lite: 1/4 inch.
   5. Outdoor Lite: Clear heat-strengthened glass, sputter coated on second surface.
   6. Interspace Content: Argon.
   7. Indoor Lite: Float heat-strengthened glass.
   8. Winter Nighttime U-Factor: 0.29 maximum.
   9. Summer Daytime U-Factor: 0.26 maximum.
   10. Shading Coefficient: 0.35.
   11. Solar Heat Gain Coefficient: 0.35 maximum.
   12. Visual Light Transmittance: 50 percent minimum.
   13. Low-E Coating: Pyrolytic on second surface.
   14. Basis of Design: VE19-2M Insulating HS/HS by Viracon.

B. Type 2 – Insulating Glass Units: Security Glazing.
   1. Applications: exterior glazing, where located on drawings.
   2. Overall Unit Thickness: 1 inch.
   3. Thickness of Each Glass Lite: 1/4 inch.
   4. Outdoor Lite: Clear fully tempered glass, sputter coated on second surface.
   5. Interspace Content: Argon.
   6. Indoor Lite (Security Glazing): School Guard SG4 as manufactured by LTI.
   7. Winter Nighttime U-Factor: 0.29 maximum.
   8. Summer Daytime U-Factor: 0.26 maximum.
   9. Shading Coefficient: 0.35.
   10. Solar Heat Gain Coefficient: 0.35 maximum.
   11. Visual Light Transmittance: 50 percent minimum.
   12. Low-E Coating: Pyrolytic on second surface.
   13. Basis of Design: VE19-2M Insulating HS/HS by Viracon.
   14. Provide clearly visible safety glazing labeling.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (TAPE AND GASKET SPLINE GLAZING)

A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.

B. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

E. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.

F. Carefully trim protruding tape with knife.

3.05 INSTALLATION - DRY GLAZING METHOD (TAPE AND TAPE)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

E. Place glazing tape on free perimeter of glazing in same manner described above.

F. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

G. Carefully trim protruding tape with knife.

3.06 INSTALLATION - WET GLAZING METHOD (COMPOUND AND COMPOUND)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24 inch centers, kept 1/4 inch below sight line.

C. Locate and secure glazing pane using glazers' clips.

D. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.07 INSTALLATION - WET/DRY GLAZING METHOD (PREFORMED TAPE AND SEALANT)

A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.

B. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with butyl sealant.

C. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.

D. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

E. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.

F. Install removable stops, with spacer strips inserted between glazing and applied stops 1/4 inch below sight lines.
   1. Place glazing tape on glazing pane of unit with tape flush with sight line.

G. Fill gap between glazing and stop with silicone type sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.

H. Apply cap bead of silicone type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.08 INSTALLATION - PRESSURE GLAZED SYSTEMS

A. Application - Exterior Glazed: Set glazing infills from exterior side of building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install pressure plates without displacing glazing gasket; exert pressure for full continuous contact.

E. Install cover plate.

3.09 INSTALLATION - STRUCTURAL SILICONE GLAZING

A. Application - Factory (Shop) Glazed: Follow basic guidelines of structural silicone glazing for glazing application.

B. Provide design review of the glazing system and project details, adhesion testing, proper surface preparation, training and a quality service program.

C. Provide only structural silicone sealant, tested and manufactured for structural glazing.

3.10 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Monitor and report installation procedures and unacceptable conditions.

3.11 CLEANING

A. See Section 01 7429 - Construction Waste Management and Disposal, for additional requirements.

B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

C. Remove nonpermanent labels immediately after glazing installation is complete.

D. Clean glass and adjacent surfaces after sealants are fully cured, in accordance with manufacturer's instructions.

E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.12 PROTECTION

A. Protect installed glass from damage during construction.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION 08 8000

SECTION 09 0561
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.

B. Removal of existing floor coverings.

C. Preparation of existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

F. Patching compound.

G. Remedial floor coatings.

1.02 RELATED REQUIREMENTS

A. Section 01 2200 - Unit Prices: Bid pricing for remediation treatments if required.

B. Section 01 2300 - Alternates: Bid pricing for remediation treatments if required.

C. Section 01 4000 - Quality Requirements: Additional requirements relating to testing agencies and testing.

1.03 PRICE AND PAYMENT PROCEDURES

A. Unit Prices: See Section 01 2200 - Unit Prices.

1.04 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.06 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:

1. Moisture and alkalinity (pH) limits and test methods.
2. Manufacturer's required bond/compatibility test procedure.

C. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation, if remediation is required.
   1. Manufacturer's qualification statement.
   2. Manufacturer's statement of compatibility with types of flooring applied over remedial product.
   3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
   4. Manufacturer's installation instructions.
   5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

D. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report directly to Owner.
   7. Submit report not more than two business days after conclusion of testing.

E. Adhesive Bond and Compatibility Test Report.

F. Copy of RFCI (RWP).

1.07 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing will be performed by an independent testing agency employed and paid by Owner.

B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

C. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify Owner when specified ambient conditions have been achieved and when testing will start.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.

B. Deliver materials in manufacturer’s packaging; include installation instructions.

C. Prevent materials from freezing.

1.09 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees Fahrenheit or more than 85 degrees Fahrenheit.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   3. Products:
      a. USG Corporation; Durock Brand Tuf-Skim Floor Patch: www.usg.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

B. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
   2. Products:
      a. ARDEX Engineered Cements; ARDEX MC RAPID: www.ardexamericas.com/#sle.
      b. Koster American Corporation; Koster VAP I 2000 with Koster SL Premium overlay: www.kosterusa.com/#sle.
      c. Sika Corporation; Sikafloor Moisture Tolerance Epoxy Primer and Sikafloor Self-Leveling Moisture Tolerant Resurfacer: www.sikafloorusa.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Preliminary cleaning.
   2. Moisture vapor emission tests; 3 tests in the first 1000 sq feet and one test in each additional 1000 sq feet, unless otherwise indicated or required by flooring manufacturer.
   3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   5. Specified remediation, if required.
   6. Patching, smoothing, and leveling, as required.
   7. Other preparation specified.
   8. Adhesive bond and compatibility test.
   9. Protection.

B. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.

3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 TERRAZZO FLOORING PREPARATION

A. Perform following operations in the order indicated:
   1. Remove or replace all loose tiles and clean the grout lines.
   2. Thoroughly mechanically sand with a floor sanding machine all the terrazzo flooring areas with 36 grit.
   3. Cleaning to remove all adhesives, wax, or other coatings.
   4. Specified remediation for where pew hardware was removed.
   5. Patching, smoothing, and leveling, as required.
   6. Second thorough cleaning to ensure the sanded surfaces are fully clean and dry.
   7. Protection until new flooring is installed.

B. Remediations:
   1. Voids that are left after removing fixtures are to be filled with a cementitious repair material. Basis of Design Mapecem Quick Patch or similar product.

3.03 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.04 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.05 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 sq feet per 24 hours.

E. Report: Report the information required by the test method.

3.06 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.07 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

C. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.

D. Place several drops of distilled or deionized water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.08 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.09 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.10 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.11 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION 09 0561

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SECTION 09 2216
NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal partition, ceiling, and soffit framing.

B. Framing accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Metal fabrications attached to stud framing.

B. Section 06 1000 - Rough Carpentry: Wood blocking within stud framing.

C. Section 07 8400 - Firestopping: Sealing top-of-wall assemblies at fire rated walls.

D. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

E. Section 08 3113 - Access Doors and Panels.

F. Section 09 2116 - Gypsum Board Assemblies: Acoustic Insulation and acoustic sealant

G. Section 09 2116 - Gypsum Board Assemblies: Execution requirements for anchors for attaching work of this section.

1.03 REFERENCE STANDARDS

A. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019 (Reapproved 2025).

B. ASTM A645/A645M - Standard Specification for Pressure Vessel Plates, 5 % and 51 2 % Nickel Alloy Steels, Specially Heat Treated; 2010 (Reapproved 2022).

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.

F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

G. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

I. ASTM E413 - Classification for Rating Sound Insulation; 2022.

J. ASTM E488/E488M - Standard Test Methods for Strength of Anchors in Concrete Elements; 2022.

K. GA-600 - Fire Resistance and Sound Control Design Manual; 2024.

L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

M. ASTM E1190 - Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members 2011.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Shop Drawings:

1. Indicate prefabricated work, component details, stud layout, framed openings, anchorage to structure, acoustic details, type and location of fasteners, accessories, and items of other related work.
2. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.

C. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with a minimum of five years documented experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packaging or bundles bearing brand name and identification of manufacturer.

B. Store all materials inside, under cover, in a manner to keep them dry, protected from weather, surface contamination, corrosion and damage from construction traffic and other causes.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
1. ClarkDietrich Building Systems: www.clarkdietrich.com.
2. Marino: www.marinoware.com.
3. The Steel Network, Inc: www.SteelNetwork.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide framing capable of withstanding design loads within limits and under conditions indicated.
1. Design Loads: In accordance with the Connecticut State Building Code and minimum parameters for calculating design loads.
2. Deflection limits: Design framing systems to withstand design loads without deflections greater that the following:
   a. Horizontal deflection of 1/240 at 5 psf, stud spacing at 16 inches on center.
   b. Horizontal deflection at tile walls L/360 at 5 psf (L/360 at 240 Pa).
3. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
   a. Upward and downward movement of 3/4 inch.
4. Provide interior framing systems sized to accommodate maximum deflection using limiting heights of metal studs without contribution of gypsum wallboard (non-composite).

2.03 FRAMING MATERIALS

A. Manufacturers: Subject to compliance with requirements, provide framing materials by one of the following:
1. ClarkDietrich Building Systems
2. Marino/WARE.
3. SCAFCO Steel Stud Company.
4. Super Stud Building Products, Inc.
5. The Steel Network, Inc.

B. Loadbearing Studs: As specified in Section 05 4000.

C. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated.
   1. Protective Coating: Coating with equivalent corrosion resistance of ASTM A653/A653M, G60 (Z180), hot-dip galvanized, unless otherwise indicated
   2. Studs: C shaped with flat or formed webs.
      a. Flange Size: 1-1/4 inch.
      b. Web Depth: As indicated on Drawings.
      c. Minimum Thickness: 0.033 inch.
      d. Minimum Design Thickness: 0.0346 inch.
   3. Runners: U shaped, sized to match studs.
   4. Furring: Hat-shaped or Z-shaped sections, minimum depth of 7/8 inch.
      a. Minimum Base-Metal Thickness: 0.0329 inch.
   5. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.
      a. Products:
         1) ClarkDietrich; RC Deluxe Resilient Channel: www.clarkdietrich.com/#sle.
         2) CEMCO; Resilient Channels: https://cemcosteel.com.
         3) Marino/WARE; Resilient Channels: www.marinoware.com.
         4) Substitutions: See Section 01 6000 - Product Requirements.
   6. Resilient Sound Isolation Clips: Steel resilient clips with molded rubber, or fiberglass isolators, attaches to framing; improves noise isolation for areas between gypsum board assemblies and adjacent sources of noise.
      a. Fiberglass Isolator: 1-inch thick, pre-compressed, molded fiberglass.
      b. Vertical Load Capacity: Ceiling hangers shall have sufficient capacity to support ceiling weights constructed. In a vertical load test comparable to a ceiling installation, the ceiling hanger shall have a minimum design load capacity of 160 pounds. Design Load capacity shall be based on a minimum safety factor of 5 as compared to load failure. Anchors for attachment of the clips to the sub-structure shall be selected to support ceiling weights at each hanger.
      c. Products: Subject to compliance with requirements, provide Kinetics Noise Control: Model AF-200 Fiberglass Pad Isolation Hanger, or one of the following:
         1) ClarkDietrich; Sound Clip (CDSC): www.clarkdietrich.com/#sle.
         2) PAC International; RSIC-1.
         3) Pliteq, Inc; GenieClip RST: www.pliteq.com/#sle.

D. Slip-Type Head Joints: Where indicated, provide the following:
   1. Double Runner System: ASTM C645 top runners, inside runner with 2-inch deep flanges, in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.

E. Non-Loadbearing Framing Accessories:
   1. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
   2. Sheet Metal Backing: 0.036 inch thick, galvanized.
   3. Fasteners: ASTM C1002 self-piercing tapping screws.
   4. Anchorage Devices: Powder actuated.
   5. Acoustic Insulation: As specified in Section 09 2900.
   6. Acoustic Sealant: As specified in Section 09 2900.
   7. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.

2.04 SUSPENSION SYSTEM COMPONETS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.0625 inch diameter wire, or double strand of 0.0475 inch diameter wire.

B. Hanger Attachments to Concrete:
   1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E488/E488M by an independent testing agency.
      a. Type: Post installed, expansion anchor.
   2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E1190 by an independent testing agency.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.162 inch diameter.

D. Grid Suspension System for Gypsum Board Ceilings: ASTM A645/A645M, direct-hung, double-web suspension system composed of main beams and cross-furring members that interlock.
   1. Furring Runners: Manufactured from 0.020 inch thick steel, 1-1/2-inches wide by 1-1/2-inches high.
   2. Furring Runners: Manufactured from 0.020 inch thick steel, 1-1/2-inches wide by 1-1/2-inches high with staked-on clip couplings, factory punched cross tee slots and hanger holes.
   3. Furring Tees: Manufactured from
   4. Products: Subject to compliance with requirements, provide one of the following:
      a. Armstrong World Industries, Inc.; Drywall Grid Systems.
      b. CertainTeed Corporation; 1-1/2 inch Drywall Suspension System
      c. USG Corporation; Drywall Suspension System

2.05 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

C. Fabrication Tolerances: Fabricate assemblies level, plumb and true to line to maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
   1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing, or other finishing materials.
   2. Squareness: Fabricate each framing assembly to a maximum out of square tolerance of 1/8 inch.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that rough-in utilities are in proper location.

3.02 PREPARATION

A. Install sealer gaskets at the underside of wall bottom track.

3.03 INSTALLATION OF STUD FRAMING

A. Comply with requirements of ASTM C754.

B. Extend partition framing to structure where indicated and to ceiling in other locations.

C. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

D. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in

accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

E. Align and secure top and bottom runners at 24 inches on center.

F. Where partition framing is subject to water on the floors during construction, provide a heavy coating of rust preventive paint, suitable for galvanized steel, on all surfaces of bottom runner tracks and the lower 3 inches of studs.
   1. Repair damaged and rusted areas of hot-dip galvanized coatings in accordance with ASTM A780/A780M.

G. At partitions indicated with an acoustic rating:
   1. Provide components and install as required to produce STC ratings as indicated, based on published tests by manufacturer conducted in accordance with ASTM E90 with STC rating calculated in accordance with ASTM E413.
   2. Place one bead of acoustic sealant between runners and substrate, studs, and adjacent construction.
   3. Place one bead of acoustic sealant between studs and adjacent vertical surfaces.

H. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

I. Install studs vertically at spacing indicated on drawings.

J. Align stud web openings horizontally.

K. Secure studs to tracks using fastener method. Do not weld.

L. Stud splicing is not permissible.

M. Fabricate corners using a minimum of three studs.

N. Install double studs at wall openings, door and window jambs, not more than 2 inches from each side of openings.

O. Coordinate erection of studs with requirements of door frames; install supports and attachments.

P. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

Q. Blocking: Use wood blocking secured to studs. Provide blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and opening frames.

R. Sound Isolation Clips: Mechanically attach to framing or structure with fasteners recommended by clip manufacturer. Install at spacing indicated on drawings.

S. Furring: Coordinate with sound isolation clip spacing and locations. Lap splices a minimum of 6 inches.

3.04 CEILING AND SOFFIT FRAMING

A. Comply with requirements of ASTM C754.

B. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.

C. Install furring independent of walls, columns, and above-ceiling work.

D. Securely anchor hangers to structural members or embed in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

E. Space main carrying channels at maximum 72 inch on center, and not more than 6 inches from wall surfaces. Lap splice securely.

F. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

G. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.

3.05 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch in 10 feet.

B. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION 09 2216

SECTION 09 2300
TEXTURED SPECIALTY CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Popcorn textured ceiling finish.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS

A. ASTM C28/C28M - Standard Specification for Gypsum Plasters; 2026.

B. ASTM C35 - Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster; 2001 (Reapproved 2019).

C. ASTM C61/C61M - Standard Specification for Gypsum Keene's Cement; 2026.

D. ASTM C631 - Standard Specification for Bonding Compounds for Interior Gypsum Plastering; 2009 (Reapproved 2020).

E. ASTM C842 - Standard Specification for Application of Interior Gypsum Plaster; 2005 (Reapproved 2025).

F. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide data on plaster materials, characteristics, and limitations of products specified.

C. Samples: Submit two samples, ____by____ inch in size illustrating finish color and texture.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Construct mock-up of interior ceiling, 4 feet long by 4 feet wide, illustrating surface finish.

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.07 FIELD CONDITIONS

A. Do not apply plaster when substrate or ambient air temperature is under 50 degrees F or over 80 degrees F.

B. Maintain minimum ambient temperature of 50 degrees F during and after installation of plaster.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Popcorn Ceilings:
   1. DAP Ceiling Texture.
   2. Homax Professional Popcorn Texture.
   3. USG QT Poly Ceiling Texture.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 POPCORN ASSEMBLIES

A. Application: spray or rolled on.

B. Color: White; no exceptions taken.

C. Base: Acrylic Latex or Water based.

D. Paintable: Yes.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing conditions are satisfactory before starting work.

B. Coordinate primed interior surfaces are dry, clean, and ready for popcorn texture application.

3.02 PREPARATION

A. Ensure proper drop clothes are installed to avoid drippings and over spray onto adjacent areas.

3.03 INSTALLATION

A. Apply popcorn texture in a smooth, even application.

B. Ensure that any divets or damage to existing to remain drywall ceilings from abatement are covered over for a consistent finish.

END OF SECTION 09 2300

SECTION 09 2400
CEMENT PLASTERING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cement plastering (on exterior facade mural).

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting.

1.03 REFERENCE STANDARDS

A. ASTM C91/C91M - Standard Specification for Masonry Cement; 2025.

B. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

C. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters; 2025.

D. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster; 2026.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide data on plaster materials and trim accessories.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Exterior Plaster Work: Do not apply plaster when substrate or ambient air temperature is 40 degrees F or lower, or when temperature is expected to drop below 40 degrees F within 48 hours of application.

PART 2 PRODUCTS

2.01 CEMENT PLASTER APPLICATIONS

A. Solid Plaster Base: Concrete masonry.
   1. Plaster Type: Jobsite mixed plaster.
   2. Number of Coats: One.
   3. Coat Thickness: provide thickness ample enough to conceal engravings, wall damage, and carvings so they are not visible.

2.02 JOBSITE MIXED CEMENT PLASTER

A. Materials:
   1. Portland Cement: ASTM C150/C150M, Type I.
      a. Finish Coat: White color.
   2. Sand: Clean, well graded, and complying with ASTM C897.
   3. Water: Clean, fresh, potable, and free of mineral or organic matter that could adversely affect plaster.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify concrete surfaces are flat, honeycombs are filled flush, and surfaces are ready to receive work of this section, and that there are no existing bituminous, water repellent, or form release agent coatings on concrete surfaces that may be detrimental to plaster bond.

3.02 PREPARATION

A. Clean concrete surfaces of foreign matter using approved acid solutions, solvents, or detergents, and then rinse surfaces thoroughly with clean water.

3.03 MIXING

A. Mix only as much plaster as can be used prior to initial set.

B. Mix materials dry, to uniform color and consistency, before adding water.

C. Protect mixtures from frost or freezing temperatures, contamination, and excessive evaporation.

3.04 APPLICATION

A. Apply plaster in accordance with manufacturer's written instructions and comply with ASTM C926.

B. Finish Coats:
   1. Cement Plaster:
      a. Apply with sufficient material and pressure to ensure complete coverage of base to specified thickness.
      b. Float to a consistent finish.

3.05 TOLERANCES

A. Maximum Variation from True Flatness: 1/4 inch in 10 feet.

3.06 REPAIR

A. Patching: Remove loose, damaged or defective plaster and replace with plaster of same composition; finish to match surrounding area.

END OF SECTION 09 2400

SECTION 09 2900
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Acoustic insulation.

C. Gypsum sheathing.

D. Gypsum wallboard.

E. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.

C. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

D. Section 09 2216 - Non-Structural Metal Framing.

1.03 REFERENCE STANDARDS

A. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished; 2018.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

E. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

F. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

G. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

H. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

I. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

J. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2018 (Reapproved 2023).

K. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

M. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2023.

N. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019, with Editorial Revision (2020).

O. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

P. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

Q. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

R. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

S. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024.

T. ASTM E413 - Classification for Rating Sound Insulation; 2022.

U. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

V. GA-226 - Application of Gypsum Board to Form Curved Surfaces; 2025.

W. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3300 – Submittal Procedures.

B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

E. Test Reports: Bullet resistant sheathing and wallboard.

F. Samples:
   1. Submit four (4) samples of bullet resistant sheathing and wallboard, 12 by 12 inches (300 by 300 mm) in size, illustrating finish color and texture.
   2. Samples of other types of gypsum board and accessories specified are not required.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
   1. See PART 3 for finishing requirements.

B. Interior Partitions, as indicated on the Drawings: Provide completed assemblies with the following characteristics:
   1. Deflection: L/240 unless otherwise noted or required by finish material i.e. tile walls L/360.
   2. Fire Rating: As indicated on the drawings.
   3. Acoustic Attenuation: STC as indicated on the Drawings calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com.
   2. CertainTeed Corporation: www.certainteed.com.
   3. Continental Building Products: www.continental-bp.com.
   4. Georgia-Pacific Gypsum: https://buildgp.com.

5. National Gypsum Company: https://nationalgypsum.com.
6. USG Corporation: www.usg.com/content/usgcom/en.html.
7. Substitutions: See Section 01 6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   a. Mold resistant board is required within 6’ of all wet locations, including but not limited to sinks, toilets, water fountains, custodial sinks, and other types of water dispensing locations.
4. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
5. Thickness:
   a. Vertical Surfaces: 5/8 inch.
   b. Ceilings: 5/8 inch.
   c. Curved ceilings or curved ceiling repairs requiring multi-layered installation: 1/4 inch and 3/8" (10mm) as required to achieve the overall thickness as indicated on the Drawings.
   d. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
6. Mold Resistant Paper Faced Products:
   a. American Gypsum Company; M-Bloc Type X: www.americangypsum.com.
   b. CertainTeed Corporation; M2Tech 5/8" Type C Moisture & Mold Resistant Drywall: www.certainteed.com.
   c. Continental Building Products; Mold Defense Type X: www.continental-bp.com.
   d. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard: https://buildgp.com.
   e. National Gypsum Company; Gold Bond XP Gypsum Board: www.nationalgypsum.com.
7. Glass Mat Faced Products:
   a. CertainTeed Corporation; 5/8" GlasRoc Interior Type X: www.certainteed.com/#sle.
   b. Georgia-Pacific Gypsum; DensArmor Plus Fireguard C: https://buildgp.com.
   c. National Gypsum Company; Gold Bond eXP Fire-Shield Interior Extreme Gypsum Panel: www.nationalgypsum.com.
   d. Substitutions: See Section 01 6000 - Product Requirements.

C. Impact Resistant Wallboard:
1. Application: Areas indicated on Drawings.
2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Hard Body Impact: Level 3 requirements according to test in Annex A1, minimum, when tested in accordance with ASTM C1629/C1629M.
6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
7. Type: Fire resistance rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.

2.03 GYPSUM WALLBOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool. Thickness: As indicated on the drawings.
   1. Application: As indicated on Drawings.
   2. Flame-spread and smoke-developed indexes: Maximum of 0 per ASTM E84, passing ASTM E136 for combustion characteristics.
   3. Basis-of-Design Products: Subject to compliance with requirements, provide one of the following:
      a. Johns Mansville; MinWool Sound Attenuation Fire Batts (SAFB).
      b. Rockwool North America (ROXUL); ROXUL AFB: www.rockwool.com.
      c. Thermafiber, Inc.; Thermafiber SAFB: www.thermafiber.com.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

C. Acoustical Sealant: As specified in Section 07 9200 - Joint Sealants; Type 4.

D. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
   1. Rigid Corner Beads: Low profile, for 90 degree outside corners.
      a. Products:
         1) CertainTeed Corporation; No-Coat Drywall Corner: www.certainteed.com.
         2) ClarkDietrich; Strait-Flex Big-Stick: www.clarkdietrich.com.
         3) Phillips Manufacturing Co; Everlast Corner Bead: www.phillipsmfg.com.
         4) Trim-Tex, Inc; : www.trim-tex.com.
         5) Substitutions: See Section 01 6000 - Product Requirements.
   2. Architectural Reveal Beads:
      a. Shapes: As indicated on the drawings.
   3. Expansion Joints:
      a. Type: V-shaped PVC with tear away fins.
      b. Products:
         1) Phillips Manufacturing Co; 093 Expansion Control Joint: www.phillipsmfg.com.
         2) Trim-Tex, Inc: www.trim-tex.com.

E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
   3. Products:
      a. Continental Building Products: www.continental-bp.com.
      b. Substitutions: See Section 01 6000 - Product Requirements.
   4. Joint Compound: Drying type, vinyl-based, ready-mixed.
      a. Products:
         1) Continental Building Products: www.continental-bp.com.
         2) Substitutions: See Section 01 6000 - Product Requirements.
      b. Application:
         1) Fill Coat: For second coat.
         2) Finish Coat: For third coat.
         3) Skim Coat: For final coat of Level 5 finish.
   5. Joint Compound: Setting type, field-mixed.
      a. Application:
         1) Prefilling: At Open joints and damaged surface areas.

2) Embedding and First Coat: For embedding tape and first coat on joints, fasteners and trim flanges.
3) Use for installing paper-faced metal trim accessories.

b. Products:
1) CertainTeed Corporation; www.certainteed.com..
2) Substitutions: See Section 01 6000 - Product Requirements.

F. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch (0.84 to 2.84 mm) in Thickness: ASTM C954; steel drill screws, corrosion resistant.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
1. Place continuous bead at perimeter of each layer of gypsum board.
2. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board parallel to framing, with ends and edges occurring over firm bearing.

C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
1. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

E. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.
1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12 inch long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches
a. o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
2. At exterior soffits, not more than 30 feet apart in both directions.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.05 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, bedded and finished with chemical hardening type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   3. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.06 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.07 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 2900

SECTION 09 3013
CERAMIC TILING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Glazed wall tile.
   2. Tile backing panels.
   3. Setting material.
   4. Grout materials.

B. Related Requirements:
   1. Section 07 9200 "Joint Sealants" for sealing of movement joints in tile surfaces.
   2. Section 09 2900 "Gypsum Board Assemblies" for tile backing panels.

1.02 DEFINITIONS

A. General: Definitions in ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. Face Size: Actual tile size, excluding spacer lugs.

C. Module Size: Actual tile size plus joint width indicated.

1.03 REFERENCE STANDARDS

A. ANSI A108.01 - General Requirements: Structures, Substrates, and Preparation of Tile; 2023.

B. ANSI A108.02 - General Requirements: Workmanship for Tile Installation; 2023.

C. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).

D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

E. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar; 2023.

F. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.

G. ASTM C241/C241M - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic; 2021.

H. ASTM C503/C503M - Standard Specification for Marble Dimension Stone; 2023.

I. ASTM C1353/C1353M - Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform Abraser; 2020, with Editorial Revision.

J. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019, with Editorial Revision (2020).

K. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

1.04 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site .
   1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification:
   1. Full-size units of each type and composition of tile and for each color and finish required.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and installer.

C. Product Certificates: For each type of product, signed by product manufacturer.

D. Material Test Reports: For each tile-setting and grouting product.

E. Maintenance material Submittals: Furnish extra materials that match and are from the same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents. Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size as indicated.

1.07 QUALITY ASSURANCE

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.09 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in "Referenced Standards" Article in the Evaluations and manufacturer's written instructions.

1.10 WARRANTY

A. System Warranty: Manufacturer's non-prorated comprehensive warranty that agrees to repair and replace defective installation areas, material, and labor that fail under normal usage within specified warranty period.
   1. Warranty Period: Five years from date of Product Purchase.

PART 2 PRODUCTS

2.01 SOURCE LIMITATIONS

A. Tile: Obtain tile from single source or producer.
   1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Accessory Products: Obtain each of the following products specified in this Section from a single manufacturer:
   1. Backer units.

2.02 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard Grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
   1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.03 GLAZED WALL TILE

A. Glazed Wall Tile Type:
   1. Subject to compliance with requirements, provide Daltile; Color Wheel Linear products by one of the following:
      a. American Olean; a brand of Dal-Tile Corporation.
      b. Crossville, Inc.
      c. Daltile; a brand of Dal-Tile Corporation. **(Basis of Design CWT-1)**
   2. Module Size: 4" by 8" Tile
   3. Face Size Variation: Rectified.
   4. Thickness: 5/16 inch.
   5. Tile Color and Pattern: As selected by Architect from manufacturer's full range .
   6. Grout Color: As selected by Architect from manufacturer's full range .
   7. Install: As indicated on Finish Legend

2.04 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Gypsum Panel: ASTM C1658/C1658M, with fiberglass mat partially or completely embedded into the core.
   1. Manufacturers: Subject to compliance with requirements, provide one of the following:
      a. CertainTeed Corporation; Diamondback Tile Backer
      b. Georgia-Pacific Building Products; DensShield Tile Backer.
      c. National Gypsum; Gold Bond eXP Tile Backer.
   2. Core: 5/8-inch, Type X.
   3. Mold Resistance: ASTM D3273, score of 10 as rated in accordance with ASTM D3274.

2.05 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.1 and ISO 13007 C2EP1, consisting of the following:
   1. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to other requirements in ANSI A118.1.
      a. Product: Subject to compliance with requirements, provide one of the following:
         1) MAPEI Corporation; Ultraflex 2.
         2) LATICRETE International, Inc. 253 Gold
         3) Custom Building Products; Versa Bond.

2.06 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ANSI A108.10, color as indicated.
   1. Polymer Type: Ethylene vinyl acetate, in dry, redispersible form, prepackaged with other dry ingredients.

a. Unsanded grout mixture for joints 1/8” and narrower.

2. Basis of Design Product: Subject to compliance with requirements, provide MAPEI Corporation; MAPEI Keracolor U Premium Unsanded Grout with Polymer or the following:
   a. LATICRETE International Inc; Laticrete 1600 Series Tri-Poly Fortified Unsanded Grout.
   b. Custom Building Products.

2.07 MISCELLANEOUS MATERIALS

A. Temporary Protective Coating: Formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products and easily removable after grouting is completed without damaging grout or tile.

B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for use on the existing Terrazzo Floors and Marble Walls.
   1. Basis of Design Product: Subject to compliance with requirements, provide MAPEI Corporation; UltraCare Heavy-Duty Stone, Tile & Grout Cleaner or comparable product by one of the following;
      a. Custom Building Products
      b. LATICRETE International INC.

C. Grout Sealer: Grout manufacturer's standard product for sealing grout joints that does not change color or appearance of grout. specifically approved for use on the existing Terrazzo Floors and Marble Walls.
   1. Basis of Design Product: Subject to compliance with requirements, provide MAPEI Corporation; UltraCare Penetrating SB Stone, Tile & Grout Sealer or comparable product by one of the following;
      a. Custom Building Products
      b. LATICRETE International INC.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove coatings, including curing compounds or other coatings, that are incompatible with tile-setting materials.

B. Substrate Flatness:
   1. For tile shorter than 15 inches, confirm that structure or substrate is limited to variation of 1/4 inch in 10 feet from the required plane, and no more than 1/16 inch in 12 inches when measured from tile surface high points.

C. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.03 INSTALLATION OF CERAMIC TILE SYSTEM

A. Install tile backing panels and treat joints in accordance with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

B. Mix mortars and grouts to comply with "Referenced Standards" Article in the Evaluations and mortar and grout manufacturers' written instructions.
   1. Add materials, water, and additives in accurate proportions.
   2. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

C. Install tile in accordance with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of ANSI A108 series that are referenced in TCNA installation methods and specified in tile installation schedules, and apply to types of setting and grouting materials used.
   1. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
   2. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
   3. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
   4. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
      a. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
      b. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

D. Grout Sealer: Apply grout sealer to grout joints in accordance with manufacturer's written instructions. As soon as sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

E. Where wall tile abuts to epoxy base:
   1. Joints should be properly sealed to prevent the penetration of any foreign materials.
   2. Wall tile shall not be proud of epoxy wall base.
      a. Finish face of wall tile should be aligned with face of epoxy base

3.04 ADJUSTING AND CLEANING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile in accordance with tile and grout manufacturer's written instructions. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.05 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.06 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Wall Installations, Wood or Metal Studs or Furring:
   1. TCNA W245 : Thinset mortar on glass-mat, water-resistant gypsum backer board.
      a. Ceramic Tile Type: CWT-1 & CWT-2
      b. Thin set Mortar
      c. Grout
      d. Joint Width: 1/16" .
      e. Movement Joints: Types located on Drawings.

END OF SECTION 09 3013

SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.
   1. Extruded-Aluminum Edge Moldings and Trim.

1.02 REFERENCE STANDARDS

A. ASTM A580/A580M - Standard Specification for Stainless Steel Wire; 2023.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

D. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023, with Editorial Revision (2024).

E. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

F. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019 (Reapproved 2025).

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

H. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

I. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2024a.

J. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work of this section with installation of mechanical and electrical components and with other construction activities affected by work of this section.
   1. Review with affected installers those locations of facility services lines and equipment within ceiling plenum that prevent installation of hangers at spacings compliant with limitations established in referenced standards. Arrange for each affected mechanical or electrical installer to provide the necessary number of additional structural support points for ceiling installer.

B. Preinstallation Meeting: Convene one week before starting work of this section.

C. Sequencing: Schedule work of affected trades to minimize or eliminate installation conflicts and rework.
   1. Supply hanger clips during steel deck erection. Supply additional hangers and inserts as required.
   2. Ensure that acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved. Do not install acoustical units until after interior wet work is dry.

D. Do not install acoustical units until after interior wet work is dry.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Shop Drawings: Indicate all grid layouts and related dimensioning.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit two samples 6 by 6 inch (152 by 152 mm) in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 6 inches long, of suspension system main runner to demonstrate color, shape, and profile.

F. Manufacturer's Installation Instructions: Indicate special procedures.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 1 percent of total installed to be provided in manufacturer’s standard boxes.

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees Fahrenheit, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Basis of Design: USG Corporation, Mars Healthcare Acoustical Panels 86169.
      a. Armstrong World Industries, Inc.: www.armstrongceilings.com/#sle.
      b. CertainTeed Corporation: www.certainteed.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Suspension Systems:
   1. Same manufacturer as acoustical units.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Acoustical Panels, Type C-1 with the following characteristics:
   1. Classification: ASTM E1264 Type IV.
   2. Size and Thickness: 24” x 24”, ¾”.
   3. Performance Criteria: 0.75 NRC / 35 CAC.
   4. Panel Edge: square.
   5. Color: white.
   6. Suspension System: Donn AX/AXCE 15/16-inch Suspension System.
      a. Color: white.

2.03 CEILING PERFORMANCE REQUIREMENTS

A. Design for maximum deflection of 1/360 of span.

2.04 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
   1. Materials:

a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
b. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.

B. Acoustical Ceiling Tile System TYPE C1:
1. Hot-dipped galvanized steel grid and cap.
2. Application(s): Interior suspended ACT ceilings.
3. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
4. Recycled Materials Content: Classified as containing greater than 50 percent total recycled content. Available for specific sizes and lengths.
5. Profile: Tee; 15/16 inch face width.
6. Finish: Baked enamel.
7. Color: White.
8. Products:
a. Basis of Design: USG Corporation; DX 15/16 Inch Suspension System: www.usg.com/ceilings/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

C. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Suspend ceiling hangers from building's structural members.
1. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post-installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
2. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
3. Do not attach hangers to steel deck tabs.
4. Do not attach hangers to steel roof deck. Attach hangers to structural members.

B. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

C. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

D. Locate system on room axis according to reflected plan.

E. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
1. Use longest practical lengths.

F. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

I. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

J. Do not eccentrically load system or induce rotation of runners.

K. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Lay directional patterned units with pattern parallel to longest room axis.

D. Fit border trim neatly against abutting surfaces.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Cut to fit irregular grid and perimeter edge trim.
   2. Make field cut edges of same profile as factory edges.
   3. Double cut and field paint with two coats all exposed reveal edges.

G. Where round obstructions occur, provide preformed closures to match perimeter molding.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

C. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5100

SECTION 09 6513
RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025a.

B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

E. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015 (Reapproved 2020).

F. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 SUMMARY

A. Section Includes:
   1. Thermoplastic-rubber base.
   2. tair accessories.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:
   1. Product Data: For adhesives, indicating VOC content.
   2. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
   3. Product Data: For sealants, indicating VOC content.
   4. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.
   5. Laboratory Test Reports: For resilient base and stair products and accessories, indicating compliance with requirements for low-emitting materials.
   6. Environmental Product Declaration: For each product.

C. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

D. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

E. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials , from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.06 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
   1. Coordinate mockups in this Section with mockups specified in other Sections.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.08 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F , in spaces to receive resilient products during the following periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F .

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Verify products comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

B. Verify products comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.02 THERMOPLASTIC-RUBBER BASE

A. Manufacturers: Subject to compliance with requirements, provide one of the following:
   1. Allstate Flooring.
   2. Johnsonite; a Tarkett company. **(Basis of Design RB-1 & RB-2)**
   3. Roppe Corporation; Roppe Holding Company.

B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
   1. Group: I (solid, homogeneous) .
   2. Style and Location:
      a. RB-1, Cove: Provide in areas with resilient floor coverings as indicated on fiinsh schedule
      b. RB-2, Straight: Provide in areas with carpet as indicated on fiinsh schedule

C. Thickness: 0.12 inch .

D. Height: 4 inches .

E. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors: As selected by Architect and noted on Finish Legend.

2.03 STAIR ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide product by basis of design or equal:
   1. ULINE, 3M 610 Safety Walk (Basis of Design)

B. Profile and Dimensions: 2” x 60

C. Model #: S-16036

D. Locations: Staircase C ONLY
   1. Install Safety-Walk Tape on Existing Terrazzo Stair Nosings after cleaning & sealing. Refer to 093100 for Terrazzo cleaning & Sealing information.
   2. Apply product to each stair/change in surface height including stair treads and landings.

E. Colors and Patterns: Black

2.04 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
   1. Verify adhesives have a VOC content of 50 Insert value??? g/L or less and 60 g/L or less for rubber stair treads.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
   1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
   1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.03 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
      a. Form without producing discoloration (whitening) at bends.
   2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
      a. Miter or cope corners to minimize open joints.

3.04 STAIR ACCESSORY INSTALLATION

A. Prepare stair substrate according to manufacturer's written instructions to ensure adhesion of product.

B. Provide clean, dry, and smooth surface for maximum adhesion.

C. Place the strip parallel to the stair nosing

D. Set strip slightly back from nosing edge 1/2" to prevent premature peeling and edge wear.

E. Strip should be continuous across each stair tread with no seams.

F. Terminate strip into stair stringer at each side of each stair tread and cut to exact length.

3.05 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products and stair accessories.

B. Perform the following operations immediately after completing resilient-product installation:
   1. Remove adhesive and other blemishes from surfaces.
   2. Sweep and vacuum horizontal surfaces thoroughly.
   3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, adhesive, and blemishes from resilient stair treads before applying liquid floor polish.
   1. Apply coat(s).

E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 09 6513

SECTION 09 6519
RESILIENT TILE FLOORING

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025a.

B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

C. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2020.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 SUMMARY

A. Section Includes:
   1. Luxury Vinyl Tile
   2. Floor Transition

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:
   1. Product Data: For adhesives, indicating VOC content.
   2. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
   3. Product Data: For chemical-bonding compounds, indicating VOC content.
   4. Laboratory Test Reports: For chemical-bonding compounds, indicating compliance with requirements for low-emitting materials.
   5. Product Data: For sealants, indicating VOC content.
   6. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.
   7. Laboratory Test Reports: For flooring products, indicating compliance with requirements for low-emitting materials.
   8. Environmental Product Declaration: For each product.

C. Shop Drawings: For each type of resilient floor tile.
   1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
   2. Show details of special patterns.

D. Samples: Full-size units of each color, texture, and pattern of floor tile required.

E. Product Schedule: For floor tile. Use same designations indicated on Drawings.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.07 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.08 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
   1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
   1. Coordinate mockups in this Section with mockups specified in other Sections.
      a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.10 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 PRODUCTS

2.01 LUXURY VINYL FLOOR TILE (LVT-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Tarkett Commercial; Even Plane or comparable product by one of the following:
   1. Armstrong Flooring, Inc.
   2. Mannington Mills, Inc.

B. Thickness: [0.80mm].

C. Sizes: As indicated on the finish legend.

D. Colors and Patterns: As indicated on the finish legend.

2.02 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. Verify flooring products comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

C. Verify flooring products comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.03 ACCESSORIES

A. Metal Transition:
   1. Schluter: LVT to Existing Terrazzo **(Basis of Design TR-2)**
   2. Or Approved Equal
   3. Finish and Style selection from Manufacturers full range.
   4. Location: As inidcated on finish plan.

2.04 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
   1. Verify adhesives have a VOC content of 50 g/L or less.
   2. Verify adhesive complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.

4. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
    a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
    b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
    1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.03 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
    1. Lay tiles in pattern indicated.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
    1. Lay tiles with grain running in one direction.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking devices.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Accessories: Install according to manufacturer's written instructions.
    1. Transition: Install transition strip between LVT and adjacent Existing Terrazzo

3.04 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:
    1. Remove adhesive and other blemishes from surfaces.
    2. Sweep and vacuum surfaces thoroughly.

3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION 09 6519

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SECTION 09 6700
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resinous Epoxy flooring system and integral cove base.

B. Floor Transition

1.02 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of a cementitious urethane based self-leveling seamless flooring system with decorative quartz aggregate broadcast and Epoxy broadcast and topcoats.

B. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/4 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

C. Cove base to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.03 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 07 9200 - JOINT SEALANTS: Sealing joints between fluid-applied flooring and adjacent construction and fixtures.

C. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

D. Section 09 0561 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.04 REFERENCE STANDARDS

A. ANSI/ESD STM7.1 - Standard Test Method for the Protection of Electrostatic Discharge Susceptible Items Flooring Systems Resistive Characterization; 2020.

B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

C. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

D. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

E. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available; and installation procedures..

C. Manufacturer’s Safety Data Sheet (SDS)

D. Samples: Submit two samples, 12" by 12"square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

F. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and application rate for each coat.

G. Manufacturer's Qualification Statement.

H. Applicator's Qualification Statement.

I. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Top Coat Materials: 2 gallons.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum 10 years documented experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.

B. Applicator Qualifications: Company specializing in performing the work of this section. Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
   1. Approved by Manufacturer
   2. References of at least 5 jobs of similar size and type

C. A pre-installation conference shall be held for review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

D. Supervisor Qualifications: Trained by product manufacturer , under direct full time supervision of manufacturer's own foreman.

1.07 DELIVERY, STORAGE, AND HANDLING

A. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.

B. Store resin materials in a dry, secure area.

C. The area shall be between 60 F and 85, dry, out of direct sunlight and in accordance with Manufacturer's recommendations and relevent health and safety regulations.

D. Store materials for three days prior to installation in area of installation to achieve temperature stability.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fluid-Applied Flooring:
   1. Life Specialty Coatings: www.lifespecialtycoatings.com/#sle.
   2. Sherwin-Williams Company: www.flooring.sherwin-williams.com/#sle. **(Basis of Design)**
   3. Terrazzo & Marble Supply Companies;[____]: www.tmsupply.com/#sle.
   4. Substitutions: See Section 016000 - Product Requirements
      a. Manufacturer of Approved System shall be single source and made in the USA.
      b. Alternates must be approved 10 days prior to bid

2.02 HIGH PREFORMANCE RESINOUS FLOORING SYSTEMS

A. Sherwin-Williams Hybri-Flex EQ (self leveling broadcast quartz), epoxy/aliphatic urethane topcoat seamless flooring system. **(EP-1)**
   1. System Materials:
      a. Topping: Sherwin-Williams Poly-Crete SL resin, hardener and SL aggregate.
      b. The broadcast aggregate shall be Sherwin-Williams Q11 quartz aggregate.

c. Broadcast: Sherwin-Williams Resuflor Glaze epoxy based two-component resin.
d. Grout Coatcoats: Sherwin-Williams Resuflor Glaze Clear, epoxy-based, resin and hardener.
e. Top coat: Sherwin-Williams Resutile AT aliphatic urethane two-component resin.
f. Colors: Selected by Architect from Manufacturers full range.

2. Patch Materials
   a. Shallow Fill and patching: Use Sherwin Williams Poly-Crete MD (up to 1/4 inch).
   b. Deep Fill and Sloping Material (over 1/4 inch): Use Sherwin WIlliams Poly-Crete WR or Cemlack UM.
3. Integral 4" Cove Base with squared top
   a. Thickness: 5/16" MIN.
      1) Cove Base should be flush with tile surface

2.03 PRODUCT REQUIREMENTS

A. Topping: Poly-Crete SL
   1. Percent Reactive: 100%
   2. VOC: 0 g/L
   3. Bond Stregth to COncrete ASTM D 4541: 400 psi, substrate fails
   4. Compressive Strength, ASTM C 579: 9,000 psi
   5. Tensile Strength, ASTM D 638: 2,175 psi
   6. Flexural Strength, ASTM D 790: 5,076 psi
   7. Impact Resistance @ 125 mils, MIL D-3134, no visible damage: 160 inch lbs

B. Broadcast Coat: Resuflor Glaze
   1. Percent Reactive: 100%
   2. VOC: <4 g/L
   3. Water Absorption, ASTM D 570: 0.04%
   4. Tensile Strength, ASTM D638: 4,000 psi
   5. Coefficient of thermal expansion ASTM D 696: 2x10 in/inF
   6. Flammability ASTM D-635: Self-Extinguishing
   7. Flame Spread/NFPA 101 ASTM E-84: Class A

C. Grout Coat: Resuflor Glaze
   1. Percent Reactive: 100%
   2. VOC: <4 g/L
   3. Water Absorption, ASTM D 570: 0.04%
   4. Tensile Strength, ASTM D 638: 4,000psi
   5. Coefficient of thermal expansion ASTM D 696: 2x10 in/in/F
   6. Flammability ASTM D-635: Self-Extinguishing
   7. Flame Spread/ NFPA 101 ASTM E-84: Class A

D. Topcoat: Resutile AT
   1. VOC: 0 g/L
   2. 60 Degree Gloss ASTM D523: 75+/-5
   3. Mixed Viscosity, (Brookfield
   4. Tensile strength, ASTM D 638: 7,000 psi
   5. Abrasion Resistance, ASTM D4060: Satin 8mg loss with grit
   6. Pot Life @ 70 degrees F 50% RH: 2 Hours
   7. Dry Properties, 70 degrees F, 50% RH : 8 hours tack free, 12 hours dry.
   8. Dry Properties, 60 degrees F, 30% RH: 12 hours tack free. 18 hours dry.
   9. Flash Point PMCC: 186 degree F
   10. Full Chemical Resistance: 7 days

2.04 ACCESSORIES

A. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

B. Primer: Type recommended by fluid-applied flooring manufacturer.

C. Metal Transition:
   1. Schluter: Epoxy Flooring System to LVT **(Basis of Design TR-1)**
   2. Or Appoved Equal
   3. Finish and Style from Manufacturer's full range.
   4. Location: As indicated on finish plan.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.

C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
      b. Internal Relative Humidity: ASTM F2170.
      c. Moisture Vapor Emission: ASTM F1869.
   2. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

B. Prepare concrete surfaces according to ICRI 310.2R, CSP 4.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

E. Apply primer to surfaces required by flooring manufacturer.

3.03 INSTALLATION - ACCESSORIES

A. Install fillet strips at base of walls where flooring is to be extended up wall as base.

B. Install terminating cap strip at top of base in areas where wall tile does not abut; attach securely to wall substrate.

C. Install transition strip between Epoxy Flooring System and adjacent LVT **(TR-1)**

3.04 INSTALLATION - FLOORING

A. General:
   1. The system shall be applied in five distinct steps as listed below;
      a. Substrate preperation
      b. Topping/overlay application with chip broadcast.
      c. Resin application with chip broadcast.
      d. Grout Coat application.

e. Topcoat application.

2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be preformed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the applicator.
6. Apply each coat to minimum thickness required by manufacturer.
7. Finish to smooth level surface.

B. Topping
1. The topping shall be applied as a self-leveling system as specified by the Architect. The topping shall be applied in one lift with a nominal thickness of 1/8 inch.
2. The topping shall be comprosed of three components, a resin, hardener and filler as supplied by the Manufacturer.
3. The hardner shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. SL Aggregate shall then be added to the catalyzed mixture and mixed in a manner to achieve a homogenous blend.
4. The topping shall be applied over horizontal surfaces using 1/2" "V" notched squeegee, trowels or other systems approved by the Manufacturer.
5. Immediately upon placing, the topping shall be degassed with a loop roller.
6. Chip aggregate shall be broadcast to excess into the wet resin, Macro chip at the rate of 0.1 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose chips.

C. Broadcast
1. The broadcast coat resin shall be applied at the rate of 100 sf/gal.
2. The broadcast coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
3. Chip aggregate shall be broadcast into the wet resin, Macro Chips at the rate of 0.1 lbs/sf.
4. Allow material to fuilly cure. Vacuum, sweep and/or blow to remove all loose chips.

D. Grout Coat
1. The grout coat shall be squeegee applied with a coverage rate of 100 sf/gal.
2. The grout coat will be back rolled and cross rolled to provide a uniform texture and finish.

E. Top Coat
1. The topcoat with grit shall be roller applied with a coverage rate of 500 sf/gal.
2. The finish floor will have a nominal thickness of 3/16 inch.

F. Apply in accordance with manufacturer's instructions.

G. Apply each coat to minimum thickness required by manufacturer.

H. 4" Cove at vertical surfaces with squared top.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Test installed floor surface in accordance with ANSI/ESD STM7.1 .

C. Tests, Inspection
1. The following tests shall be conducted by the Applicator:
a. Temperature
1) Air, substrate

D. Coverage Rates
   a. Rates for all layers shall be monitored by checking quantity of material used against the are covered

3.06 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Barricade area to protect flooring until fully cured.

END OF SECTION 09 6700

SECTION 09 6813
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Floor Transition

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 0561 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016 (Reapproved 2021).

B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025a.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

F. CRI 104 - Standard for Installation of Commercial Carpet; 2018.

G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Shop Drawings: Indicate layout of joints.

D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

E. Accessory Samples: Submit two 6" inch long samples of edge strip, base cap, stair nosing, and Transitions..

F. Sustainable Design Submittal: Submit VOC content documentation for adhesives.

G. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

H. Manufacturer's Qualification Statement.

I. Installer's Qualification Statement.

J. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

K. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. Mannington Commercial; _____: www.manningtoncommercial.com#sle.
   2. Mohawk Group; ____: www.mohawkgroup.com/#sle.
   3. Tarkett North America, www.tarkett.com. (**Basis of Design EM-1)**
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Tile Carpeting, Type C-1: Tufted, manufactured in one color dye lot.
   1. Product: Tarkett Abrasive Action II **(Basis-of Design EM-1)**
   2. Tile Size: As indicated on Finish Legend
   3. Color: As indicated on Finish Legend.
   4. Dye Method: 100% Solution Dyed.
   5. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
   6. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
   7. Install Method: As indicated on Finish Legend

2.03 ACCESSORIES

A. Subfloor Filler: High-preformance, fast setting, cementitious material for patching concrete surfaces.
   1. Basis-of-Design Product or approved substitution:
      a. Mapei, Quickpatch
         1) Follow manufacturer's written instructions for application.

B. Subfloor Primer: All-Purpose Primer for Self-Leveling Underlayments.
   1. Basis-of-Design Product or approved substituion:
      a. Mapei, Primer T
         1) Follow manufacturer's written instructions for application.

C. Self-Leveling Underlayment: High Strength, self -leveling, cement-based underlayment and repair mix for interior concrete.
   1. Basis-of-Design Product: or approved substitution:
      a. Mapei, Novoplan 2 Plus
         1) Follow manufacturer's written instructions for application.

D. Metal Transition:
   1. Schluter: Entry Mat to Existing Terrazzo **(Basis of Design TR-3)**
   2. Or Approved Equal
   3. Finish and Style selection from manufacturers full range.
   4. Location: As indicated on finish plan.

E. Adhesives:
   1. Compatible with materials being adhered; maximum VOC content as specified in Section 01 6116.

F. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
      b. Internal Relative Humidity: ASTM F2170.
      c. Moisture Vapor Emission: ASTM F1869.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Fully adhere carpet tile to substrate.

G. Trim carpet tile neatly at walls and around interruptions.

H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION 09 6813

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SECTION 09 9113
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Exposed surfaces of steel lintels and ledge angles.
   3. Salvaged exterior areaway grates and associated hardware.
   4. Exterior galvanized structural steel at main canopy.
   5. Exterior galvanized metal railings.
   6. Bollards.
   7. Existing to remain gutter assemblies.
   8. New scupper boxes and down spouts.
   9. New gutter assemblies and associated components.
   10. Interior face of exterior concrete areaways.

B. Surface preparation.
   1. All surfaces to receive new exterior paint finishes are to be fully cleaned and primed per paint manufacturer's recommendations.
   2. Refer to additional information in Part 3.

C. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
   7. Marble, granite, slate, and other natural stones.
   8. Floors, unless specifically indicated.
   9. Ceramic and other types of tiles.
   10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster, and stucco.
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED SECTIONS

A. Section 01 6116 – Volatile Organic Compound (VOC) Content Restrictions.

B. Section 05 0513 – Shop-Applied Coatings for Metal.

1.03 REFERENCE STANDARDS

A. ASTM D2370 - Standard Test Method for Tensile Properties of Organic Coatings; 2016 (Reapproved 2021).

B. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

F. SSPC-SP 2 - Hand Tool Cleaning; 2024.

G. ASTM D522/522M – Flexibility.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. See Section 01 6116 – Volatile Organic Compound (VOC) Content Restrictions.

C. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.

D. Samples: For each type of paint system and each color and gloss of topcoat indicated, submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating colors selected for each finishing product specified.

E. Product List: For each product indicated, include the following:
   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

F. Manufacturer's Instructions: Indicate special surface preparation procedures.

G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. MPI Standards:
   1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
   2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees Fahrenheit for exterior; unless required otherwise by manufacturer's instructions.

1.08 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
   1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:
   1. Benjamin Moore & Co.
   2. Sherwin-Williams Company (The).
   3. ICI Paints.
   4. PPG Architectural Finishes, Inc.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.

B. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another,
   2. and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   3. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. Volatile Organic Compound (VOC) Content: Comply with Section 01 6116.

D. Flammability: Comply with applicable code for surface burning characteristics.

E. Colors: As indicated in Color Schedule.

2.03 PAINT SYSTEMS - EXTERIOR

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another, and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.

B. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including primed metal.
1. Two top coats and one coat primer.
2. Top Coat(s): Exterior Alkyd Enamel.
3. Top Coat Sheen:
a. Gloss: MPI gloss level 6; use this sheen at all locations.

2.04 PRIMERS

A. Primers: Provide primers as recommended by manufacturer of top coats, refer to exterior paint finish schedule.

B. VOC Content: E Range of E2.

2.05 EXTERIOR ALKYD PAINTS

A. Exterior Alkyd Enamel (Gloss): MPI #9 (Gloss Level 6).

B. VOC Content: E Range of E1.
1. Benjamin Moore: Benjamin Moore - Urethane Alkyd Gloss Enamel; No. M22.
2. ICI Paints: Devoe Coatings - Devguard Alkyd Enamel; No. 4308-0100.

C. VOC Content: E Range of E2.
1. PPG: Speedhide l - Ext. Alkyd Enamel – Gloss; No. 6-282.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

E. Clean surfaces thoroughly and correct defects prior to application.

F. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

G. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

H. Seal surfaces that might cause bleed through or staining of topcoat.

I. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

J. Areaway Surfaces:
   1. Fully power wash interior faces of concrete areaways to be clean of all residues and spray paints.
   2. Allow to fully dry before painting.

K. Existing exterior areaway grates:
   1. Existing steel areaway grates and associated hardware to be salvaged and removed.
   2. Fully sandblast all rust off of the grates and associated hardware; all surfaces to be fully prepared for new paint finish.
   3. Allow to fully dry before painting.

L. Existing to remain copper gutters:
   1. Fully clean exterior surfaces of existing to remain gutter assemblies and remove all remnants of previous roofing sealants, mastics, etc.
   2. Lightly sand the existing gutter assemblies prior to priming to ensure adequate paint molecular adhesion.
   3. Allow to fully dry before painting.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Sand metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

H. At areaways, fully paint all interior sides of existing areaways and associated hardware.

3.04 INSTALLATION

A. For areaway grates and associated hardware, reinstall in the same locations.

3.05 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

B. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.07 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.08 EXTERIOR PAINT SCHEDULE

A. Type P-6:
   1. Locations:
      a. Exterior Areaway Grates, and all associated accessories.
      b. New scupper boxes, downspouts, and all associated accessories.
   2. Basis of Design: Benjamin Moore
      a. Primer: V110 Corotech Acrylic Metal Primer.
         1) One Coat.
      b. Topcoat: V330 Corotech DTM Gloss Enamel.
         1) Two Coats.
   3. Type: Urethane alkyd gloss enamel no. M22.
   4. Finish: Gloss.
   5. Color: refer to finish schedule.

B. Type P-7:
   1. Locations:
      a. Main canopy structural galvanized steel and all associated components.
   2. Basis of Design: Benjamin Moore
      a. Primer: V110 Corotech Acrylic Metal Primer.
         1) One Coat.
      b. Topcoat: V330 Corotech DTM Gloss Enamel.
         1) Two Coats.
   3. Type: Exterior alkyd enamel MPI EXT 5.3B.
   4. Finish: Gloss.

5. Color: refer to finish schedule.

C. Type P-7:
   1. Locations:
      a. Existing to remain copper gutter assemblies.
   2. Basis of Design: Benjamin Moore
      a. Primer: V175 Corotech Waterborne Bonding Primer.
         1) One Coat.
      b. Topcoat: V330 Corotech DTM Gloss Enamel.
         1) Two Coats.
   3. Type: Exterior alkyd enamel MPI EXT 5.3B.
   4. Finish: Gloss.
   5. Color: refer to finish schedule.

D. Type P-8:
   1. Locations:
      a. Interior side only of exterior lower-level concrete areaways.
   2. Basis of Design: Benjamin Moore Element Guard 765.
      a. Primer: Ultra Spec Masonry Interior/Exterior Hi-Build Block Filler 571.
         1) One Coat.
      b. Topcoat: Benjamin Moore Element Guard 765.
         1) Two Coats.
   3. Type: 100% Acrylic Resin.
   4. Finish: Soft gloss.
   5. Color: refer to finish schedule.

END OF SECTION 09 9113

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SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes surface preparation and the application of paint systems on the following substrates:
   1. Concrete masonry units (CMU).
   2. Steel, interior.
   3. Hollow metal Doors and frames.
   4. Metal stiles and railings
   5. Gypsum Board
   6. Popcorn Ceiling

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
   1. Painting includes field painting or exposed bare and covered pipes and ducts, conduits, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
      a. Painting and overspray of telecom cabling including Cat 6, Cat 6A, coaxial and fiber optic cable is not permitted.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts and labels.
   1. Prefinished items include the following factory-finished components:
      a. Architectural casework
      b. Prefinished wood doors.
      c. Elevator entrance doors
      d. Elevator equipment
      e. Finished mechanical and electrical equipment.
      f. Light fixtures and wiring devices.
      g. Switchgear.
      h. Distribution cabinets in closets or equipment rooms.
   2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
      a. Furred areas.
      b. Ceiling plenums.
      c. Pipe spaces.
      d. Duct Shafts.
      e. Elevator Shafts.
   3. Finished metal surfaces include the following:
      a. Anodized or coated aluminum
      b. Stainless Steel
      c. Chromium plate.
      d. Copper and copper alloys.
      e. Bronze and brass.
   4. Operating parts include moving parts of operating equipment and the following:

a. Valve and damper operators.
b. Linkages.
c. Sensing devices.
d. Motor and fan shafts.

5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating or nomenclature plates.

D. Related Sections include the following:
1. Section 05 “Structural Steel Framing” for shop priming structural steel.
2. Section 05 "Metal Fabrications" for shop priming ferrous metal fabrications.
3. Section 05 "Metal Stairs" for shop priming ferrous metal.
4. Section 06 "Interior Architectural Woodwork” for items indicated to be field finished by this section.
5. Section 08 “Hollow Metal Doors and Frames” for factory primed steel doors and frames.
6. Division 09 Section “Gypsum Board Assemblies” for surface preparation of gypsum board.
7. Division 23 and 26 Sections for painting of mechanical and electrical equipment.

1.03 DEFINITIONS

A. General: Standard coating terms defined in ASTM D16 apply to this Section.
1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Full gloss refers to a high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.04 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

B. SSPC-PA 1 - Shop, Field, and Maintenance Coating of Metals; 2024, with Errata (2025).

C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

D. SSPC-SP 2 - Hand Tool Cleaning; 2024.

E. SSPC-SP 3 - Power Tool Cleaning; 2024.

F. SSPC-SP 7/NACE No.4 - Brush-Off Blast Cleaning; 2007.

G. SSPC-SP 11 - Power-Tool Cleaning to Bare Metal; 2020.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.
1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer’s catalog number and general classification.
2. Manufacturer’s Information: Manufacturer’s technical information, including label analysis and instructions for handling, storing, and applying each coating material.
3. Indicate VOC content.

B. Sustainable Design Submittals:
1. Product Data: For paints and coatings, indicating VOC content.
2. Laboratory Test Reports: For paints and coatings, indicating compliance with requirements for low-emitting materials.
3. Environmental Product Declaration: For each product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
   1. Submit Samples on rigid backing, 8 inches square.
   2. Apply coats on Samples in steps to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

D. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

1.07 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
      a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
      b. Other Items: Architect will designate items or areas required.
   2. Final approval of color selections will be based on mockups.
      a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
   3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.09 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 PRODUCTS

2.01 MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
   1. Sherwin-Williams Co.
   2. PPG Industries Inc. (PPG).
   3. Benjamin Moore & Co., including affiliate brand Coronado and Corotech.

2.02 PAINT PRODUCTS, GENERAL

A. Material Compatibility:
   1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. Material Emissions and Pollutant Control: Verify not less than 85 percent of field-applied paints and coatings that are inside the weatherproofing system comply with one of the following:
   1. Low-Emitting Materials: Verify VOC emissions comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Verify formaldehyde emissions do not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

C. Emissions Requirements: Verify field-applied paints and coatings that are inside the weatherproofing system comply with one of the following:
   1. Low-Emitting Materials: Verify VOC emissions comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

D. Colors: As indicated in a color finish legend.

2.03 CONCRETE UNIT MASONRY BLOCK FILLERS

A. Concrete Unit Masonry Block Filler: Factory -formulated high-performance latex block fillers. (50g/L)
   1. Sherwin-Williams; Prep Rite Block Filler B2525: Applied at a dry film thickness of not less than 8.0 mils.
   2. Benjamin Moore; Ultra Spec Hi-Build Masonry Block Filler 571: Applied at a dry film thickness of not less than 10 mils.
   3. PPG; 6-7 SpeedHide Interior/Exterior Masonry Latex Block Filler: Applied at a dry film thickness of not less than 7.1 mils.

2.04 INTERIOR PRIMERS

A. General: Provide tinted primers as required for dark colors.

B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application. (100 g/L).
   1. Sherwin Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.
   2. Benjamin Moore, Ultra Spec 500 Interior Latex Primer N534: Applied at a dry film thickness of not less then 1.8 mils.
   3. PPG: 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less then 1.0 mil.

C. Interior Metal Primer: Factory-formulated metal primer (250 g/L)
   1. Sherwin Williams; Pro Industrial Pro-Cryl Universal Acrylic Primer B66 Series: Applied at a dry film thickness of not less than 2.0 mils.
   2. Benjamin Moore; Ultra Spec HP DTM Acrylic Metal Primer No. HP04: Applied at a dry film thickness of not less than 1.7 mils.
   3. PPG; 90-912 Series Pitt-Tech Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 2.0 mils.

D. Interior/ Exterior Latex Primer/Sealer: Factory-formulated Parched Concrete primer
   1. Basis of Design Product: Sherwin Williams; PrepRite ProBlock Interior-Exterior Latex Primer-Sealer: Applied at a dry film thickness of not less than 1.4 mils.
   2. Benjamin Moore equal
   3. PPG equal

E. Interior Popcorn Ceiling Primer:

1. Sherwin Williams; ProBlock Premium All-Prupose Water-Based Interior Primer. Applied at a dry film thickness 1-1.5 mils.
2. Benjamin Moore equal
3. PPG equal

2.05 INTERIOR PAINTS

A. Interior, Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application ceilings and soffits(50g/L).
   1. Sherwin Williams; ProMar 200 Zero VOC B30-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
   2. Benjamin Moore, Ultra Spec 500 Interior Flat T535: Applied at a dry film thickness of not less than 1.8 mils.
   3. PPG: 6-70 Series Speedhide Interior Latex Flat: Applied at a dry film thickness of not less than 1.3 mils.

B. Interior, Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel for walls (100 g/L).
   1. Sherwin Williams; ProMar 200 Zero VOC Interior Latex Eggshell enamel B20-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
   2. Benjamin Moore, Ultra Spec 500 Interior Eggshell T538: Applied at a dry film thickness of not less than 1.8 mils.
   3. PPG: 6-411 Series Speedhide Interior Enamel Latex Eggshell: Applied at a dry film thickness of not less than 1.5 mils.

C. Interior, Semi-gloss Acrylic Enamel for Metal Surfaces: Factory-formulated semi-gloss acrylic-latex interior enamel (250 g/L).
   1. Sherwin Williams; Pro Industrail Acrylic B66 Series Semi-Gloss: Applied at a dry film thickness of not less than 2.5 mils.
   2. Benjamin Moore, Ultra Spec HP DTM Acrylic Semi-gloss Enamel HP29: Applied at a dry film thickness of not less than 1.5 mils.
   3. PPG: 4216HP Series Pitt-Tech Plus High Performance Waterborne DTM Acrylic Semi-gloss: Applied at a dry film thickness of not less than 2.0 mils.

D. Interior Acrylic Enamel (Flat Dryfall): Factory-formulated enamel for overhead interior application ceilings and structural framing (150 g/L).
   1. Coronado Paint; Super Kote 5000 Latex Flat Dry Fall 110 Line: Applied at a dry film thickness of not less than 1.5 mils.
   2. PPG; SpeedHide Super Tech WB Interior Dry-Fog Flat Latex 6-725XI: Applied at a dry film thickness of not less than 2.2 mils.
   3. Sherwin Williams; Low VOC Waterborne Acrylic Dryfall Flat B42W00081; Applied at a dry film thickness of not less than 1.7 mils.

E. Interior, Low-Luster Pre-Catalyzed Waterbased Epoxy: Factory formulated interior enamel.
   1. Basis of Design Product: Subject to compliance with requirements, provide Sherwin Williams; Pro Industrial Pre-Catalyzed Water Based Epoxy, or comparable product by one of the following.
      a. Benjamin Moore.
      b. PPG
   2. Colors: As indicated on Finish Legend.

F. Interior, Water-Based, Polyurethane/ Acrylic Metallic Coating:
   1. Basis of Design Product Subject to compliance with requirements, provide Scuffmaster; Solid Metal, or comparable product by one of the following.
      a. Modern Masters.
      b. Precision Coatings, PC3.
   2. Base Coat: Water-based polyurethane/ acylic base coat and cross-linker.

a. Basis of Design: Scuffmaster MC2000.
3. Clear Coat: Water-based polyurethane/acrylic base coat and cross-linker.
a. Basis of Design: Scuffmaster Ultra-Clear Satin
4. Colors: As indicated on Finish Legend.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
2. Masonry (Clay and CMUs): 12 percent.
3. Wood: 15 percent.
4. Gypsum Board: 12 percent.

C. Gypsum Board Substrates: Verify that the finishing compound is sanded smoothly.

D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

E. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify Construction Manager about anticipated problems when using the materials specified over substrates primed by others.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair the bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

E. Existing Masonry Substrates: For existing painted masonry and glazed masonry surfaces indicated to receive paint, comply with the following:
1. Remove all loose coatings and feather sand sharp edges.
2. Clean the entire surface with a hot water degreasing solution in accordance with SSPC-SP 1.
3. Rinse the entire area with clean hot water and allow it to dry.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
1. SSPC-SP 2.

2. SSPC-SP 3.
3. SSPC-SP 7/NACE No.4.
4. SSPC-SP 11.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Aluminum Substrates: Remove loose surface oxidation.

I. Gypsum Board Substrates: Do not begin paint application until the finishing compound is dry and sanded smooth.

J. Popcorn Substrate: Do not begin primer or paint application until the finishing compound is fully cured and dry. Look for flaking, failing aggregate, or powdering surface.

3.03 APPLICATION

A. Apply paints according to manufacturer's written instructions.
1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint the front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in occupied spaces:
a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Duct, equipment and pipe insulation or other paintable jacket material.
h. Other items as directed by Architect.
2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.04 FIELD QUALITY CONTROL

A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.

2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.05 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
   1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
   2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
   3. Allow empty paint cans to dry before disposal.
   4. Collect waste paint by type and deliver to recycling or collection facility.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 INTERIOR PAINTING SCHEDULE

A. Concrete Unit Masonry: Provide the following finish systems over interior concrete masonry:
   1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a filled surface.
      a. Block Filler: Concrete unit masonry block filler.
      b. Finish Coats: Interior low-luster acrylic enamel.

B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
   1. Flat Acrylic Finish (ceilings): Two finish coats over a primer.
      a. Primer: Interior gypsum board primer.
      b. Finish Coats: Interior flat acrylic paint.
   2. Low-Luster Acrylic Enamel Finish (Walls): Two finish coats over a primer.
      a. Primer: Interior gypsum board primer.
      b. Finish Coats: Interior low-luster acrylic enamel.
   3. Water-Based Light-Industrial Coating System over Epoxy Primer System
      a. Prime Coat: Anticorrosive epoxy primer.
      b. Intermediate Coat: Matching topcoat.
      c. Topcoat: Interior, water-based, light-industrial coating.

C. Ferrous and Zinc-Coated Metal: Provide the following finish systems over ferrous metal:
   1. Semi-gloss Acrylic Enamel Finish: Two Finish coats.
      a. Primer: Metal primer, including surfaces with factory prime coat.
      b. Finish Coats: Interior semi-gloss acrylic enamel for metal surfaces.

D. Exposed Structure: Provide the following finish system over exposed metal roof deck and steel structure:
   1. Flat Dryfall Acrylic-Enamel Finish: One finish coat.
      a. Primer: None required for DTM products.
      b. Finish Coats: Interior acrylic dryfall.

E. Popcorn Ceiling: Provide the following finish systems over interior popcorn ceiling:
   1. Flat Acrylic Finish (ceilings): Two finish coats over a primer.
      a. Primer: Popcorn ceiling primer.

b. Finish Coats: Interior flat acrylic paint.

END OF SECTION 09 9123

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SECTION 10 1423
PANEL SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Panel signage.
   1. Interior room identification signs

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's product literature for each type of panel sign, indicating styles, font, foreground and background colors, locations, and overall dimensions of each sign.

C. Shop Drawings:
   1. Show drawing of each sign type with all text, tactile characters, pictorials, and braille must be submitted for review.
   2. Include dimensions, locations, elevations, materials, text and graphic layout, attachment details, and schedules.
   3. Schedule: Provide information sufficient to completely define each panel sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
      a. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
      b. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
      c. Submit for approval by Owner through Architect prior to fabrication.

D. Samples: Submit two samples of each type of sign, of size similar to that required for project, indicating sign style, font, and method of attachment.

E. Selection Samples: Where colors, materials, and finishes are not specified, submit two sets of color selection charts or chips from manufacturers full range.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

G. Manufacturer's qualification statement.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store under cover and elevated above grade.

D. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain minimum ambient temperature during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Panel Signage:
1. Best Sign Systems, Inc; ____: www.bestsigns.com/#sle.
2. GC Signs
3. Takeform: www.takeform.net/#sle. **(Basis of Design)**
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Accessibility Requirements: Comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most restrictive requirements.

2.03 INTERIOR INFORMATIONAL SIGN STANDARDS

A. It is the intent of these specifications to establish a sign standard for the owner including, but not limited to promary and secondary directories, wall mounted

B. Type Style: Copy shall be true, clean, accurate reproduction of typeface specified.

C. Upper case, unless otherwise noted, in Futura Medium font.

D. Letter spacing to be normal and interline spacing shall be set by manufacturer.

E. Arrows, symbols and logo art: As selected by Architect from manufacturers standard styles, sizes, colors and spacing.

F. Grade II Braille utilizing perfectly round, clear insertion beads.

G. Colors & Finishes
1. Typography: As Selected by Architect from Manufacturer's full range
2. Colors, patterns and artwork and message background shall be selected from manufacturer's full range.
3. Finishes are to meet current Federal ADA and all state and local requirements.

2.04 INTERIOR ROOM SIGNS

A. Manufacturers:
1. Takeform Architectural Graphics (Basis of Design)
2. Or approved Substitution.

B. Signage System:
1. The signage shall be a direct print acrylic sign system with applied graphics including all tactile requirements in adherence to ADA specifications.
2. Signage shall be capable of accepting direct prints including colors, patterns, graphic images and photography. Prints should be second surface to protect from scratches, fading or other damage.
3. All signs, including room ID's, directionals and directories shall have a matching appearance and constructed utilizing the same manufacturing process to ensure a consistent look throughout.

C. Materials:
1. Signage should be fabricated of acrylic, .375" thick, comprised of two layers. Edges shall be smooth without chips, burrs, sharp edges or marks. The direct print shall be second surface to prevent scratching, fading or other damage.
2. Acrylic shall be non-glare optically clear with P99 finish assuring no loss of clarity or composition to the print.
3. Tactile lettering shall be precision machined, raised 1/32", matte PETG and subsurface colored for scratch resistance.

4. The signage shall utilize an scrylic sphere for grade II Braille inserted directly into a scratch resistant, acrylic face. Braille dots are to be pressure fit in high tolerance drilled holes. Braille dots shall be half hemispherical dmed and protrusing a minimum 0.025".
5. The signage shall utilize a pressure activated adhesive. The adhesive shall be nonhazardous and shall allow for flexing and deflection of the adhered components due to changes in temperature and humidity without bond failure.
6. Signage shall have an acrylic shim plate. The shim shall lift the sign off the wall to facilitate cleaning and painting without removal.
7. All signs shall be provided with appropriate mounting hardware. All hardware shall have a polished anodized finish, architectural in appearance and suitable for the mounting surface.
8. Some signs may be installed on glass. A blank backer is required to be placed on the opposite side of the glass to cover tape and adhesive. The backer shall match the sign in size and shape.

D. Colors, Patterns, Imagery and Artwork
1. Vendor shall provide an online library of images including patterns, graphics, and photography. The library shall be organized by idea or theme to facilitate the selection of images appropriate for this project.
2. All images shall have a minimum resolution approved by the Architect.
3. Face and background colors shall be selected by Architect from manufacturers full range
4. Standard tactile colors shall match manufacturer's ADA standard color selection. Font and font colors shall be per the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

C. Installer shall examine signs for defects, damage and compliance with specifications. Installation shall not proceed until unsatisfactory conditions are corrected.

3.02 DELIVERY, STORAGE, PROTECTION

A. Package to prevent damage or deterioration during shipment, handling, storage and installation.

B. Products should remain in original packaging until removal is necessary.

C. Store products in a dry, indoor location.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install with horizontal edges level.

C. Locate panel signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Protect from damage

E. Mount room signs with adhesive tape.

3.04 SIGN QUANTITIES

A. Room Identification Signs:
1. 2 Line Sign: Sign with text and braille for room name and number at each permanent room.
a. Provide one sign per room, at specified location on the signage schedule, unless noted otherwise.

b. Text: See Signage Schedule
c. **Total Type 2: 1**

2. Toilet Rooms Signs: Sign with pictogram, accessibility symbol, text, and braille for Restrooms. Install at each accessible toilet room door.
   a. UNISEX (Pictogram Accessibility Symbol)
   b. **Total Type 1: 1**
3. WOMEN (Pictogram Female & Accessibility Symbol)
   a. **Total Type 1A: 1**
4. MEN- (Pictogram Male & Accessibility Symbol)
   a. **Total Type 1B: 1**

3.05 SIGNAGE SCHEDULE & SIGNAGE SKETCHES

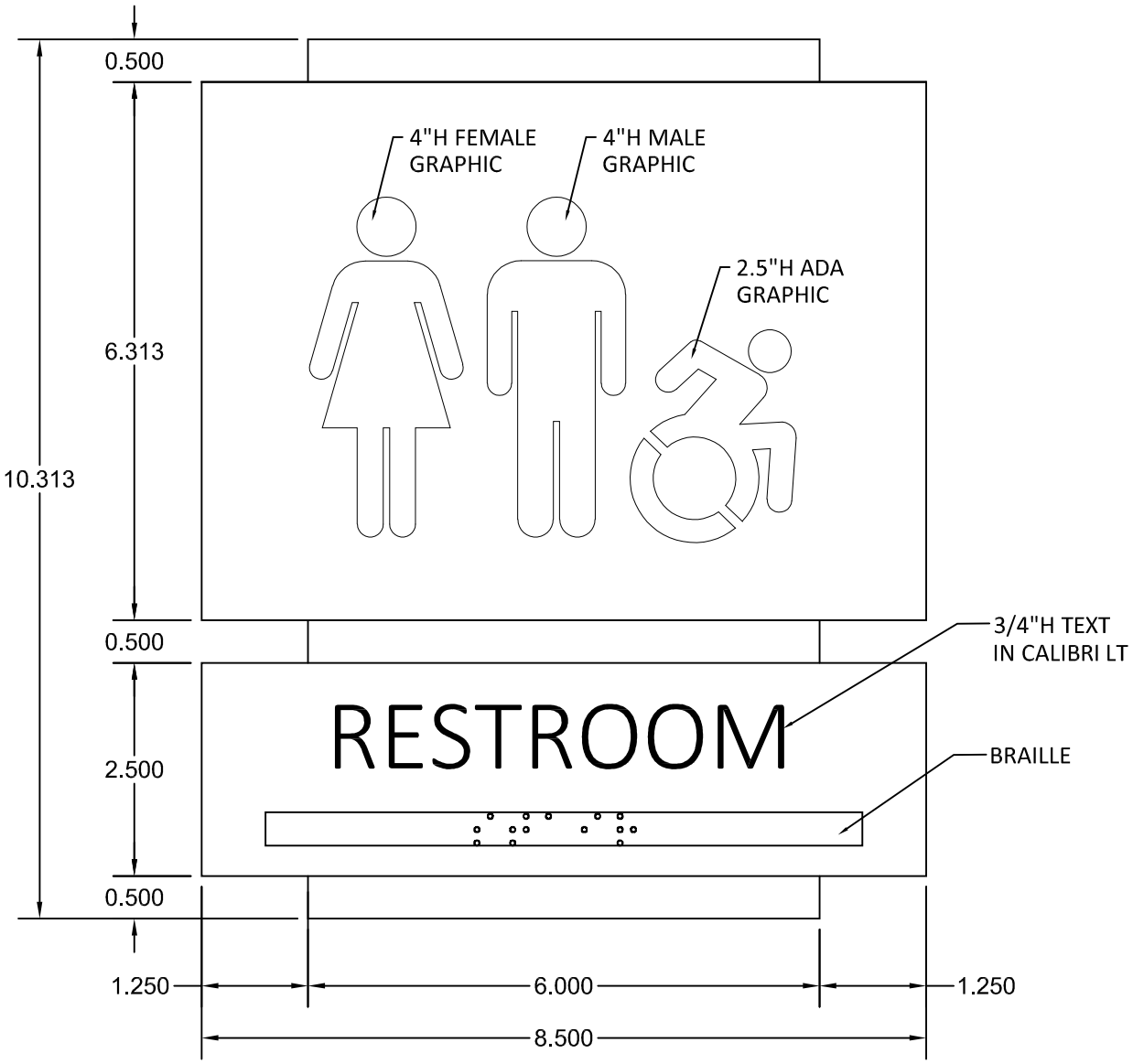
A. Refer to Signage Schedule attached at the end of this section.

B. Refer to Sign Layout Drawings attached at the end of this section.

END OF SECTION 10 1423

Arch Room #	Door # (Location)	Sign Text -1	Sign Text-2	Sign Text -3	Sign Type	Qty	Mtg.
104	104	CUSTODIAN	104		2	1	WALL
105	105	RESTROOM	W/ ADA SYMBOL & FEMALE PICTOGRAMS		1A	1	WALL
106	106	RESTROOM	W/ ADA SYMBOL, FEMALE & MALE PICTOGRAMS		1	1	WALL
107	107	RESTROOM	W/ ADA SYMBOL & MALE PICTOGRAMS		1B	1	WALL

END OF SECTION 101400.01



TYPE 1

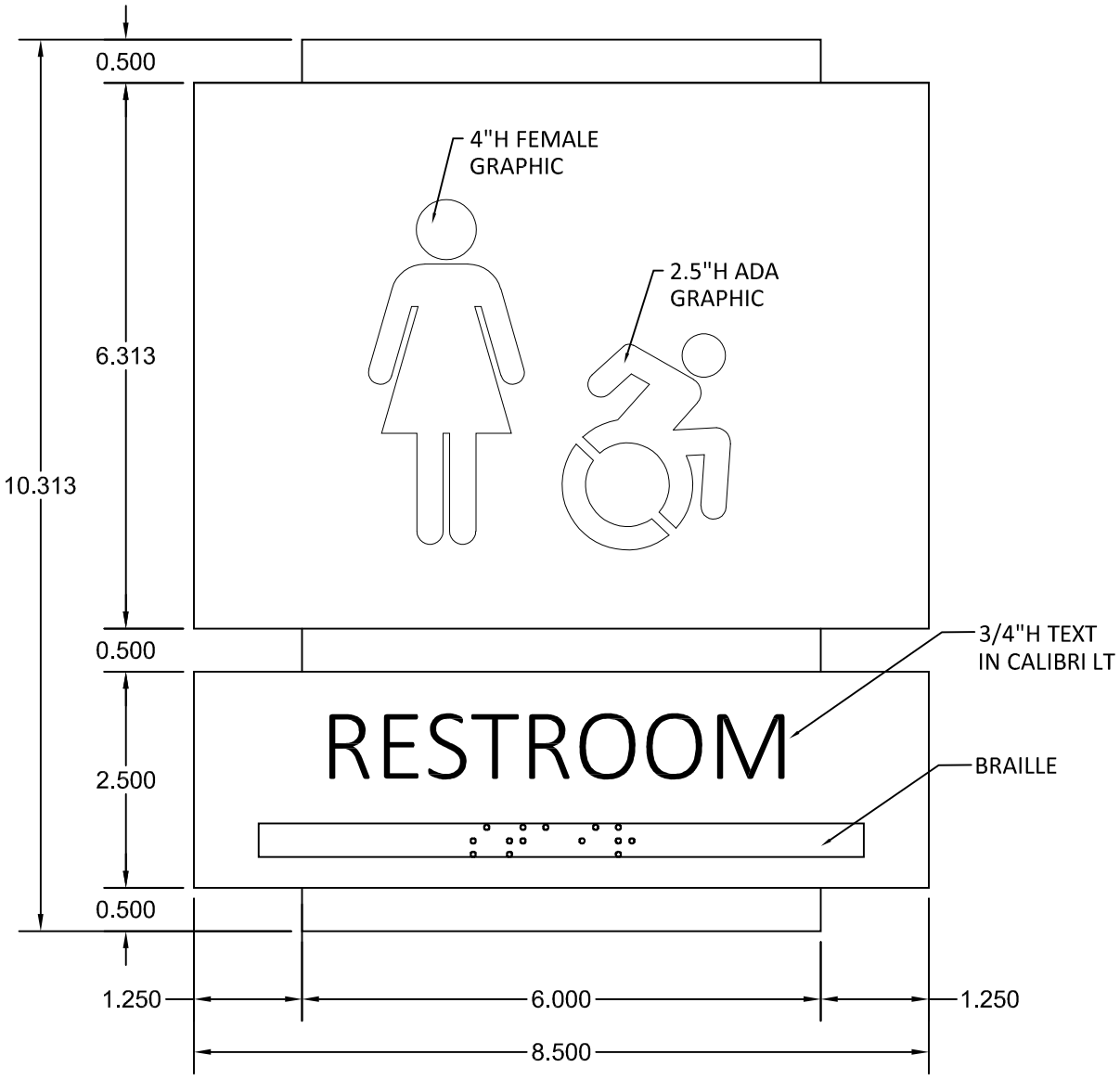
DATE: 05.01.2026
REV:

SIGNAGE LAYOUT

FRIAR
21 Talcott Notch Road
Farmington, CT 06032

SHEET NO.

1



TYPE 1A

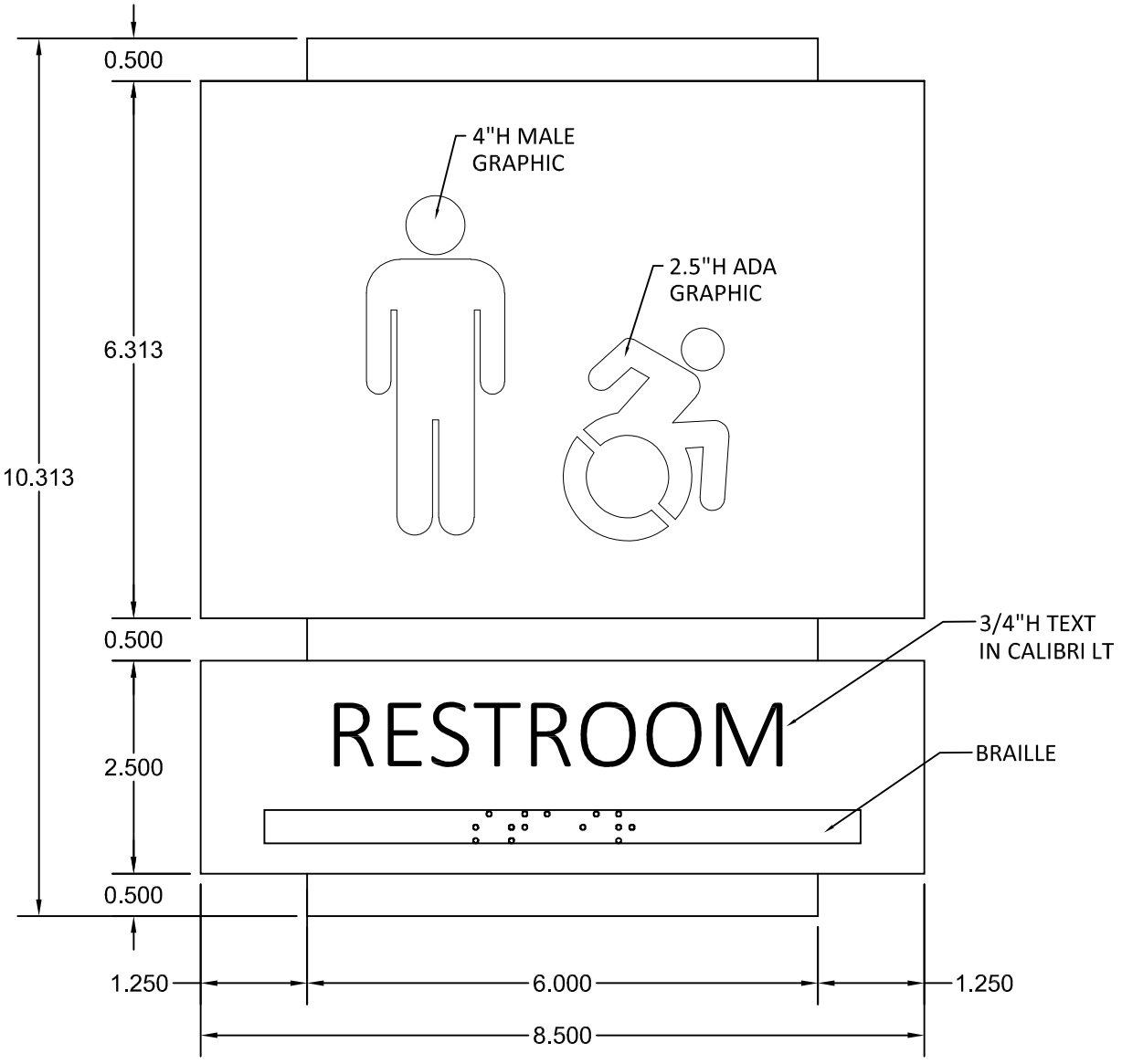
DATE: 05.01.2026
REV:

SIGNAGE LAYOUT

FRIAR
21 Talcott Notch Road
Farmington, CT 06032

SHEET NO.

2



TYPE 1B

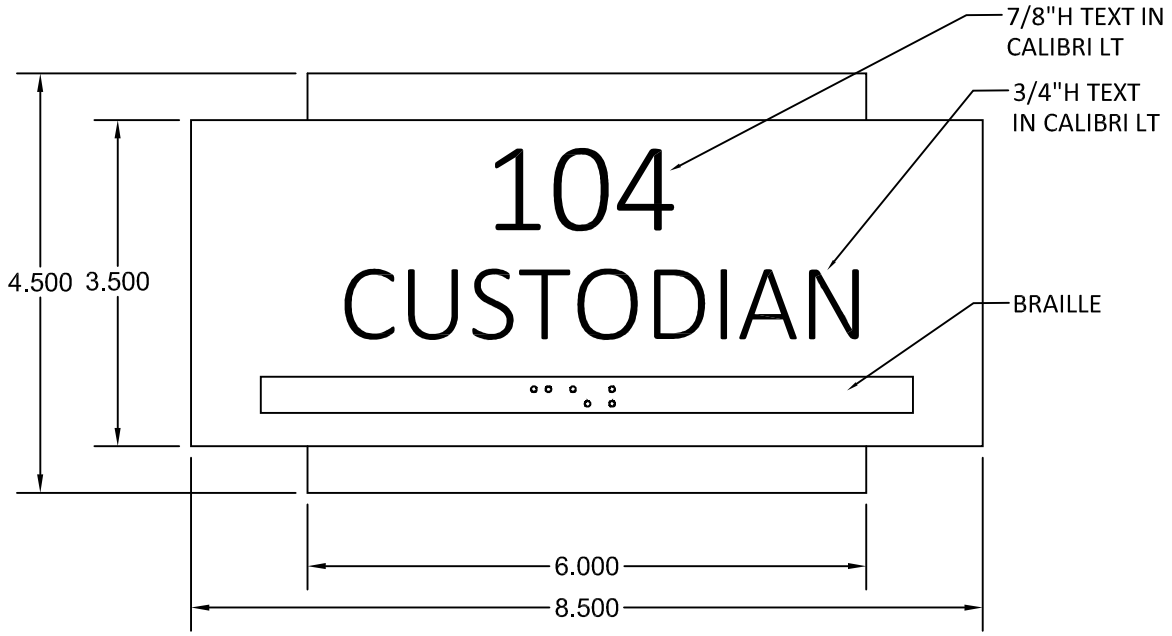
DATE: 05.01.2026
REV:

SIGNAGE LAYOUT

FRIAR
21 Talcott Notch Road
Farmington, CT 06032

SHEET NO.

3



TYPE 2

DATE: 05.01.2026
REV:

SIGNAGE LAYOUT

FRIAR
21 Talcott Notch Road
Farmington, CT 06032

SHEET NO.

4

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SECTION 10 1423 - POST AND PANEL SIGNAGE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-illuminated post and panel signs.

1.2 COORDINATION

A. Furnish templates and tolerance information for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For post and panel/pylon signage.

1. Include fabrication and installation details and attachments to other work.

2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.

3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.

C. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by the manufacturer.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify locations of embedded in permanent construction by other installers by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.

b. Deterioration of embedded graphic image.

c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Movements: For exterior signs, allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

B. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for signs.

2.2 POST AND PANEL SIGNS

A. Post and Panel Sign: Sign of single-panel configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Laminated, Aluminum-Sheet Sign Panels: Aluminum sheet laminated to both sides of acrylic core sheet with painted edges.

a. Composite-Sheet Thickness: Manufacturer's standard for size of sign.

b. Surface-Applied Graphics: Applied vinyl film.

2. Posts: Galvanized Steel Pipe.

a. Shape: Round.

b. Size: 2-3/8” OD Pipe (Sch 40).

c. Installation Method: Direct burial with concrete footing.

d. Finish and Color: Black.

e. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. (366 g /sq. m) zinc.

1) Polymer coating over metallic coating.

f. Within City right-of-way.

3. Decorative Metallic-Coated Steel Tubular Picket Fence Posts: Comply with ASTM F2408, for light industrial (commercial) application (class) unless otherwise indicated.

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) Master Halco.
2) Merchants Metals; a division of MMI Products, Inc.
3) BetaFence USA; a division of Betafence.

b. Metallic-Coated Steel Sheet: Galvanized-steel sheet or aluminum-zinc alloy-coated steel sheet.

1) Color: Black.

c. The interior surface of tubes formed from uncoated steel sheet shall be coated with zinc-rich thermosetting coating to comply with ASTM F2408.

d. Size: Square tubes 2 by 2 inches (51 by 51 mm) formed from 0.108-inch (2.74-mm) nominal-thickness, metallic-coated steel sheet or formed from 0.105-inch (2.66-mm) nominal-thickness steel sheet and hot-dip galvanized after fabrication.

1) Length: As indicated on the Drawings.

2) No pre-punched openings.

e. Post Caps: Formed from steel sheet and hot dip galvanized after forming.

f. Locations: On site.

4. Text and Typeface: typeface as indicated by manufacturer's designation and variable content as scheduled.

2.3 MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Copper Sheet: ASTM B 152/B 152M.

D. Steel Materials:

1. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating, either commercial or forming steel.

2. Bolts for Steel Framing: ASTM A 307 or ASTM A 325 (ASTM A 325M) as necessary for design loads and connection details.

3. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.

E. Vinyl Film: UV-resistant vinyl film of nominal thickness indicated, with pressure-sensitive, permanent adhesive on back; die cut to form characters or images as indicated and suitable for exterior applications.

F. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.

2. For exterior exposure, furnish stainless-steel or hot-dip galvanized devices unless otherwise indicated.

3. Exposed Metal-Fastener Components, General:

a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.

b. Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant, Allen-head or one-way-head slots unless otherwise indicated.

4. Inserts: Furnish inserts to be set by other trades into concrete or masonry work.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

C. Anchoring Materials:

1. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for exterior applications.

2. Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

3. Water-Resistant Product: At exterior locations, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs in the shop to the greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in locations concealed from view after final assembly.

2. Mill joints to tight, hairline fit. Form joints exposed to weather to resist water penetration and retention.

3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed joints of flux, and dress exposed and contact surfaces.

4. Conceal fasteners and anchors unless indicated to be exposed; locate exposed fasteners where they will be inconspicuous.

5. Internally brace signs for stability and for securing fasteners.

B. Sign Message Panels: Construct sign-panel surfaces to be smooth and to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner.

1. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.

2. Increase panel thickness or reinforce with concealed stiffeners or backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.

3. Continuously weld joints and seams unless other methods are indicated; grind, fill, and dress welds to produce smooth, flush, exposed surfaces with welds invisible after final finishing.

C. Post Fabrication: Fabricate posts designed to withstand wind pressure indicated for Project location and of lengths required for installation method indicated for each sign.

1. Aluminum Posts: 2-3/8" OD Pipe (Sch 40), coated, extruded-aluminum tubing unless otherwise indicated, with brackets or slots to engage sign panels. Include post caps, fillers, spacers, junction boxes, access panels, reinforcement where required for loading conditions, and related accessories required for complete installation.

2. Direct Burial: Fabricate posts 36 inches (910 mm) longer than height of sign to permit direct burial and embedment in concrete foundations or concrete-filled postholes.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

B. Color Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

2.8 METALLIC-COATED STEEL FINISHES

A. Surface Preparation: Clean surfaces of oil and other contaminants. Use cleaning methods that do not leave residue. After cleaning, apply a conversion coating compatible with the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and apply galvanizing repair paint, complying with SSPC-Paint 20, to comply with ASTM A 780/A 780M.

B. Baked-Enamel or Powder-Coat Finish: After cleaning and pretretaing, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils (0.05 mm).

2.9 STEEL FINISHES

A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, and prepare for coating according to coating manufacturer's written instructions.

1. For Baked-Enamel or Powder-Coat Finish: After cleaning, apply a conversion coating compatible with the organic coating to be applied over it.

B. Factory Prime Finish: After surface preparation and pretreatment, apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer.

C. Baked-Enamel or Powder-Coat Finish: After cleaning and pretretaing, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils (0.05 mm).

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs.

C. Verify that anchor inserts are correctly sized and located to accommodate signs.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using installation methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.

2. Install signs so they do not protrude or obstruct according to accessibility standard.

3. Before installation, verify that sign components are clean and free of materials or debris that would impair installation.

4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.3 INSTALLING POSTS

A. Vertical Tolerance: Set posts plumb within a tolerance of 1/16 inch in 3 feet.

B. Direct-Burial Method and Concrete Footing:

1. Excavation: Excavate posthole to dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating an additional 12 inches (300 mm), backfilling with satisfactory soil or well-graded aggregate, and compacting to original subgrade elevation.

2. Setting in Earth: Set post in position, support to prevent movement.

3. Setting in Cast-in-Place Concrete: Set post in position, support to prevent movement, and place concrete for concrete foundation as indicated.

4. Setting in Preformed Hole in Concrete Foundation: Form or core drill holes in concrete foundation not less than 3/4 inch larger than outside dimension of post for installing posts in concrete. Set post in position, shim to prevent movement, and fill annular space between post and hole with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

    a. Leave anchorage joint exposed with 1/8-inch anchoring material sloped away from post.

3.4 FINISH AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF DOCUMENT 10 1426

SECTION 10 2113.17
PHENOLIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Phenolic toilet compartments configured as toilet enclosures.

1.02 RELATED REQUIREMENTS

A. Division 01 Section “Sustainable Design Requirements.”

B. Section 06 1000 - ROUGH CARPENTRY: Blocking and supports.

C. Section 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES.

D. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.03 REFERENCE STANDARDS

A. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Show locations of cutouts for compartment-mounted toilet accessories.
   2. Show locations of reinforcements for compartment-mounted grab bars.

D. Samples for Verification: Of each type of color and finish required for units, prepared on 6-inch-square Samples of same thickness and material indicated for Work.

1.05 QUALITY ASSURANCE

A. Comply with requirements in CID-A-A-60003, "Partitions, Toilets, Complete."

B. Accessibility: Comply with applicable provisions in ICC/ANSI A117.1 and the 2010 ADA Standards.

C. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.
   1. Coordinate with wall finishes indicated on the Finish Schedule. Allow for thickness of ceramic wall tile and tile wainscots as required.

D. Fire Performance Characteristics: Provide materials with surface burning characteristics indicated below, per NFPA 255, “Method of Test of Surface Burning Characteristics of Building Materials”, ASTM E84, by a testing organization acceptable to authorities having jurisdiction.
   1. Flame Spread: 26 – 75.
   2. Smoke Developed: 0 – 450.

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on Shop Drawings.

1.07 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of phenolic partitions, including panels, doors, stiles, and continuous hinges that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Breakage, corrosion, delamination and defects in factory workmanship.
   2. Warranty Period: Ten years from date of Substantial Completion.
   3. Warranty Period for Stainless Steel hardware: One year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Phenolic Toilet Compartments:
   1. Bradley **(Basis of Design)**
   2. ASI Global Partitions: www.asi-globalpartitions.com/#sle.
   3. ASI Accurate Partitions: www.asi-accuratepartitions.com/#sle.

2.02 PHENOLIC TOILET COMPARTMENTS (TP-1)

A. Toilet-Enclosure, Overhead braced.

B. Door, Panel and Pilaster Construction: Solid phenolic-core panel material with melamine facing on both sides fused to substrate during panel manufacture (not separately laminated), and with eased and polished edges.
   1. Facing Sheet Color: Wilsonart Asian Night
   2. Core Color: Black.
   3. Doors and Pilasters: 3/4-inch- thick.
   4. Panels: 3/4-inch- thick.

C. Pilaster Shoes and Sleeves (Caps): Stainless steel, ASTM A 666, Type 302 or 304, not less than 20 gauge thickness and 3 inches high, finished to match hardware.

D. Brackets (Fittings):
   1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.03 ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.
   1. Material: Stainless steel.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome- plated steel or brass, finished to match hardware, with theft-resistant-type heads. Provide hex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust- resistant, protective-coated steel.

2.04 FABRICATION

A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions. Make provisions for setting and securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal supports and leveling mechanism.

B. Doors: Unless otherwise indicated, provide 32-inch- wide in-swinging doors for standard toilet compartments and 36-inch- wide out-swinging doors with a minimum 32-inch- wide clear opening for compartments indicated to be accessible to people with disabilities. Furnish

hardware for each compartment to comply with the requirements of ICC/ANSI A117.1, 2010 ADA Standards, and as follows:

1. Hinges: Manufacturer's standard continuous, full-height, 14 gauge edge mount stainless steel, continuous gravity type hinge that swings to a closed or partially open position.
2. Latch and Keeper: Manufacturer's standard, heavy-duty cast stainless steel, surface-mounted latch unit with combination rubber-faced door strike and keeper.
3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.
4. Door Bumper: Manufacturer's standard rubber-tipped bumper, heavy-duty cast stainless steel, at out-swinging doors.
5. Door Pull: Manufacturer's standard unit, 4-inch long stainless steel wire pull, at out-swinging doors. Provide units on both sides of doors at compartments indicated to be accessible to people with disabilities.
    a. Mount an additional door pull on inside of handicapped accessible stalls at 36 inches above the floor, located at 6 inches from hinge side of door.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

3.02 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
    1. Maximum Clearances:
        a. Pilasters and Panels: 1/2 inch.
        b. Panels and Walls: 1 inch.

B. Overhead-Braced Compartments: Secure pilasters to floor, and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 2 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners.

3.03 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 10 2113.17

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SECTION 10 2800
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Diaper changing stations.

C. Utility room accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry.

B. Section 10 2113.17 - Phenolic Toilet Compartments.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

C. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2025.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

E. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

F. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).

G. ASTM C1036 - Standard Specification for Flat Glass; 2025.

H. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

I. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2024.

J. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use; 2022.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Structural Performance: Design accessories and fasteners to comply with the following requirements:
   1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point, when tested accordingly to ASTM F446.

D. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated.

2. Identify accessories using designations indicated.

E. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.06 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.07 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.08 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, visible silver spoilage defects.
   2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Obtain public-use washroom accessories from single source from single manufacturer. Commercial Toilet, Custodial, and Restroom Accessories:
   1. Bobrick Washroom Equipment; www.bobrick.com.
   2. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
   3. Bradley Corporation; _____: www.bradleycorp.com/#sle.
   4. Substitutions: Section 01 6000 - Product Requirements.

B. Diaper Changing Stations:
   1. Koala Kare Products;[____]: www.koalabear.com/#sle.
   2. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
   3. Bradley Corporation; _____: www.bradleycorp.com/#sle.
   4. Substitutions: 01 6000 - Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

B. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

C. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.

F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 SCHEDULE OF TOILET ACCESSORIES

A. Electric Hand Dryer **C (OFCI)**:
   1. Basis of Design: Bobrick B-7188.
   2. Description: Touch free, electronic sensor.
   3. Mounting: Surface mounted, ADA.
   4. Material and Finish: Stainless steel.
   5. Voltage: 115V.

B. Liquid-Soap Dispenser **D (OFCI)**:
   1. Basis of Design: Bobrick B-2112.
   2. Mounting: Horizontally oriented, surface mounted.

3. Capacity: 40 fl oz.
4. Materials: Stainless steel.
5. Lockset: LAT 74.
6. Refill Indicator: Window type.

C. Surface Mounted Toilet Tissue (Jumbo Roll) Dispenser **T (OFCI)**:
1. Basis of Design: Bobrick B-2892.
2. Description: Twin Jumbo-Roll Toilet Tissue Dispenser.
3. Mounting: Surface mounted.
4. Controlled-delivery units cannot be used at accessible toilets.
5. Capacity: Designed for two 10 inch diameter tissue rolls.
6. Material and Finish: Stainless steel.
7. Lockset: LAT 74.

D. Framed Mirrors **L**: Stainless steel framed, 1/4 inch (6 mm) thick annealed float glass; ASTM C1036.
1. Basis of Design:
   a. Unisex Single Use Restrooms: Bobrick B-293 1830.
   b. Multi-use Restrooms: Bobrick B-290 1830.
2. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
3. Size: As listed above.
4. Frame: 0.05 inch (1.3 mm)angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
5. Backing: Full-mirror sized, minimum 0.03 inch (0.8 mm) galvanized steel sheet and nonabsorptive filler material.

E. Sanitary Napkin Disposal: **HH (OFCI)**:
1. Basis of Design: Bobrick B-35303.
2. Description: Sanitary Napkin Disposal.
3. Mounting: Surface Mounted.
4. Capacity: 1.2 gal.
5. Material and Finish: Stainless steel.

F. Grab Bars: **J, K, LL**:
1. Basis of Design: Bobrick: B-5806 Series.
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
4. Finish: Smooth, No. 4 finish (satin) on ends and peened slip-resistant texture in grip area.
5. Outside Diameter: 1-1/4 inches (32 mm).
6. Configuration and Length: As indicated on Drawings.

2.04 CUSTODIAL ACCESSORIES

A. Mop and Broom Holder **SS**:
1. Basis of Design: Bobrick B-224.
2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
3. Length: 36 inches (915 mm).
4. Hooks: Three.
5. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, No. 4 finish (satin).
7. Shelf: Not less than nominal 0.05-inch- (1.3-mm-) thick stainless steel.
8. Rod: Approximately 1/4-inch- (6-mm-) diameter stainless steel.

2.05 DIAPER CHANGING STATIONS

A. Diaper Changing Station **CC**: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.
   1. Basis of Design: Koala Kare Products, KB200-SS.
   2. Material: Polyethylene.
   3. Mounting: Surface.
   4. Color: Selected from Manufacturer's standard line of colors.
   5. Minimum Rated Load: 250 pounds (113.4 kg).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

D. See Section 06 1000 Rough Carpentry for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations and indicated on the drawings; report any discrepancies to the Architect prior to installation.

3.03 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION 10 2800

SECTION 14 4216
WHEELCHAIR LIFTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vertical enclosed permanently-installed wheelchair lifts. (Clarity 16E, Clarity 16S, Clarity 16D, Clarity 16C).

1.02 REFERENCE STANDARDS

A. ANSI 117 - Standard Specification for Structural Glued Laminated Timber of Softwood Species; 2025.

B. ASME A18.1 - Safety Standard for Platform Lifts and Stairway Chairlifts; 2023.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 RELATED SECTIONS

A. Section 26 05 00 - Common Work Results for Electrical.

1.04 REFERENCES

A. ADA Accessibility Guidelines for Buildings and Facilities (ADAAG).

B. ASME A17.5 - Elevator and Escalator Electrical Equipment.

C. ASME A18.1 - Safety Standard for Platform Lifts and Stairway Chairlifts.

D. ANSI A117.1 - Accessible and Usable Buildings and Facilities.

E. NFPA 70 (NEC) - National Electrical Code.

1.05 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: Drawings shall show dimensional and wiring requirements.

D. Verification Samples: For each finish product specified, two samples 2 x 3 inches (50 x 75 mm) representing actual product, color, and patterns.

1.06 QUALITY ASSURANCE

A. Manufacturer shall have not less than twenty years of experience in the design and manufacture of vertical wheelchair lifts.

B. Installer Qualifications: Minimum 2 year experience installing similar products.

1.07 PRE-INSTALLATION MEETINGS

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handle materials to avoid damage.

1.09 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.10 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.11 WARRANTY

A. Manufacturer shall provide a warranty for a period of ten years on the drive train, four years on all other components, and 90 days on labor, starting from the date of installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Ascension, a division of AGM Container Controls, Inc., which is located at: 3526 E. Ft. Lowell Rd.; Tucson, AZ 85716; Toll Free Tel: 800-459-0400; Tel: 520-881-3993; Fax: 520-881-4983; Email:request info (WebSales@ascension-lift.com); Web:https://ascension-lift.com

B. Other manufacturers:
   1. Garaventa.
   2. Savaria.

C. Substitutions: See Section01 6000-Product Requirements.
   1. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.02 VERTICAL PERMANENTLY-INSTALLED WHEELCHAIR LIFTS

A. Enclosed vertical platform wheelchair lift with self-contained drive system.
   1. For independent use by individuals with disabilities.
   2. ADA Compliance: Includes all applicable operating and safety devices.
   3. Low-Profile Platform Floor: Eliminates need for pit or access ramp at lower landing and facilitates entry into lift platform.

B. Lift Product: Clarity 16D. Machine cabinet, transparent runway enclosure, and lifting platform servicing 2 landings, each on the same side of the lift.
   1. Machine Cabinet: Installs against wall/structure opposing the landings, providing clear view lines through the transparent runway enclosure on three sides.
   2. Unobstructed View. Transparent panels on 3 sides of enclosure.
   3. Required Installation Space: 48.13 x 67.75 inches (1225 x 1720 mm).
   4. Enclosure Structure: Aluminum alloy.

C. Physical Characteristics:
   1. Platform Size: 36 x 56 inches (914 x 1422 mm).
   2. Lifting capacity: 750 lbs (340 kg).
   3. Vertical Speed: 20 fpm (6 mpm).
   4. Vertical Travel: reference drawings for floor to floor heights.

D. Doors and Gates:
   1. Lower Landing Door:
      a. Automatic Operation: Right handed.
   2. Upper Landing Door:
      a. Automatic Operation: Right handed.
   3. Upper Landing Gate:
      a. Manual Operation: Right handed. Self-closing.

E. Materials:
   1. Guide Rails: Aluminum alloy, integral to machine cabinet.
   2. Guide Rail Brackets and Cabinet Supporting Members: Steel.
   3. Platform Frame: Steel.
   4. Platform Grab Bar and Accent Rails: Stainless steel.
   5. Windows: 1/4 inch thick high impact strength clear thermoplastic.

F. Finishes:
   1. Grab Bar and Accent Rails: Brushed stainless steel.
   2. Exposed Metal Surfaces: Powder coat.
      a. Color: to be selected from manufacturer's standard colors.

G. Drive Configuration: 2:1 chain hydraulic.
   1. Platform Support: 2 hydraulic jacks with 2 suspension chains each.
   2. Suspension Chains: No. 50 roller chain, 5045 lbs (22.4 kN) breaking strength.
   3. Hydraulic Power Unit: Mounted on vibration-isolating supports to minimize vibration transmission and reduce frame-borne noise.

H. Electrical Requirements:
   1. Amperage Draw per Lift: 6 Amps maximum.
   2. Service Line: 120 VAC, 60 hertz. Amperage capacity: Exceeding 6 Amps.
   3. Full-Time Battery Power: Integral 24 VDC SLA battery bank.
   4. Motor: 3 hp (2.1 kW), 24 VDC.
   5. Electrical System: Certified to ASME A17.5 by independent testing laboratory.

I. Safety Devices:
   1. Lift Construction: Meet applicable requirements of ASME A18.1, ASME A17.5, ADAAG, ANSI 117.1, and NFPA 70 (NEC) as applicable.
   2. Safety features for protection of passengers and general public.
      a. Enclosed: Prevents access to underside of platform.
      b. Operating Switches: Constant pressure.
      c. Integral Emergency Lighting: Illuminates platform floor and controls.
      d. Automatic Standby Power: Minimum 5 lift cycles at full load during power outage events.
      e. Manual Lowering: Gravity lowers platform to lower landing.
      f. Emergency Stop Button: Lighted, sounds audible alarm.
      g. Door and Gate interlocks: Electro-mechanical.
      h. Limit Switches: Upper and lower.
      i. Slack-Chain Switches: Automatically stop platform if any suspension chain slackens.
      j. Platform Safeties: Physically prevent platform from lowering if any suspension chain slackens.
      k. Platform Floor: Low-profile and slip-resistant surface.
      l. No installation pit or access ramp at the lower landing.

2.03 ADD-ONS

A. Two-Way Communication: Hands-free autodialing phone on platform.

B. Universal Keys: Limits lift use to authorized persons.

C. Dome and Ventilation: Covers top of enclosure.

D. Hollow Landing Package: For anchoring to the floor at the lower landing.
   1. Rear Fascia: Prevents access to back of machine cabinet where not covered by vertical landing face.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify suitability of substrate preparation in accordance with approved manufacturer's drawings.

B. Verify correct space requirements in accordance with approved manufacturer's drawings. Verify electrical service is of correct type and at correct location.

C. Do not begin installation until substrates have been properly prepared. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install lift in accordance with approved submittals, manufacturer's instructions, ASME A18.1 requirements, and applicable regulatory requirements.

B. Installation space and substrate shall be of sufficient strength to support the loads imposed on it during operation of the lift. Refer to structural loading diagrams provided by manufacturer to ensure proper provision is made.

3.04 FIELD QUALITY CONTROL

A. Perform acceptance tests as required by code and the authority having jurisdiction. Place rated load on platform and operate for several cycles to verify correct installation and operation. No mechanical failures shall occur and no wear that would affect the reliability of the lift shall be detected.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 14 4216

SECTION 23 0900 - INSTRUMENTATION AND CONTROLS FOR HVAC

PART 1 GENERAL

1.1 SECTION INCLUDES

A. System Description

B. Operator Interface

C. General Purpose Digital Controllers

D. Unitary Or Terminal Digital Controllers

E. Input/Output Interface

F. Bridges And Routers

G. Gateways

H. Panels

I. Power Supplies And Line Filtering

J. Local Area Network (Lan)

K. System Software

L. Controller Software

M. Input Hardware

N. Parking Garage Co And No2 Monitoring System

O. Chiller Room Refrigerant Detection System

P. Thermostats

Q. Humidistats

R. Time Clocks

S. Control Valves

T. Dampers

U. Actuators

V. Wire, Cable And Network Accessories

1.2 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. This Section includes provision of control sequences for HVAC systems, subsystems, and equipment indicated on the drawings and other Division 23 specification sections.

C. Section 23 0400 – General Conditions for Mechanical Trades.

D. Section 26 2717 - Equipment Wiring: Electrical characteristics and wiring connections.

E. Section 28 3100 - Fire Detection and Alarm.

1.3 REFERENCE STANDARDS (follow the most currently adopted amended version)

A. ANSI/CEA 709.1.D - Control Network Protocol Specification.

B. ASHRAE Std 135 - BACnet - A Data Communication Protocol for Building Automation and Control Networks.

C. MIL-STD-810 - Environmental Engineering Considerations and Laboratory Tests; Revision G.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. UL (DIR) - Online Certifications Directory.

1.4 DEFINITIONS

A. Backbone: The high traffic density connectivity portion of the communication network.

B. Bridge: A device that connects two or more LAN segments at the physical and data link layers. This device may also perform message filtering if programmed to do so.

C. Browser: A computer program that accesses and displays information from the Internet or intranet.

D. Client: A system or device that makes use of another device for some particular purpose through a system request.

E. Device (BACnet): A device, real or virtual, that supports digital communication using the BACnet protocol. Examples would be an operator terminal, router, unitary controller, etc.

F. Ethernet: Ethernet is a widely used Local Area Network (LAN). Ethernet, which conforms to IEEE Standard 802.3.

G. Events: Changes in the state of an object, typically between Normal, Off-Normal, and Fault Condition. Events may be reported to other BACnet devices.

H. Firewall: A security mechanism placed at the connection between networks and/or at networks outside connections. The firewall restricts access to the network.

I. Gateway: A device that connects two or more dissimilar networks by message translation and signal conditioning, permitting information exchange among them. A gateway would be necessary to translate LonWorks messages to the BACnet form.

J. Gbps: Gigabits per second. A unit of data transfer speed equal to 1024 Mbps.

K. GUI: Graphical User Interface, a type of Operator Interface Device for a BAS.

L. Hertz: A unit of measure equal to an oscillation per second.

M. HTML: The source form used for documents on the Internet or on an intranet. HTML embeds commands that determine formatting along with the text to be displayed.

N. Instance: A number which uniquely identifies an object within a device (e.g., Analog Input No.1, No. 2, etc.). Device Objects are required to have an instance number that is unique to their internetwork. Instance numbers may range from 0 to 4194303.

O. ID: Identification (name, number, plate, or tag).

P. IP: Internet Protocol. The protocol that defines both the format of packets used on a TCP/IP internet or intranet and the mechanism for routing a packet to its destination.

Q. IP address: A 32-bit address assigned to a device that uses TCP/IP protocols.

R. Kbps: A unit of data transfer equal to 1024 bits per second.

S. LAN: A LAN is a network of interconnected hardware devices sharing resources within a relatively small geographic area.

T. Mbps: A unit of data transfer equal to 1024 Kbps.

U. MS/TP: The Master-Slave/Token-Passing EIA-485 LAN developed for BACnet by ASHRAE. Operates at 9600, 19.2K, 38.4K and 76.8 K BPS. Master nodes (devices) pass around a speaking token which entitles the holder to initiate BACnet messages. Slave nodes can only respond to messages from Masters.

V. Native BACnet: A Building Automation System that uses the BACnet protocol for its data transfer between hardware devices and operator interface devices.

W. Object Identifier: A 32-bit number which uniquely identifies an object within a device, or the device object internetwork-wide. 10 bits represent the object type and 22 bits the instance number.

X. PC: Personal Computer.

Y. Peer-to-Peer Communication: Communication between equals. In BACnet, application programs (performing the functions of the BACnet devices on which they run) in devices of the appropriate conformance class talk to each other as peers, using the Protocol Stacks to deliver their message to each other. Likewise, Network Layers may talk as peers to determine how to route messages.

Z. Physical Segment: A single continuous medium 9-wire to which BACnet nodes are attached.

AA. PID: Proportional Integral and Derivative.

BB. Protocol: A design that specifies the details of how digital devices interact.

CC. Repeater: A device that connects two or more physical segments of a LAN at the physical layer and exactly reproduces the electrical signals on either side so that nodes on either side of the repeater are considered to be on the same network.

DD. Router: A device which connects two or more networks, of same or different types, so that a BACnet message may be transferred across the appropriate networks to reach its destination.

EE. RS-232-C: The technical name of the standard for serial data connections such as those between a computer and a keyboard.

FF. Server: A computer or hardware device which stores the resources accessed by other computers or hardware devices (clients).

GG. TCP/IP: The protocol suite used in the Internet. Although the suite contains many protocols, TCP and IP are two of the most important.

HH. Unitary Controller: Devices which controls and/or monitors a single piece of equipment.

II. WEB: A synonym for the World Wide Web. In modern usage pertains to both the Internet and to intranets using the TCP/IP Protocol.

1.5 GENERAL REQUIREMENTS

A. All work of this section shall be coordinated and provided by the single Building Management System (BMS) Contractor.

B. The BMS work shall consist of the provision of all labor, materials, tools, equipment, software, software licenses, software configurations and database entries, interfaces, wiring, tubing, installation, labeling, engineering, calibration, documentation, samples, submittals, testing, commissioning, training services, permits and licenses, transportation, shipping, handling, administration, supervision, management, insurance, temporary protection, cleaning, cutting and patching, warranties, services, and items, even though these may not be specifically mentioned in these Division documents which are required for the complete, fully functional and commissioned BMS.

C. The BMS shall perform all sequences of operation which may be listed on control drawings. Controls supplier shall provide all devices necessary to completely perform sequences whether such devices are explicitly shown on the drawings specified, or not shown or specified.

D. Where other Sections include a requirement for manufacturer equipment controllers (e.g. chillers, boilers, packaged units that are specified with packaged controls), this Section shall be responsible for provision of control components and software required to perform sequences of operation outlined that are in addition to the capabilities of the controllers provided with the manufacturer equipment. Coordinate and integrate all equipment controllers.

E. Each component of the system, including the LANs and software, shall be in full compliance with ASHRAE Standard 135, commonly referred to as BACnet.

F. Provide the services of control manufacturer’s representative to be on site during startup, testing and balancing procedures, detailed in Part 3 of this specification. Representative shall be part of manufacturer’s service organization and shall be skilled in the adjustment and calibration of all control devices as well as being capable of modifying and checking system software.

1.6 ADMINISTRATIVE REQUIREMENTS

A. The work of this Division shall be scheduled, coordinated, and interfaced with the associated work of other trades.

B. If the Contractor believes there are conflicts or missing information in the project documents, the Contractor shall promptly request clarification and instruction from the design team.

C. Pre-installation Meeting: Conduct a pre-installation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

D. Scheduling: Coordinate with Owner and General Contractor. Manage and coordinate the BMS work in a timely manner in consideration of the Project schedules. Coordinate with the associated work of other trades so as to not impede or delay the work of associated trades.

1.7 COORDINATION

A. Coordinate locations of thermostats, humidistats, and other exposed control sensors with plans and room details before installation.

B. Coordinate work under provisions of General Conditions and Division 1 as applicable.

C. Coordinate material delivery to comply with project schedule.

D. Coordinate conduit, and wiring installation with other trades to avoid conflicts.

E. Coordinate panel locations and installation with other trades to avoid conflicts and to provide power and other requirements.

1.8 SUBMITTALS

A. Product Data: Include manufacturer's technical literature for each control device. Indicate dimensions, capacities, performance characteristics, electrical characteristics, finishes for materials, and installation and startup instructions for each type of product indicated.
   1. DDC System Hardware: Bill of materials of equipment indicating quantity, manufacturer, and model number. Include technical data for operator workstation equipment, interface equipment, control units, transducers/transmitters, sensors, actuators, valves, relays/switches, control panels, and operator interface equipment.
   2. Control System Software: Include technical data for operating system software, operator interface, color graphics, information on programmability and other third-party applications.
   3. Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data.

B. Shop Drawings: Submit shop drawings containing the following information for each control system:
   1. System architecture diagram: Indicate programmable control unit locations, and trunk data conductors.
   2. Schematic control diagrams: Submit diagrams of each controlled system with control points labeled and control elements graphically shown, with wiring.

3. Floor plans: Show sizes and locations of components, horizontal routing and risers.
4. Points list: List connected data points, including connected control unit and input device.
5. Sequence of operation: Written detailed operational description of sequences
6. Schedule of dampers: Include size, leakage, pressure drop and other flow characteristics.
7. Schedule of valves: Including flow, pressure drop, valve coefficient (CV), shut-off head, maximum controllable differential pressure range and other flow characteristics.

C. Wiring Diagrams: Submit wiring diagrams, detailing wiring for power, signal, and control systems and differentiating clearly between manufacturers installed and field installed wiring.

D. Sample Covers: Submit samples of each type of space sensor cover for approval prior to ordering the covers.

E. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owners name and registered with manufacturer.

1.9 RECORD DOCUMENTATION

A. General: Manuals shall be furnished as files in portable document format (PDF). One complete set of manuals shall be furnished before the contract is complete. The manuals shall include the name, address and telephone number of each subcontractor installing equipment and systems and of the local representative for each specific item of equipment and each system provided. A logically organized table of contents shall be included with dynamic links to view all data sheets.

B. Hardware Manual: The hardware manual shall describe the system and each piece of equipment provided.

C. Software Manual: The software manual shall describe programming and testing, starting with a system overview and proceeding to a detailed description of each software module. The manual shall be oriented to programmers and shall describe calling requirements, data exchange requirements, data file requirements, and other information necessary to enable proper integration, loading, testing, and program execution.

D. Operations Manual: The Operations manual shall describe the operations of the complete system.

E. Maintenance Manual: The maintenance manual shall provide descriptions of maintenance for each piece of equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

F. Project Drawings: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors. Revise shop drawings to reflect actual installation and operating sequences.

1.10 QUALITY ASSURANCE

A. Products shall be standard manufacturer products having been in commercial or industrial use for at least one year prior to the bid date for this project. Products shall comply with the following as a minimum:
   1. NFPA 90A, "Installation of Air Conditioning and Ventilation Systems."
   2. NISTIR 6392 for digital system control components.
   3. ANSI/ASHRAE Standard 135-1995 for BACnet compatible system control components.
   4. Applicable provisions of NFPA code.
   5. Applicable provisions of NEC.

B. Designer Qualifications: Perform design of system software under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

D. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and certified and marked for intended use.

F. Comply with ASHRAE 135 for DDC system components.

1.11 PERFORMANCE REQUIREMENTS

A. Accuracy: Report values and maintain measured variables within tolerances as follows:
   1. Water Temperature: Plus or minus 1 deg F (0.5 deg C).
   2. Water Flow: Plus or minus 5 percent of full scale.
   3. Water Pressure: Plus or minus 2 percent of full scale.
   4. Space Temperature: Plus or minus 1 deg F (0.5 deg C).
   5. Ducted Air Temperature: Plus or minus 1 deg F (0.5 deg C).
   6. Outside Air Temperature: Plus or minus 2 deg F (1.0 deg C).
   7. Dew Point Temperature: Plus or minus 3 deg F (1.5 deg C).
   8. Temperature Differential: Plus or minus 0.25 deg F (0.15 deg C).
   9. Relative Humidity: Plus or minus 5 percent.
   10. Airflow (Pressurized Spaces): Plus or minus 3 percent of full scale.

11. Airflow (Measuring Stations): Plus or minus 5 percent of full scale.
12. Airflow (Terminal): Plus or minus 10 percent of full scale.
13. Air Pressure (Space): Plus or minus 0.01-inch wg (2.5 Pa).
14. Air Pressure (Ducts): Plus or minus 0.1-inch wg (25 Pa).
15. Carbon Monoxide: Plus or minus 5 percent of reading.
16. Carbon Dioxide: Plus or minus 50 ppm.
17. Electrical: Plus or minus 5 percent of reading.

B. Alarm Response Time: Annunciate alarm at workstation within 45 seconds. Multiple workstations must receive alarms within five seconds of each other.

1.12 WARRANTY

A. Correct defective Work within a five year period after Substantial Completion.

B. Provide five year manufacturer's warranty for field programmable micro-processor based units.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide operator workstation software, controller software, and custom application programming language, building controllers, programmable application controllers and application specific controllers from only one of the following manufacturers.
1. Schneider Electric, installed by Environmental Systems Co. (ESC)
2. Schneider Electric, installed by SNE Building Systems
3. Automated Logic Corporation

B. Other products specified herein (such as sensors, valves, dampers and actuators) need not be manufactured by the above manufacturers, unless otherwise noted.

2.2 SYSTEM DESCRIPTION

A. The system shall consist of a series of digital controllers interconnected by the LAN. One or more operator interface devices shall be connected to the LAN to provide access to the controllers for the purpose of receiving information or issuing commands. The controllers shall be located adjacent to the equipment they monitor or control and shall be sized for the task assigned to them. The system shall utilize distributed processing architecture and one controller shall be provided for each major piece of equipment controlled or monitored except that the equipment associated with the chiller plant and the heating plant shall be controlled from multiple controllers if necessary.

B. The communication network between building controllers shall be BACnet over Ethernet or BACnet over IP. The communication network between unitary or terminal unit controllers shall be BACnet MS/TP over EIA-485. BACnet Point-To-Point may be used for communication between the network and modems, line drivers or other data communication equipment.

C. The BAS software shall be designed around the open standards of web technology. The BAS server shall communicate using the ASHRAE BACnet/IP protocol. The Server shall be accessed using a web browser. The web browser Graphical User Interface shall support Microsoft browsers, and Windows as well as non-Windows operating systems. No special software shall be required for the PC's/PDA's used to access the BAS via a web browser.

D. Input devices such as temperature sensors, humidity sensors, pressure sensors, motor current sensors, relays and other devices to sense or measure conditions of equipment or space, shall be provided as part of the system to meet the requirements of the sequences of operation.

E. Output devices such as valves, dampers, damper operators, relays, solenoids, transducers, or other devices to control equipment, shall be provided as part of the system to meet the requirements of the sequences of operation.

F. System Software:
   1. Provide and install the software indicated in Part 2 of this specification. The database required for implementation shall be provided, including point description, alarm limit, calibration variable graphics, report, and point summaries.
   2. The system described herein is a distributed processing system, which utilizes DDC to perform each logic and control decision and operation for each piece of equipment. An OID shall not be required to operate the system. Each item of large equipment, such as air handling units, boilers and PDDU units, shall be provided with a separate digital controller panel (DCP) with readout capability. Each equipment shall be controlled by a separate application-specific field controller (ASC).

G. Labeling: Provide a comprehensive labeling system for each wiring and component using the designations shown on the approved submittals.

H. Electrical Work: Provide the BAS power and control wiring required. This shall include power requirements for control panels, field controllers, sensors and other control devices. Provide transformers necessary to step down from the available voltage to the voltage required to operate the control system products and control devices.

I. Other Work: The work included under this Division shall include the drawings, specifications, submittals, equipment, labor, materials, technical supervision, transportation, training services, documentation, warranty, and other appurtenant work as required to furnish and install a fully operational system to monitor and control, set forth, in strict accordance with these specifications and subject to the terms and conditions of the Contract. An apparatus, appliance, material or work not shown on the drawings but mentioned in the specifications, or vice versa, or incidental accessories necessary to make the work entirely complete and ready for operation, even if not particularly specified, shall be furnished, delivered and installed by the Contractor without additional expense to the Owner.

J. Completion: It is the intention of the specifications and drawings to call for furnished work, tested, and ready for operation. Wherever the word “provide” is used, it shall mean “provide and install complete and ready for use.”

K. Omissions: Minor details not usually shown or specified but necessary for proper installation and operations shall be included, as if herein specified and/or shown.

2.3 OPERATOR INTERFACE

A. General:
1. PC Based Work Station shall reside on high speed network with building controllers and be connected to server for full access to all system information
2. Workstation, controllers, and control backbone shall communicate using BACnet protocol and addressing.

B. Personal Computer: PC compatible with sufficient memory and hard drive storage to support graphics, reports, and communication requirements. Furnish with the following minimum requirements:
1. Processor: Intel i5 4.0 GHz.
2. Hard Drive: 1 TB
3. Memory: 8 Gigabyte DDR4 SDRAM.
4. Mouse And keyboard.
5. Monitor: Minimum of 24 inch color, flat panel display.
6. Operating System: Windows 10
7. Printer: Furnish each operator workstation with color ink jet printer and associated cables. Printer capable of minimum of 14 pages per minute (PPM) operation and compatible with standard parallel or USB communications or network capable.

C. Laptop: PC compatible with sufficient memory and hard drive storage to support graphics, reports, and communication requirements. Furnish with the following minimum requirements:
1. Processor: Intel i5 [4.0] GHz.
2. Hard Drive: 1 TB

3. Memory: 8 Gigabyte DDR4 SDRAM.
4. Mouse: two-button optical type wireless.
5. Keyboard: 104 key.

2.4 GENERAL PURPOSE DIGITAL CONTROLLERS

A. General Purpose Digital Controllers shall be BTL listed.

B. Communication Speed: Controllers shall communicate using Ethernet or BACnet/IP using an unshielded twisted pair at the Data Link Layer.

C. General Specification: Each General Purpose Digital Controller shall be capable of stand-alone DDC operation utilizing its own minimum 16-bit processor, non-volatile flash memory, input/output, 10-bit A to D conversion, hardware clock/calendar, and voltage transient and lightning protection devices. Firmware revisions to the controller shall be made from the BAS server or remotely over the intranet or Internet. Controllers shall not require component changes to implement firmware revisions.

D. Self-Test Diagnostics: Each controller shall include self-test diagnostics, enabling the controller to automatically report malfunctions to the server.

E. Each General Purpose Multiple Application Digital Controller shall contain both software and firmware to perform full DDC Proportional, Integral, and Derivative (PID) control loops and programs.

F. Input/Output Processing:
1. Digital outputs shall be relays, each configured as normally open or normally closed. Each output shall have a manual Hand-Off-Auto switch to allow for override and a LED to indicate the operating mode of the output.
2. Universal inputs shall be Thermistor, RTD 0-10VDC, 0-20 mA, resistive and dry contact.
3. Analog output shall be electronic, voltage mode 0-10 VDC, current mode 4-20mA.

G. Power and Noise Immunity:
1. Maintain operation at 90 to 110 percent of nominal voltage rating.
2. Perform orderly shutdown below 80 percent of nominal voltage.
3. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet.

2.5 UNITARY OR TERMINAL DIGITAL CONTROLLERS

A. BACnet BIBBs: The Unitary Controllers shall use BACnet as the native communications protocol between controllers on the unitary controller network and shall be classified as AACs, ASCs, or SAs by the BACnet Testing Laboratory.

B. Communication Speed: The communication between unitary controllers shall be 38.4 Kbps, minimum, over EIA-485, using MS/TP architecture.

C. Sensor Support: Each unitary controller shall be able to support various types of zone temperature sensors, such as temperature sensor only, temperature sensor with built-in local override switch, and temperature sensor with built-in set point adjustment switch.

D. Each Unitary Controller for VAV application shall have a built-in air flow transducer for accurate air flow measurement in order to provide the pressure independent VAV operation, and an integral direct-coupled electronic actuator.

E. Visual Status: Each unitary controller and unitary controller interface shall have LED indication for visual status of communication, power, and each output.

F. Standalone Algorithm: In the event of a loss of communication, each Unitary Controller shall control from a stand-alone algorithm to maintain the assigned space temperature until communication with the unitary control module interface is restored.

G. Input/Output Processing:
1. Digital Outputs shall be relays, 24 Volts AC or DC maximum, having 3-amp maximum current. Each relay shall be configured as normally open or normally closed, and either dry contact or bussed.
2. Universal Inputs shall be Thermistor, RTD, dry contacts or 0-5VDC.
3. Enhanced Zone Sensor Input: The input shall provide one Thermistor input, one local setpoint adjustment, one timed local override switch, and one occupancy LED indicator.
4. Analog Output electronic, voltage made 0-10VDC or current mode 4-20mA or 3-wire floating.

2.6 INPUT/OUTPUT INTERFACE

A. Hardwired inputs and outputs tie into the DDC system through building, custom application, or application specific controllers.

B. All Input/Output Points:
1. Protect controller from damage resulting from any point short-circuiting or grounding and from voltage up to 24 volts of any duration.
2. Provide universal type for building and custom application controllers where input or output is software designated as either binary or analog type with appropriate properties.

C. Binary Inputs:
1. Allow monitoring of On/Off signals from remote devices.
2. Provide wetting current of 12 mA minimum, compatible with commonly available control devices and protected against the effects of contact bounce and noise.

3. Sense dry contact closure with power provided only by the controller.

D. Pulse Accumulation Input Objects: Conform to all requirements of binary input objects and accept up to 10 pulses per second.

E. Analog Inputs:
1. Allow for monitoring of low voltage 0 to 10 VDC, 4 to 20 mA current, or resistance signals (thermistor, RTD).
2. Compatible with and field configurable to commonly available sensing devices.

F. Binary Outputs:
1. Used for On/Off operation or a pulsed low-voltage signal for pulse width modulation control.
2. Outputs provided with three position (On/Off/Auto) override switches.
3. Status lights for building and custom application controllers to be selectable for normally open or normally closed operation.

G. Analog Outputs:
1. Monitoring signal provides a 0 to 10 VDC or a 4 to 20 mA output signal for end device control.
2. Provide status lights and two position (AUTO/MANUAL) switch for building and custom application controllers with manually adjustable potentiometer for manual override on building and custom application controllers.

H. Tri State Outputs:
1. Coordinate two binary outputs to control three point, floating type, electronic actuators without feedback.
2. Limit the use of three point, floating devices to the following zone and terminal unit control applications:
   a. VAV terminal units.
   b. Duct mounted heating coils.
   c. Zone dampers.
   d. Radiation.
3. Control algorithms run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.

I. System Object Capacity:
1. System size to be expandable to twice the number of input output objects required by providing additional controllers, including associated devices and wiring.
2. Hardware additions or software revisions for the installed operator interfaces are not to be required for future, system expansions.

2.7 BRIDGES AND ROUTERS

A. The controller network shall use BACnet as its native communication protocol. Network bridges and routers must be of a modular design to ensure reliability and system performance. Routers and bridges must be used between system LANs and between the system and third party devices requiring interfaces.

B. BACnet Router: The central system shall use the building's Local Area Network (LAN) for communication. The communication between the central server and the controllers shall be BACnet/IP. A router shall be provided as required to bridge BACnet/IP and the data link used between controllers (BACnet Ethernet and BACnet MS/TP). Proprietary networks and proprietary protocols are not acceptable. The BACnet routers shall utilize flash memory to allow firmware upgrades to be performed remotely.

C. Unitary Controller Router: A router shall be provided as required to bridge between the unitary controller network and the main controller network.

2.8 GATEWAYS

A. Bi-Directional Protocol Translator (BPT): The Building Automation System shall establish an interconnection, which appears to the operator to be seamless, between the building's electrical and/or mechanical subsystems, as well as other manufacturers' control systems as may be installed in the future. These systems shall be controlled, monitored, and programmed with the same programming language used for the other control modules.
   1. The BPT shall be a microprocessor-based communication device to provide seamless, two-way translation between two or more standard or non-standard protocols.
   2. The BPT shall be available for a variety of Data Link/Physical Layer configurations, including PTP (point-to-point) via EIA-232, MS/TP via EIA-485, and ARCNET.
   3. In addition to BACnet, the BPT shall also support other protocols including Modbus, JBus and other protocols as specified herein for electrical/mechanical subsystems.
   4. The BPT shall have at least three communications ports: One shall be for communication between native BACnet controllers residing on the controller network; the other two ports shall have the ability to be configured for different protocols.
   5. The BPT shall provide full custom programmability of the data flowing between the networks, using the same graphic programming as specified herein. The system shall have the ability to create custom building control strategies using global data between networks.

2.9 PANELS

A. Cabinet: Each DDC Controller shall be enclosed in a field panel or equipment enclosure with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face. The field panel cabinet shall be general purpose utility enclosures with enameled finished face panel. Provide sufficient access for wire and conduit to enter the cabinet. Each of the field control panel locks for the project shall be keyed alike.
   1. Locations outdoors and/or in wet ambient conditions: Provide waterproof enclosure rated for operation at 32-122 degrees F.
   2. Locations in conditioned space: Provide dustproof enclosure

B. Each panel shall include the following:
   1. Receptacles: Provide a 20 ampere duplex receptacle inside or immediately adjacent to the field control panel.
   2. Master Disconnect Switch: Provide a master electrical power disconnect switch inside the field control panel to disconnect the external power to the cabinet for maintenance and repair. The disconnect switch shall not affect the duplex receptacle hereinbefore specified.
   3. Terminal Strips: Provide screw type terminal strips in the field control panel for the termination of field wiring. Lay out terminal strips in a neat and orderly fashion and label each termination. Wiring entering the panel shall be routed through the panel wire-ways in a neat and workmanlike manner, properly tied or laced and terminated.

2.10 POWER SUPPLIES AND LINE FILTERING

A. Power Supplies:
   1. Provide UL listed control transformers with Class 2 current limiting type or over-current protection in both primary and secondary circuits for Class 2 service as required by the NEC.
   2. Limit connected loads to 80 percent of rated capacity.
   3. Match DC power supply to current output and voltage requirements.
   4. Unit to be full wave rectifier type with output ripple of 5.0 mV maximum peak to peak.
   5. Regulation to be 1 percent combined line and load with 100 microsecond response time for 50 percent load changes.
   6. Provide over-voltage and over-current protection to withstand a 150 percent current overload for 3 seconds minimum without trip-out or failure.
   7. Operational Ambient Conditions: 32 to 120 degrees F.
   8. EM/RF meets FCC Class B and VDE 0871 for Class B and MIL-STD 810 for shock and vibration.
   9. Line voltage units UL recognized and CSA approved.

B. Power Line Filtering:
   1. Provide external or internal transient voltage and surge suppression component for all workstations and controllers.
   2. Minimum surge protection attributes:
      a. Dielectric strength of 1000 volts minimum.
      b. Response time of 10 nanoseconds or less.
      c. Transverse mode noise attenuation of 65 dB or greater.
      d. Common mode noise attenuation of 150 dB or greater at 40 to 100 Hz.

2.11 LOCAL AREA NETWORK (LAN)

A. Provide communication between control units over local area network (LAN).
   1. LAN Capacity: Not less than 60 stations or nodes.
   2. Break in Communication Path: Alarm and automatically initiate LAN reconfiguration.
   3. LAN Data Speed: Minimum 100 MBps
   4. Communication Techniques: Allow interface into network by multiple operation stations and by auto-answer/auto-dial modems. Support communication over telephone lines utilizing modems.
   5. Transmission Median: Fiber optic or single pair of solid 24 gage twisted, shielded copper cable.
   6. Network Support: Time for global point to be received by any station, shall be less than 3 seconds. Provide automatic reconfiguration if any station is added or lost. If transmission cable is cut, reconfigure two sections with no disruption to system's operation, without operator intervention.
   7. Where used, LAN controller cards shall be standard “off the shelf” products available through normal PC vendor channels.

2.12 SYSTEM SOFTWARE

A. System Software Overview: The BAS Contractor shall provide the OID software required for efficient operation of the BAS specified herein. Software shall be modular in design to provide maximum flexibility, expandability, and to permit future revision of the system. The functionality described herein shall be regarded as a minimum. The system software shall include the following, as a minimum:
   1. Complete database entry.
   2. Configuration of the controller and operator workstation application programs to provide the sequence of operation indicated.
   3. Dynamic color Graphics of each system.
   4. Configuration of the reports and point summaries indicated.
   5. Event/alarms comprised of Urgent Alarms, Alarms, and Messages as specified.

B. Graphical User Interface (GUI) Software
1. The GUI shall be a 32-bit full-featured software application compatible with Windows 10. The intent of the GUI is to provide an easy to use graphical OID that enables operators to manage their facilities on a day-to-day basis. The user may navigate within the system to check on environmental conditions, setpoints, schedules, etc. Using a mouse, it shall be possible to easily navigate through floor plans and different areas within a facility or multiple facilities. In addition, manual commands may be used to navigate directly to each point in the system and a tree structure shall show the control system hierarchy.

C. Workstation Applications Editors:
1. Database Creation and Modification. Changes shall be done utilizing standard procedures and while the system is on-line and operating. The system shall allow changes to be made either at the local site through a portable computer or at the central OID.
2. The system shall permit the operator to perform the following, as a minimum:
a. Add and delete BACnet objects and points
b. Assign BACnet Object/Device Instance numbers and Network numbers
c. Modify point parameters, control sequences and programs
d. Reconfigure application programs
e. Create and/or modify graphics

2.13 CONTROLLER SOFTWARE

A. The system shall continuously perform DDC functions at the local control module in a stand alone mode. The operator shall be able to design and modify the control loops to meet the requirements of the system being operated. The operators shall use system-provided displays for tuning of PID loops. These displays shall include the past three input variable values, the setpoint for the loop, the sample interval and the results of the PID effects on the final output.

B. Each control module shall perform the following functions:
1. Identify and report alarm condition.
2. Execute each application programs indicated in the sequences of operation.
3. Execute DDC algorithms.
4. Trend and store data.
5. Maintain time-of-day schedules.

C. Software Integration: The programs should be integrated into a single working system and each of the above functions should be executed in real time and automatically when needed, such as to optimize the controlled equipment.

D. System Security: User access secured via user passwords and user names.

E. Object or Object Group Scheduling:
   1. Weekly Schedules Based on Separate, Daily Schedules:
      a. Include start, stop, optimal stop, and night economizer.
      b. 10 events maximum per schedule.
      c. Start/stop times adjustable for each group object.
   2. Exception Schedules:
      a. Based on any day of the year.
      b. Defined up to one year in advance.
      c. Automatically discarded and replaced with standard schedule for that day of the week upon execution.
   3. Holiday or Special Schedules:
      a. Capability to define up to 99 schedules.
      b. Repeated annually.
      c. Length of each period is operator defined.

F. Provide standard application for equipment coordination and grouping based on function and location to be used for scheduling and other applications.

G. Alarms:
   1. Binary object is set to alarm based on the operator specified state.
   2. Analog object to have high/low alarm limits.
   3. All alarming is capable of being automatically and manually disabled.
   4. Alarm Reporting:
      a. Operator determines action to be taken for alarm event.
      b. Alarms to be routed to appropriate workstation.

H. Maintenance Management: System monitors equipment status and generates maintenance messages based upon user-designated run-time limits.

I. Sequencing: Application software based upon specified sequences of operation

J. PID Control Characteristics:
   1. Direct or reverse action.
   2. Anti-windup.
   3. Calculated, time-varying, analog value, positions an output or stages a series of outputs.
   4. User selectable controlled variable, set-point, and PED gains.

K. Power Failure/Automatic Restart:
   1. Power failures shall cause the control module to go into an orderly shutdown with no loss of program memory.
   2. Upon resumption of power, the Control module shall automatically restart and printout the time and date of the power failure and restoration at the respective OID.

3. Prior to taking action, the controller shall look at the actual time-of-day and the programmed schedule for the controlled systems. If systems are operating, the restart program shall automatically restart affected field equipment. The operator shall be able to define an automatic power up time delay for each piece of equipment under control.

L. Staggered Start Application:
1. Prevents all controlled equipment from simultaneously restarting after power outage.
2. Order of equipment startup is user selectable.

M. Energy Calculations:
1. Accumulated instantaneous power or flow rates are converted to energy use data.
2. Algorithm calculates a rolling average and allows window of time to be user specified in minute intervals.
3. Algorithm calculates a fixed window average with a digital input signal from a utility meter defining the start of the window period that in turn synchronizes the fixed-window average with that used by the power company.

N. Anti-Short Cycling:
1. All binary output objects protected from short-cycling.
2. Allows minimum on-time and off-time to be selected.

O. On-Off Control with Differential:
1. Algorithm allows binary output to be cycled based on a controlled variable and set-point.
2. Algorithm to be direct-acting or reverse-acting incorporating an adjustable differential.

P. Run-Time Totalization:
1. Totalize run-times for all binary input objects.
2. Provides operator with capability to assign high run-time alarm.

2.14 INPUT HARDWARE

A. Temperature Sensors: Vibration and corrosion resistant, for wall, immersion, or duct mounting as required.
1. General purpose temperature sensors
a. Accuracy: +/-0.5 degrees F at calibration point.
2. Outside Air Temperature Sensors
a. Description: Designed to withstand the environmental conditions to which they will be exposed. They shall also be provided with a solar shield. Sensors exposed to wind velocity pressures shall be shielded by a perforated plate that surrounds the sensor element. Temperature

transmitters shall be of NEMA 3R construction and rated for ambient temperatures.

b. Accuracy: within +/- 1 degrees F in the range of -52 degrees F to 120 degrees F.

3. Room Temperature Sensors:
   a. Description: Steel cover plate with insulated back and security screws. Color per architect.
4. Room temperature sensors with slide switch
   a. Description: Construct for surface mounting. Provide setpoint reset slide switch with an adjustable temperature range.
   b. Accuracy: +/-0.5 degrees F in the range of 32 degrees F to 96 degrees F.
5. Room Temperature Sensors with Integral Digital Display:
   a. Description: Construct for surface mounting with four button keypad with the following capabilities:
      1) Indication of space temperature.
      2) Setpoint adjustment to accommodate room setpoint,
      3) Display and control fan operation status.
      4) Manual occupancy override and indication of occupancy status.
      5) Controller mode status.
6. Chilled water and condenser water sensors
   a. Accuracy: +/-0.25 degrees F in the range 30 degrees F to 70 degrees F.
7. Hot water temperature sensors
   a. Accuracy: +/-0.75 degrees F over the range of 50 degrees F to 250 degrees F.
8. Thermo wells:
   a. When thermo wells are required, the sensor and well shall be supplied as a complete assembly, including wellhead and Greenfield fitting. Thermo wells shall be pressure rated and constructed in accordance with the system working pressure. Thermo wells and sensors shall be mounted in a threadolet or 1/2” NFT saddle and allow access to the sensor for repair or replacement. Thermo wells shall be constructed of 316 stainless steel.
9. Ceiling and Recessed Mount Temperature Sensors:
   a. Description: Ceiling-mounted sensor in a low-profile housing.
10. Temperature Averaging Elements
    a. Accuracy: +/- 1 degrees F.
    b. Applications: Use on duct sensors for ductwork 10 sq ft or larger, where prone to stratification and for all mixed air and heating coil discharge sensors regardless of duct size.
11. Duct Mount Sensors
    a. Description: Duct mount sensors shall mount in an electrical box through a hole in the duct, and be positioned so as to be easily accessible for repair or replacement. Duct sensors shall be insertion type and constructed as a complete assembly, including lock nut and

mounting plate. For outdoor air duct applications, a weatherproof mounting box with weatherproof cover and gasket shall be used.

B. Humidity Sensors: Vibration and corrosion resistant, for wall, immersion, or duct mounting as required.
   1. Room Sensors
      a. Description With locking cover, matching room temperature sensors, span of 25% to 90% R.H.
      b. Accuracy: ± 3% of operating range, with linear output
   2. Duct and Outside Air Sensors
      a. Description: With element guard and mounting plate, range of 0% to 100% R.H., with repeatable accurate readings from 10% to 90% R.H.
      b. Accuracy: ± 1% of operating range, with linear output

C. Differential Water Pressure Sensors
   1. Manufacturers:
      a. Setra
      b. Mamac
      c. Automation Components Inc. (ACI)
      d. Greystone
   2. Description: Industrial quality probe with pressure transducer designed to transmit a proportional 4 to 20 mA or 0-10VDC output in response to variation of differential pressure at water pressure sensing points. Pressure transmitters shall be selected with suitable range for expected input, temperature compensated, and constructed to withstand 100% pressure over-range without damage, and to hold calibrated accuracy when subject to a momentary 40% over-range input. A minimum of a NEMA 1 housing shall be provided for the transmitter. Differential pressure transmitters used for flow measurement shall be sized to the flow sensing device, and shall be supplied with Tee fittings and shut-off valves in the high and low sensing pick-up lines.
   3. Transmitters shall be located in accessible local control panels wherever possible.
   4. Accuracy: 1% of full scale, maintain up to 20 to 1 ratio turndown.

D. Differential Air Pressure Sensors
   1. Manufacturers:
      a. Setra
      b. Mamac
      c. Automation Components Inc. (ACI)
      d. Greystone
   2. Description: Air Static Pressure and Differential Pressure Sensors shall consist of a probe with pressure transducer designed to transmit a proportional 4 to 20 mA or 0-10VDC output in response to variation of differential pressure at air pressure sensing points. Pressure transmitters shall be selected with suitable range for expected input, temperature compensated, and constructed to withstand 100% pressure over-range without damage, and to hold calibrated

accuracy when subject to a momentary 40% over-range input. A minimum of a NEMA 1 housing shall be provided for the transmitter. Transmitters shall be located in accessible local control panels wherever possible.

3. Accuracy: 2% of full scale with repeatability of 0.5%.
4. Range:
   a. Building Static Pressure Range: 0 inch to 0.25 inch wg.
   b. Duct Static Pressure Range: 0 inch to 5 inches wg.
   c. End of Line Primary Fan System Discharge Duct Static Pressure Range: 0 to 4 inches wg.
   d. Return Air and Outside Air Static Pressure Range: -2 to +2 inches wg.

E. Fluid Flow Monitoring
1. Electromagnetic type (Pipes 3” or larger)
   a. Manufacturer and model: Onicon F3500
   b. Description: Electromagnetic type with integral microprocessor-Based electronics, NEMA 4 enclosure, and 316L stainless steel wetted components, analog output signal. The meter shall have an accuracy of +/-1.0% from 2 to 20 ft/sec. Provide remote mounted LCD read-out panel or unit mounted.
2. Electromagnetic type (Pipes smaller than 3”)
   a. Manufacturer and model: Onicon F3100
   b. Electromagnetic type with integral microprocessor-Based electronics, NEMA 4 enclosure, analog output signal. The meter shall have an accuracy of +/-0.4% ft/sec from 3.3 to 33 ft/sec. Provide remote mounted LCD read-out panel or unit mounted.

F. BTU Monitoring
1. Manufacturer and model: Onicon System 10
2. Description: Two matched temperature sensors and flow meter, microprocessor-based controller, designed to provide full energy, flow and temperature data at local LCD panel and over a serial network interface. Calibrated using application specific flow and temperature data and provided with a certificate of calibration.

G. Airflow Measuring Sensors (AFMS)
1. Thermal Dispersion Type
   a. Description: Thermal airflow stations with one or more bead-in-glass thermistor sensor nodes mounted in a probe with a stainless steel mounting bracket, and a remotely mounted microprocessor-based transmitter at each measurement location compatible with BMS. Provide the number of independent sensor nodes as recommended by the airflow station manufacturer based on the duct size.
   b. Sensing-Node Temperature Accuracy: Within 0.15 deg F (0.08 deg C) over an operating range of minus 20 to plus 160 deg F (minus 28.9 to plus 71.1 deg C) and humidity range of 0 to 100 percent RH.

c. Airflow Station Accuracy: Within 3 percent of reading for ducted applications, and within 5 percent of reading for non-ducted applications.

2. Pitot-Tube Type
   a. Description: Multiple total- and static-pressure sensors positioned at the center of equal area of the station cross section and interconnected by respective averaging manifolds. Provide the number of independent sensors recommended by the airflow station manufacturer in written instructions based on the duct size.
   b. Casing: Galvanized sheet steel at least 0.079 inch (2.0 mm) thick with coating complying with ASTM A653/A653M, G90 (Z275). Casings shall be stainless steel, 0.0781 inch (2.0 mm) thick, when connected to stainless duct and aluminum, 0.063 inch (1.6 mm) thick, when connected to aluminum duct.
   c. Straightener or equalizer: Type 3003 aluminum or Type 316 stainless steel, depending on casing material. Use stainless steel for units with stainless-steel casings.
   d. Pressure sensor array: Drawn copper or stainless-steel tubing. Use stainless steel for units with stainless-steel casings. Copper tubing shall comply with ASTM B75 and ASTM B280. Minimum tube wall thickness shall be 0.030 inch (0.8 mm). Include internal piping and external pressure transmitter ports.
   e. Performance:
      1) Pressure Loss: 0.015-inch wg (3.8 Pa) at 1000 fpm (5 m/s), or 0.085-inch wg (22.5 Pa) at 2000 fpm (10 m/s).
      2) Accuracy: Within 2 percent of actual airflow.
      3) Self-Generated Sound: NC 40 and sound level within the duct shall not be amplified.
      4) Performance rated and tested according to AMCA 610. Each station shall bear the AMCA seal.
3. Piezometer Ring Fan Inlet Airflow Sensor
   a. Description: Multiple pressure sensor points strategically placed along the circumference of the inlet cone and internally connected to an averaging ring manifold located behind the inlet cone. Sensor points shall not protrude beyond the surface of the inlet cone nor be adversely affected by particle contamination present in the airstream. Sensor shall be non-intrusive and not impact fan performance. Product shall be a standard offering of the fan manufacturer and include published literature with supporting test data to validate sensor performance.
   b. Accuracy: within 5 percent of actual airflow.

H. Status and Safety Switches
1. General Requirements and application: Switches shall be provided to monitor equipment status, safety conditions, and generate alarms at the BMS when a failure or abnormal condition occurs. Safety switches shall be provided with two

sets of contacts and shall be interlock wired to shut down respective equipment.

a. Status Inputs for Fans: Differential-pressure switch with adjustable range of 0 to 5 inches wg. or current sensing switch, as indicated on the control diagrams.
b. Status Inputs for Pumps: Differential-pressure switch piped across pump with adjustable pressure-differential range of 5 psig to 1.5 times the design pump operating pressure differential, or current sensing switch, as indicated on the control diagrams.
c. Status Inputs for Electric Motors: Current-sensing relay with current transformers, adjustable and set to 175 percent of rated motor current.

2. Current Sensing Switches
   a. The current sensing switch shall be self-powered with solid-state circuitry and a dry contact output. It shall consist of a current transformer, a solid state current sensing circuit, adjustable trip point, solid state switch, SPDT relay, and an LED indicating the on or off status. A conductor of the load shall be passed through the window of the device. It shall accept over-current up to twice its trip point range.
   b. Current sensing switches shall be calibrated to show a positive run status only when the motor is operating under load. A motor running with a broken belt or coupling shall indicate a negative run status.
3. Air Filter Status Switches
   a. Differential pressure switches used to monitor air filter status shall be of the automatic reset type with SPDT contacts rated for 2 amps at 120VAC.
   b. A complete installation kit shall be provided, including: static pressure tops, tubing, fittings, and air filters.
   c. Provide appropriate scale range and differential adjustment for intended service.
4. Air Flow Switches
   a. Differential pressure flow switches shall be bellows actuated mercury switches or snap acting micro-switches with appropriate scale range and differential adjustment for intended service.
5. Air Pressure Safety Switches
   a. Air pressure safety switches shall be of the manual reset type with SPDT contacts rated for 2 amps at 120VAC.
   b. Pressure range shall be adjustable with appropriate scale range and differential adjustment for intended service.
6. Water Flow Switches
   a. Bellows-actuated mercury or snap-acting type, with appropriate scale range and differential adjustment, with stainless-steel or bronze paddle. For chilled-water applications, provide vapor-proof type.

7. Low Temperature Limit Switches
    a. The low temperature limit switch shall be of the manual reset type with Double Pole/Single Throw snap acting contacts rated for 16 amps at 120VAC.
    b. The sensing element shall be a minimum of 15 feet in length and shall react to the coldest 18-inch section. Element shall be serpentined across the leaving side of the coil surface in accordance with manufacturers recommended installation procedures.
    c. For large duct areas where the sensing element does not provide full coverage of the air stream, additional switches shall be provided as required to provide full protection of the air stream.
8. Damper Position Indication
    a. Potentiometer mounted in enclosure with adjustable crank arm assembly connected to damper to transmit 0 - 100 percent damper travel.

I. Vibration Switches: Designed to provide vibration protection for rotating machinery operating within the range of 120 to 60,000 rpm. Provide two limit set points, one set for the maximum allowable vibration (in/sec), and the other set for a percentage of that setting, tripping the alarm relay when that percentage is reached. Provide a built-in, adjustable time delay to prevent trips due to transient vibrations. Switch shall be wired for automatic remote reset and enclosed in water-tight housing.

J. Water Detectors: External tape-style sensor with contacts to connect to a monitoring system. Gold-plated probes and microchip technology for detection of conductive liquids. Weatherproof enclosure with LED indication if water detected.

K. Power Monitoring Devices:
1. Manufacturers:
    a. Veris Industries
2. Current measurement shall be by a combination current transformer and a current transducer. The current transformer shall be sized to reduce the full amperage of the monitored circuit to a maximum 5 Amp signal, which will be converted to a 4-20 mA DDC compatible signal for use by the BAS.
3. Current Transformer: A split core current transformer shall be provided to monitor motor amps.
    a. Operating frequency – 50 - 400 Hz.
    b. Insulation – 0.6 Kv class 10Kv BIL.
    c. UL recognized.
    d. Five amp secondary.
    e. Select current ration as appropriate for application.
4. Current Transducer: A current to voltage or current to mA transducer shall be provided. The current transducer shall include:
    a. 6X input over amp rating for AC inrushes of up to 120 amps.
    b. Manufactured to UL 1244.
    c. Accuracy: +.5%, Ripple +1%.

d. Minimum load resistance 30kOhm.
e. Input 0-20 Amps.
f. Output 4-20 mA.
g. Transducer shall be powered by a 24VDC regulated power supply (24 VDC +5%).

L. Carbon Dioxide Sensors: Electronic, designed to monitor CO2 levels in HVAC systems for use in demand controlled ventilation systems according to ASHRAE Standard 62. Units shall have linear analog output of 0-10VDC/4-21mA, over a range of 0-3000 ppm of CO2. Units shall be furnished with a 5-year calibration guarantee.

M. Oxygen Sensor: Wall-mounted, single detectors, using solid-state zircon cell sensing, suitable over a temperature range of minus 32 to plus 1100 deg F (0 to 593 deg C), calibrated for 0 to 5 percent, with continuous or averaged reading, 4 to 20 mA output.

N. Occupancy Sensor: Passive infrared, with time delay, daylight sensor lockout, sensitivity control, and 180-degree field of view with vertical sensing adjustment, flush mounting for finished areas (offices, entries, etc.), and wall mounted for storage areas, garages, shops, etc.

2.15 PARKING GARAGE CO AND NO2 MONITORING SYSTEM

A. Manufacturers:
1. Honeywell
2. Toxalert, Inc.
3. MSA, Inc.

B. Description: Provide gas monitoring detection system consisting of sensors, control panels and other components as required for a complete installation. The Carbon Monoxide (CO) and Nitrogen Dioxide (NO2) sensors shall be housed in a combination NEMA 1 removable hinged cover cabinet with a keyed lock to prevent tampering. An aluminum splash/dust shield on the face of sensor to protect sensing element. A combination CO/NO2 sensor is acceptable

C. System controller: Provide a microprocessor based controller to monitor each carbon monoxide and nitrogen dioxide sensor. Provide adjustable alarm setpoints, 85db audible alarm, visual alarms, auxiliary relay contacts for control of ventilation fans and all necessary power supplies and transformers to supply power to sensors.

D. Carbon Monoxide Sensors: Electronic, microprocessor-based, designed to measure carbon monoxide (CO) and provide a digital display and analog output proportional to the CO level being sensed. Unit shall display and report CO levels of between 0 and 400 ppm with an accuracy of +/-5 percent.

E. Nitrogen Dioxide Sensors: Electro-chemical element, microprocessor-based, designed to measure nitrogen dioxide (NO2) and provide an analog signal proportional to the NO2 gas levels detected and shall have a normal operation range of 4° F to 122° F and 15 to 90% R.H. non-condensing. The sensor shall have a range of 0 to 20 PPM with a response time of 30 seconds to 90% indication.

2.16 CHILLER ROOM REFRIGERANT DETECTION SYSTEM

A. Manufacturers:
1. Honeywell
2. Toxalert, Inc.
3. MSA, Inc.

B. Description: Provide complete refrigerant leak monitoring system consisting of remote refrigerant sensors and a controller/annunciator panel designed to continuously monitor the level of refrigerants in mechanical equipment rooms with chillers. Provide control unit with power on; warning, alarm and sensor malfunction indicators, LCD display of gas concentration, relay contacts (warning and alarm) and interface to automation systems. It also comes with an audible alarm and silence switch, purge On/Auto switch, and Manual/Auto reset switch.

C. Refrigerant Sensors: The sensing element shall be solid state metal oxide semiconductor housed in an explosion proof housing with output signal proportional to the refrigerant level being detected.

D. Remote Alarm Panel: Provide one at each machinery room door with horn, light, silence button & purge switch.

2.17 THERMOSTATS

A. General: Refer to control sequences and diagrams for application requirements. Manufacturer’s standard thermostats shall meet the applicable requirements listed below, unless thermostat is specified in other sections.

B. Combination Thermostat and Fan Switches: Line-voltage thermostat with two-, three-, or four-position, push-button or lever-operated fan switch. Label switches "FAN ON-OFF," "FAN HIGH-LOW-OFF," or "FAN HIGH-MED-LOW-OFF." Provide unit for mounting on two-gang switch box. Separate heating and cooling setpoint with locking exposed setpoint adjustment. Automatic switching from heating to cooling.

C. Electric microcomputer-based room thermostats: 7-day programmable with automatic switching from heating to cooling, short-cycle protection, battery replacement without program loss, LCD display including room temperature, setpoint and mode.

D. Low-Voltage, On-Off Thermostats: NEMA DC 3, 24-V, bimetal-operated mercury-switch type, with adjustable anticipation heater.

E. Line-Voltage, On-Off Thermostats: Bimetal-actuated, open contact or bellows-actuated, enclosed, snap-switch type, or equivalent solid-state type, with heat anticipator, integral manual on-off-auto selector switch. Thermostats that control electric heating loads directly shall be provided with off position on dial wired to break ungrounded conductors.

F. Remote-Bulb Thermostats: On-off or modulating type, liquid filled to compensate for changes in ambient temperature, with copper capillary and bulb, unless otherwise indicated.
1. Bulbs in water lines with separate wells of same material as bulb.
2. Bulbs in air ducts with flanges and shields.
3. Averaging Elements: Copper tubing with either single- or multiple-unit elements, extended to cover full width of duct or unit, adequately supported.
4. Scale settings and differential settings are clearly visible and adjustable from front of instrument.
5. On-Off Thermostat: With precision snap switches, with electrical ratings required by application.
6. Modulating Thermostats: Construct so complete potentiometer coil and wiper assembly is removable for inspection or replacement without disturbing calibration of instrument.

G. Fire-Protection Thermostats: UL listed with fixed or adjustable settings to operate at not less than 75 deg F above normal maximum operating temperature, with the following:
1. Compliant with latest issue of NFPA 90A.
2. Reset: Manual
3. Dual-Temperature Thermostats: Automatic changeover from normal setting to lower unoccupied setting, with manual-reset lever to permit return to normal temperatures during unoccupied cycles, with automatic reset to normal during next cycle of operation.

H. Immersion Thermostats: Remote-bulb or bimetal rod-and-tube type, proportional acting with adjustable throttling range and adjustable set point.

I. Airstream Thermostats: Two-pipe, fully proportional, single-temperature type, with adjustable set point in middle of range and adjustable throttling range, plug-in air gauge test fitting or permanent pressure gage, remote bulb, bimetal rod and tube, or averaging element.

J. Heating/Cooling Valve-Top Thermostats: Proportional acting for modulating flow, molded-rubber diaphragm, remote-bulb liquid-filled element, direct or reverse acting with minimum valve shutoff differential pressure of 25 psig, and cast housing with position indicator and adjusting knob.

2.18 HUMIDISTATS

A. Electric Duct-Mounted Humidistats: Insertion, 2-position type with adjustable 2 percent throttling range, 20 to 80 percent operating range, single- or double-pole contacts.

2.19 TIME CLOCKS

A. Seven day programming switch timer with synchronous timing motor and seven day dial, continuously charged Ni-cad battery driven power failure 8 hour carry over and multiple switch trippers to control systems for minimum of two and maximum of eight signals per day with two normally open and two normally closed output switches.

B. Solid state programmable time control, 24 hour battery carry over, duty cycling.

2.20 CONTROL VALVES

A. General: All automatic control valves shall be factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of the piping system in which the valve is being installed, and be suitable for the system flow conditions and close against the differential pressures involved. Valves shall be fully proportioning and provide near linear heat transfer control. The valves shall be quiet in operation and fail-safe open, closed, or in their last position. All valves shall operate in sequence with another valve when required by the sequence of operations. All control valves shall be sized by the control manufacturer, and shall be guaranteed to meet the heating and cooling loads, as specified.

B. Sizing and application: Valves shall be globe, ball, and/or butterfly, as required by the specific application. Modulating water valves shall be sized per manufacturer's recommendations for the given application.
   1. Liquid Control Valves (water and glycol)
      a. Two-position service: Line size unless otherwise indicated.
      b. Two-way modulating service (non-pressure independent): Pressure drop shall be equal to the pressure drop through heat exchanger (load), 50 percent of the pressure difference between supply and return pipe mains, or 5 psi whichever is greater. Minimum Cv shall be calculated at 10 percent of design flow, with a coincident pressure differential equal to the system design pump head.
      c. Three-way modulating service: Pressure drop equal to the pressure drop through the coil exchanger (load), 5 psi maximum.
      d. For pressure independent valves, select for a differential pressure range of 5 to 50 psig.
      e. Close-off (differential) Pressure Rating: Valve actuator and trim shall be furnished to provide the following minimum close-off pressure ratings:
         1) Two-way: 150 percent of total system (pump) head.

2) Three-way: 300 percent of pressure differential between ports A and B at design flow or 100 percent of total system (pump) head.

2. Steam Valves
   a. Two-position service: Line size.
   b. Modulating valve sizes for steam service shall provide a pressure drop at design flow equal to lesser of the following
      1) Two-position service: pressure drop 10 percent to 20 percent of inlet psig.
      2) Modulating service: 15 psig or less; pressure drop 80 percent of inlet psig.
      3) Modulating service: 16 to 50 psig; pressure drop 50 percent of inlet psig.
      4) Modulating service: over 50 psig; pressure drop as indicated on plans.
   c. Close-off (differential) Pressure Rating: Valve actuator and trim shall be furnished to provide minimum close-off pressure rating of 150 percent of operating (inlet) pressure.
   d. Control valves shall be suitable for operation at system operating pressure and temperature identified in associated Division 23 steam piping and accessories section.

C. Ball Valves NPS 2 and Smaller:
   1. Description: Forged brass body with nickel plating, characterized stainless steel ball and trim, and Teflon seats and seals.
   2. Application: Characterized Ball valves shall be used for hot and condenser water applications, water terminal reheat coils, radiant panels, unit heaters, package air conditioning units, and fan coil units except those described hereinafter.
   3. Manufacturers:
      a. Belimo CCV
      b. Siemens
      c. Johnson Controls

D. Globe Pattern:
   1. Application: Modulating valves of the single-seat type with equal percentage flow characteristics shall be used for all AHU, ERU and special applications as indicated.
   2. Manufacturers:
      a. Belimo
      b. Siemens
      c. Johnson Controls
   3. Up to 2 inches (50 mm): Bronze body, bronze trim, rising stem, renewable composition disc, screwed ends with backseating capacity repackable under pressure.

4. Over 2 inches: Iron body, bronze trim, rising stem, plug-type disc, flanged ends, renewable seat and stainless steel disc.
5. Hydronic Systems:
    a. Rate for service pressure of 125 psig at 250 degrees F.
    b. Replaceable plugs and seats of stainless steel.
    c. Two way valves shall have equal percentage characteristics, three way valves linear characteristics. Size two way valve operators to close valves against pump shut off head.
6. Steam Systems:
    a. Rate for service pressure of 125 psig at 250 degrees F.
    b. Replaceable plugs and seats of stainless steel. Pressure drop across any steam valve at maximum flow shall be as shown on the Drawings.
    c. Valves shall have modified linear characteristics.

E. Butterfly Pattern:
1. Application: High Performance Butterfly valves shall be acceptable for modulating large flow applications greater than modulating plug valves, and for all two-position, open/close applications. In-line and/or three-way butterfly valves shall be heavy-duty pattern with a body rating comparable to the pipe rating, replaceable lining suitable for temperature of system, and a stainless steel vane.
2. Sizing: Valves for modulating service shall be sized and travel limited to 50 degrees of full open. Valves for isolation service shall be the same as the pipe. Valves in the closed position shall be bubble-tight.
3. Manufacturers:
    a. Nibco, Inc.
    b. Crane Co.
    c. Grinnell
    d. Hammond Valve
    e. Milwaukee Valve Co.
    f. Bray International
4. Lug type: Bi-directional dead end service without downstream flange.
    a. Body: Carbon steel, cast iron, ductile Iron or stainless steel.
    b. Seat: Metal or reinforced PTFE.
    c. Offset stem: Stainless steel.
    d. Disc: 316 Stainless Steel

F. Pressure Independent Control Valves
1. Application: Provide pressure independent flow control valves as specified within the drawings and schedules.
2. Description:
    a. Body: Forged brass, nickel plated body
    b. Packing: EPDM O-rings, lubricated.
    c. Trim: Chrome plated brass stem, chrome plated brass ball with equal percentage flow characteristics, fiberglass reinforced Teflon PTFE seats.

d. Pressure Rating: 600 psi (1/2" to 1") and 400 psi (1-1/4" to 2")
e. Temperature Ratings: Media temperature range 0ºF to 212ºF
f. Close Off Pressure Rating: 200 PSI

3. Manufacturers:
   a. Griswold
   b. Belimo
   c. FDI
4. Accuracy: The flow shall not vary more than +/- 5% due to system static pressure fluctuations across the valve with a minimum of 5 PSID across the valve from 0 to 100% full rated flow with an equal percentage characteristic.
5. Sizing: sized by the maximum coil capacity in GPM, not the conventional Cv method.
6. Provide PT ports to verify flow.
7. The manufacturer shall warranty all components for a period of 5 years from the date of production, with the first two years unconditional.

G. Terminal Unit Control Valves:
1. Bronze or brass body, bronze trim, two- or three-port as indicated, stainless steel ball union and threaded ends, 100 psi close-off rating.
2. Rating: Class 125 for service at 862 kPa (125 psig) and 121 deg C (250 deg F) operating conditions.
3. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.

2.21 DAMPERS

A. General: The BMS Contractor shall furnish all automatic dampers unless provided as standard from equipment manufacturer. All automatic dampers shall be sized for the application by the BMS Contractor or as specifically indicated on the Drawings.

B. Sizing and Application: All dampers used for throttling airflow shall be of the opposed blade type arranged for normally open or normally closed operation, as required. The damper is to be sized so that, when wide open, the pressure drop is a sufficient amount of its close-off pressure drop to shift the characteristic curve to near linear. All dampers used for two-position, open/close control and mixing boxes shall be parallel blade type arranged for normally open or closed operation, as required.

C. Airfoil Blade Dampers
1. General: Double skin construction with linkage out of the air stream
2. Manufacturers:
   a. Johnson Controls D-7250 D-1250 or D-1300
   b. Ruskin CD50
   c. Vent Products 5650.
   d. Tamco
3. Application: whenever the damper face velocity exceeds 1500 FPM or system pressure exceeds 2.5” w.g., but no more than 4000 FPM or 6” w.g.

D. One-Piece Rolled Blade Damper
1. Manufacturers:
a. Johnson Controls D-1600
b. Ruskin CD36
c. Vent Products 5800
d. Tamco
2. Performance: Dampers shall be tight closing, low leakage type, with synthetic elastomer seals on the blade edges and flexible stainless steel side seals. Dampers of 48”x48” size shall not leak in excess of 8.0 cfm per square foot when closed against 4” w.g. static pressure when tested in accordance with AMCA Std. 500.
3. Construction:
a. Frames: Galvanized steel, welded or riveted with corner reinforcement, minimum 12 gage, 0.1046 inch.
b. Blades: Galvanized steel, maximum blade size 8 inches wide, 48 inches long, minimum 22 gage, 0.0299 inch, attached to minimum 1/2 inch shafts with set screws.
c. Blade Seals: Synthetic elastomeric inflatable mechanically attached, field replaceable.
d. Jamb Seals: Spring stainless steel.
e. Shaft Bearings: Oil impregnated sintered bronze.
f. Linkage Bearings: Oil impregnated sintered bronze.
4. Application: face velocities of 1500 FPM or below.

2.22 ACTUATORS

A. General: Size to operate with sufficient reserve power to provide smooth modulating action or two-position action over the entire operating range. Provide proportional or two-position type as indicated in the sequence of operation, with current limiting circuitry or microprocessor overload protection.

B. Manufacturers:
1. Johnson Controls
2. Honeywell
3. Belimo
4. Siemens

C. Electronic Damper Actuators
1. Modulating and two-position actuators shall be provided as required by the sequence of operations and as indicated on drawings. Damper sections shall be sized based on actuator manufacturer’s recommendations for face velocity, differential pressure and damper type. The actuator mounting arrangement and spring return feature shall permit normally open or normally closed positions of the dampers, as required. All actuators (except terminal units) shall be furnished with mechanical spring return unless otherwise specified in the sequences of

operations. All actuators shall have external adjustable stops to limit the travel in either direction and a gear release to allow manual positioning.

2. Modulating actuators shall accept 24 VAC or VDC power supply, consume no more than 15 VA, and be UL listed. The control signal shall be 2-10 VDC or 4-20 mA, and the actuator shall provide a clamp position feedback signal of 2-10 VDC. The feedback signal shall be independent of the input signal and may be used to parallel other actuators and provide true position indication. The feedback signal of one damper actuator for each separately controlled damper shall be wired back to a terminal strip in the control panel for trouble-shooting purposes.
3. Two-position or open/closed actuators shall accept 24 or 120 VAC power supply and be UL listed. Isolation, smoke, exhaust fan, and other dampers, as specified in the sequence of operations, shall be furnished with adjustable end switches to indicate open/closed position or be hard wired to start/stop associated fan. Two-position actuators, as specified in sequences of operations as “quick acting,” shall move full stroke within 20 seconds. All smoke damper actuators shall be quick acting.
4. Electronic damper actuators shall be direct shaft mount.

D. Electronic Valve Actuators:

1. Modulating and two-position actuators shall be provided as required by the sequence of operations. Actuators shall provide the minimum torque required for proper valve close-off against the system pressure for the required application. The valve actuator shall be sized Based on valve manufacturer’s recommendations for flow and pressure differential. All actuators shall fail in the last position unless specified with mechanical spring return in the sequence of operations. The spring return feature shall permit normally open or normally closed positions of the valves, as required. All direct shaft mount rotational actuators shall have external adjustable stops to limit the travel in either direction.
2. Modulating Actuators shall accept 24 VAC or VDC and 120 VAC power supply and be UL listed. The control signal shall be 2-10 VDC or 4-20 mA and the actuator shall provide a clamp position feedback signal of 2-10 VDC. The feedback signal shall be independent of the input signal, and may be used to parallel other actuators and provide true position indication. The feedback signal of each valve actuator (except terminal valves) shall be wired back to a terminal strip in the control panel for trouble-shooting purposes.
3. Two-position or open/closed actuators shall accept 24 or 120 VAC power supply and be UL listed. Butterfly isolation and other valves, as specified in the sequence of operations, shall be furnished with adjustable end switches to indicate open/closed position or be hard wired to start/stop the associated pump or heat exchanger.

2.23 WIRE, CABLE AND NETWORK ACCESSORIES

A. Exposed cables installed in air plenums shall be specifically listed for air plenum use. (See specifications for specific wire and cable installation requirements.)

B. Cables, both fiber and copper, shall be as recommended by the manufacturer of the BAS, and shall be as required to support the specified LAN BACnet transmission type.

C. Network Repeater: Provide network repeaters as required to isolate and boost RS-485 signals. Provide power connection and NEMA enclosure as required.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

3.2 INSTALLATION

A. Provide a complete, neat and workmanlike installation. Use only manufacturer employees who are skilled, experienced, trained, and familiar with the specific equipment, software, standards and configurations to be provided for this Project.

B. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.

C. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation.

D. Provide with 120v AC, 15 amp dedicated emergency power circuit to each programmable control unit.

E. Provide conduit and electrical wiring in accordance with Section 26. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

F. Combination fire Smoke dampers shall be installed by division 23, powered by division 26, interconnecting control wiring between duct mounted smoke detector and fire/smoke damper by BMS contractor, alarm points, status/position, shut down of unit and notification by BMS contractor.

G. Furnish and install all access doors.

H. BMS Wiring
1. All conduit, wiring, accessories and wiring connections required for the installation of the Building Management System, as herein specified, shall be provided by the BMS Contractor unless specifically shown on the Electrical Drawings under Division 26 Electrical. All wiring shall comply with the requirements of applicable portions of Division 26 and all local and national electric codes, unless specified otherwise in this section.
2. All BMS wiring materials and installation methods shall comply with BMS manufacturer recommendations.
3. The sizing, type and provision of cable, conduit, cable trays, and raceways shall be the design responsibility of the BMS Contractor. If complications arise, however, due to the incorrect selection of cable, cable trays, raceways and/or conduit by the BMS Contractor, the Contractor shall be responsible for all costs incurred in replacing the selected components.
4. Class 2 Wiring
   a. All exposed Class 2 (24VAC or less) wiring shall be installed in conduit unless otherwise specified.
   b. Conduit is not required for Class 2 wiring in concealed accessible locations. Class 2 wiring not installed in conduit shall be supported every 5’ from the building structure utilizing metal hangers designed for this application. Wiring shall be installed parallel to the building structural lines. All wiring shall be installed in accordance with local code requirements.
   c. The use of plenum rated cable, not in conduit, in areas such as drop ceilings and wall cavities is acceptable.
   d. Class 2 signal wiring and 24VAC power can be run in the same conduit. Power wiring 120VAC and greater cannot share the same conduit with Class 2 signal wiring.
5. Provide for complete grounding of all applicable signal and communications cables, panels and equipment so as to ensure system integrity of operation. Ground cabling and conduit at the panel terminations. Avoid grounding loops.

I. BMS Line Voltage Power Source
1. 120-volt AC circuits used for the Building Management System shall be taken from panel boards and circuit breakers provided by Division 26.
2. Circuits used for the BMS shall be dedicated to the BMS and shall not be used for any other purposes.
3. DDC terminal unit controllers may use AC power from motor power circuits.

J. BMS Raceway
1. All wiring shall be installed in conduit or raceway except as noted elsewhere in this specification. Minimum control wiring conduit size 3/4”.
2. All conduits and raceways shall be installed level, plumb, at right angles to the building lines and shall follow the contours of the surface to which they are attached.

3. Flexible Metal Conduit shall be used for vibration isolation and shall be limited to 3 feet in length when terminating to vibrating equipment. Flexible Metal Conduit may be used within partition walls. Flexible Metal Conduit shall be UL listed.

K. Penetrations
1. Provide fire stopping for all penetrations used by dedicated BMS conduits and raceways.
2. All openings in fire proofed or fire stopped components shall be closed by using approved fire resistive sealant.
3. All wiring passing through penetrations, including walls shall be in conduit or enclosed raceway.
4. Penetrations of floor slabs shall be by core drilling. All penetrations shall be plumb, true, and square.

L. BMS Identification Standards
1. Node Identification. All nodes shall be identified by a permanent label fastened to the enclosure. Labels shall be suitable for the node location.
a. Cable types specified in Item A shall be color coded for easy identification and troubleshooting.

M. BMS Panel Installation
1. The BMS panels and cabinets shall be located as indicated at an elevation of not less than 2 feet from the bottom edge of the panel to the finished floor. Each cabinet shall be anchored per the manufacturer's recommendations.
2. The BMS contractor shall be responsible for coordinating panel locations with other trades and electrical and mechanical contractors.

3.3 COMMISSIONING

A. Start and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.

B. The Contractor shall provide the services of a factory authorized service representative to assist an independent commissioning agent to start up the BAS, and to commission each component included in the BAS.

C. Controls and Safeties: Test, and set each of the digital and analog sensing and actuating devices. Test each instrumentation device by making a comparison between the central computer or field control panel display and the reading at the device, using an instrument traceable to the National Bureau of Standards, which shall be at least twice as accurate as the device to be tested. Record the measured value and displayed value for each device in the Commissioning Report.

D. Operational Tests: The Contractor shall conduct an operational test of each system and subsystem, including each of the associated field control panels, components, and field devices, to verify the proper sequence of operation and the actual performance of the installed BAS subsystem.

E. Documentation: Provide written documentation of the system commissioning and performance verification processes described above, including an itemized inspection and validation report complete with dates and second test results, and a performance test report for each system and each Sequence of Operation.

3.4 DEMONSTRATION AND INSTRUCTIONS

A. General: The contractor shall demonstrate the operation of the BAS hardware, software, and each of the related components, systems and subsystems to the satisfaction of the Owner. The Contractor shall schedule the demonstration with the Owner's representative at least 2 weeks in advance of the proposed demonstration. Demonstration shall not be scheduled until each of the hardware and software submittals, and the Commissioning Test Report are received and approved. If the work fails to conform to Contract specifications, scheduling of additional site visits by the Contractor for re-demonstration is required.

B. Personnel and Equipment: The Contractor shall supply the required personnel and equipment for the demonstration, including, but not limited to, instruments, ladders, paper, etc. The contractor-supplied personnel shall be competent with and knowledgeable of the project-specific hardware, software, and the HVAC systems. Complete training documentation and a complete copy of the BAS submittals shall be on file at the job site.

C. Physical Demonstration of Response to System Conditions: System acceptance shall include demonstrations that each of the components function properly by actual response to system conditions that may be encountered. The Contractor shall furnish the materials such as sources of temporary heating and cooling necessary to cause the system components to go through the required sequences. Computer simulations of possible operating conditions are not acceptable for demonstration of system performance. Proposed methods of demonstrating component operation shall be submitted to the Owner. Representatives of Owner will also witness the tests.

D. Orientation and training: Provide services of qualified technical personnel for three 6-hour days at project site to instruct Owner's personnel in operation and maintenance of the installed BAS.

3.5 ACCEPTANCE

A. Upon completion of the installation and commissioning of the systems, the contractor shall notify the owner's representative in writing, together with a copy of the commissioning report, that the system is complete and ready for acceptance testing. The owner's representative shall schedule a starting day for system acceptance testing. The contractor shall demonstrate calibration, testing, and adjusting of points or systems selected by the owner's representative. After an adequate sampling of points and sequences have been verified to satisfy the owner's representative that the system is performing in accordance with the contract documents, the system shall be accepted and the warranty period shall begin.

3.6 MAINTENANCE

A. See Section 01 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

B. Provide service and maintenance of energy management and control systems for one years from Date of Substantial Completion.

C. Provide two complete inspections, one in each season, to inspect, calibrate, and adjust controls as required, and submit written reports.

D. Provide complete service of systems, including service calls to inspect, calibrate, and adjust controls, and submit written reports.

END OF SECTION 23 0900

SECTION 23 0993 - SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes sequence of operation for:
1. General.
2. Control devices.
3. Economizer cooling.
4. Baseboard radiators
5. Dedicated outside air system.
6. Domestic hot water pumps.
7. ECMs.
8. Emergency generator.
9. Exhaust fans.
10. Glycol feed unit.
11. Hot water boiler plant.
12. Mini split AC units.
13. Miscellaneous plumbing.
14. Outdoor air conditions monitoring.
15. Unit heaters / Cabinet heaters.
16. Utility metering and monitoring.
17. VFDs.
18. VRF system.
19. Water heaters.
20. Air compressor monitoring.
21. Trending.
22. Alarm notification.

B. Related Sections:
1. Section 23 04 00 – General Conditions for Mechanical Trades
2. Section 23 09 00 - Instrumentation and Control for HVAC: For equipment, devices, and system components to implement sequences of operation.

1.2 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate mechanical system controlled and control system components.
1. Label with settings, adjustable range of control and limits. Submit written description of control sequence.
2. Submit flow diagrams for each control system, graphically depicting control logic.

3. Submit draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.
4. Coordinate submittals with information requested in Section 23 09 00.

1.3 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of components and set points of controls, including changes to sequences made after submission of shop drawings.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 GENERAL

A. Provide all controls, low voltage control wiring, hardware points (analog in, analog out, binary in, binary out) and accessories as required to perform the control sequences indicated. Additionally, provide hardware points indicated regardless that such points may not be required to perform the control sequences indicated.

B. Unless otherwise indicated, setpoints and values listed in the sequence of controls shall be adjustable by the Owner thru the DDC (direct digital controls) or BMS (Building Management System) (BMS and DDC are used interchangeably and share same meaning) graphical interface; the Owner shall not be required to edit operating code in order to change any of the setpoints and values.

C. Heating shall only be enabled when the system is indexed to heating mode (shall occur when outside air temperature is below 65°F). Devices such as CUH and UH shall operate on a software permissive, only allowing fans to start and control valves to open when system is in heating mode, use of aquastats is not acceptable.

D. Temperature Sensors
1. General
a. Where temperature ranges, reset temperatures, setback temperatures, setup temperatures, deadbands, override times, etc. are indicated, those values shall be adjustable both globally and locally.
b. There shall be two independent interfaces for global settings for the following space categories.
1) Corridors, restrooms, vestibules, storage rooms, janitor closets, electrical closets, data closets/rooms, and mechanical rooms

2) Other spaces

c. Each temperature control zone shall be initially set to default to the global settings, with a flag or similar to override the global setting for each of the values for that zone.

d. The values indicated herein shall be the initial global settings.

2. Corridors, restrooms, vestibules, storage rooms, janitor closets, electrical closets, data closets/rooms, and mechanical rooms

a. Unless otherwise indicated, temperature sensors shall be the brushed chrome blank front type sensors. Initial setpoints for dead front sensors shall be as follows:

b. Occupied

1) Heating (defined as outside air temperature is below 65°F): 68°F.

2) Cooling (defined as outside air temperature is above 68°F): 75°F.

c. Unoccupied

1) Heating: 58°F.

2) Cooling: 82°F.

3. Other spaces

a. Unless otherwise indicated, temperature sensors shall be digital temperature adjustment (plus & minus two degrees from BMS setpoint) where occupant can change room temperature setpoints with BMS lockout capabilities. Initial setpoints for sensors shall be as follows:

b. Occupied

1) Heating (defined as outside air temperature is below 65°F): 68°F.

2) Cooling (defined as outside air temperature is above 68°F): 75°F.

c. Unoccupied

1) Heating: 58°F.

2) Cooling: 82°F.

d. Occupied Override

1) Where there are no occupancy sensors in the same space as a temperature sensor, temperature sensors shall be provided with momentary type occupied override buttons. Upon activation of the occupied override button, the space will go to occupied mode for a specific period of time. Set override time at 3 hours initially (configurable).

2) Where occupancy sensors (refer to electrical power drawings for occupancy sensor quantities and locations) are located in the same space as a temperature sensor, the auxiliary contacts of the occupancy sensors shall be connected to the BMS for occupied override purposes.

a) Occupied mode

(1) Spaces indexed to occupied mode shall remain in occupied mode unless the occupancy sensors do not detect occupancy for 10 minutes continuously. At 10 minutes since the last detection of occupancy, the cooling and heating setpoints of the spaces shall be reset to 3°F higher and 3°F lower than the setpoint respectively.

(2) Once in unoccupied mode, the cooling and heating setpoints shall remain at the reset temperatures (3°F higher and lower) until the occupancy sensors detect occupancy for 5 minutes continuous. At 5 minutes continuous occupancy, the occupied setpoint shall be restored.

b) Unoccupied mode

(1) Spaces indexed to unoccupied mode shall remain in unoccupied mode unless the occupancy sensors detect occupancy for 10 minutes continuously. At 10 minutes continuous occupancy, the occupied setpoint shall be used.

(2) Once in the occupied mode, the setpoint shall remain at the occupied setpoint until the occupancy sensors do not detect occupancy for 5 minutes continuous. At 5 minutes since the last detection of occupancy, the unoccupied setpoints shall be restored.

(3) See the lighting plans for the locations of the occupancy sensors.

E. Occupied/Unoccupied Programming

1. The HVAC equipment shall be indexed to warm-up and cool-down modes via the BMS, optimal start/stop shall be programmed in for all equipment so that equipment start and start times are determined based on outside air conditions and system learns based on past building history. The operator station software configuration shall allow the Owner to easily select the occupied and unoccupied hours by individual zone, global by air handler, or global by building. The BMS shall trend the outside air temperature with respect to the warm up times, and shall optimize the warm up times such that the spaces reach occupied temperature by the time selected.
2. Terminal heating and cooling units
   a. Warm-up (morning): Units shall operate in the warm-up mode until the space reaches the occupied temperature setpoint, at which point the unit shall be indexed to the occupied mode.

b. Cool-down (evening): Units shall operate in the cool-down mode until the space reaches the unoccupied temperature setpoint, at which point the unit shall be indexed to the unoccupied mode.

F. Air handling units: Shall remain in the warm-up mode until all spaces served reach occupied temperature setpoints, at which point the units shall be indexed to occupied mode.

3.2 CONTROL DEVICES

A. All devices and sensors shall be adjustable. BMS shall display setpoints and actual conditions/status of all control devices and position of all actuators (damper and valve, with the exception of at Fin Tube, CUH and UH where position/status of actuators is not required at control valve) at the central personal computer (PC) thru the use of end switches and potentiometers integral to actuators.

3.3 ECONOMIZER COOLING

A. Where economizer cooling is indicated as the first stage of cooling, the economizer cooling sequence of control shall be as follows:
1. Economizer cooling shall be enabled when all of the following are true (see also paragraph 2.):
a. The outside air temperature is less than 65°F.
b. The outside air temperature is less than the return air temperature.
c. The outside air enthalpy is less than 22 btu/lb.
d. The outside air enthalpy is less than the return air enthalpy.
2. The BMS system operator shall, via single click editing, be easily able to select any or all of items a. thru d. of the previous paragraph for economizer enabling, for individual air handling systems and for air handling systems globally. Additionally, the BMS system operator shall be easily able to globally change the setpoints for items a. and c. of the previous paragraph.
3. Economizer cooling shall be integrated; economizer cooling shall continue to operate during stages of mechanical cooling as long as all four of the conditions indicated in paragraph 1 are true (or as selected by the system operator per paragraph 2).
4. When both mechanical cooling is anticipated to be required the next day (by trending the outside air enthalpy), and economizer cooling is available during the unoccupied cycle, economizer cooling shall be operated during the unoccupied cycle to pre-cool the spaces served by the air handler to 70°F.

3.4 BASEBOARD RADIATION

A. General: ATC Contractor to provide and monitor space sensor.

B. Fin Tube Radiation with air handling units
1. Fin Tube Radiation shall be the first stage of heating.

a. Warm-up (morning): On call for heating the control valve shall be open.
b. Occupied: On call for heating the control valve shall be open.
c. Cool-down (evening): The control valve shall be closed.
d. Unoccupied: On call for heating the control valve shall be open.

3.5 DEDICATED OUTSIDE AIR SYSTEM (DOAS-1) – DISCHARGE AIR CONTROL

A. General:
1. Factory mounted controls with Discharge Air control with unit conditioning modes enabled based on outdoor air conditions and controlled to maintain discharge air setpoints
2. Upon detection of smoke by any of the duct mount smoke detectors or by any other signal from the fire alarm system, the supply fan and the exhaust fan will be shut off, the energy recovery wheel will be shut off, the outside air dampers will close, the exhaust air dampers will close, and the control valves will close.
3. CO2 Sensors: CO2 sensors will be mounted on the wall adjacent to the room controllers, or will be integral to the room controllers. If mounted adjacent to the room controllers, sensors will be the blank front type with air openings only for sensing CO2.
4. Display at DDC workstation, outside airflow read via airflow monitoring stations provided and installed by this division.
5. Alarms
   a. Low supply air temperature: 45°F.
   b. High filter static pressure drop: 0.50” wg.
6. Hardware Points (in addition to those required by the sequence of control)
   a. Space Supply static pressure
   b. Space Return static pressure
7. Analog In: Filter differential pressure
8. Operation Modes:
   a. The ventilation systems will operate in two modes - Standard Mode & Dehumidification Mode, based on the relative humidity of the exhaust air, as measured by a relative humidity sensor mounted in the exhaust air ductwork upstream of the energy recovery unit (ERU) or energy recovery ventilator (ERV) as applicable. Relative humidity sensors will be provided by the BAS provider.
   b. When the exhaust air relative humidity rises above the setpoint, the DOA will operate in Dehumidification Mode until the exhaust air relative humidity drops to a set differential relative humidity, at which point the DOA will revert to Standard Mode. Set the Dehumidification Mode On setpoint at 60% RH initially, and the differential at 5°F initially (for an initial Dehumidification Mode Off setpoint of 55% RH).

B. SAFETIES:
1. Unit will incorporate a lockout circuit which provides reset capability at the space thermostat or base unit, should any of the following standard safety devices trip and shut off compressor.
   a. Loss-of-charge/Low-pressure switch.
   b. High-pressure switch.

c. Freeze condition sensor on evaporator coil.

2. If any of these safety devices trip, the LCD screen will display the alarm message.
3. Unit will incorporate "AUTO RESET" compressor over temperature, over current protection.
4. Unit control board will have on-board diagnostics and fault message display.
5. Standard controls will include anti-short cycle and low voltage protection, and permit cooling operation down to a selectable value as low as 0 °F.
6. Control board will monitor each refrigerant safety switch independently.
7. The electric heating section will have a primary limit control(s) (automatic reset) to prevent the heating element system from operating at an excessive temperature

C. Discharge Air Control:
1. Discharge Air Temperature Setpoint is controlled by Discharge Air Cooling Setpoint BAS during cooling operation, and Discharge Air Heating Setpoint BAS during heating. If Discharge Air Temperature Setpoint BAS is In Service, the program will use this over the discharge cooling and heating setpoints.
2. Dehumidification Temperature Setpoint is controlled by Dehumidification Temperature Setpoint.

D. Starting Sequence:
1. Occupied operation begins when the unit is placed in Occupied via BAS or when contact is closed on the field wiring terminal strip. The unit must not be in Emergency Stop to begin starting sequence. Contacts on the field wiring terminal strip are used as an external Emergency Stop for the unit. Cycling power to unit may not resolve alarm condition.
2. Refer to Multi-State Value Occupancy Status to determine the active status of the unit.
3. Modulating Outdoor & Return Air Dampers: Modulating Outdoor & Return Air Dampers will begin by adjusting the Outdoor Air Damper Position Command to meet the Outdoor Air Damper Minimum Position Setpoint. The supply fan sequence starts immediately after the unit becomes occupied

E. Supply Fan Sequence:
1. Constant Volume with VFD: After completing the starting sequence, the supply fan will run to the Supply Fan Speed Setpoint, field adjustable from 50-100%.
2. If ventilation requirements for all spaces is met supply fan will modulate to reduce fan speed based on critical zone scenario.
3. Reduced fan speed rate will be minimum value determined by balancing of unit.

F. Economizer mode:
1. Economizer Mode is enabled during Cooling Mode when the Outdoor Air Enthalpy falls below Return Air Enthalpy and the Outdoor Air Temperature Active is below 80°F. Economizer Mode continues with a deadband of 3 BTU/lb, and 1°F for temperature. If the unit is not in Free Cooling Mode during Economizer Mode, the unit opens the outdoor air damper to the Outdoor Air Damper Maximum Position Setpoint. Mechanical cooling will not be locked out unless the unit is in Free Cooling Mode.
2. Refer to Multi-State Value Economizer System Status to determine the active

status for the economizing.

3. Free Cooling Mode is enabled when the unit is in Economizer Mode and the Outdoor Air Temperature Active is cooler than five degrees below the Discharge Air Temperature Setpoint Active. During Free Cooling Mode, mechanical cooling is locked out and the unit adjusts the outdoor air damper position to maintain the Discharge Air Temperature Setpoint Active

G. Ventilation mode:
1. Ventilation Mode is enabled when the Outdoor Air Temperature Active is between the Outdoor Air Cooling Enable Setpoint and the Outdoor Air Heating Enable Setpoint. During Ventilation Mode, heating and cooling is locked out and the unit supplies un-conditioned air. Ventilation Mode is locked out whenever the unit is in Dehumidification Mode.

H. Heating mode:
1. Heating Mode is enabled whenever the Outdoor Air Temperature Active is below the Outdoor Air Heating Enable Setpoint. During Heating Mode, Heat Capacity is adjusted to maintain the Discharge Air Temperature Local to Discharge Air Temperature Setpoint 75°F (adj.).
2. Above 10.0 deg. F unit to use heat pump heating (1st stage heat) to meet supply air setpoint temperature. Below 10.0 deg. F unit to use hot water heat (2nd stage heat) to meet supply air setpoint temperature and turn off heat pump heating.
   a. During 2nd stage heat unit to modulate hot water control valve to maintain discharge air setpoint.

I. Cooling Mode:
1. Cooling Mode is enabled whenever the Outdoor Air Temperature rises above the Outdoor Air Cooling Enable Setpoint. The Outdoor Air Temperature must be above the Outdoor Air Heating Enable Setpoint. During Cooling Mode, Cooling Capacity is adjusted to maintain Discharge Air Temperature Setpoint 68°F (adj.).
2. Compressor Low Ambient Lockout: On units without head pressure control, the compressors will be locked out if the Outdoor Air Temperature falls below the Compressor Low Ambient Lockout Setpoint and there is a demand for cooling. When this occurs, the unit will display Compressor Low Ambient Lockout as an informational diagnostic.
3. Evaporator Frost Protection: Circuit 1 refrigeration pressure is monitored, and Cooling Capacity will be limited to prevent the indoor coil from freezing. If the unit has digital scroll on the second circuit, then both circuits will be monitored

J. Dehumidification Mode:
1. Outdoor Air Dewpoint is calculated using Outdoor Air Temperature and Outdoor Air Humidity.
2. For Dehumidification Temperature, unit uses Discharge Air Dewpoint (calculated using Discharge Air Temperature Local and Discharge Air Humidity Local), OR Indoor Coil Leaving Air Temperature Local, depending on unit cabinet size.
3. Dehumidification Mode is enabled whenever the Outdoor Air Dewpoint rises above the Outdoor Air Dewpoint Enable Setpoint. The Outdoor Air Temperature Active must be above Outdoor Air Heating Enable Setpoint.
4. During Dehumidification Mode, Cooling Capacity is adjusted to maintain the Dehumidification Temperature Setpoint Active, which is written to by

Dehumidification Temperature Setpoint (adjustable). Hot Gas Reheat Valve Command (if installed) is adjusted to maintain Discharge Air Temperature Setpoint Active.

K. Hot Gas Reheat Purge:
1. Hot Gas Reheat Purge Mode is initiated if the Hot Gas Reheat Valve Command is between 10% and 50% for thirty continuous minutes. During Hot Gas Reheat Purge Mode the signal first goes to 80% for one minute, then to 10% for one minute. The Hot Gas Reheat Valve Command returns to its previous position and will begin to modulate after a 30-second delay.

L. Exhaust Fan Operation:
1. After completing the Supply Fan Starting Sequence, Exhaust Damper Open Close Command is enabled. Once the Exhaust Damper End Switch has proven, Exhaust Fan Start Stop Command is enabled.
2. Exhaust Fan Tracking: To enable exhaust fan tracking to the supply fan speed, set Exhaust Fan Tracking Offset Setpoint to In Service and adjust to the desired value (%). Putting this point In Service will override all other default speed control for the exhaust fan.
3. Provide differential pressure sensor in corridor of each floor being served by each DOA. Control exhaust fan based on worst case pressure.

M. Energy Recovery Wheel (ERV):
1. The Energy Recovery Wheel Start Stop Command is enabled whenever there is a call for exhaust fan. During Ventilation Mode or Economizer Mode the ERV is disabled, except during the cleaning cycle, which occurs for two minutes every thirty minutes.
2. During cooling operation, the Energy Recovery Exhaust Air Bypass Position Command is locked at 0% (closed position) for full energy recovery. During heating operation, the position is modulated to maintain the Discharge Air Temperature Setpoint Active for variable effectiveness capacity control. Once the bypass damper becomes fully closed, the primary heater will be engaged.
3. The unit prevents frost accumulation on the ERV by measuring the Exhaust Leaving Temperature Local. Initially the ERV speed is reduced to maintain 15°F for the exhaust temperature. If the ERV speed is at minimum, but the exhaust temperature remains below 15°F, the unit will maintain the temperature by modulating the Energy Recovery Outdoor Air Bypass Position Command open. During normal operation, the VFD is at 100% (full speed) and the bypass damper is at 0% (closed).

N. Outside Airflow Monitoring:
1. Units with Outdoor Air Flow Local In Service and Modulating Dampers installed will modulate the Outdoor Air Damper Position Command the Outdoor Air Minimum Flow Setpoint determined by balancing of unit. Damper position is restricted between the Outdoor Air Damper Minimum Position Setpoint and Outdoor Air Damper Maximum Position Setpoint will be 100% outside air rating of unit airflow.
2. Airflow stations factory supplied and mounted on supply fan and exhaust fan.

O. Demand Control CO2 Ventilation:
1. Modulating dampers are required for CO2 control. The unit will modulate the Outdoor Air Damper Position Command to maintain Space CO2 Concentration Local to Space Concentration Setpoint at all rooms with CO2 sensors. The CO2 concentration can also be communicated to Space CO2 Concentration BAS. CO2 Concentration must be field provided and installed.
2. If ventilation requirements for all spaces ARE met supply fan and dampers will modulate to reduce cfm supplied based on critical zone scenario.

P. Unoccupied Operation:
1. During unoccupied periods, the supply fan will be disabled and the outside air damper will close.

3.6 DOMESTIC HOT WATER AND PUMPS

A. Water Heater Scheduling: Water heater on-off shall be controlled per a time of day schedule and shall be activated during occupied modes.

B. Domestic Hot Water Recirculating Pumps HWRP-1: Pump shall be controlled per a time of day schedule and shall be activated during occupied modes. If temperature at inlet to pump drops below 105F, pump shall start. If temperature at inlet to pump rises above 110F, pump shall stop.

3.7 ECM (ELECTRONICALLY COMMUTED MOTORS) CONTROL

A. Electrical disconnects shall report disconnect position via relay outputs.

B. Start/stop, alarm, speed control and status points shall be hardwired

C. The following points shall be communicated to the bas via the VFD's manufacturer's standard network communication port:
1. Speed indication.
2. Auto / out of auto indication.
3. Fault / fault code.
4. Motor current.
5. Drive temperature.
6. DC bus voltage.
7. Power demand (kw).

3.8 EMERGENCY GENERATOR MONITORING - FUTURE

A. Emergency Generator: BMS shall monitor the operation of the generator. After normal power is restored, BMS shall stage equipment back on incrementally.

3.9 EXHAUST FANS

A. EF-1:
1. On room temperature above 80 degrees F, open intake dampers and start exhaust fans.
2. On room temperatures above 95 degrees F, signal alarm.

B. EF-2:
1. Time Delay Switch, 1 To 60 Minutes Adjustable

C. EF-3:
1. Operate 24/7

3.10 GLYCOL FEED UNIT

A. GENERAL
1. Glycol make-up system shall be provided with factory controls, adjustable pressure reducing valve, pressure gauge and low level alarm.

B. ALARMS
1. Low fluid level

C. OPERATION
1. The unit's packaged controls shall activate the unit to maintain system pressure setpoint.

3.11 HOT WATER BOILER PLANT AND PUMPING

A. The BMS contractor shall be responsible for installation and wiring of the Boiler Manufacturer Control Panel, Outdoor Sensors, Supply and Return Temperature Sensors, Individual Boiler Supply and Return Temperature sensors, and interlock wiring of the primary pumps (HWP-1).

B. Boiler plant shall be allowed to operate (enable / disable) when OA temperature is below 65°F (adjustable).

C. BMS shall interface with controls listed below and shall be capable of reading and displaying the follow points from the boiler’s BMS interface:
1. Enable / disable output signal
2. Boiler status feedback – on/ off
3. Burner operating status – on/off.
4. General alarm output signal
5. Hot water supply temperature
6. Hot water return temperature

D. Once the hot water system flow is established, the BMS shall enable the Boiler Manufacturer Control Panel via the BACnet communication interface. The BMS shall monitor the boilers status and alarms via the communication interface, and monitor the dry contact alarm at the central Boiler Control Panel.
   1. When a boiler is enabled, BMS shall start respective primary hot water pump. Boiler shall not start until flow is proven through respective flow switches. If flow status is not proven, lead boiler shall not be energized, lag boiler shall be energized and an alarm shall be activated at the central PC.
   2. Boilers shall be sequenced as required to maintain desired set point through a lead/lag array. Alternation of boiler lead/lag designation shall be based on operator defined run times. BMS shall monitor secondary hot water flow rates and temperatures and boiler control panel for demand to start and stop lag boiler.

E. Once enable, the boiler manufacturer control panel will enable and modulate the boilers in sequence based on its on outdoor air reset curve (adj.) to maintain supply water temperature at the reset setpoint.

F. BMS shall command the primary pumps and modulate speeds per boiler manufacturer control signal.

G. The BMS shall monitor hot water supply and return temperatures at locations shown on the floor plans independent form the boiler controls.

H. The BMS shall monitor outdoor temperature and humidity via its own sensors and display at the central PC.

I. Reset schedule:
   1. Outside air temperature at 25°F, boiler hot water setpoint shall be 140°F
   2. Outside air temperature at 65°F, boiler hot water setpoint shall be 100°F

J. Secondary pumping system (HWP-3 & HWP-4)
   1. Lead hot water pump shall start per sequences of operation described in other sections of this specification.
   2. Designation of lead and standby pump shall be automatically alternated based on user defined run times or day of the week.
   3. When the pump is enabled, the pump VFD status determines if the motor is operating. After an operator definable feedback time delay, if there is an indication that the pump is not operating, the standby pump shall be enabled and an alarm shall be generated. Conversely, if status is detected while pump is turned off, a separate alarm shall be generated.
   4. Pump VFD Operation / Hot Water Differential Pressure (DP) Reset.
      a. BMS shall modulate pump VFD to maintain DP setpoint at each DPT. Pump speed shall be increased in response to transmitter with highest demand (transmitter with DP furthest below setpoint. DP at each

sensor shall be allowed to increase above setpoint if pump speed needs to increase to maintain DP at a sensor which is below setpoint.

1) If pump VFD is modulated to lowest speed and DP is 10% above setpoint for 15 minutes BMS shall open bypass valve until DP setpoint is reached. If bypass valve is open and DP decreases below setpoint BMS shall close bypass valve and allow pump to maintain system DP setpoint.

b. BMS shall reset the differential pressure (DP) setpoint based on control valve positions. There are multiple DPT's. BMS contractor shall assign each control valve to a specific DPT that it is served by.

c. Differential setpoint shall operate between a low limit and an upper limit. The baseline operating setpoints shall be based on values determined during Testing, Adjusting and Balancing (TAB).
   1) DP operating setpoint.
   2) DP Low limit.
   3) DP upper limit.

d. BMS shall command DP setpoint to either increase or decrease or remain at present value.

e. BMS shall poll position of all control valves every five (5) minutes.

f. If any of the following are true, operating DP setpoint shall increase by 10% per polling interval until the upper limit is reached.
   1) More than 60% of the 2-position control valves are fully open.
   2) Any modulating control valve is 80% open or greater.

g. If all of the following are true, operating DP setpoint shall decrease by 10% per polling interval until the lower limit is reached.
   1) Less than 40% of the 2-position control valves are fully opened
   2) All modulating control valves are less than 60% open.

h. BMS shall trend the DP command setpoint and actual DP value.

K. Alarms

1. BMS shall monitor boilers for general alarm conditions.
2. An alarm shall be generated if the hot water supply temperature is 2°F below or above setpoint.
3. If system DP value decreases 25% below the low limit or increases 25% above high limit for a period of 15 minutes, BMS shall issue alarm at the operator work station.

3.12 MINI SPLIT AC UNITS - FUTURE

A. Provide unit with manufacturer's stand-alone controls and wired thermostat.

B. Provide BAS space temperature sensor for BAS monitoring.

C. BMS shall monitor temperature independent of unit's sensor. If temperature rises above 85F, BMS shall send an alarm to central PC.

D. BMS shall monitor leak detector in the secondary drain pan. If sensor detects leak, BMS shall shut down the AC unit and send an alarm to central PC. Provide field installed contact relay to shut down the unit.

E. BMS contractor shall install control wiring between indoor unit and outdoor unit.

3.13 OUTDOOR AIR CONDITIONS MONITORING

A. Functional Control
1. The controller shall monitor outside air temperature and humidity and calculate the outside air enthalpy. These readings and values shall be available to the system.

B. Temperature, Humidity and Carbon Dioxide History: BMS shall record data as follows:
1. Daily high and low readings: At 12:05 am every night, the controller shall reset the high and low daily peak recordings for the next day.
2. Monthly high and low readings: At 12:05 am on the first day of each month, the controller shall reset the high and low monthly peak recorders for the next month.
3. Yearly high and low readings: At 12:05 am on the first day of each year, the controller shall reset the high and low yearly peak recorders for the next year.

3.14 UNIT HEATERS / CABINET UNIT HEATERS

A. Single temperature electric room thermostat maintains occupied space temperature of by cycling unit fan motor.

3.15 UTILITY METERING & MONITORING

A. BAS shall monitor and display on the energy dashboard system the following. See BMS specification 230900 2.12.B for additional requirements.
1. Natural Gas service pressure sensor after gas regulator shall be monitored and provided by ATC. Coordinate installation with Division 22.
a. Gas pressure service to be NOSHOK, Series 625 or equivalent, interconnected to BMS so gas pressure can be monitored.
2. Air monitoring for contaminates:
a. Meter and control wiring furnished and installed by ATC.
b. Wall mounted CO2 sensors shall be provided adjacent to all temperature sensors. CO2 sensors shall monitor CO2 levels in each zone and report back to BMS ppm levels.
3. Electric metering:
a. Meter furnished and installed by Division 26 (12-Channel Multi-Meter Energy Monitoring System)
b. Controls contractor shall coordinate interface with Division 26.
c. Provide BACnet/IP communication and graphics to actively monitor all building electrical loads from a Division 26 provided 12 Channel Multi-

Meter Energy Monitor and (1) one Main Distribution Switch Board (MSB) internally mounted main sub meter. Provide daily use, monthly use and yearly use. Refer to E3.0 for metered loads.

d. BMS shall monitor KW Consumption at electrical panels serving each of the following:
   1) Whole building (from MSB internal meters)
   2) Electric Vehicle Charging Stations (from EVDP)
   3) General Purpose (from GP1, GP2, VP01, VP02, VP03, VP11, VP12, VP13, VP14)
   4) Normal Lighting (from LP1 and LP2)
   5) Mechanical/HVAC (from MHP)
   6) Generator loads (normal power)
   7) Generator loads (emergency power)
   8) Optional Standby Loads (ATS-OS)
   9) Future PV (from PV1)

3.16 VARIABLE FREQUENCY DRIVE CONTROL

A. The hand-off-automatic switch on the VFD shall provide for the following basis of control:
   1. Hand position: the bas shall have no control over the motor speed nor shall it be able to start or stop the motor (except for safety purposes where the motor shall shut down). The motor shall run under speed control from the hand potentiometer on the vsd. All safeties controlling the shutdown shall be operational (i.e. Smoke detectors, pressure switches, etc). Temperature and humidity control shall be available through the bas.
   2. Off position: the motor shall be off. The bas shall not control the motor. All other control points shall be in their fail-safe position.
   3. Automatic position: the motor shall be controlled by the bas.

B. Electrical disconnects shall report disconnect position via relay outputs.

C. Start/stop, alarm, speed control and status points shall be hardwired

D. The following points shall be communicated to the bas via the VFD's manufacturer's standard network communication port:
   1. Speed indication.
   2. Auto / out of auto indication.
   3. Fault / fault code.
   4. Motor current.
   5. Drive temperature.
   6. DC bus voltage.
   7. Power demand (kw).

3.17 VRF SYSTEM

A. General
1. Wall mounted bas room sensors shall control the VRF system. The BAS shall enable, disable, set operating modes and send setpoints to the VRF controls system via Bacnet communication interface.
2. Each bas room sensor shall control both the fin tube [or radiant panel] [or hot water coil] heating valves (as first stage heat) and also communicate commands and setpoints to control the VRF fan coil units via bacnet interface with VRF system controller. Provide bas room sensor to control each VRF fan coil unit.
3. VRF manufacturer's temperature sensors (thermistor type) shall be provided, mounted concealed as noted below. It is not the intent for wall mounted VRF zone controllers to be provided in addition to the bas room sensors.
4. Install controls furnished by the VRF system manufacturer for field installation. Provide wiring between the outdoor units and the indoor units, the front end controller(s), and other controls components furnished with the VRF systems, per the VRF system shop drawings, for a complete and operable system.

5. Connect the bas to the bacnet communications package provided by the VRF system manufacturer, and map all points as necessary to monitor and to control the systems as described below.

B. Operation
1. The space temperature setpoint (adjustable by the occupant at the wall-mounted bas room sensor) shall be used to index the VRF system into its operating modes, as follows:
a. Off: the VRF fan coil unit shall deactivate.
b. Fan only: the VRF fan coil unit fan shall activate.
c. Cooling: if the space temperature at the bas wall sensor increases above setpoint, the bas shall index the fan coil unit into cooling mode.
d. Heating: if the space temperature at the bas wall sensor decreases below setpoint, the bas shall activate the fin tube heat as first stage heat. If the fin tube radiation valve has been commanded open, and the space temperature continues to fall below setpoint, bas shall command the VRF unit to heating mode. The fin tube radiation shall operate as the first stage of heating in both occupied and unoccupied modes.
e. Occupied mode: the bas shall index the VRF system into occupied mode based on schedule. During this period the VRF system shall operate to maintain occupied setpoints.
f. Unoccupied mode: the bas shall index the VRF system into unoccupied mode based on schedule. During this period the VRF system shall operate to maintain unoccupied setpoints.
g. The bas shall prohibit simultaneous heating and cooling. Provide 2 degree deadband (adjustable through bas).

2. Condensing units and heat pumps: shall activate on a call for heating or cooling and operate in accordance to the manufacturer's specifications.
3. Branch controllers: shall operate in accordance to the manufacturer's specifications to maintain the heating and the cooling setpoints of the spaces served by the heat pump systems.
4. Fan coil units: if the bas commands a VRF fan coil unit into to heating, cooling or fan mode, the fan coil shall operate in accordance the manufacturer's specifications to maintain the heating and the cooling setpoints of the spaces served.

C. Limits and alarms:
1. If space temperature does not match setpoint for a predetermined time period, alarm shall be generated.
2. Provide alarm for condensate overflow. Switch shall be wired to de-energize unit upon detection of rising water (blocked drain) and generate and alarm to the bas.

D. VRF sensor installation
1. Ducted VRF fan coils: install the VRF temperature sensor in the return ductwork, minimum 5'-0" upstream of the inlet connection. The preferred location is in a return grille plenum. Note the locations of the sensors on the record drawings. Sensor shall be accessible.
2. Non-ducted VRF fan coils: install the VRF temperature sensor integral to the housing or faceplate of the bas room controller or bas room temperature sensor respectively if acceptable to both the VRF system manufacturer and the bas equipment manufacturer. If not acceptable to both, install the VRF wall mount temperature sensor adjacent to the bas room controller or bas room temperature sensor.

3.18 TRENDING

A. BMS contractor shall be responsible for setting up all trends as listed here-in. Trending shall not occur through use of licensing through 3rd party software.

B. The following items shall be linked to a trend log. BMS shall record a trend sample every 10 minutes for all items listed below.
1. All input and output (I/O) points
2. All calculated values and variables (i.e. enthalpy, differential pressures, reset setpoints, BTUH usage, etc.).
3. Who logs in and how long they were logged in.
4. When logged in, record the changes made by person logged in.

C. For the first 5 years of operation, the system shall trend and record all data at 10 minute increments. Data shall be saved permanently on the local hard drive with shall automatically backup every day to the Owner's remote servers.

D. Indoor and Outdoor Environmental Log: A dedicated trend log page shall be setup to permanently monitor and record all indoor and outdoor conditions as follows:
   a. Temperature at all outdoor sensors.
   b. Temperature at all indoor space sensors.
   c. Relative humidity and dew point temperature at indoor and outdoor space sensors.
   d. CO2 at all indoor and outdoor space sensors.

3.19 ALARM NOTIFICATION

A. BMS contractor shall be responsible for setting up all alarms as listed here-in. Software and programming shall not occur through use of licensing through 3rd party software.

B. All alarms shall be listed on a graphics page dedicated to alarms ("Alarm Log Page") which shall list all alarms by "Level of Alarm". Listing at the Alarm Log Page shall describe:
   1. Specific input signal that is in alarm.
   2. Date and time when the alarm first started.
   3. Setpoint and actual reading at the time of the alarm.
   4. Indication if the device is still in alarm mode.
   5. How many times a specific device has been in alarm over the entire history.

C. All alarms shall be cleared at the Alarm Log Page through a graphic interface.

D. All alarms shall be permanently recorded and stored. A history of all alarms shall be available to the user; and shall be sorted, searched and saved by date and by type of alarm.

E. Equipment Graphic Alarm: Certain alarms as listed below shall be indicated on the respective "Equipment Graphics Page". These graphic displays shall indicate an alarm condition by showing the appropriate object in red and blinking.

F. All alarms shall be classified as Level 1, Level 2 or Level 3.

G. Level 1 Alarm: Following shall occur:
   1. Alarm shall be displayed at "Alarm Log Page".
   2. Alarm history shall be trended and permanently saved.
   3. Send text messages.
   4. Send email messages.
   5. Warning of new Level 1 Alarms shall be displayed when user first logs into software.
   6. Equipment Graphic Alarm shall occur.

H. Level 2 Alarm: Following shall occur:
   1. Alarm shall be displayed at "Alarm Log Page".
   2. Alarm history shall be trended and permanently saved.

3. Equipment Graphic Alarm shall occur.

I. Level 3 Alarm: Following shall occur:
   1. Alarm shall be displayed at “Alarm Log Page”.
   2. Alarm history shall be trended and permanently saved.

J. Contractor shall coordinate with the Owner with programming alarms including off site alarms such as text messages; and trouble shooting them for accuracy.

END OF SECTION 23 0993

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DOCUMENT 31 1100 - CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Cutting of trees and other vegetation.
2. Clearing of miscellaneous vegetation.
3. Removal of roots and related growth.
4. Disposal of all waste materials.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 and any supplements.

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction

1.3 DEFINITIONS

A. Clearing: Clearing shall consist in the felling, cutting up, and satisfactory disposal of trees and other vegetation designated for removal in accordance with these specifications.

B. Drainage Course: Layer supporting basement grade used to minimize capillary flow of pore water.

C. Grubbing: Grubbing shall consist of the removal of roots 1 ½ inch and larger, organic matter and debris, and stumps having a diameter of three inches or larger, to a depth of at least 18 inches below the surface and or subgrade; whichever is lower, and the disposal thereof.

1.4 SAFETY REQUIREMENTS

A. Contractor shall conduct all clearing and grubbing activities in conformance with applicable regulations, including those relating to barriers, warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Contractor shall provide and maintain barricades, warning signs, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained, experienced, and as required licensed, in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 PREPARATION

A. Secure the work area and take precautions for preventing injuries to persons or damage to property in or about the work. Protect structures, utilities, sidewalks, pavements and other facilities or sensitive areas from damage by clearing and grubbing operations.

B. Establish all required erosion and sedimentation controls prior to initiating work.

3.2 CLEARING AND GRUBBING

A. Clear, grub, remove, and dispose of all vegetation and debris within the limits of construction, as designated on the plans or as required by Engineer. Contractor shall remove only those trees and shrubs absolutely necessary to allow for the construction. The work shall also include the preservation and protection of all vegetation designated to remain.

B. A preconstruction meeting shall be held with Engineer, Owner, local authorities, property owner(s) and other appropriate personnel, if required, prior to any clearing.

C. The area within the limits of construction or as designated shall be cleared and grubbed of all trees, stumps, roots, brush, undergrowth, hedges, heavy growth of grasses or weeds, debris and rubbish of any nature which, in the opinion of Engineer, is unsuitable for foundation material. Nonperishable items that will be a minimum of five (5) feet below the finish elevation of the earthwork or slope of the embankment may be left in place.

D. Contractor shall provide barricades, fences, coverings, or other types of protection necessary to prevent damage to existing improvements, not indicated to be removed, and improvements on adjoining property. All improvements damaged by this work shall be restored to their original condition or to a condition acceptable to the owner or other parties or authorities having jurisdiction.

E. Protection of Trees and Vegetation: Contractor shall protect existing trees and other vegetation indicated on the Drawings to remain in place against cutting, breaking, or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary fences or barricades as required to protect trees and vegetation to be left standing at no additional cost.

F. Trees and shrubs that are to remain within the construction limits will be indicated on the Drawings or conspicuously marked on the Project Site. Unless otherwise noted, trees within the construction limits shall become the property of the Contractor and shall be removed from the site.

G. Carefully and cleanly cut roots and branches of trees indicated to remain where the roots and branches obstruct construction of utilities or other subsurface improvements. Contractor shall provide protection for roots and branches over 1 ½ inches diameter that are cut during construction operations. Temporarily cover all exposed roots with wet burlap to prevent roots from drying out. Provide earth cover as soon as possible.

H. Damaged trees and vegetation designated to remain shall be repaired or replaced at Contractor’s expense in a manner acceptable to Engineer if they are damaged by construction operations. Repair tree damage as directed by a qualified tree surgeon.

I. Trees and vegetation designated to remain shall be repaired or replaced at Contractor’s expense in a manner acceptable to Engineer if they are damaged by construction operations. Repair tree damage as directed by a qualified arborist.

J. All brush, tree tops, stumps, and debris shall be hauled away and disposed of in accordance with all applicable laws and regulations. Contactor shall clean up debris resulting from clearing operations continuously with the progress of the work and remove promptly all salvageable material that becomes his property and is not to be reused in construction. Sale of material on the site is prohibited. Debris from the site shall be removed in such a manner as to prevent spillage. Keep pavement and area adjacent to site clean and free from mud, dirt, dust, and debris at all times.

K. The method of stripping, clearing and grubbing the site shall be at the discretion of the Contractor. However, all stumps, roots and other debris protruding through the ground surface or in excavated areas shall be completely removed to a minimum depth of 18 inches below surface and/or subgrade whichever is lower and disposed of off the site by the Contractor, at his expense.

L. Marginal Areas: In marginal areas, with Engineer's permission, remove trees where the following conditions exist.

1. Root Cutting: When clearing up to the "clearing limits," the Contractor shall also remove any tree which is deemed marginal such that when the roots are cut and the tree could be rendered unstable by the affects of high winds and in danger of toppling into either the right-of-way or onto private property.

2. Slender Bending Trees: Where young, tall, thin trees are left unsupported by the clearing operation, and are likely to bend over into the right-of-way, Contractor, during the clearing operation, shall selectively remove those trees which are located outside and adjacent to the clearing limits and any right-of-way or easement as well. During the course of construction and during the one-year warranty period, the Contractor shall remove such young trees that overhang into the right-of-way or cleared area.

M. Stripping of Topsoil: Remove the existing topsoil to a depth of 6 inches or to the depth encountered from all areas in which excavation will occur. The topsoil shall be stored in stockpiles, separate from the excavated material, if the topsoil is to be respread. Otherwise material shall be disposed of off-site at Contractor's expense.

3.3 DISPOSAL

A. Contactor shall consolidate and clean-up debris resulting from clearing and grubbing operations continuously with the progress of the work.

B. All brush, treetops, stumps, and debris resulting from clearing and grubbing operations shall be hauled away and disposed of in accordance with all applicable laws and regulations. Any materials salvaged by Contractor from clearing and grubbing operations shall be promptly removed from the Project Site.

C. Contractor will be responsible for obtaining all applicable permits and paying all fees for the disposal of excess material.

D. Sale of material on the Project Site is prohibited.

E. Burning of material is prohibited.

END OF DOCUMENT 31 1100

DOCUMENT 31 2310 - EARTHHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Preparation and grading subgrades for slabs-on-grade, walks, pavements, and landscaping.
2. Excavating and backfilling for structures.
3. Excavation and backfilling for underground utilities and associated appurtenances.
4. Excavation and backfilling of replacement material for unsatisfactory soil excavation, mass rock removal and trench rock removal.
5. Excavation, backfill and compaction for the demolition/removal of subsurface utilities and improvements.
6. Earth retention systems.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 GENERAL

A. Contractor is advised that lines and grades, as shown on the Drawings, are subject to change. Although it is intended to adhere to what is shown on Drawings, Engineer reserves the right to make changes in lines and grades of utilities or other subsurface construction when such changes may be necessary or advantageous.

B. In open trenching on public roadways, Contractor shall be governed by the conditions, restrictions and regulations made by the local or state authority as applicable. All such regulations shall be in addition to those set down in the Specifications.

1.3 EXCAVATION CLASSIFICATIONS

A. Excavation - Excavation shall be unclassified and no consideration will be given to the nature of the materials. Excavation shall comprise and include the satisfactory removal and disposal of all materials encountered regardless of the nature of the materials and shall be understood to include but not limited to earth, fill, boulders, foundations, pavements, curbs, piping,

cobbles, stones, footings, bricks, concrete, previously abandoned drainage structures and utility structures abandoned and not removed by the utility and debris.

B. Common Excavation - Excavation of all materials that can be excavated, moved, loaded, transported, and unloaded using heavy equipment or that can be excavated and dumped into place or loaded onto hauling equipment by excavation equipment (shovel, bucket, backhoe, dragline, or clam shell) or moved with dozer-type equipment, appropriate to the material type, character, and nature of the materials. The presence of isolated boulders or rock fragments larger than 1 cubic yard is not in itself sufficient cause to change the classification of the surrounding material. All Common Excavation shall be included in the Base Bid.

C. Rock Excavation - Rock Excavation as defined herein. The excavation and removal of isolated boulders or rock fragments larger than 1 cubic yard encountered in materials otherwise conforming to the definition of Common Excavation shall be classified as rock excavation. The presence of isolated boulders or rock fragments larger than 1 cubic yard is not in itself sufficient cause to change the classification of the surrounding material.

1.4 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818 and any supplements.

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction

D. American Concrete Institute (ACI)

1. ACI 229R-99 - Controlled Low-Strength Materials (CLSM).

E. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO Method T 90 - Determining the Plastic Limit and Plasticity Index of Soils.

2. AASHTO T104 - Standard Method of Test for Soundess of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

3. AASHTO Method T146 - Standard Method of Test for Wet Preparation of Disturbed Soil Samples for Test.

F. ASTM International (ASTM).

1. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3(2,700 kN-m/m3)).
4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
5. ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
7. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.5 DEFINITIONS

A. Backfill: Soil material or flowable concrete used to fill an excavation.

B. Bedding Course: Layer placed over the excavated sub-grade in a trench before laying pipe.

C. Benching: A method of limiting cave-in potential by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.

E. Clearing: Clearing shall consist in the felling, cutting up, and satisfactory disposal of trees and other vegetation designated for removal in accordance with these specifications.

F. Drainage Course: Layer supporting basement grade used to minimize capillary flow of pore water.

G. Earth Retention Systems: Any structural system, such as sheeting and bracing or cofferdams, designed to retain in-situ soils in place and prevent the collapse of the sides of an excavation in order to protect employees and adjacent structures.

H. Excavation: Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

1. Additional Excavation: Excavation beyond required dimensions or below subgrade elevations that is requested and/or directed by Engineer. Additional Excavation and

replacement material will be paid for according to Contract provisions for changes in the Work.

2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.

3. Unauthorized Excavation: Excavation below the elevations specified on the plans, beyond the limits indicated on the plans, or where no dimensions are indicated, beyond depths, elevations, and dimensions reasonably necessary for construction of the work without the request and/or direction of the Engineer. Unauthorized excavation, as well as any remedial work directed by Engineer, or if applicable Geotechnical Engineer, shall be without additional compensation.

I. Fill: Soil materials used to raise existing grades.

J. Finished Grade: The proposed final elevations shown on the Drawings or called for in the Specifications.

K. Geotechnical Engineer: A qualified and licensed entity designated for the project as the authority on the assessment, design, and oversight of soil and/or rock conditions and construction affected by such conditions.

L. Geotechnical Testing Agency: An independent testing agency employed by Owner, or by Contractor is called-for, and qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

M. Grubbing: Grubbing shall consist of the removal of roots 1 ½ inch and larger, organic matter and debris, and stumps having a diameter of three inches or larger, to a depth of at least 18 inches below the surface and or subgrade; whichever is lower, and the disposal thereof.

N. Protective System: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include earth retention systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

O. Regular Excavation: Removal and disposal of any and all material above subgrade elevation, except solid rock and undercut excavation, located within the limits of construction.

P. Rock: Solid ledges, bedded deposits, unstratified masses and conglomerations of material so firmly cemented as to possess the characteristics of solid rock which cannot be removed without systematic drilling or hoe ramming. All boulders containing a volume of more than one (1) cubic yard shall be considered rock.

Q. Rock Excavation: Removal and satisfactory disposal of Rock, which, in the opinion of Engineer, cannot be excavated except by drilling, wedging, jack hammering or hoe ramming or the excavation of boulders or rock fragments containing a volume of more than one (1) cubic yard.

The presence of isolated boulders or rock fragments larger than 1 cubic yard is not in itself sufficient cause to change the classification of the surrounding material.

R. Licensed Professional Engineer: A person who is licensed as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

S. Satisfactory Materials: Earth material that meets the classification, use, and/or gradation requirements herein that does not contain limestone, shale, clay, ash, slag, friable material, organic or vegetative materials, topsoil, wood, trash, broken concrete, masonry rubble, trash, refuse, or frozen materials.

T. Shield System: A structure that is designed to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

U. Sloping: A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

V. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

W. Sub-grade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below drainage fill.

X. Surplus Material: Excavated acceptable material that cannot be utilized elsewhere on the site as backfill or embankment fill, or as otherwise directed by the Engineer.

Y. Temporary Dewatering System: A system to lower and control water to maintain stable, undisturbed subgrades at the lowest excavation levels. Dewatering shall be provided for all pipelines, structures and for all other miscellaneous excavations.

Z. Testing Laboratory: A qualified entity engaged to perform specific laboratory tests.

AA. Testing Agency: A qualified entity engaged to collect samples, perform specific in-field tests, and/or inspections. The Testing Laboratory may provide the services of the Testing Agency.

BB. Trench: A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.

CC. Unacceptable Material: Soil material that contains organic silt, peat, vegetation, wood or roots, stones or rock fragments over six (6) inches in diameter or exceeding 40 percent by weight of the backfill material, porous biodegradable matter, loose or soft fill, construction debris, or refuse, or material which cannot be compacted to the specified or indicated density.

1.6 SUBMITTALS

A. Site Characterization of Off-Site Borrow Sources: The following information shall be submitted to Engineer for review at least two weeks prior to use of an off-site borrow source:

1. Location and name of the borrow source site.
2. Owner and contact information for the borrow source site.
3. Present and past usage of the source site and materials.
4. Any previously existing report(s) associated with an assessment of the source site as relates to the presence of oils, hazardous materials, or other organic and non-organic constituents which may be considered contaminants.
5. Location within the site from which the material will be obtained.

B. Chemical Testing Data: For each type/classification of earth material proposed and each source of earth material proposed: Submit a letter signed by an authorized representative of material supplier stating that such proposed material is free of oils, hazardous materials, or other organic and non-organic constituents which may be considered contaminants.

C. Material Testing Data: Provide results for all proposed bedding, fill, aggregates, and backfill. Submit complete laboratory reports.

1. Gradation analysis.
2. Soil classification and Moisture-Dry Density Curve.
3. Loss on Abrasion.
4. Soundness.

D. Samples: 50-pound sample of each type of off-site bedding, fill, aggregates, and backfill that are proposed for use at the Project Site in an air-tight container for the testing laboratory, a minimum of two weeks prior to delivery of such material to the site. Use of these proposed materials by Contractor prior to testing and approval or rejection shall be at Contractor's risk.

E. Product Data

1. Plastic warning tape.
2. Separation fabric, filter fabric, geogrids, or similar geotextiles.

F. Field Testing Results

1. Compaction test results keyed to date and specific location of testing. Provide Engineer with copies of testing reports within 24 hours of field test.

1.7 SAFETY

A. Contractor shall conduct all excavation activities in conformance with applicable regulations, including those relating to warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Contractor shall provide and maintain barricades, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas and open excavations. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

D. Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to construct permanent or temporary excavation support systems, including, but not necessarily limited to, sheet piling, trench shields, trench boxes, timber trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping, and benching.

E. Any time an excavation is to remain open, at a minimum, provide full enclosure with safety barriers and fencing, warning signs, and additional safety control measures as appropriate for the condition.

1.8 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Utility Mark-out

1. Prior to commencing work, comply with utility mark-out requirements of the Call-Before-You-Dig System (1-800-922-4455).

2. Verify the location of all subsurface utilities marked through the Call-Before-You-Dig System.

3. Not all subsurface facilities or structures will be identified through the Call-Before-You-Dig System. Confirm the location of other subsurface utilities and other subsurface facilities or structures prior to commencing work. Field-mark utilities as required.

C. Codes and Standards: Perform the work of this Section in accordance with all applicable codes, standards, and the requirements of authorities having jurisdiction.

D. Engineer reserves the right to perform all in-field testing specified in this Section and reserves the right to determine the suitability of all materials to be used for fills and reject any fill not meeting the specifications.

E. Field Density testing and subgrade observation shall be performed by the designated entity

F. Weather Limitations:

1. Material excavated when frozen or when air temperature is less than 32 degrees Fahrenheit (32 F) shall not be used as fill or backfill until material completely thaws.

2. Material excavated during inclement weather shall not be used as fill or backfill until after material drains and dries sufficiently for proper compaction.

1.9 TESTING

A. The Owner will retain a testing entity to perform sampling and testing of the work under this Section during construction. The testing entity's presence does not constitute supervision or direction of Contractor's work. Neither the presence of the testing entity nor any observations and testing performed by him, nor any notice or failure to give notice shall excuse Contractor from conformance with these Specifications or from defects discovered in his work. Contractor shall remain responsible for all pre-construction sapling and testing.

B. Borrow and Fill: Contractor shall provide testing as defined below.

1. Gradation analysis for each type of borrow and on-site fill materials by ASTM D422.

2. Soil classification (ASTM D2487) and Moisture-Dry Density Curve (Proctor Test-Modified) by ASTM D1557 for all proposed fill and backfill materials at the frequency specified below:

a. For suitable soil materials removed during Trench Excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.

b. For borrow materials, perform tests from each proposed source, at a rate of one test for every 1,000 cubic yards of soil type. Similarity of soil types will be as determined by the Engineer.

3. Loss on Abrasion: Where called-for, AASHTO Method T 96.

4. Soundness: Where called-for, AASHTO Method T 104.

C. Compaction Testing: Owner will conduct compaction testing (i.e. ASTM D2922 and ASTM D3017 or ASTM D1556) at the frequency indicated below.

1. Trench: 1 test per lift, every 1,000 square feet or 200 feet of trench.

2. Embankment: 1 test per lift, every 1,000 square feet.

3. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.

4. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than 95% of maximum dry density at optimum moisture content, Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.

5. If testing indicates that compacted subgrade, backfill, or fill are below specified density, additional compaction and/or replacement of material shall be provided at no expense to Owner.

D. Chemical Testing: Prior to delivery of any earth material to the Project Site, Contractor shall conduct chemical testing to demonstrate that such material is free of oils, hazardous materials, or other organic and non-organic constituents which may be considered contaminants.

1.10 EXCAVATED MATERIAL

A. Placement

1. Excavated material shall be so placed as not to interfere with travel or movement on existing streets, driveways, sidewalks or other areas designated to remain undisturbed. Excavated material shall not be deposited on private property without the written consent of the property owner(s) and approval of Engineer.

2. No excavated material shall be stored on top of installed pipe or other construction. Contractor shall consider surcharge loads when stockpiling excavated material adjacent to trenches, and take any measure required to prevent cave-in, including but not limited to, trench support systems and/or stockpiling excavated material remote from trench.

B. Suitable excavated material may be used for Common Fill or Backfill on other parts of the Work, if specifically approved by Engineer.

C. Material excavated from private property shall belong to the property Owner, or his representative, and shall be disposed of by the Contractor, as required by said Owner or his

representative. If the Contractor fails to promptly remove such surplus material, Engineer may have the same done and charge the cost thereof as money paid to the Contractor.

D. Contractor shall be responsible for the proper disposal of all unsuitable excavated materials. Engineer shall determine what is suitable or unsuitable material where questions arise. Generally, unsuitable material shall include, but not be limited to, pavement (bituminous and concrete), large boulders, pipe, conduit and metal.

E. Contractor shall submit to Engineer, for approval, the location(s) to be utilized during the Contract period for waste material disposal. This approval must occur before any export of waste material from the project site. Any change in the disposal site during construction shall be submitted for approval.

1.11 SHEETING, SHORING AND BRACING

A. Provide earth retention systems as required by federal, state and local regulations. Shoring and bracing of trenches and other excavations shall be in accordance with the latest OSHA Standards and Interpretations, and to all other applicable codes, rules and regulations of federal, state and local authorities.

1.12 DRAINAGE

A. At all times during construction, Contractor shall temporarily provide, place and maintain ample means and devices with which to remove promptly, and dispose of properly, all water entering trenches and other excavations, or water that may flow along or across the site of the Work, and keep said excavations dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be damaged. At the conclusion of the work, Contractor shall remove such temporary means and devices.

B. All groundwater which may be found in the trenches and foundation excavations, and any water which may get into them from any cause whatsoever, shall be pumped or bailed out, so that the trench shall be dry during pipe laying and backfilling and during the placement of concrete.

C. All water pumped or drained from the Work shall be managed in accordance with applicable discharge permits, without undue interference with other work or damage to pavements, other surfaces, or property.

1.13 COORDINATION

A. Prior to commencing earthwork operations, meet with representatives of governing authorities, Engineer, testing entity, and other pertinent entities.

1. Review earthwork procedures and responsibilities including Contractor's schedule of operations, scheduling observation and testing procedures and requirements.

2. Notify participants at least three (3) working days prior to convening conference. Record discussions and agreements and furnish copies to each participant.

3. Contractor shall at all times so conduct his work as to insure the least possible inconvenience to the general public and the residents in the vicinity of the work. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by Contractor to ensure the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by Engineer.

B. Benchmark/Monument Protection: Protect and maintain benchmarks, monuments or other established reference points and property corners. If disturbed or destroyed, replace at no cost to Owner.

C. Provide five (5) days advance notice to Engineer and testing entity for any proposed earthwork operation requiring observation and/or testing.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. All materials used in the work of this Section shall be Satisfactory Material, and any material that does not meet this classification shall be considered an Unsatisfactory Material and shall not be used.

B. Unsatisfactory Soils: Soil materials not meeting the requirements for Satisfactory Soils.

1. Unsatisfactory soils also include satisfactory soils not maintained within two (2) percent of optimum moisture content at time of compaction.

2.2 COMMON FILL/ORDINARY BORROW

A. Earth materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GP-GC, SW, SP, and SM that are free of clay.

B. Common Fill material is subject to the approval of Engineer and may be either material removed from excavations or borrow from off site. It shall have physical properties such that it can be readily spread and after it has been placed and properly compacted, it will form a dense, stable fill.

C. Common Fill shall be graded as follows:

Gradation of Common Fill

Sieve	Percent Passing by Weight
6”	100

Sieve	Percent Passing by Weight
3.5 ”	50-100
3/4”	50-90
No. 4	25-55
No. 200	0-20

1. Less than twenty (20) percent of material by weight passing the No. 4 sieve shall pass the No. 200 sieve.

2. Common Fill shall not be used at locations where use of select fill is indicated.

2.3 COMMON FILL/ORDINARY BORROW

A. Satisfactory Material that is well-graded meeting ASTM D 2487 classification group GW, GP, GM, SW, SP, and SM. No particle shall exceed 6-inches in size and no greater than 10% by weight of the material shall pass the No. 100 sieve and no greater than 5% by weight of the material shall pass the No. 200 sieve.

B. Common Fill is subject to the approval of Engineer and may be either material removed from on-site excavations or borrow pits or imported from off-site, approved sources. It shall have physical properties such that it can be readily spread and after it has been placed and properly compacted, it will form a dense, stable fill.

2.4 BANK RUN GRAVEL

A. Granular material, well graded from fine to coarse, obtained from approved natural deposits and unprocessed, except for the removal of unacceptable material and stones larger than the maximum size permitted.

B. Bank Run Gravel shall be graded as follows:

Gradation of Bank Run Gravel (ConnDOT Grading “C”)

Sieve	Percent Passing by Weight
1 ½”	100
¾”	45-80
¼	25-60
No. 10	15-45
No. 40	5-25
No. 100	0-10
No. 200	0-5

2.5 GRANULAR FILL

A. Broken or crushed stone, gravel, or a mixture thereof.

B. Broken or crushed stone

1. The product resulting from the artificial crushing of rocks, boulders or large cobblestones, substantially all faces of which have resulted from the crushing operation. Broken or crushed stone shall consist of sound, tough, durable stone, reasonably free from soft, thin, elongated, laminated, friable, micaceous or disintegrated pieces.

C. Bank or crushed gravel

1. Sound, tough, durable particles of crushed or uncrushed gravel, free from soft, thin, elongated or laminated pieces and vegetable or other deleterious substances. Crushed gravel shall be the manufactured product resulting from the deliberate mechanical crushing of gravel with at least 50% of the gravel retained on the No. 4 sieve having at least one fractured face.

D. Granular Fill shall be graded as follows:

Gradation of Granular Fill (ConnDOT Grading “A”)

Sieve	Percent Passing by Weight
3 ½”	100
1 ½”	55-100
1/4”	25-60
No. 10	15-45
No. 40	5-25
No. 100	0-10
No. 200	0-5

E. Reclaimed material shall not be considered acceptable for use as granular fill.

2.6 SCREENED GRAVEL AND CRUSHED STONE

A. Screened gravel, well graded in size from 3/8 inch to 3/4 inch. The gravel shall consist of clean, hard, and durable particles or fragments. Crushed rock of suitable size and grading may be used instead of screened gravel.

B. Screened Gravel shall be graded as follows:

Gradation of Screened Gravel (ConnDOT Gradation No. 6)

Sieve	Percent Passing by Weight
1”	100
3/4”	90-100
1/2”	20-55
3/8”	0-15
No. 4	0-5

2.7 PROCESSED AGGREGATE BASE

A. Coarse aggregates and fine aggregates shall be combined and mixed by approved methods so that the resulting material shall conform to the following gradation:

Gradation of Processed Aggregate Base

Sieve	Percent Passing by Weight
2 1/2”	100
2”	95-100
3/4”	50-75
1/4”	25-45
No. 40	5-20
No. 100	2-12

B. Coarse Aggregate: Either gravel, broken stone or a combination thereof. When tested by means of the Los Angeles Machine, using AASHTO Method T 96, the coarse aggregate shall not have a loss of more than 50%.

1. If gravel is used for the coarse aggregate, it shall consist of sound, tough, durable particles of crushed or uncrushed gravel or a mixture thereof, free from soft, thin, elongated or laminated pieces, lumps of clay, loam and vegetable or other deleterious substances.

2. If broken stone is used for the coarse aggregate, it shall consist of sound, tough, durable fragments of rock of uniform quality throughout. It shall be free from soft disintegrated pieces, mud, dirt, organic or other injurious material.

3. Soundness for Gravel and Broken Stone: When tested by magnesium sulfate solution for soundness using AASHTO Method T 104, the coarse aggregate shall show a loss of not more than 15% at the end of 5 cycles.

C. Fine Aggregate: Natural sand, stone sand, screenings or any combination thereof. The fine aggregate shall be limited to material 95% of which passes a No. 4 (4.75-mm) sieve having

square openings and not more than 8% of which passes a No. 200 (75-µm) sieve. The material shall be free from clay, loam and deleterious materials.

1. Plasticity: When natural sand is used, the fine aggregate shall conform to the following:

    a. When the fraction of the dry sample passing the No. 100 mesh sieve is 4% or less by weight (mass), no plastic limit test will be made.

    b. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than 4% and not greater than 8% by weight (mass), that fraction shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T 90.

    c. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than 8% by weight (mass), the sample will be washed; and the additional material passing the No. 100 mesh sieve shall be determined by AASHTO Method T 146, except that the No. 100 mesh sieve will be substituted for the No. 40 mesh sieve where the latter is specified in AASHTO Method T 146. The combined materials that passed the No. 100 mesh sieve shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T 90.

2. Plasticity: When screenings or any combination of screenings and natural sand or any combination of stone sand and natural sand are used, the following requirements shall apply:

    a. When the fraction of the dry sample passing the No. 100 mesh sieve is 6% or less by weight (mass), no plastic limit test will be made.

    b. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than 6% and not greater than 10% by mass, that fraction shall not have sufficient plasticity to permit the performing of the plastic limit test, using AASHTO Method T 90.

    c. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than 10% by weight (mass), the sample shall be washed; and additional material passing the No. 100 mesh sieve shall be determined by AASHTO Method T 146, except that the No. 100 mesh sieve shall be substituted for the No. 40 mesh sieve where the latter is specified in AASHTO Method T 146. The combined materials that have passed the No. 100 mesh sieve shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T 90.

2.8 BEDDING

A. Slabs on grade

1. Granular Fill unless otherwise indicated.

B. Utilities

1. Unless otherwise indicated, bedding shall consist of screened gravel, maximum size 3/4 inches and minimum size 3/8 inches.

2. When clay, wet, soft or silty soil conditions prevail, 3/4-inch crushed stone shall be used for bedding of pipe.

2.9 SAND

A. Sand shall consist of clean, hard, durable, uncoated particles of quartz or other rock. It shall not contain more than 3% of material finer than a #200 sieve.

B. Organic Impurities: Fine aggregate subjected to the colorimetric test shall not produce a color darker than Gardner Color Standard No. 11, using AASHTO T 21. If the fine aggregate fails to meet this requirement, the provisions of AASHTO M 6, Section 5.2, will govern.

C. Sand shall be uniformly graded as follows:

Gradation of Sand

Sieve	Percent Passing by Weight
3/8”	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10

D. The above gradation represents the extreme limits which shall determine suitability for use from all sources of supply. The gradation from any one source shall be reasonably uniform and not subject to the extreme percentages of gradation specified above. For the purpose of determining the degree of uniformity, a fineness modulus determination will be made upon representative samples from any source. Fine aggregate from any one source having a variation in fineness modulus greater than 0.20 either way from the fineness modulus of the representative sample will be rejected.

2.10 FLOWABLE CONCRETE FILL/BACKFILL (FLOWFILL)

A. Cementitious material, ACI 229R, comprised of cement, aggregates, fly ash, water, and admixtures, capable of being poured or pumped, self-leveling, self-curing to specified strengths.

B. Excavatable flowfill: Concrete strength shall be liquid enough to flow, be self-leveling and excavatable by hand methods. Unless otherwise specified, excavatable flowfill shall have a minimum 28 day compressive strength of 30 psi, and shall not exceed 100 psi.

C. Non-excavatable flowable: Concrete strength shall be liquid enough to flow and be self-leveling and excavatable by machine equipment. Unless otherwise specified, non-excavatable flowfill shall have a minimum 28-day compressive strength of 125 psi, and shall not exceed 200 psi.

2.11 DETECTABLE WARNING TAPE

A. Acid and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric power lines, electric power conduits and other electric power facilities.

2. Blue: Water.

3. Orange: Communication lines or cables, including but not limited to telephone, fire signals, cable television, and electronic controls.

4. Green: Storm drainage and sanitary sewer systems, including force mains and other non-hazardous materials.

PART 3 EXECUTION

3.1 PREPARATION

A. Notify “Call-Before-You-Dig” to request a utility mark-out for the Project Site prior to any earth disturbance. Provide written confirmation to Engineer that such mark-out has been completed.

B. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures, utilities, and other site features prior to start of work and notify Engineer in writing, of any discrepancies or hazardous conditions.

C. Take precautions for preventing injuries to persons or damage to property in or about the work. Protect structures, utilities, sidewalks, pavements and other improvements from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

D. Protect sub-grades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

E. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

F. When excavations are to be made in paved surfaces, the pavement shall be removed so as to provide a clean uniform edge with a minimum disturbance of remaining pavement. Saw cutting the pavement to provide a clean, uniform edge shall unless otherwise indicated.

G. If pavement is removed in large pieces, it shall not be mixed with other excavated material, but shall be disposed of away from the site of the Work before the remainder of the excavation is made.

3.2 CLEARING AND GRUBBING

A. Clear, grub, remove, and dispose of all vegetation and debris within the limits of construction, as designated on the plans or as required by Engineer. Contractor shall remove only those trees and shrubs absolutely necessary to allow for the construction. The work shall also include the preservation from injury of defacement of all vegetation or object designated to remain.

B. Refer to Section 31 1100 – Clearing and Grubbing.

3.3 PROTECTION OF EXISTING FEATURES

A. General

1. Protect all existing improvements from damage unless those improvements are specifically designated for permeant removal, relocation, or temporary removal and replacement.

2. As excavation approaches underground structures, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools.

3. Pavements: On paved surfaces to remain, do not use or operate tractors, bulldozers, or other power operated equipment, the treads or wheels of which are so shaped as to cut or otherwise damage such surfaces. All surfaces, which have been damaged by Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of operations. Suitable materials and methods shall be used for such restoration.

B. Utilities

1. Existing utilities remaining in service, including those remaining in service until after relocation, and relocated utilities shall be protected from damage. Before excavating near any existing utilities, notify the utility owner, coordinate protective work and comply with the utility owners' requirements. Coordinate with respective utility owners/operators as required.

2. Safeguard and protect from damage or movement any existing services, utilities, and utility structures uncovered or encountered which are to remain in service.

3. All utility services shall be supported by suitable means so that the services shall not fail when tamping and settling occurs.

4. Where known utilities are encountered, notify Engineer and document location and type of utility before proceeding with work in such area.

5. When uncharted or incorrectly charted piping or utilities are encountered during excavation, stop work and notify Engineer immediately. Cooperate with the utility owners in maintaining their utilities in operation prior to resuming work.

C. Retaining Structures: Provide bracing, shoring, sheeting, sheet piling, underpinning or other retaining structures necessary to guard against any movement or settlement of existing or new construction, utility systems, paving, or other improvements. Assume responsibility for the strength and adequacy of retaining structures, and for the safety and support of construction, utilities or paving, and for any movement, settlement or damage thereto. Retain the services of a licensed engineer as required to design bracing, shoring, sheeting, sheet piling, underpinning or other retaining structures.

D. Replacement and Relocation

1. In case of damage, Contractor shall notify the appropriate party so that proper steps may be taken to repair any and all damage done. When the Owner does not wish to make the repairs themselves, all damage shall be repaired by Contractor, or, if not promptly done by him, Engineer may have the repairs made at the expense of Contractor.

2. If certain existing structures are encountered that in the opinion of Engineer require temporary or permanent relocation or removal, Engineer may order in writing that Contractor undertake all or part of such work or to assist the Owner in performing such work. For such occurrences, Contractor shall be compensated as applicable, as extra work.

3. In removing existing structures, Contractor shall use care to avoid damage to the material, and Engineer shall include for payment only those new materials, which, in his judgment, are necessary to replace those unavoidably damaged.

4. The structures to which the provisions of the preceding two paragraphs shall apply include structures which (1) are not indicated on the Drawings or otherwise provided for, (2) encroach upon or are encountered near and substantially parallel to the edge of the excavation, and (3) in the opinion of Engineer will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced. (See Item 3.19, "Sub Surface Obstructions" also).

3.4 DEWATERING

A. Comply with all applicable permit requirements.

B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrade and from flooding Project site and surrounding area.

C. Protect sub-grades from softening, undermining, washout and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

2. Install de-watering system to keep subgrades dry and convey ground water away from excavations.

3.5 EXCAVATION

A. Dust Control: During the progress of the Work, Contractor shall conduct his operations and maintain the area of his activities in order to minimize the creation and dispersion of dust. Refer to Section 01 5714- Temporary Dust Control.

B. Excavate to the exact elevations shown on the plans, or as directed by Engineer. Where no dimensions are indicated, make excavations in such manner, and to such depths, elevations, and dimensions, that will give suitable room for construction of the work indicated on the Drawings. As applicable for utility installations, comply with trench limits shown on the Drawings.

C. Furnish and place all sheeting, bracing, and supports, and render the bottom of the excavation firm and dry, and in all respects, acceptable for construction of the work.

D. If Contractor excavates below the elevations specified on the plans, beyond the limits indicated on the plans, or where no dimensions are indicated, beyond depths, elevations, and dimensions reasonably necessary for construction of the work, Contractor shall bring the excavation back to the proper elevation and/or dimension by backfilling with Suitable Material that is approved by Engineer in accordance with the backfilling provisions specified herein. Engineer, or if applicable Geotechnical Engineer, shall have sole authority in determining the specific composition of such Suitable Material.

1. Any increase in cost resulting from Unauthorized Excavation, including but not necessarily limited to backfilling, haul-off, increasing the size of footings or foundations, testing, schedule impact, or administrative impact shall be at Contractor’s sole expense.

E. If utilities are to be laid in new embankments, or other new fill areas which are more than 12 inches deep below the invert of the pipe, the fill material shall be placed and properly compacted to final grade or to a height of at least 3 feet above the top elevation of the pipe,

whichever is the lesser, before laying pipe. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall then be excavated as though in undisturbed material.

3.6 TRENCH EXCAVATION

A. In general, trenches shall be excavated to such depth as will provide a cover depth as indicated on the Drawings from finished grade to the top of the pipe barrel. Deeper trenches shall be provided where necessary on account of the conformation of the ground and to permit the alignment of the pipe without undue deflection of joints.

B. Trenches shall be excavated by hand or machinery to the width and depth indicated on the Drawings and specified herein. Depth shall account for thickness of the pipe and thickness of bedding. All loose materials shall be removed from the bottom of the trench so that the bottom of the trench will be in an undisturbed condition.

C. If in the opinion of Engineer, the material at or below the depth to which excavation for structures and pipes would normally be carried is unsuitable for foundation, it shall be removed to such widths and depths as directed and replaced with suitable material.

D. Trench widths shall be 3 feet greater than the nominal inside diameter of pipe for such diameters of 36 inches or less. For diameters greater than 36 inches, the width shall be 4 feet greater than nominal inside diameter. Trench excavation for manholes, catch basins, drop inlets, etc. shall be two (2) feet outside the neat lines of the foundations. These limits may be adjusted for field conditions at the direction of Engineer.

E. Bedding for pipe and utility structures will be as detailed on the Drawings.

3.7 APPROVAL OF SUBGRADE

A. Notify Engineer, and Geotechnical Engineer if applicable, when excavations have reached required subgrade elevation.

B. If Engineer and, if applicable, Geotechnical Engineer determines that Unacceptable Material is present, continue excavation of such Unacceptable Material and replace with approved Satisfactory Materials as directed. The replacement of Unacceptable Material with Satisfactory Materials will be paid for as a change in the work according to applicable provisions of the contract.

C. Protect subgrade from disturbance at all times. Reconstruct sub-grades damaged by freezing temperatures, frost, rain, accumulated water or construction activities, as directed by Engineer. Excavation and replacement with structural fill of any disturbed or softened materials resulting from inadequate preparation, inadequate dewatering, or inadequate protection, shall be at Contractor’s sole expense.

3.8 FILL AND BACKFILL

A. Fill: Contractor shall remove loam and topsoil, loose vegetable matter, stumps, large roots, etc., from areas upon which embankments will be built or material will be placed as fill to adjust subgrade prior to final grading. The subgrade shall be prepared by forking, furrowing, or plowing such that the first layer of the new material placed thereon, will be well bonded to it.

B. Backfill: Common Fill material may be used as backfill when indicated on the Drawings or when authorized by Engineer (or as applicable Geotechnical Engineer) if Contractor can achieve required minimum dry density after compaction. Backfilling shall be done as promptly as is consistent with non-injury to pipe or structures, but no backfilling shall be done before Engineer (or as applicable Geotechnical Engineer) gives permission.

C. Frozen material shall not be placed in any fill or backfill, nor shall any fill or backfill be placed upon frozen material. Previously frozen material shall be removed, or shall be otherwise treated as required, before new fill or backfill is placed.

D. After the subgrade has been prepared, fill material shall be placed thereon and built up in successive layers not exceeding twelve (12) inches before compaction until it has reached the required elevation.

1. When gravel fill or other material is used for foundation of structures, it shall be spread in layers of uniform thickness not exceeding six (6) inches before compaction.

E. Upon completion of filling and backfilling, all surplus material shall be removed and surfaces to remain which are affected in any way by the work restored to the condition in which they were before ground was broken. All surplus materials shall become the property of Contractor. If Contractor fails to promptly remove such surplus materials, Engineer may have the same done and charge all associated costs to Contractor, including deduction from payments due.

3.9 REPLACEMENT OF UNSATISFATORY MATERIALS, MASS ROCK REMO AND TRENCH ROCK

A. Unsatisfactory materials to be removed off site shall be collected, transported and disposed in accordance with the applicable environmental regulations and under the oversight of Licensed Environmental Professional (LEP) who is registered in Connecticut.

B. Replament material for unsatisfactory material or rocks shall be Common Fill, which shall be brought to subgrade in 12” lifts and compacted per Section 3.12.

3.10 BACKFILLING UTILITIES

A. As soon as practical after utility has been placed into bedding and joints properly made, backfilling shall begin, and shall continue without delay.

B. Placement of bedding over pipe prior to placement of backfill shall be as indicated on the Drawings. Hand-place bedding at the sides of the pipe and to the limits indicated on the Drawings over the pipe. Bedding placed over pipe shall be in 6-inch layers, leveled along the length and width of the trench and thoroughly compacted with approved tampers.

C. Install warning tape as indicated o the Drawings unless otherwise specified by the utility owner/operator.

3.11 BACKFILLING AT STRUCTURES

A. No backfill shall be deposited against concrete until the concrete has obtained sufficient strength to withstand the earth pressure placed upon it and in no case less than seven days, nor before carrying out and satisfactorily completing the tests for watertight structures specified elsewhere.

B. Prior to placing backfill, subgrade shall be thoroughly compacted. Soft or loose material evident during compaction shall be removed and replaced with Granular Fill.

C. Fill placed around arches, rigid frames, box culverts and piers shall be deposited on both sides of the structure to approximately the same elevation at the same time. Each layer of backfill shall be spread to a thickness not exceeding 6 inches deep after compaction and shall be thoroughly compacted by the use of power rollers or other motorized vehicular equipment, by tamping with mechanical rammers or vibrators, or by pneumatic tampers. Any equipment not principally manufactured for compaction purposes or which is not in proper working order in all respects shall not be used within the area described above.

D. Bring backfill to sub-grade elevations. Slope backfill at exterior of building to drain water away from building.

3.12 COMPACTION

A. Each layer of fill or backfill material shall be compacted by the use of compaction equipment consisting of rollers, compactors or a combination thereof. Earth-moving and other equipment not specifically manufactured for compaction purposes will not be considered as compaction equipment. At such points as cannot be reached by mobile mechanical equipment, or where such equipment is not permitted, the materials shall be thoroughly compacted by the use of suitable power- driven tampers.

B. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or application of water, to compact it properly. At such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction, or such other precautions shall be taken as may be necessary to obtain proper compaction.

C. Special attention shall be given to compaction in places close to walls where motorized vehicular compaction equipment cannot reach. Within 3 feet of the back face of walls and within a greater distance at angle points of walls, each layer of backfill shall be compacted by mechanical rammers, vibrators or pneumatic tampers.

D. Each layer of fill or backfill shall be compacted at optimum moisture content. No subsequent layer shall be placed until the specified compaction is obtained for the previous layer.

E. Compaction Density: Compaction density shall be expressed as a percentage of maximum dry density at optimum moisture content according to ASTM D 1557 Method C. Density indicated is minimum required.

1. Under structures, building slabs, and steps: 95 %
2. At building foundations: 95 %
3. Utilities, below pipe centerline: 95%
4. Utilities below unpaved surface, above pipe centerline: 92%
5. Utilities below paved surface, above pipe centerline: 95%
6. Embankments: 92%
7. Landscaped areas: 90 %.
8. Natural grass athletic fields and similar recreational fields: 93%

3.13 SUBSURFACE OBSTRUCTIONS

A. As a general rule, sub-surface obstructions encountered along the route of the pipeline shall be considered as follows:

1. Crossing Obstruction: All pipes, conduits, wires, etc. of whatever nature whose centerline lies at an angle of 20 degrees or greater to the centerline of the pipe being installed shall be considered as crossing obstructions and shall be protected, or repaired or replaced if damaged, or relocated, all at no additional cost to the Owner.

2. Interfering Obstructions: All pipes, conduits, wires, etc. of whatever nature whose centerline lies at an angle of less than 20 degrees, but more than 5 degrees to the centerline of the pipe being installed, shall be considered as interfering obstructions. Costs for supporting such obstructions in place during installation of the new pipe shall be paid for by the Owner. Costs for supporting interfering obstructions shall not be construed to include any costs for excavation. Repairing or replacing damaged interfering obstructions, or relocation shall be accomplished at no additional cost to the Owner.

3. Parallel Obstructions: All pipes, conduits, wires, etc. of whatever nature whose centerline lies at an angle of 5 degrees or less, or is truly parallel and less than 0.5 feet offset from outside the normal trench limits, as specified in Subarticle 3.5 B. of this Section, of the pipe being installed, shall be considered parallel obstructions. Costs for supporting such obstructions in place during installation of the new pipe, including excavation, may be

paid for by the Owner, or Owner may elect to pay for the cost of replacing such obstructions. Should Owner first elect to pay the cost of supporting the obstruction and then elect to pay the cost of replacing the obstruction, approved costs for supporting the obstruction, including excavation, incurred prior to electing replacement costs shall also be paid. After Owner elects to pay replacement costs, only replacement costs will be paid for all additional work in the vicinity of the parallel obstruction.

4. Angle measurement between centerline of obstructing pipe, conduit, wire, etc. and centerline of the pipe being installed shall be taken from between the horizontal projection of the centerlines at ground surface. Parallel offset distance between centerline of obstructing pipe, conduit, wire, etc. and the outside of normal trench limits of the pipe being installed shall be taken from between the horizontal projection of the centerlines and outside trench limit at ground surface.

END OF DOCUMENT 31 2310

DOCUMENT 31 2319 - DEWATERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removal of surface water and ground water as necessary to perform the construction required by the contract.

2. Constructing, installing, building, and maintaining all necessary temporary water extraction and management facilities.

3. Furnishing, installing, and operating all necessary pumps, piping, and other equipment.

4. Complying with all applicable approvals, authorizations or permits associated with the management of dewatering wastewaters.

5. Removing all such temporary works and equipment after their intended function is no longer required.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. Connecticut Department of Energy and Environmental Protection (DEEP)

1. Connecticut Guidelines for Soil Erosion and Sediment Control, DEP Bulletin 34, State of Connecticut Council on Soil and Water Conservation, 2002.

2. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities, (DEEP-WPED-GP-015), latest issue.

3. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer (DEP-WD-GP-007), latest issue.

4. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water (DEP-PED-GP-020), latest issue.

5. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water (DEP-PED-GP-020), latest issue.

D. Regulations of Connecticut State Agencies (RCSA)

1. RCSA Section 22a-372-1, 22a-377(b)-1, 22a-377(c)-1, 22a-377(c)-2, Water Diversion.

2. RCSA Section 22a-430-3 through 4, General Conditions Applicable to Water Discharge Permits and Procedures and Criteria for Issuing Water Discharge Permits.

3. RCSA Section 22a-430-8, Underground Injection Control.

1.3 DESCRIPTION OF THE WORK

A. Prevent surface water and subsurface or groundwater from flowing into excavations or earthwork areas which would cause flooding of the Project Ste and surrounding area, or softening or loosening of the soil at excavation or earthwork subgrade.

B. Provide adequate and satisfactory dewatering and drainage of excavations and furnish all materials and equipment and do all incidental work required in conjunction with the furnishing, installing, and maintaining of same to permit proper and timely completion of all work required.

C. Contractor may choose any satisfactory dewatering method he wishes subject to the approval of Engineer, provided such method performs the dewatering required and complies with applicable approvals, authorizations and permits.

D. Contractor shall assume all responsibility for the adequacy of the methods, materials, and equipment employed. Contractor shall take all precautions necessary to prevent loosening or softening of the subgrade. In this regard, Contractor shall at all times be prepared to alter his construction method or sequence.

E. The work shall be maintained dry until the structures (building slabs and footings, paved area, pipe, drainage structure, embankments, etc.) are completed.

F. All dewatering required by pumping and drainage shall be performed without damage to the excavation, pipe trench, pavements, pipes, electrical conduits, other utilities and any

other work or property. Existing or new sanitary sewers shall not be used to dispose of drainage.

1.4 SUBMITTALS

A. Dewatering Plan: Prior to installation of the dewatering system, submit design data showing the following, for review by Engineer:

1. Locations and associated construction where dewatering is required.

2. Specific methods and devices proposed for dewatering.

3. Details on protection at the inlet and outlet of pumps, method for floating the pump intake, or other methods to minimize and retain the sediment.

4. Proposed location of dewatering discharge and details of infiltration basins or other discharge location. Per the General Permit, where feasible and appropriate, dewatering wastewaters will be infiltrated into the ground.

5. Details on any containment berm construction when dewatering earth materials.

6. Identification of a contingency plan for emergency operations should the dewatering operation prove inadequate to meet the dewatering need or is found to be causing unacceptable turbidity problems (e.g., alternative discharge locations or use of a portable sediment tank). If turbidity or siltation problems are not adequately controlled by the contingency plan, then the operation will be ceased and a revised dewatering plan submitted for approval prior to further implementation.

1.5 REGULATORY COMPLIANCE

A. Comply at all times with the following as applicable to the Project:

1. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities, (DEP-PED-GP-015), latest revision. Conditions of such permit, other conditions of approval or authorizations, and any Stormwater Pollution Prevention Plans shall become part of the Contract Documents.

2. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer (DEP-PERD-GP-007), latest revision. The conditions of such permit, other conditions of approval or authorizations, and any supplemental plans shall become part of the Contract Documents.

3. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water (DEP-PED-GP-020), latest revision. The conditions of such permit, other conditions of approval or authorizations, and any supplemental plans shall become part of the Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 JOB CONDITIONS

A. Surface Drainage: Intercept and divert precipitation, and surface water, away from excavations through the use of temporary diversion swales, temporary sediment traps, pipes, sumps or other approved means.

B. Drainage of Excavated Areas: Provide and maintain ditches of adequate size to collect surface and seepage water, which may enter the excavations. Divert the water into sumps and storm drains or pump into drainage channels or storm drains. When water is to be diverted into a storm drain, provide dewatering settling basins, or other accepted apparatus, such as fractionation tanks, as required to reduce the amount of fine particles, which may be carried into the drain. If a storm drain becomes blocked due to dewatering operation, it shall be cleaned by the Contractor at his own expense.

3.2 DEWATERING

A. Where feasible and appropriate, dewatering wastewaters will be infiltrated into the ground. Dewatering wastewaters discharged to surface waters will be discharged in a manner that minimizes the discoloration of the receiving waters. The following measures will be employed to ensure that dewatering wastewaters will not cause scouring or erosion or contain suspended solids in amounts that could reasonably be expected to cause pollution:

B. Divert surface waters away from areas needing dewatering.

C. Consider if well points and sumps can be used to lower the groundwater table reducing the need for settling facilities.

D. For sites that don’t require continuous pumping, pump work areas before construction activities begin each work day.

E. Provide filtration near the suction intake.

F. Locate pumps, intake sumps, and other intake structures in areas which will not require constant moving, when possible.

G. Locate pump discharge facilities (portable, permanent, or bio-filtering structures) such that a minimum disturbance of existing wetlands and watercourses is incurred.

H. Provide protection at outlets from pumping operations to dissipate pumping surges and prevent erosion at the point of discharge.

I. Maintain the water level at such lowered elevations that no danger to structures can occur because of the buildup of excessive hydrostatic pressure on the subgrade, or bottom of trench, unless otherwise permitted by Engineer.

J. Do not allow water to accumulate in excavations. At all times during construction, provide ample means and devices with which to remove promptly and dispose properly of all water entering roadway, trench, and structure excavations and keep them dry until the structures to be built thereon are completed.

K. No pipe/culvert/structure shall be laid in water. No masonry shall be laid in water, and no water shall be allowed to rise over masonry (either concrete or brick) in 24 hours after being placed. Nor shall moving water be allowed to rise over masonry for four days. In no event shall water be allowed to rise so as to set up unequal pressures in the structures until the concrete or mortar has set at least 24 hours. The Contractor shall constantly guard against the possibility of flotation of pipe or structures after installation. He shall place adequate backfill promptly in accordance with Section 31 2310 - Earthwork to prevent this occurrence, and his method of handling drainage and carrying on these operations shall always be adequate to prevent flotation.

END OF DOCUMENT 31 2319

DOCUMENT 31 2513 - GEOTEXTILES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Furnishing and installation geotextile materials for the separation of earth materials.

2. Furnishing and installation geotextile materials for the stabilization of earth materials.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818 and any supplements.

B. ASTM International (ASTM).

1. ASTM D4355 – Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.

2. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

3. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

4. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

5. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.

6. ASTM D4873 – Guide for Identification, Storage, and Handling of Geotextiles.

7. ASTM D6241 – Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

8. ASTM D6706 – Standard Test Method for Measuring Geosynthetic Pullout Resistance in Soil.

C. Code of Federal Regulations (CFR)

1. 29 CFR Part 1926 Subpart P – OSHA Excavation Regulations 1926.560 through 1926.562 including Appendices A through F.

D. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section.

1.3 SUBMITTALS

A. Submit to Engineer for approval material specifications, manufacturer's product data, manufacturer's installation guidelines, and shop drawings for all materials furnished under this Section.

B. Connection details for geotextile.

C. Proposed mechanical connection devices.

1.4 DELIVERY, STORAGE AND HANDLING

A. Geotextile labeling, shipment, and storage shall follow ASTM D4873. Product labels shall be clearly labeled and/or marked to specifically identify each product and clearly show the manufacturer's name, style name, and roll number.

B. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants. Protect rolls from crushing or abrasion during shipping and hauling.

C. Geotextile shall be stored on a prepared surface (not wooden pallets) and should not be stacked more than two rolls high. Storage shall be such that the geotextile is protected from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat or cold, or other damaging circumstances. Temporary storage at the Project Site shall be away from standing water such that crushing or flattening of roll goods does not occur.

PART 2 PRODUCTS

2.1 SEPARATION GEOTEXTILE

A. Separation Geotextile shall be utilized to separate layers of earth materials in utility trenches, drains, layered systems and similar installations in a non-structural configuration.

1. Composition: Woven geotextile made of 100% polypropylene slit film yarns.

2. Physical properties:

Mechanical and Physical Properties of Separation Geotextile

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Grab Tensile Strength, Ultimate	ASTM D4632	Pounds	120
Grab Tensile Strength, Elongation at Ultimate	ASTM D4632	Percent (%)	50
Trapezoid Tear Strength	ASTM D4533	Pounds	50
CBR Puncture Strength	ASTM D6241	Pounds	310
Apparent Opening Size (AOS)	ASTM D4751	(U.S. Sieve)	70
Permittivity	ASTM D4491	sec^{-1}	1.7
Flow Rate	ASTM D4491	$gal/min/ft^2$	135
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70

2.2 LIGHT-DUTY STABILIZATION GEOTEXTILE

A. Light-Duty Stabilization Geotextile shall be utilized under temporary sidewalks and unit pavers when called-for.

1. Composition: Woven geotextile made of 100% polypropylene slit film yarns.

2. Physical properties:

Mechanical and Physical Properties of Light-Duty Stabilization Geotextile

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Tensile Strength @2% Strain (MD/CD)	ASTM D4595	Pounds/foot	600/600
Tensile Strength @5% Strain (MD/CD)	ASTM D4595	Pounds/foot	1620/1620
Flow Rate	ASTM D4491	$Gal/min/ ft^2$	70
Permittivity	ASTM D4491	sec^{-1}	90
Apparent Opening Size (AOS)	ASTM D4751	(U.S. Sieve)	40
Interaction Coefficient	ASTM D6706	-	0.89
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	90

MD – Machine Direction
CD – Transverse (Crosswise) Direction

2.3 STABILIZATION GEOTEXTILE

A. Stabilization Geotextile shall be utilized for stabilization of subgrades where unsuitable subsurface soil conditions are present. Stabilization geotextile shall only be utilized with the approval of Engineer.

1. Composition: Woven geotextile made of 100% polypropylene slit film yarns.

2. Physical properties:

Mechanical and Physical Properties of Stabilization Geotextile

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Grab Tensile Strength, Ultimate (MD/CD)	ASTM D4595	Pounds/foot	7200/5760
Tensile Strength at 2% Strain	ASTM D4595	Pounds/foot	1370/1560
Tensile Strength at 5% Strain	ASTM D4595	Pounds/foot	3600/3600
Tensile Strength at 10% Strain	ASTM D4595	Pounds/foot	6600/5760
Flow Rate	ASTM D4491	Gal/min/ ft^2	15
Permittivity	ASTM D4491	sec^{-1}	0.23
Apparent Opening Size (AOS)	ASTM D4751	(U.S. Sieve)	20
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	80

MD – Machine Direction
CD – Transverse (Crosswise) Direction

PART 3 EXECUTION

3.1 GENERAL

A. Install geotextile as shown on the Drawings or as called-for in the Specifications. Follow manufacture's guidelines.

B. Ensure that geotextile is protected during installation from clogging, tears, and other damage.

3.2 PIPE OR DRAINAGE SYSTEMS

A. Provide smooth side and bottom trench surfaces so the fabric does not bridge depressions in the soil and is not damaged by rock projections.

B. Use fabric of a width to permit a minimum trench-width overlap across the backfill at the trench top.

C. Lay the fabric flat in the prepared trench without stretching. Lay the top of the fabric back on the sides to allow for the placement of the aggregate backfill and pipe.

D. Overlap ends of rolls an amount equal to the trench width prior to fabric placement. Where pockets or cavities occur in the trench bottom or sides, fill them with acceptable granular material to prevent distortion or damage to the fabric.

E. Backfill aggregate and install pipe in a manner to prevent damage to the fabric. Compact aggregate backfill and overlap the fabric across the trench top. Do not allow the fabric to be exposed for more than 2 weeks without covering with backfill.

3.3 LAYER SEPARATION AND/OR STABILIZATION

A. Place fabric on a normally prepared subgrade area attending the full width of the sub-base layer being protected.

B. Place fabric in a loose and unstretched condition to minimize shifting, puncture, and/or tearing. Overlap fabric roll-ends and edges a minimum of 12 inches with adjacent material.

C. Place subbase material within 2 weeks after placement of fabric to minimize exposure. Place sub-base material in a manner to minimize slippage of the fabric. If excessive slippage occurs, use steel securing pins per manufacturer’s guidelines.

END OF DOCUMENT 31 2513

DOCUMENT 31 4143 – SHEETING AND STAYBRACING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Shoring and bracing necessary to protect existing buildings, existing culvert, streets, walkways, utilities, and other improvements and excavation against loss or ground caving embankments.

2. Maintenance of shoring and bracing.

3. Removal of shoring and bracing, as required.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges and Incidental Construction, Form 817, 2016 and any supplements.

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

1.3 DESCRIPTION OF THE WORK

A. Contractor shall install sheeting or staybracing as necessary in order to comply with the Applicable Safety Code; to accommodate traffic; to permit access to existing utilities; to provide an opening of proper depth and width in which to install the proposed pipes and other underground structures; and to protect his workmen, employees of the Owner and (Insert Name), State and the public, from death or injury from bank failure, earth collapse or earth movement of any nature whatsoever. In general, all trenches and excavations over 5 feet in depth, any other unstable excavations or excavations in unstable material, shall be protected against the hazard of collapse.

1.4 SHEETING/STAYBRACING DESIGN

A. Contractor shall be entirely and solely responsible for the adequacy and sufficiency of all supports and for all sheeting, bracing, shoring, underpinning, cofferdamming, etc. The Contractor shall assume the entire and sole responsibility for damages on account of injury to persons or damage to adjacent pavements and public and private property (including

but not limited to, the Work under construction, existing buildings, facilities, etc.) which injury or damage results directly from said Contractor's failure to install, or to leave in place, adequate and sufficient supports, sheeting, bracing, underpinning, cofferdamming, etc.

B. Contractor shall submit, in triplicate, a detailed written description of the equipment and sheeting methods he proposes to use to Engineer prior to the installation of any sheeting and/or shoring. These plans should include, but not be limited to, the type of sheeting or shoring, sizes and dimensions, bracing, spacing, methods of installation and removal, etc.

C. All sheeting shall be designed and sealed by a Professional Engineer licensed to practice in the State where the Work is being performed. He shall be known as the Contractor's Engineer. Sheeting computations and sketches shall be submitted for Engineer's review.

1.5 SHEETING LEFT-IN-PLACE

A. Sheeting, shoring or other timbering may be left-in-place at the option of the Contractor when needed to protect other existing facilities or the Work built or to be built under this Contract. However, steel sheeting left-in-place will be paid for only where specifically shown as "Steel Sheeting Left-in-Place" on the Contract Drawings or where ordered by Engineer.

B. It is expressly understood and agreed that removing or leaving-in-place any sheeting or shoring, etc., as noted above, shall not relieve the Contractor from any responsibility for any loss damage whatever due to omission of, or failure of, the sheeting, etc., failure to leave it in place, or the settling of the backfill, or any movement of the ground or any structure or object adjacent to any trench or excavation made by Contractor. Engineer will not order sheeting left-in-place at the expense of the Owner in order to accommodate the convenience of the Contractor or to save him the cost of its removal.

1.6 OPTIONAL METHOD OF TRENCHING

A. Contractor may, with the approval of Engineer, lay back slopes in accordance with the provisions of the Applicable Safety Code in order to avoid the necessity of sheeting or limiting the quantity thereof. However, in the case of trenches, the toe of this slope will not be lower than one foot above the top of the pipe to be installed. A level bench of at least two (2) feet in width shall be maintained between the toe of the sloped section and vertical trench excavation for pipes with an outside diameter of six (6) feet or less; for pipes with an outside diameter over six (6) feet, a minimum four (4) foot bench shall be provided. Where sloping is used as a substitute for sheeting or staybracing, or used in combination therewith, it shall be sloped a minimum of one horizontal to one vertical except where instability of the material requires a slope flatter than one to one. If the Contractor elects and is allowed to lay back the slopes, there will be no additional payment made for the extra excavation outside of the normal trench or structure excavation payment limits.

1.7 RESPONSIBILITY OF ENGINEER

A. There shall be no obligation on the part of Engineer to issue orders for sheeting, staybracing or sheeting left-in-place and/or to pass upon sufficiency and adequacy of

sheeting; nor shall the failure on the part of Engineer to give such orders relieve the Contractor from liability for damages occasioned by negligence, or otherwise growing out of the Contractor's failure to either install sufficient and adequate sheeting and/or staybracing or to leave in place in the excavation sufficient and adequate support to prevent the caving in or moving of the ground adjacent to the sides of the excavation during and after the backfilling operation.

PART 2 PRODUCTS

2.1 WOOD STAYBRACING

A. Wood Staybracing

2.2 STEEL SHEETING

A. Steel sheeting: continuous and interlocking sheets, ASTM A-328.

2.3 TRENCH BOXES

A. Trench boxes shall not be used unless requested by the Contractor and authorized by Engineer. If authorized, they shall be used only when the protection of workmen is involved, not for support of existing adjacent utilities, structures, embankments, etc. A trench protected by the use of a trench box shall not be considered a sheeted trench.

PART 3 EXECUTION

3.1 INSTALLATION

A. Unless expressly authorized by Engineer, sheeting shall be driven ahead of the excavation to avoid loss of material from behind the sheeting. If it is necessary to excavate below the sheeting to facilitate driving, care shall be taken to avoid trimming behind the face along which the sheeting will be driven. Care shall be taken to prevent voids outside of the sheeting.

B. All sheeting and staybracing shall be securely installed and properly braced in accordance with the Applicable Safety Code. Engineer may direct the Contractor at any time in writing to have sheeting, bracing, etc. in place to be embedded in backfill or concrete for the purpose of preventing subsequent injury to structures and property.

C. The depth of pilot cuts for trenches/structures shall not exceed five (5) feet in depth at any time. Engineer may reduce the depth of the pilot cut should the soil and subsurface conditions warrant such action. Sheeting must be driven by drop hammer or other methods approved in writing by Engineer below the area of the pilot cut. Driving of sheeting above the pilot cut is subject to the directions of Engineer. Engineer may direct the Contractor to use other types of equipment, and to revise the procedure during the excavation of the pilot cut and the driving of the sheeting should it be found necessary to do so.

D. Vibratory driving hammers shall not be used unless specifically authorized by Engineer.

E. Where sheeting is specified to be left-in-place, it shall be wood sheeting unless otherwise specifically noted on the Contract Drawings. Where wooden sheeting cannot be driven due to the nature of the material, then steel sheeting may be driven and removed in lieu of the wooden sheeting providing the following procedures are followed:

1. Simultaneously with the withdrawal of sheeting and as each layer is compacted in accordance with Section 312310 - Earthwork; or

2. The trench/area will be backfilled to the surface. If the sheeting is to be withdrawn, backfilling will proceed up to each set of rangers and braces; the rangers and braces will be removed; the backfilling will proceed up to the next set of rangers and braces, etc. up to the top of the excavation. The backfill material shall be compacted to 98% of the maximum dry density as determined by AASHTO T 99, Method C. Alternate sections of sheeting from the left side and right side of the trench/area shall be removed and the cavity remaining there from shall be jetted thoroughly by high-pressure water, starting at the toe of the sheeting and being drawn to the surface. Sand shall be inserted with the jetting process.

3. Where the bottom of the excavation is not free draining material (some areas of organic material or miscellaneous fill) or where granular backfill is not available or ordered by Engineer, the jetting shall be very carefully done with a minimum amount of water being expended. In such locations, the Contractor may request the approval of Engineer for other compaction methods in the sheeting cavity.

4. Contractor shall remove the sheeting and/or staybracing from the excavation, except where it is specifically indicated on the Contract Drawings "To be Left- in-Place", or the Contractor may elect to leave in place the sheeting and/or staybracing for his own convenience, or to serve his own interest to protect existing facilities, the Work built or to be built under this Contract, or for the safety of the public, etc., at no cost to the Owner. No sheeting or bracing which is within three feet of the existing or proposed finished grade may be left-in-place without the prior permission of Engineer. This may require the Contractor cut off sheeting at this elevation and at no additional cost to the Owner.

5. Where sheeting, regardless of the type of sheeting used, is left in place, as specified or ordered or at the Contractor's convenience/option, unless otherwise specifically permitted in writing by Engineer, all elements such as rangers, braces, wales, etc. shall be left in place except as specified hereinbefore; and, except such temporary braces required to be removed to make way for the structure/utility. Where it is necessary to remove such temporary braces, the sheeting shall be rebraced, but in no case shall the sheeting be braced against the sides of the structure/utility to be constructed unless approved in writing by the owner of the structure/utility. Where lagging and "soldier" beams are used, the "soldier" beams and all the braces shall also be left in place.

6. Where wood sheeting has been driven below the excavation bottom to provide for a "toe-in", no wood sheeting below the top of pipe or structure shall be removed, but it shall be cut off at this elevation and the remaining sheeting above this line

removed as described herein. There will be no payment made for this work, nor for the wood sheeting left-in-place.

7. Sheeting shall be cut away and removed from in front of capped outlets or other braces or inlets set in the pipe for future connections.

8. All sheeting, shoring and bracing removed shall be carefully removed from the excavation in such a manner as not to endanger the completed work or any adjacent pavements, buildings, structures, utilities, property, etc. The sheeting shall be withdrawn to such an extent that it is just above the backfill material being compacted and all voids left or caused by the withdrawal of such sheeting, shall be immediately refilled with approved material and compacted at no additional cost to the Owner.

9. Where the excavation is to be left open during non-working hours, the sheeting shall extend 42 inches above existing grade to protect pedestrian and vehicular traffic from the open excavation.

END OF DOCUMENT 31 4143

SECTION 32 1216 - BITUMINOUS CONCRETE PAVEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Bituminous concrete paving for streets, driveways, and parking areas.

2. Installation of bituminous concrete overlays over existing pavement, including surface preparation, truing and leveling pavement, tack coating and all other associated items and operations necessary and required to complete the installation.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut Department of Transportation (ConnDOT).

1. Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 and any supplements.

2. Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 Supplemental Section 4.06 – Bituminous Concrete (Revised 3/17/14).

3. Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 Supplemental Section M.04 – Bituminous Concrete (Revised 1/28/15).

D. American Association of State High and Transportation Officials (AASHTO).

1. AASHTO M-17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.

2. AASHTO M 82, Cutback Asphalt (Medium-Curing Type) .

3. AASHTO M-208 - Standard Method of Test for Unconfined Compressive Strength of Cohesive Soil-ASTM Designation D 2166.

4. AASHTO M-320 - Standard Specification for Performance-Graded Asphalt Binder.

5. AASHTO R-26 - Standard Recommended Practice for Certifying Suppliers of Performance-Graded Asphalt Binders.

6. AASHTO R-29 - Standard Practice for Grading or Verifying the Performance Grade of an Asphalt Binder.

7. AASHTO T-27 - Sieve Analysis of Fine and Course Aggregates.

8. AASHTO T-84 - Specific Gravity and Absorption of Fine Aggregates.

9. AASHTO T-85 - Specific Gravity and Absorption of Coarse Aggregates.

10. AASHTO T-96 - Standard Method of Test for Resistance to Degradation of small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

11. AASHTO T 104 Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

12. AASHTO T-209 - Maximum Specific Gravity and Density of Bituminous Paving Mixtures.

13. AASHTO T-245 - Standard Method of Test for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.

E. American Society for Testing and Materials (ASTM)

1. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples.

2. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.

1.3 ACTION SUBMITTALS

A. CTHPB Documentation Submittals: Comply with Division 01 Section “Sustainable Design Requirements” and provide the following in addition to other action submittals:

1. Product Data for Credit 5d: For adhesives and sealants, documentation including printed statement of VOC content.

2. Product Data for Credit 5d: For paints and coatings, including printed statement of VOC content.

3. Product Data for Credit d8: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

4. Product Certificates for Credit d10: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material.

Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

5. Certificates for Credit d13: Chain-of-custody certificates indicating that products specified to be made from certified wood comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.

6. Laboratory Test Reports for Credit b4: For composite wood and agrifiber products, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

1.4 SPECIFICATIONS

A. All work performed under this Section shall conform to the Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 Supplemental Section 4.06 – Bituminous Concrete (Revised 3/17/14). This Specification is hereby incorporated into this Section by reference.

1.5 TESTING

A. Owner will retain a testing entity to perform observation and testing of the work under this Section. The testing entity’s presence does not constitute supervision or direction of Contractor’s work. Neither the presence of the testing entity nor any observations and testing performed by him, nor any notice or failure to give notice shall excuse Contractor from conformance with these Specifications or from defects discovered in his work.

B. Each week, Contractor shall advise the University Representative of anticipated testing requirements during the following week, based on anticipated construction activities. The Contractor shall also notify the University Representative and testing laboratory 24 hours before the expected time of testing.

PART 2 PRODUCTS

2.1 GENERAL

A. All work performed under this Section shall conform to the Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 Supplemental Section M.04 – Bituminous Concrete (Revised 1/28/15). This Specification is attached hereto and is herby incorporated into this Section.

PART 3 EXECUTION

3.1 GENERAL

A. Contractor shall install all pavements as specified in the location and to the grades as shown on the Drawings and/or approved by Engineer. Materials, methods of construction, and type and thickness of pavement courses shall be as shown on the Details of the Drawings and as specified herein.

B. Owner and its representatives shall have access to all parts of the Work under construction at all times.

3.2 SPECIFICATIONS

A. Execute the work of this Section in accordance with the Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 Supplemental Section 4.06 – Bituminous Concrete. This Specification is attached hereto and is herby incorporated into this Section.

END OF DOCUMENT 32 1216

DOCUMENT 32 1440 - STONE PAVING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Salvaged existing granite pavers.

B. Sand setting bed materials.

C. Salvaged existing granite stair treads.

1.3 RELATED REQUIREMENTS

A. Section 31 2310 - Earthwork: Preparation of subsoil for pavers.

B. Section 32 3200 – Site Cast-in-Place Concrete: Subbase for pavers.

1.4 REFERENCE STANDARDS

A. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide characteristics of paver unit, dimensions, special shapes, and setting materials.

C. Product Data: Provide characteristics of polymeric sand, including base material, additive(s), compressive strength, and color.

D. Shop Drawings: Indicate layout of pavers, dimensions of paved areas, elevations, and affected adjacent construction.

E. Samples: Submit two samples of each paver and curb size, illustrating style, size, color range and surface texture of units being provided.

F. Manufacturer's Installation Instructions: Indicate substrate requirements, [____], and installation methods.

1.6 MOCK-UP

A. Provide paver mock-up, 4 feet (1.2 m) long by 4 feet (1.2 m) wide; include setting bed, pavers, stair treads and joints.

B. Locate where directed.

C. Mock-up may not remain as part of the Work.

1.7 FIELD CONDITIONS

A. Maintain cementitious materials and substrate surface to a minimum of 50 degrees F (10 degrees C) prior to, during, and 48 hours after completion of work.

PART 2 PRODUCTS

2.1 GRANITE PAVERS

A. Salvaged Granite Pavers: Stones shall be salvaged pavers encountered during site demolition operations as approved by Landscape Architect, unless otherwise indicated.

1. Only to be used in locations specifically indicated for salvaged pavers.
2. All salvaged pavers shall be cleaned of all grout prior to reinstallation.

A. Replacement Granite Pavers: Should all existing pavers not be salvageable, paving slabs shall be made from granite complying with ASTM C615/C615M. Dimension stone units; size to match existing pavers; gauged thickness to match existing pavers; square shape; color and stone variety to match existing pavers; natural weathering of stone to match existing pavers.
1. Top Surface Finish: Sawn with thermal finish to match existing pavers.
2. Sides Finish: Sawn.
3. Bottom Finish: Sawn.

2.2 GRANITE STAIR TREADS

A. Salvaged Granite Stair Treads: Stones shall be salvaged pavers encountered during site demolition operations as approved by Landscape Architect, unless otherwise indicated.

1. Only to be used in locations specifically indicated for salvaged treads.
2. All salvaged treads shall be cleaned of all grout prior to reinstallation.

B. Replacement Granite Stair Treads Material Standard: Comply with ASTM C 615.

1. Varieties and Sources: Subject to compliance with requirements, provide the following:

a. Stone Type: Match existing granite tread material.
b. Color: Match existing granite tread material.

c. Sources:

1) Better Stones and Masonry Supply, 200 Tolland Street, East Hartford, CT 06108 (860) 289-1414.
2) O& G Industries, Masonry Division, 260 Murphy Road, Hartford, CT 06114 (203) 873-9800.
3) Cold Spring – Building Materials, Randy Huber (860) 657-8061.
4) Fox-Becker Granite Company, John B. Sterry, Jr. (860) 346-1681.

2. Treads:

1) Top Finish: Match existing treads.
2) Sides Finish: Saw cut.
3) Riser Finish: Thermal to match existing weathered treads.
4) Riser Batter: Match existing treads.
5) Nosing: Radial to match existing treads.
6) Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.
7) Length: As required.
8) Width: Match existing treads.
9) Thickness: Match existing treads.

2.3 SAND SETTING BED MATERIALS

A. Sand for Setting Bed: Clean washed bank sand containing maximum of 30 percent particle size of No. 10 (2 mm) sieve.

B. Polymeric Sand: Fine sand complying with ASTM C144 combined with polymer binders for creating semi-solid joints between pavers.
1. Color: as selected by Landscape Architect.

2.4 FABRICATION

A. Fabrication Tolerances for Stone Units: Within 1/8 inch (3 mm) of actual dimensions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate is level, smooth, capable of supporting pavers and imposed loads, and ready to receive work of this section.

B. Verify gradients and elevations of substrate are correct.

3.2 PREPARATION

A. See Section 31 2300 for subsoil preparation, fill compaction requirements and concrete subbase.

3.3 INSTALLATION OF GRANITE PAVERS ON SAND SETTING BED

A. Spread sand evenly over prepared substrate to a maximum thickness of 1-1/2 inch (38 mm).

B. Dampen and roller compact sand to level and even surface.

C. Screed and scarify top 1/2 inch (13 mm) of sand.

D. Place paver units in herringbone pattern, from straight reference edge.

E. Sprinkle sand over surface, sweep into joints and moisten. Recover with additional sand and repeat until joints are firm. Remove excess sand.

F. Tamp and level paver units with mechanical vibrator until units are firm, level, and to correct elevation and gradients.

3.4 INSTALLATION OF GRANITE TREADS

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with drawings and using skilled mechanics capable of proper handling of the setting of the stone and able to field cut where necessary with sharp and true edges.

C. Set stone with joints uniform in appearance and stone edges and faces aligned to tolerances indicated.

D. Clean surfaces that are dirty or stained. Scrub with fiber brushes, and then rinse with clear water.

E. Provide expansion, control, and pressure-relieving joints of widths and at locations shown on Drawings.

3.5 CLEANING

A. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.

B. Use non-metallic tools in cleaning operations.

C. Rinse surfaces with clean water.

D. Broom clean paving surfaces. Dispose of excess sand.

E. See Section 01 7419 for construction waste management and disposal.

3.6 PROTECTION

A. Do not permit traffic over unprotected paver surface.

B. Protect paver surface with sheets of plywood.

END OF DOCUMENT 32 1440

SECTION 32 1500 – AGGREGATE SURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Stone Mulch Surfacing.

1.2 RELATED REQUIREMENTS

A. Section 31 2200 – Earthwork: Preparation of site paving, compacted subbase for paving, and base courses.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification:
   1. For each stone type indicated. Include at least two samples in each set for each type of stone, exhibiting extremes of the full range of color and other visual characteristics expected in completed Work. Samples will establish the standard by which stone provided will be judged.
   2. Weed Control Barrier: 12 by 12 inches (300 by 300 mm).
   3. Edging Materials and Accessories: Manufacturer's standard size, to verify color selected.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of aggregate through one source from a single manufacturer.

B. Pre-installation conference: Conduct conference at project site to comply with requirements in Section 01 3000 - Administrative Requirements.

PART 2 PRODUCTS

2.1 STONE SOURCE

A. Varieties and Sources: Obtain materials of each type from same source for the entire project. Approval of stone supplier is required prior to purchase. Subject to compliance with requirements, provide stone of one of the following varieties from the following source or equivalent:

2.2 STONE MULCH SURFACING

A. Riverwashed Stone Mulch: Screened, off-site crushed stone free of iron, fines, dust (less than 2 percent passing the No. 200 sieve), organic materials, snow, ice, and other unsuitable materials as approved by Landscape Architect.
   1. Size: 3/4-inch (19 mm) diameter. Mulch shall be washed free of all fines.
   2. Color: Readily available natural gravel color range as approved by Landscape Architect.

B. Crushed Stone Mulch: Screened, off-site crushed stone free of iron, fines, dust (less than 2 percent passing the No. 200 sieve), organic materials, snow, ice, and other unsuitable materials as approved by Landscape Architect.

      a) Color: Readily available natural gravel color range as approved by Landscape Architect.
      b) Size: 3/4 inch minus diameter**.**

   2.

C. Stone Mulch Edge Restraints: Standard commercial-aluminum angle edging, rolled edge, fabricated in sections of standard lengths.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide “Perma-Strip” angled aluminum landscape edging as manufactured by Permaloc Corporation or comparable product by a licensee of one of the following:
      a) Brickstop Corporation.
      b) Curv-Rite, Inc.
      c) Sure-loc Edging Corporation.
   2. Edging Size: 3/16 inch (3.2 mm) thick by 6 inches (102 mm) tall by 1-1/2 inches wide.
   3. Stakes: 18 inches (300 mm) long, 3 minimum per 8-foot section.
   4. Accessories: Standard tapered ends, corners, and splicers.
   5. Finish: Electrostatically-applied baked on paint.
   6. Color: Black.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 STONE MAINTENANCE STRIP INSTALLATIONS

A. Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 inches (760 mm) apart, driven below top elevation of edging.

B. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches (150 mm) and secure seams with galvanized pins.
   1. Mulch backfilled and compacted surfaces areas to receive stone mulch. Apply 4-inch (100-mm) average thickness of mineral mulch over whole surface, and finish level with adjacent finish grades.

3.3 CLEANUP AND PROTECTION

A. During installation, keep adjacent paving and construction clean and work area in an orderly condition.

B. After completing installation of stone materials, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

3.4 DISPOSAL

A. Remove surplus stone materials and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

END OF DOCUMENT 32 1500

SECTION 32 1623 - CURBING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Cast-in-place concrete curb.

B. Work shall also include all associated items and operations necessary and required to complete the installations, including, but not limited to, surface preparation, finishing and cleanup.

C. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

D. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. United States Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016 and any supplements.

D. ASTM International (ASTM).

1. ASTM C33 – Standard Specification for Concrete Aggregates.
2. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
3. ASTM C150 – Standard Specification for Portland Cement.
4. ASTM D235 – Standard Specification for Mineral Spirits (Petroleum Spirits).
5. ASTM C207 – Standard Specification for Hydrated Lime for Masonry Purposes
6. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.

7. ASTM C309 – Standard Specification for Liquid Membrane - Forming Compounds for Curbing Concrete.
8. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.
9. ASTM C989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
10. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
11. ASTM D1752 – Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
12. American Concrete Institute (ACI)
13. ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

E. American Association of State High and Transportation Officials (AASHTO)

1. AASHTO M 6 – Standard Specification for Fine Aggregate for Portland Cement Concrete.
2. AASHTO M 85 – Standard Specification for Portland Cement (Chemical and Physical).
3. AASHTO M 133 – Standard Specification for Preservatives and Pressure Treatment Processes for Timber.
4. AASHTO M 213 – Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
5. AASHTO M 233 – Standard Specification for Boiled Linseed Oil Mixture for Treatment of Portland Cement Concrete.
6. AASHTO M 240 – Standard Specification for Blended Hydraulic Cement.
7. AASHTO T11 – Standard Method of Test for Materials Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing.
8. AASHTO T21 – Standard Method of Test for Organic Impurities in Fine Aggregate for Concrete.

1.3 SUBMITTALS

A. Submit Shop Drawings, manufacturer’s literature, material certificates or other data indicating compliance with these Specifications.

B. Precast Curbing: Submit for approval, data indicating size, shape and dimensions, finish and setting method.

C. Stone Curbing: Submit for approval, the name of the quarry and the type of curb which the Contractor proposes to use. Samples of curbing shall be submitted for approval only when requested by the Engineer. Such submission shall be made sufficiently in advance of ordering so that the Engineer may have an opportunity to judge the granite, both as to quality and appearance.

D. Precast Curbing: Submit representative test specimens of the cured concrete used in precast units showing a compressive strength of 4,000 pounds prior to shipping any units.

E. Submit testing data for concrete as required by Section 03 3200 – Site Cast-in-Place Concrete.

1.4 DELIVERY, STORAGE AND HANDLING

A. Granite and precast concrete curb units shall be delivered to the job adequately protected from damage during transit.

B. Curbing shall be protected against staining, chipping, and other damage. Cracked, badly chipped, or stained units will be rejected and shall not be employed in the Work.

PART 2 PRODUCTS

2.1 CAST-IN-PLACE CONCRETE CURB

A. Concrete and reinforcement for cast-in-place concrete curbs shall be as specified in Section 03 3200 – Site-Cast-in-Place Concrete.

2.2 CEMENT MORTAR

A. Mortar shall be composed of one part Portland Cement, ASTM C150, and two parts, by volume, of surface dry fine aggregate. Hydrated lime, ASTM C207, in an amount not to exceed 4 pounds of lime to each bag of Portland Cement, may be added at the option of Engineer. Cement and hydrated lime shall conform to the following requirements:

1. Portland cement: Types I, II or IS.

a. Cement having a temperature exceeding 160°F (71°C) at the time of delivery to the mixer shall not be used in the concrete.

b. Types I, II, and III portland cement shall conform to the requirements of AASHTO M 85.

c. Type IS, Portland blast-furnace slag cement and Type IP, portland-pozzolan cement shall conform to the requirements of AASHTO M 240. The use of other approved cementitious material as a partial replacement for Type IS or Type IP cement will not be permitted.

d. Type I and Type III portland cement shall be used only when required or expressly permitted by Contract or Engineer.

2. Hydrated lime: ASTM C6.

3. Fine aggregate: Fine aggregate shall be sand consisting of clean, hard, durable, uncoated particles of quartz or other rock, free from lumps of clay, soft or flaky material, loam, organic or other injurious material. In no case shall sand containing lumps of frozen material be used.

    a. Fine aggregate shall contain not more than 3% of material finer than a No. 200 (75 µm) sieve, using AASHTO T 11.

    b. Organic Impurities: Fine aggregate subjected to the colorimetric test shall not produce a color darker than Gardner Color Standard No. 11, using AASHTO T 21. If the fine aggregate fails to meet this requirement, the provisions of AASHTO M 6, Section 5.2, will govern.

    c. Gradation: For laying stone or precast units, fine aggregate shall be uniformly graded from coarse to fine and shall meet the following gradation requirements:

Aggregate Gradation (Cement Mortar for Laying Stone or Precast Units)

Sieve	Percent Passing
⅜″	100
No. 4	95–100
No. 8	80–100
No. 16	50–85
No. 30	25–60
No. 50	10–30
No. 100	2–10

    d. Gradation: For pointing stone or precast units, fine aggregate shall be uniformly graded from coarse to fine and shall meet the following gradation requirements:

Aggregate Gradation (Cement Mortar for Pointing Stone or Precast Units)

Sieve	Percent Passing
No. 8	100
No. 50	10–40
No. 100	0–10

4. Water: Potable quality.

2.3 JOINT FILLER

A. Preformed expansion joint filler or wood joint filler as indicated on the plans.

B. Preformed expansion joint filler shall be the bituminous cellular type and shall conform to the requirements of AASHTO M213.

C. Boards for wood joint filler shall be planed on two sides and shall be either redwood, cypress or white pine. Redwood and cypress boards shall be of sound heartwood. White pine boards shall be of sound sapwood.

1. Occasional small, sound knots and medium surface checks will be permitted provided the board is free of any defects that will impair its usefulness for the purpose intended. The joint filler may be composed of more than one length of board in the length of the joint, but no board of a length less than 6 feet may be used; and the separate boards shall be held securely to form a straight joint. Boards composed of pieces that are jointed and glued shall be considered as one board.

2. Dimensions shall be as specified or shown on the plans; and tolerances of plus $\frac{1}{16}$-inch thickness, plus ⅛-inch depth and plus ¼-inch length will be permitted.

3. All wood joint filler boards shall be given a preservative treatment by brushing with a creosote oil conforming to AASHTO M133. After treatment, the boards shall be stacked in piles, each layer separated from the next by spacers at least ¼ inch thick; and the boards shall not be used until 24 hours after treatment.

2.4 TRANSITION SECTIONS

A. Horizontal transition sections shall be provided at all locations where curb sections change (i.e., vertical to sloped). Vertical transition sections shall also be provided for precast curb sections at handicapped ramps to create a smooth transition with a doweled joint. Vertical transition sections for stone curb shall be made as shown on the Drawings.

PART 3 EXECUTION

3.1 GENERAL

A. Trenching, excavation, backfilling, and compaction shall be completed in accordance with Section 31 2310 – Earthwork, except as modified within this Section.

B. Cement Mortar Bedding, if required, shall be placed as indicated in details in accordance with Section 03 3200 – Site Cast-In-Place Concrete.

3.2 CAST-IN-PLACE CONCRETE CURB

A. General Requirements: Concrete curb shall be constructed of concrete and shall be cast-in-place on the prepared subbase in accordance with the dimensions and details line and grade shown on the Drawings. Curbing shall be constructed using conventional forms and in segments separated by construction joints and expansion joints as specified herein. This item shall consist of concrete curbing constructed or as ordered and in conformity with these specifications.

B. Forms: Forms shall be metal or acceptable planed and matched lumber, straight and free from warp or other irregularities that will adversely affect the installation. Forms shall conform to the curb cross-section shown on the Drawings and shall be carefully set to line and grade and thoroughly braced and

secured in place so that there will be no displacement during placement of the concrete. All forms shall be thoroughly cleaned prior to reuse.

C. Placing of Concrete: Prior to placement of the concrete, the subgrade shall be moistened and the contact surfaces of the forms shall be given a light coating of oil that will not discolor the concrete. Concrete shall then be placed in the form as near to its final position as practicable, struck off with a template, spaded to prevent “rock-pockets” or “honey combing” adjacent to the forms and finished to a smooth even surface. The concrete may be compacted by mechanical vibrators if approved by Engineer. Placing by slip form methods shall be approved by Engineer.

D. Expansion Joints: Vertical expansion joints shall be located approximately every seventy-five (75) feet and shall be so arranged that they shall match expansion joints in any adjacent concrete pavements and sidewalks. Unless directed otherwise, expansion joints shall also be installed at the PC and PT of all radius curb. Expansion joints shall be constructed vertical, plumb, and at right angles to the face of the curb.

1. Prior to concreting, all exposed surfaces of the wood filler shall be given a light brush coating of form oil.

2. They shall be one-half (½) inch in width and formed with premolded bituminous joint filler cut to conform to the cross-section of the curb/curb gutter.

E. Construction Joints: Vertical construction joints shall be located approximately every fifteen (15) feet being equally spaced between expansion joints. The length of these curb/curb gutter segments may be varied slightly for closures but in no case shall they be less than eight (8) feet. Construction joints shall be vertical, plumb and at right angles to the face of the curb and shall be formed by approved method that will provide complete separation of the curb segments during the placing of the concrete. If curb is formed by slip form methods, the joints shall be sawed as soon as practicable after the concrete has set to preclude raveling during the sawing and before any shrinkage cracking occurs in the concrete.

F. Finishing: Forms shall be left in place for twenty-four (24) hours or until the concrete has sufficiently hardened as determined by Engineer so that they can be removed without injury to the curb. Upon removal of the forms, the exposed faces of the curb/curb gutter shall be immediately rubbed to a uniform surface. Rubbing shall be performed by experienced and competent concrete finishers. No plastering will be permitted.

END OF DOCUMENT 32 1623

SECTION 32 1723 – PAVEMENT MARKINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Temporary or permanent painted pavement markings, including but not limited to center lines, lane lines and shoulder lines, stop bars, crosswalks, parking stalls, lane arrows, legends, markings within gore areas, and painting of paved islands or medians.

2. Maintaining access for vehicular and pedestrian traffic as required for other construction activities. Utilize flagmen, barricades, warning signs, and warning lights as required.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 SUBMITTALS

A. Submit material specifications and shop drawings for all materials furnished under this Section.

B. Submit material certificates signed by the material producer and Contractor, certifying that materials comply with these Specifications.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges and Incidental Construction, Form 818 and any supplements.

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction

D. ASTM International (ASTM)

1. ASTM C501 - Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.

2. ASTM D211 - Standard Specification for Chrome Yellow and Chrome Orange Pigments.

3. ASTM D476 - Standard Classification for Dry Pigmentary Titanium Dioxide Products.
4. ASTM D562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
5. ASTM D605 - Standard Specification for Magnesium Silicate Pigment (Talc).
6. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
7. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
8. ASTM D711 - Standard Test Method for No-Pick-Up Time of Traffic Paint.
9. ASTM D869 - Standard Test Method for Evaluating Degree of Settling of Paint.
10. ASTM D1475 - Standard Test Method for Density of Liquid Coatings, Inks, and Related Products.
11. ASTM D1763 - Standard Specification for Epoxy Resins.
12. ASTM D2240 - Standard Test Method for Rubber Property- Durometer Hardness.
13. ASTM D2486 - Standard Test Methods for Scrub Resistance of Wall Paints.
14. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
15. ASTM D4505 - Standard Specification for Preformed Retroreflective Pavement Marking Tape for Extended Service Life.
16. ASTM E303 - Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
17. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials.

E. American Association of State High and Transportation Officials (AASHTO)

1. AASHTO M 247 - Standard Specification for Glass Beads Used in Traffic Paints.

F. American Concrete Institute

1. ACI 503R - Use of Epoxy Compounds with Concrete.

G. United States General Services Administration, Federal Specifications.

1. Federal Specification TT-P-1952D - Paint, Traffic and Air Field Marking, Water Emulsion Base.

H. United States General Services Administration, Federal Standards.

1. Federal Standard No. 595 - Colors Used in Government Procurement.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Contractor shall furnish one technical expert, who shall be fully knowledgeable about all equipment operations and application techniques, to oversee the work of this Section.

PART 2 PRODUCTS

2.1 WATERBORNE PAVEMENT MARKING PAINT

A. General

1. White and yellow fast-drying waterborne pavement marking paint, low VOC, ready-mixed, one component, 100 percent acrylic, Federal Specification TT-P-1952D.

2. Paint shall be capable of being applied with paint striping equipment at ambient temperatures.

3. Weight per gallon shall not be less than 12.5 pounds/gallon when tested in accordance with ASTM D 1475.

4. Colors: ASTM D211 and per Federal Standard No. 595.

B. Manufacture

1. Paint shall be formulated and manufactured from first-grade raw materials and shall be free from defects and imperfections that might adversely affect the serviceability of the finished product. The materials shall not exhibit settling or jellying after storage in the sealed containers as received that will affect the performance of the products. The paint shall provide the proper anchorage, refraction and reflection for the finished glass spheres when applied as specified.

C. Composition

1. Composition of the paint shall be at the discretion of the manufacturer, provided that the finished product meets the requirements of any applicable Federal, State or Local regulations for products of this type and the requirements as follows:

a. Paint shall not contain more than 0.06% lead.

b. Total nonvolatile shall not be less than 70% by weight (mass).

c. Pigment shall be 45-55% by weight (mass).

d. Resin solids shall be composed of 100% acrylic emulsion polymer.

e. Volatile organic compounds shall not exceed 150 grams/liter, excluding water.

f. Closed-cup flash point shall not be less than 100°F (38°C), and weight per gallon shall not be less than 12.5 pounds/gallon when tested in accordance with ASTM D 1475.

D. Viscosity

1. Consistency of the paint shall not be less than 80, nor more than 90 Kreb units when tested in accordance with ASTM D562. The paint shall have good spraying characteristics when the material is heated to application temperature of 130°F to 145°F.

E. Flexibility

1. Paint shall not show cracking or flaking when subjected to the TT-P-1952D flexibility test in which the panels used shall be tin plates that are 3 inches x 5 inches in area and 35 - 31 U.S. Gauge in thickness. The tin panels shall be lightly buffed with steel wool and thoroughly cleaned with solvent before being used for tests.

F. Dry Opacity

1. Both white and yellow paints shall have a minimum contrast ratio of 0.96. Contract ratio shall be determined by applying a wet film thickness of 0.005 inches (127 microns) to a standard hiding power chart. After drying, the black and white reflectance values shall be determined using a suitable reflectometer and the contrast ratio determined.

G. Bleeding

1. Paints shall have a minimum bleeding ratio of 0.97 when tested in accordance with FS TT-P-1952D.

H. Abrasion Resistance

1. No less than 210 liters of sand shall be required to remove paint film when tested in accordance with TT-P-1952D.

I. Color

1. Yellow: FS 595, No. 13538, latest issue.

2. White: No darker or yellower than FS 595, No. 17778, latest issue, when the material is placed in a type EH weatherometer for a period of 500 hours and weathered according to ASTM G153.

3. Color determination shall be made without beads, after a minimum of 24 hours. If not a visual match, the diffuse day color of the paint shall conform to the CIE Chromaticity coordinate limits as follows:

Paint CIE Chromaticity Coordinate Limits

	x	Y	x	y	x	y	x	y	Brightness
White	0.305	0.295	0.360	0.360	0.388	0.377	0.280	0.310	84.0 Min
Yellow	0.485	0.455	0.506	0.452	0.484	0.428	0.477	0.438	50.0 Min

4. Paint shall not discolor in sunlight and shall maintain colorfastness throughout its life, approximately two years.

J. Glass Bead Adhesion

1. Paint with glass beads conforming to M.07.30, applied at the rate of 6.0 pounds/gallon of paint, shall require not less than 150 liters of sand to remove paint film and glass beads.

K. Scrub Resistance

1. Paint shall pass 300 cycles minimum when tested in accordance with ASTM D2486.

L. Drying time

1. Reflectorized line shall dry to no pick up in 15 minutes or less as tested by ASTM D711 when applied at the ratio provided for specified glass spheres to paint (the paint at 15+ 1 mil (381 millimeters + 25 millimeters) wet film thickness equivalent to 100-115 square foot/gallon and the glass spheres at the equivalent rate of 6.0 pounds/gallon.

2.2 HOT-APPLIED WATERBORNE PAVEMENT MARKING PAINT

A. General

1. White and yellow fast-drying waterborne pavement marking paint, low VOC, ready-mixed, one component, 100 percent acrylic, Federal Specification TT-P-1952D.

2. Paint shall be capable of being applied with paint striping equipment at an application temperature of 130°F to 145°F.

3. Color: ASTM D211 and per Federal Standard No. 595.

4. Glass Beads: AASHTO M 247, Type 1.

B. Manufacture

1. Paint shall be formulated and manufactured from first-grade raw materials and shall be free from defects and imperfections that might adversely affect the serviceability of the finished product. The materials shall not exhibit settling or jellying after storage in the sealed containers as received that will affect the performance of the products. The paint shall provide the proper anchorage, refraction and reflection for the finished glass spheres when applied as specified.

C. Composition

1. Composition of the paint shall be at the discretion of the manufacturer, provided that the finished product meets the requirements of any applicable Federal, State or Local regulations for products of this type and the requirements as follows:

a. Paint shall not contain more than 0.06% lead.

b. Total nonvolatile shall not be less than 76% by weight (mass).

c. Pigment shall be 58-63% by weight (mass).

d. Resin solids shall be composed of 100% acrylic emulsion polymer.

e. Volatile organic compounds shall not exceed 150 grams/liter, excluding water.

f. Closed-cup flash point shall not be less than 100°F, and weight per gallon shall not be less than 12.5 pounds/gallon when tested in accordance with ASTM D 1475.

D. Viscosity

1. Consistency of the paint shall not be less than 80, nor more than 90 Kreb units when tested in accordance with ASTM D562. The paint shall have good spraying characteristics when the material is heated to application temperature of 130°F to 145°F.

E. Flexibility

1. Paint shall not show cracking or flaking when subjected to the TT-P-1952D flexibility test in which the panels used shall be tin plates that are 3 inches x 5 inches (76 millimeters x 127 millimeters) in area and 35 - 31 U.S. Gauge in thickness. The tin panels shall be lightly buffed with steel wool and thoroughly cleaned with solvent before being used for tests.

F. Dry Opacity

1. Both white and yellow paints shall have a minimum contrast ratio of 0.96. Contract ratio shall be determined by applying a wet film thickness of 0.005 inches (127 microns) to

a standard hiding power chart. After drying, the black and white reflectance values shall be determined using a suitable reflectometer and the contrast ratio determined.

G. Bleeding

1. Paints shall have a minimum bleeding ratio of 0.97 when tested in accordance with FS TT-P- 1952D.

H. Abrasion Resistance

1. No less than 210 liters of sand shall be required to remove paint film when tested in accordance with TT-P-1952D.

I. Color

1. Yellow: FS 595, No. 13538, latest issue.

2. White: No darker or yellower than FS 595, No. 17778, latest issue, when the material is placed in a type EH weatherometer for a period of 500 hours and weathered according to ASTM G153.

3. If not a visual match, the diffuse day color of the paint shall conform to the CIE Chromaticity coordinate limits as follows:

Paint CIE Chromaticity Coordinate Limits

	x	Y	x	y	x	y	x	y	Brightness
White	0.305	0.295	0.360	0.360	0.388	0.377	0.280	0.310	84.0 Min
Yellow	0.485	0.455	0.506	0.452	0.484	0.428	0.477	0.438	50.0 Min

4. Paint shall not discolor in sunlight and shall maintain colorfastness throughout its life, approximately two years. Color determination shall be made without beads, after a minimum of 24 hours.

J. Glass Bead Adhesion

1. Paint with glass beads shall require not less than 150 liters of sand to remove paint film and glass beads.

K. Scrub Resistance

1. Paint shall pass 300 cycles minimum when tested in accordance with ASTM D2486.

L. Drying time

1. Reflectorized line shall dry to no pick up in 120 seconds or less when applied at the ratio provided for specified glass spheres to paint (the paint at 15+ 1 mil (381 millimeters + 25 millimeters) wet film thickness equivalent to 100-115 square foot/gallon (2.45-2.82 square meters/liter) and the glass spheres at the equivalent rate of 6.0 pounds/gallon (0.72 kilograms/liter). The paint shall be applied with equipment so as to have the paint at a temperature of 130°F to 145°F (54°C to 63°C) at the spray gun.

2.3 EPOXY RESIN PAVEMENT MARKINGS

A. Epoxy Resin Material: The material shall be composed of epoxy resins and pigments only.

B. Composition:

1. White (percent by weight): 20% +/- 2% Titanium Dioxide, ASTM D476 Type 3 and 80% +/- 2% Epoxy Resins.

2. Yellow (percent by weight): 25% +/- 2% Chrome Yellow, ASTM D211 Type 3 and 75% +/- 2% Epoxy Resins.

3. Epoxy Resins: ASTM D1763.

C. Color

1. Yellow: FS 595, No. 13538, latest issue.

2. White: No darker or yellower than FS 595, No. 17778, latest issue, when the material is placed in a type EH weatherometer for a period of 500 hours and weathered according to ASTM G153.

D. Adhesion Capabilities

1. When the adhesion of the material to portland cement concrete (test concrete shall have a minimum of 300 psi tensile strength) is tested according to ACI 503R testing procedure, the failure of the system must take place in the concrete. The concrete shall be 90 °F when the material is applied, after which the material shall be allowed to cure for 72 hours at 73 +/- 3.5 °F.

E. Abrasion Resistance

1. When the abrasion resistance of the material is tested according to ASTM C 501 with a CS-17 wheel under a load of 1000 grams for 1000 cycles, the wear index shall be no greater than 82. (The wear index is the weight (mass) in milligrams that is abraded from the sample under the test conditions).

F. Hardness

1. The Type D durometer hardness of the material shall be not less than 75 nor more than 90 when tested according to ASTM D2240 after the material has cured for 72 hours at 73 +/- 3.5 °F.

G. Tensile Strength

1. Tensile strength of the material, when tested according to ASTM D 638, shall not be less than 6,000 psi after 72 hours cure at 73 +/- 3.5 °F.

H. Compressive Strength

1. Compressive strength of the material, when tested according to ASTM D 695, shall not be less than 12,000 psi after 72 hours cure at 73 +/- 3.5 °F.

I. Shelf Life

1. Individual components shall not require mixing prior to use when stored for a period of 12 months.

2.4 GLASS BEADS

A. Beads shall be transparent, clean, colorless glass, smooth and spherically shaped, free of milkiness, pits, or excessive air bubbles.

B. Quality Assurance Control

1. Beads shall be segregated into maximum lots of 2,500 pounds (1125 kilograms) and lot numbers shall be stamped onto each lot. Each lot shall be tested for gradation, rounds and embedment coating.

C. Gradation - The glass spheres shall meet the following gradation requirements:

Glass sphere gradation (ConnDOT Grading “A”)

Sieve Size	% Passing
20 (850 um)	100
30 (600 um)	80-95
50 (300 um)	9-42

Sieve Size	% Passing
80 (180 um)	0-10

Glass sphere gradation (ConnDOT Grading “B”)

Sieve Size	% Retained
10 (2.0 mm)	0
12 (1.7 mm)	0-5
14 (1.4 mm)	5-20
16 (1.18 mm)	40-80
18 (1.0 mm)	10-40
20 (850 um)	0-5
Pan	0-2

D. Roundness: Glass beads shall have a minimum of 80% rounds per screen for two highest sieve quantities and no more than 3% angular particles per screen for Grading “B”. The remaining sieve fractions shall typically be no less than 75% rounds.

E. Refractive Index: Glass beads shall have a refractive index of 1.50 to 1.52.

PART 3 EXECUTION

3.1 GENERAL

A. Pavement markings shall be applied in accordance with the details shown on the plans and the control points established by the Contractor and approved by the Engineer.

B. No paint shall be applied to new bituminous pavement until the top course has cured at least one week minimum.

C. Pavement areas to be painted shall be dry and sufficiently cleaned of sand and road debris so as to provide an acceptable bond between the paint and the pavement.

D. All painting shall be performed in a neat and workmanlike manner. The lines shall be sharp and clear with no feathered edging or fogging and precautions shall be taken to prevent tracking by tires of the striping equipment. Paint shall be applied as shown on the Drawings with no unsightly deviations.

E. Contractor shall protect the buildings, walks, pavement, curbing, trees, shrubs, mulch, etc. from over-spray of paint and damage by his operations.

F. Operations shall be conducted only when the road surface temperature is at least 40°F or as allowed by Engineer. They shall be discontinued during periods of rain, and shall not continue until Engineer determines that the pavement surface is dry enough to achieve adhesion.

G. After application, paint shall be protected from crossing vehicles using traffic cones or other acceptable method for a time at least equivalent to the drying or curing time of the paint.

H. The material shall be applied to the pavement by equipment used specifically for the application of pavement markings and shall be of a standard commercial manufacturer.

I. Contractor shall provide survey control for layout of pavement markings by utilizing his own surveyor or hiring a registered land surveyor. The cost of this survey control shall be included in other items of work.

3.2 WATERBORNE PAVEMENT MARKINGS

A. Painted legend, arrows, and markings includes paint installed with a hand striping machine such as: stop bars, crosswalks, parking stalls, lane arrows, legends, markings within gore areas, and painting of paved islands or medians.

B. Painted pavement markings and hot applied painted pavement markings include paint installed with a truck-mounted painting machine such as center lines, lane lines and shoulder lines.

C. Waterborne Paint, Ambient Temperature

1. Apply paint at a rate of 100 to 115 square feet per gallon, with glass beads applied at a rate of 6 pounds per gallon of paint for painted pavement markings and painted legend, arrows, and markings

D. Waterborne Paint, Hot-Applied

1. Hot-applied paint shall be applied at a temperature of 130°F to 145°F at the spray gun.

2. Apply paint at a rate of 8 pounds per gallon of paint for hot-applied painted pavement markings.

3.3 EPOXY RESIN PAINTED PAVEMENT MARKINGS

A. Epoxy resin pavement markings includes epoxy resin installed with a truck-mounted machine such as center lines, lane lines, and shoulder lines.

B. Epoxy resin pavement markings, symbols and legends include stop bars, crosswalks, parking stalls, lane arrows, legends, and markings within areas such as paved islands, gore areas and paved medians.

C. Equipment

1. Equipment furnished shall include an applicator truck of adequate size and power, together with the following:

   a. Remote application equipment designed to apply an epoxy resin material in a continuous pattern.

   b. Portable glass bead applicators, one for each size bead, designed to provide uniform and complete coverage of the epoxy binder by a controlled free-fall method. Pressurized glass bead application shall not be used. Before epoxy color is changed, equipment shall be cleaned out sufficiently to ensure that the color of material applied will be correct.

2. When working on a highway with more than one lane in either direction, the applicator truck (striper) shall have a permanently mounted direction variable illuminated arrow board, fully operational and visible to approaching traffic. There will be no additional payment for the arrow board. Its cost shall be included in the bid price for this item.

3. For markings applied on pavements over one year old, equipment furnished shall also include a power washing machine capable of cleaning the pavement with a pressure of 2,400 to 2,800 psi with water heated to 180°F - 195°F. No chemicals shall be added to the water used in the process. The power washer shall be equipped with a turbo blast tip with an oscillating head and shall be capable of supplying a minimum of 5 gallons/minute gun.

4. All guns on the spray carriages shall be in full view of the operator(s) during operation.

D. Procedures

1. The road surface shall be cleaned at the direction of the Engineer just prior to application. Pavement cleaning shall consist of power washing using clean water heated to 180°F – 195 °F at a pressure of 2,240 - 2,800 psi. The areas to be power washed shall include all areas where epoxy marking symbols and legends (including stop bars and

crosswalks) are to be applied and at least 1 inch beyond the area to be marked. The surface shall be cleaned to the satisfaction of the Engineer.

a. For other pavement areas, cleaning shall consist of brushing with rotary broom (non-metallic), and any additional work as recommended by the material manufacturer and acceptable to the Engineer.

b. New portland cement concrete surfaces shall be cleaned by abrasive blasting to remove any surface treatments and/or laitance.

c. New bituminous concrete surfaces are not to be power washed.

2. All surfaces that are power washed shall be allowed to dry sufficiently prior to the application of the epoxy markings. The areas to be marked shall be broom cleaned immediately prior to the application of the epoxy markings. Glass beads shall be applied immediately after application of the epoxy resin marking to provide an immediate notrack system.

3. Contractor will place necessary “spotting” at appropriate points to provide horizontal control for striping and to determine necessary starting and cutoff points. Broken line intervals will not be marked. Longitudinal joints, pavement edges and existing markings shall serve as horizontal control when so directed.

4. A tolerance of 0.25 inch under or 0.25 inch over the specified width shall be allowed for striping provided the variation is gradual and does not detract from the general appearance. Alignment deviations from the control guide shall not exceed 2 inches provided the variation is gradual and does not detract from the general appearance. Material shall not be applied over a longitudinal joint. Establishment of application tolerances shall not relieve Contractor of the responsibility to comply as closely as practicable with the planned dimensions.

5. Glass beads conforming to the requirements of Grading “B” (larger beads) as specified herein shall be applied at a rate of 12 pounds per gallon of epoxy pavement marking material, immediately followed by a second drop of glass beads conforming to the requirements of Grading “A” (smaller beads) as specified herein applied at a rate of 13 pounds per gallon of epoxy pavement marking material.

6. Time to No-Track: The material shall be in “no-tracking” condition within 15 minutes, or as allowed by Engineer. The no-tracking time shall be determined by passing over the line with a passenger car or pickup truck in the simulated passing maneuver. A marking showing no visual deposition of the material to the pavement surface when viewed from a distance of 50 feet (15 meters) shall be considered as showing “no-tracking” and conforming to this requirement for time to no-track.

7. When stencils are used during the application of epoxy markings, care must be used when removing the stencils so that the epoxy resin does not drip on the road, sidewalk,

grass, etc., and so that the applied markings have edges which are clean, straight and neat.

8. Epoxy resin pavement markings may be applied over existing painted markings provided they are sufficiently worn to allow adequate adhesion. If required by the Engineer, existing plastic, thermoplastic, epoxy or freshly painted markings shall be removed prior to the application of epoxy markings.

E. Crosswalks

1. Only glass beads conforming to the requirements of Grading "A" (smaller beads) as specified herein shall be applied at a rate of 25 pounds per gallon of epoxy pavement marking material.

F. Performance

1. In order to be accepted, the applied markings must meet the following minimum retroreflectivity reading as measured using an LTL 2000 Retrometer with 30-meter geometry 1 to 2 weeks after installation:

   a. White Epoxy 250 millicandelas per square foot per foot candle (millicandelas per square meter per lux).

   b. Yellow Epoxy 175 millicandelas per square foot per foot candle (millicandelas per square meter per lux).

END OF DOCUMENT 32 1723

SECTION 32 2113 – CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes

1. Furnishing and installing woven wire fencing systems of the type and height specified and supported by metal posts erected where indicated on the Drawings and as specified herein, including fence and gates.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. ASTM International (ASTM).

1. ASTM A90 – Standard Test Method for Weight (Mass) of Coating on Iron or Steel Articles with Zinc or Zinc Alloy.

2. ASTM A123 – Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

3. ASTM A153 – Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.

4. ASTM A307 – Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.

5. ASTM A392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.

6. ASTM A428 – Standard Test Method for Weight (Mass) of Coating on Aluminum-Coated Iron or Steel Articles.

7. ASTM A491 – Standard Specification for Aluminum Coated Steel Chain Link Fence Fabric.

8. ASTM A780 – Standard Specification for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

9. ASTM A817 – Standard Specification for Metallic-Coated Steel Wire for Chain Link Fence Fabric and Marcelled Tension Wire.

10. ASTM A824 – Standard Specification Metallic-Coated Steel Marcelled Tension Wire for Use with Chain Link Fence.

11. ASTM B211 – Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire.

12. ASTM C94 – Standard Specification for Ready-Mixed Concrete.

13. ASTM F552 – Standard Terminology Relating to Chain Link Fencing.

14. ASTM F567 – Standard Practice for Installation of Chain Link Fence.

15. ASTM F626 – Standard Specification for Fence Fittings.

16. ASTM F668 – Specification for Polymer Coated Chain Link Fence Fabric.

17. ASTM F900 – Standard Specification for Industrial and Commercial Swing Gates.

18. ASTM F934 – Specification for Standard Colors for Polymer-Coated Chain Link.

19. ASTM F1043 – Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.

20. ASTM F1083 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

21. ASTM F1183 – Standard Specification for Aluminum Alloy Chain Link Fence Fabric.

22. ASTM F1664 – Standard Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence.

D. Chain Link Fence Manufacturer’s Institute

1. Chain Link Fence Manufacturer’s Institute Product Manual, latest revision.

1.3 SYSTEM DESCRIPTION

A. Temporary Construction Fence:

1. Fence Height: 8 feet.

2. Mesh Size: 2 inches.

3. Mesh Gage: 12
4. Gates: Height of gates shall match that of fence. Width of gates shall be as shown on the Drawings.
5. Anchored post or driven posts where indicated. No top or bottom rails required.
6. Panelized/modular units where indicated. Two stabilizers per panel.

B. Chain Link Fence:

1. Fence Height: Varies, refer to the Drawings.
2. Mesh Size: 2 inches.
3. Mesh Gage: 9, measured prior to application of any coating.
4. Gates: Height of gates shall match that of fence. Type and size of gates shall be as shown on the Drawings.
5. Top and bottom rails between posts unless otherwise indicated.

1.4 SUBMITTALS

A. Shop drawings showing the plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates and a schedule of components.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.

1. Fence and gate posts, rails, and fittings.
2. Chain-link fabric, fabric coatings, reinforcements, and attachments.
3. Accessories: Privacy slats.
4. Gates, locking mechanisms and hardware.
5. Gate operators, including operating instructions.
6. Motors (if applicable): Show nameplate data, ratings, characteristics, and mounting arrangements.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.

1. Gate Operator (if applicable): Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.

2. Wiring Diagrams (if applicable): For power, signal, and control wiring.

D. Samples for Initial Selection: For components with factory-applied color finishes.

E. Samples for Verification: Prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

F. Delegated-Design Submittal: For chain-link fences and gate framework indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified factory-authorized service representative.

B. Product Certificates: For each type of chain-link fence system and gate, from manufacturer.

C. Product Test Reports: For framing strength, ASTM F1043.

D. Field quality-control reports.

E. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:

1. Polymer finishes.

2. Gate hardware.

3. Gate operator.

1.7 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Supply material in accordance with Chain Link Fence Manufacturer’s Institute Product Manual and this Specification.

C. Perform installation in accordance with ASTM F567.

D. Maintain all facilities installed under this Section in proper and safe condition throughout the progress of the work.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to existing improvements and/or proposed construction. Verify dimensions by field measurements. Notify Engineer of any dimensional discrepancies prior to proceeding with the work. Coordinate with Engineer regarding any adjustment or modification.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

B. Packages shall be labeled with the manufacturer's name.

C. Store fence fabric and accessories in a secure and dry place.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of gate operators and controls.

b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

c. Deterioration of coatings beyond normal weathering.

B. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 GENERAL

A. All posts and rails shall be straight, true to section and of sufficient length for proper installation.

B. Unless otherwise specified, hardware and accessories shall conform to the requirements of ASTM F626 and ASTM A123 or ASTM A153 as applicable for zinc-coating.

2.2 POSTS AND RAILS

A. Extruded steel tube, ASTM F1083 or rolled/welded tube, ASTM F1043, minimal yield strength 50,000 pounds per square inch (psi), hot dipped galvanized.

1. Extruded steel tube: Average zinc coating of 2.0 ounces per square foot (oz/ft^2) interior/exterior, ASTM F1083.

2. Rolled/welded tube: External zinc coating 1.0 oz/ft^2 with a clear polymeric overcoat, Type D interior 90% zinc-rich coating having a minimum thickness of 0.30 mils.

B. Post size per Table 1.

Table 1 – Post and Rail Sizes

Item	Fence Height	Outside Diameter, Inches	F1083 Schedule 40 weight lb/ft	F1043-IC WT-40 weight lb/ft
Line Posts	up to 8 ft.	2.375	3.65	3.12
	8 to 12 ft.	2.875	5.79	4.64
Terminal Posts	up to 8 ft.	2.875	5.79	4.64
	8 to 12 ft.	4.000	9.11	6.56
Rails		1.660	2.27	1.84

C. Truss rod shall be ⅜-inch zinc-coated steel with adjustable turnbuckles or truss tightener.

2.3 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. Fabric Height: As indicated on Drawings.

2. Mesh Size: 2 inches.

3. Selvage: Knuckled at both selvages (KK).

4. Wire Fabric

a. Zinc-Coated Steel Fabric, 9-gauge, ASTM A817, hot-dip galvanized, ASTM A392 Class 2 – 2.0 oz/ft^2, coated after weaving (GAW).

1) Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.

2.4 TENSION WIRE

A. Match coating type to that of the chain link fabric.

1. Metallic-coated steel wire: Marcelled (spiraled or crimped), 7 gage, (0.177 inches) diameter, ASTM A824, zinc-coated, ASTM A817 Class 5 – 2.0 oz/ft².

2.5 HARDWARE AND FITTINGS

A. Tension and Brace Bands: Galvanized pressed steel complying with ASTM F626, minimum steel thickness of 12 gauge (0.105 in.), minimum width of ¾ in. and minimum zinc coating of 1.20 oz/ft². Secure bands with $^{5}/_{16}$ in. hot-dip galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Caps, Rail and Brace Ends, Boulevard Clamps, and Rail Sleeves: In compliance to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft².

1. Rail sleeves shall not be less than 6 inches long.

C. Truss Rod Assembly: In compliance with ASTM F626, ⅜ in. diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft², assembly capable of withstanding a tension of 2,000 lbs.

D. Tension Bars: In compliance with ASTM F626. Galvanized steel one-piece length 2 in. less than the fabric height, minimum cross section of $^{3}/_{16}$ in. by ¾ in. and minimum zinc coating of 1.2 oz./ft².

E. Miscellaneous hardware, including but not limited to nuts, bolts, washers, clips, bands, rail ends, brackets, and straps shall be provided as required, hot-dip galvanized steel, ASTM F626.

F. Brace bands shall be formed from flat or beveled steel and shall have a minimum thickness after galvanizing of 0.108 inches and a minimum width of ¾ inch.

2.6 TIE WIRE AND HOG RINGS

A. Tie Wire and Hog Rings: Galvanized minimum zinc coating 1.20 oz/ft², 9-gauge (0.148 in) steel wire, ASTM F626.

B. Polymer coated materials shall match the coating, class and color to that of the chain link fabric.

2.7 FASTENERS

A. All fasteners shall be hot-dip galvanized, ASTM F2329.

B. Bolts: Steel, ASTM A307, Grade A min, Hex.

C. Nuts: Steel, ASTM A563, Grade A min, Hex.

D. Washers: Steel, round, ASTM F844.

E. Polymer Coated Color Fittings: In compliance with ASTM F626, PVC or polyolefin coating minimum thickness 0.006 in. fused and adhered to the zinc-coated fittings. Color to match fence system.

2.8 MODULAR OR PANELIZED CHAIN LINK FENCE

A. Free-standing fence panels, minimum ten (10) foot panels of the height specified.

B. Fabric as specified.

C. Welded tubular steel frame.

D. Stands: Four-sided welded tubular steel frame with center bar and tubular sleeves.

2.9 GATES

A. Gate Construction: ASTM F900. Corners welded or assembled with special malleable or pressed-steel fittings and rivets or bolts to provide rigid connections.

B. Pipe and Tubing: Zinc-Coated Steel: Comply with ASTM F1043 and ASTM F1083; protective coating and finish to match fence framing.

C. Posts (Hing Posts): Round tubular steel.

1. Up to 4-foot fencing: 2⅞-inch OD Pipe.

2. Over 4-foot to 6-foot fencing: 4-inch OD Pipe.

3. Over 6-foot to 12-foot fencing: 6.625-inch OD Pipe.

D. Frames and Bracing: Round tubular steel.

1. Framing:

a. 2.375 inch OD Pipe

b. Gate Leaves: Configured with intermediate members and diagonal truss rods or tubular members as necessary to provide rigid construction, free from sag or twist. When width of gate leaf exceeds 10 feet, install mid-distance vertical tubing of the same size and weight as frame members. When either horizontal or vertical bracing is not required, provide truss rods as cross-bracing to prevent sag or twist.

c. Horizontal bid bracing shall be used on all gates.

E. Wire Fencing Fabric: Fabric shall match that of fence, attached securely to frame at intervals not exceeding 15 inches.

F. Hardware:

1. Latches, hinges, stops, keepers and other hardware items shall be furnished as required for proper operation. These elements may not be shown on the Drawings, but shall be supplied and installed as required for a complete gate system.

2. Hinges: 360-degree inward and outward swing. Set screw shall be installed drilled into the steel post to lock each hinge to the gate post and prevent rotation. No-lift-off type. Box type hinges are not acceptable.

3. Latches: permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.

4. Double gates and single gates with leaf width 4 feet and greater shall be equipped with a minimum ½" drop bar and gate hold-backs.

5. Latches, hinges, stops, keepers and other hardware items shall be furnished as required for proper operation.

2.10 CONCRETE

A. Concrete shall conform to ASTM C94; or pre-packaged concrete mix, ASTM C387. Minimum 28-day compressive strength of 3,000 psi. No air entrainment.

2.11 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 EXECUTION

3.1 GENERAL

A. Install fence with properly trained crew as shown on the drawings in accordance with ASTM F567.

B. Install all nuts for tension bands and hardware bolts on the side of the fence opposite the fabric.

C. The temporary chain link fence shall be removed at the conclusion of the work.

3.2 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.4 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F567 and more stringent requirements indicated.

1. Install fencing on established boundary lines inside property line.

3.5 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.

2. Concrete post footings shall have a plan diameter 12 inches greater than the post diameter. Holes shall be clean and free of loose soil and debris. Concrete shall be placed continuously in one operation and tamped or vibrated for consolidation. Tops of the concrete footings shall be crowned to shed water.

3. Gate post/footings shall be installed a minimum of 42 inches below grade.

4. All corner, end posts, and gate posts shall be braced.

a. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

b. Corner and terminal posts are to be braced horizontally and diagonally. The braces are to extend over one adjacent panel. Changes in line of 30 degrees or more shall be considered as corners.

c. Braces and truss rods shall be securely fastened to posts with appropriate hardware.

d. Pull posts with two braces shall be provided for all heights where changes in horizontal or vertical alignment of ten (10) degrees or more occur.

5. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Concealed Concrete: Top 3 inches below grade as indicated on Drawings to allow covering with surface material.

b. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

c. Posts Set into Voids in Concrete: Form or core drill holes not less than 5 inches deep and ¾ inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts uniformly as indicated on the Drawings. Unless indicated otherwise, spacing shall be 8 feet on-center.

E. Post Bracing and Intermediate Rails: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches on-center. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:

1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches (152 mm) of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Intermediate and Bottom Rails: Install and secure to posts with fittings.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches on-center.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches on-center and to braces at 24 inches on-center.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

M. Privacy Slats: Install slats in direction indicated, securely locked in place.

1. Diagonally, for privacy factor of 80 to 85.

N. Fabric:

1. Do not install fabric until concrete post footings have cured seven (7) days. Provide fabric of the height specified. Install fabric on the public side of the fence, with bottom no greater than 2 inches above the ground surface. Fabric shall be pulled taut to prevent sagging and provide a uniform smooth appearance. Fasten fabric to line posts at intervals not exceeding 15 inches with ties as specified.

2. Install tension wire in one continuous length between pull posts, weaved through fence fabric at top. Tension wire shall be applied to provide a wire without visible sag between posts. Fasten fabric to tension wire at intervals not exceeding 24 inches with ties or hog rings as specified.

3. Where it is not practicable to conform the fence to general contour of the ground, as at ditches, channels, etc., the opening beneath the fence shall be enclosed with chain link fabric and sufficiently braced to preclude access, but not to restrict the flow of water.

3.6 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of 1,500 feet except as follows:

B. Fences within 100 feet of buildings, structures, walkways, and roadways: Ground at maximum intervals of 750 feet.

1. Gates and Other Fence Openings: Ground fence on each side of opening.

2. Bond metal gates to gate posts.

3. Coordinate subparagraph below with Drawings in projects where intentional discontinuities are provided in metal fencing conductivity to localize lightning effects to the vicinity of strikes. See Evaluations.

4. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.

C. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.

D. Plans and details on Electrical Drawings and requirements in Division 26 Sections may revise or illustrate application of requirement below or may require grounding that exceeds minimum requirements in IEEE C2. Fences enclosing electrical substations are often bonded to a station grounding mat.

E. Fences Enclosing Electrical Power Distribution Equipment: Ground as required by IEEE C2 unless otherwise indicated.

F. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location, including the following:

1. Make grounding connections to each barbed wire strand with wire-to-wire connectors designed for this purpose.

2. Make grounding connections to each barbed tape coil with connectors designed for this purpose.

G. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

H. Connections: Make connections to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.

2. Make connections with clean, bare metal at points of contact.

3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.

4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.

5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

I. Bonding to Lightning Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

3.7 FIELD QUALITY CONTROL

A. Grounding-Resistance Testing: Engage a qualified testing agency to perform tests and inspections.

1. Grounding-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure grounding resistance no fewer than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural grounding resistance. Perform tests by two-point method according to IEEE 81.

2. Excessive Grounding Resistance: If resistance to grounding exceeds specified value, notify Architect promptly. Include recommendations for reducing grounding resistance and a proposal to accomplish recommended work.

3. Report: Prepare test reports certified by a testing agency of grounding resistance at each test location. Include observations of weather and other phenomena that may affect test results.

END OF DOCUMENT 32 3113

DOCUMENT 32 3132 WOOD COMPOSITE FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Wood composite fences.

B. Wood composite double-swing gates.

C. Wood composite industrial double-swing gates.

D. Excavation for posts.

1.2 RELATED SECTIONS

A. Section 03 30 00 – Site Cast-in-Place Concrete.

1.3 REFERENCES

A. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.

B. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

C. ASTM D 143 - Standard Test Methods for Small Clear Specimens of Timber.

D. ASTM D 198 - Standard Test Methods of Static Tests of Lumber in Structural Sizes.

E. ASTM D 1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

F. ASTM D 1413 - Standard Test Method for Wood Preservatives by Laboratory Soil-Block Cultures.

G. ASTM D 1761 - Standard Test Methods for Mechanical Fasteners in Wood.

H. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.

I. ASTM D 2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.

J. ASTM D 2394 - Standard Methods for Simulated Service Testing of Wood and Wood-Base Finish Flooring.

K. ASTM D 2395 - Standard Test Methods for Specific Gravity of Wood and Wood-Based Materials.

L. ASTM D 4761 - Standard Test Methods for Mechanical Properties of Lumber and Wood-Base Structural Material.

M. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

N. ASTM F 1679 - Standard Test Method for Using a Variable Incidence Tribometer (VIT).

O. American Wood Preservers Association (AWPA) E1-06 - Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Design Requirements: Design fence system to withstand 110 MPH steady wind and 130 MPH gusting wind tests.

B. Delegated Design: Design gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used indicating sizes, profiles, surface finishes, and performance characteristics, and including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Instructions on care and cleaning of composite wood products.

C. Verification Samples: For each finish product specified, two samples, minimum size 9 inches (229 mm) square, representing actual product, color, and patterns.

D. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

F. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for cleaning and maintenance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's instructions.

B. Store level and flat, off ground or floor, with supports at each end and maximum 24 inches on center.

C. Do not stack wood composite over 8 feet (203 mm) high.

D. Cover wood composite with waterproof covering, vented to prevent moisture buildup.

1.7 WARRANTY

A. Provide manufacturer's 25-year residential warranty / 10 year commercial warranty providing coverage against checking, splitting, splintering, rotting, structural damage from termites, and fungal decay of wood composite.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Seclusions Privacy Fencing and Gate System as manufactured by Trex Fencing, https://www.trexfencing.com or approved equivalent from one of the following:
   1. FenceTrac Enclosures by Fence Trac Fence Systems (8-foot maximum height).
   2. Oasis Composite Fencing by Fortress Building Products (-foot maximum height).

B. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00 - Product Requirements.

C. Wood composite: Reclaimed wood and plastic with integral coloring; free from toxic chemicals and preservatives:
   1. Characteristics:
      a. Abrasion resistance: 0.01-inch wear per 1000 revolutions, tested to ASTM D 2394.
      b. Hardness: 1124 pounds, tested to ASTM D 143.
      c. Self-ignition temperature: 743 degrees F, tested to ASTM D 1929.
      d. Flash ignition temperature: 698 degrees F, tested to ASTM D 1929.
      e. Flame spread rating: 80, tested to ASTM E 84.
      f. Water absorption, 24-hour immersion, tested to ASTM D 1037:
         1) Sanded surface: 4.3 percent.
         2) Unsanded surface: 1.7 percent.
      g. Thermal expansion coefficient, 36-inch-long samples:
         1) Width: 35.2 x 10-6 to 42.7 x 10-6.
         2) Length: 16.1 x 10-6 to 19.2 x 10-6.
      h. Fastener withdrawal, tested to ASTM D 1761:
         1) Nail: 163 pounds per inch.
         2) Screw: 558 pounds per inch.
      i. Static coefficient of friction:
         1) Dry: 0.53 to 0.55, tested to ASTM D 2047.
         2) Dry: 0.59 to 0.70, tested to ASTM F 1679.
         3) Wet: 0.70 to 0.75, tested to ASTM F 1679.
      j. Fungus resistance, white and brown rot: No decay, tested to ASTM D 1413.
      k. Termite resistance: 9.6 rating, tested to AWPA E-1.

l. Specific gravity: 0.91 to 0.95, tested to ASTM D 2395.
m. Compression:
1) Parallel: 1806 PSI ultimate, 550 PSI design, tested to ASTM D 198.
2) Perpendicular: 1944 PSI ultimate, 625 PSI design, tested to ASTM D 143.
n. Tensile strength: 854 PSI ultimate, 250 PSI design, tested to ASTM D 198.
o. Shear strength: 561 PSI ultimate, 200 PSI design, tested to ASTM D 143.
p. Modulus of rupture: 1423 PSI ultimate, 250 PSI design, tested to ASTM D 4761.
q. Modulus of elasticity: 175,000 PSI ultimate, 100,000 PSI design, tested to ASTM D 4761.
r. Thermal conductivity: 1.57 BTU per inch per hour per square foot at 85 degrees F, tested to ASTM C 177.

2.2 COMPONENTS

A. Fence System: Seclusions Privacy Fence System.
1. Fence height:
a. Height between 4 feet and 12 feet as indicated on the Drawings.
2. Components:
a. Fence posts.
b. Post caps: As selected from manufacturer's full range of cap styles.
c. Top rail.
d. Aluminum bottom rail inserts.
e. Bottom rail covers and pickets.
f. Fence brackets.
3. Surface texture: Smooth.
4. Color: As selected from manufacturer’s full color range.

2.3 ACCESSORIES

A. Fasteners: 1-5/8 inch galvanized or corrosion-resistant coated steel. Provide finish nails where applicable.

B. Concrete: Provide as Specified in Section 03 30 00 – Site Cast-in-Place Concrete; minimum 2500 PSI compressive strength at 28 days, with a 3-to-5-inch slump.

C. Gate Hardware:
1. Provide two Trex hinges per gate leaf minimum, and size to gate weight and conditions.
2. Provide center gate stop and drop rod for double gates.
3. Provide with latching mechanism.
4. Provide with padlock provisions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Cut and drill wood composite using carbide tipped blades.

C. Space posts maximum 8 feet on center.

D. Drill post holes into undisturbed or compacted soil; excavate deeper in soft or loose soils and for posts with heavy lateral loads.

E. Drill posts to 12-inch diameter. Locate bottom of post 30 inches below grade or below frost line whichever is greater.

F. Place top of concrete 6 inches below finished grade.

G. Screw fence brackets to posts with four 1-5/8 inch long exterior screws.

H. Cut top rails, pickets, bottom rail covers and aluminum bottom rails to lengths required.

I. Slide bottom rail covers over aluminum bottom rail pieces.

J. Position aluminum bottom rail on fence brackets with deeper side of rail channel facing downward.

K. Cut end pickets to height to provide clearance under brackets and screw to posts.

L. Insert pickets into bottom rail, interlocking adjacent pieces.

M. Position top rail and screw attach to top brackets with 1-5/8-inch-long exterior screws.

N. Use finish nails to secure pickets to rails if the pickets are not tightly interlocked.

O. Place post caps over post tops and secure with construction adhesive or four finish nails.

3.4 CLEANING

A. Clean wood composite to remove stains:
   1. Mold, mildew, and berry and leaf stains: Clean surfaces with conventional deck wash containing detergent or sodium hypochlorite.
   2. Rust and ground-in dirt: Clean surfaces with cleaner containing oxalic or phosphoric

acid.

3. Oil and grease: Clean surfaces with detergent containing degreasing agent.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF DOCUMENT 32 3132

DOCUMENT 32 3000 – SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

Section Includes:

1. Precast concrete bench.

B. Related Requirements:

1. Division 03 Section "Site Cast-in-Place Concrete" for installing site furnishings cast in concrete footings.
2. Division 31 Section "Earthwork" for excavation for installing concrete footings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For each type of exposed finish, not less than 6-inch- (152-mm-) long linear components and 4-inch- (102-mm-) square sheet components.

E. Product Schedule: For site furnishings. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For site furnishings to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE BENCH

A. Basis-of-Design Product: Subject to compliance with requirements, provide Woodline precast concrete benches as manufactured by Wausau Tile Inc., (800) 388-8728 for approved product matching style, form, materials and finish.

B. Bench Type 1 with finish on all exposed surfaces and top:

1. Model Number: ZB.WL.10.
2. Shape: Rectangle.
3. Bench Material: Precast concrete.
4. Bench Finish: Weatherstone White (W20).
5. Wood Seat Material: Thermal Modified Ash (B26).
6. Seat Depth: 20 inches.
7. Seat Length: 96 inches.
8. Seat Height: 20 inches.

C. Bench Type 2 with finish on all exposed surfaces and top:

1. Model Number: ZB.WL.06.
2. Shape: Rectangle.
3. Bench Material: Precast concrete.
4. Bench Finish: Weatherstone White (W20).
5. Wood Seat Material: Thermal Modified Ash (B26).
6. Seat Depth: 20 inches.
7. Seat Length: 24 inches.
8. Seat Height: 20 inches.

D. Bench Type 3 with finish on all exposed surfaces and top:

1. Model Number: ZB.WL.04.
2. Shape: L-shaped.
3. Bench Material: Precast concrete.
4. Bench Finish: Weatherstone White (W20).
5. Seat Depth: 48 inches.
6. Seat Length: 48 inches.
7. Seat Height: 20 inches.

E. Materials: Precast concrete and wood.

1. Finish and colors as confirmed by Landscape Architect.

2.2 MATERIALS

A. Steel and Iron: Free of surface blemishes and complying with the following:

1. Tubing: Cold-formed steel tubing complying with ASTM A 500/A 500M.

B. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, corrosion-resistant-coated or non-corrodible materials; commercial quality, tamperproof, vandal and theft resistant, concealed, recessed, and capped or plugged.

1. Angle Anchors: For inconspicuously bolting legs of site furnishings to on-grade substrate; one per leg.

C. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M; recommended in writing by manufacturer, for exterior applications.

D. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.

2.3 FABRICATION

A. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

B. Factory Assembly: Assemble components in the factory to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.4 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled site furnishing surfaces according to manufacturer's written instructions. Protect from damage until acceptance by Owner.

END OF DOCUMENT 32 3300

SECTION 32 3305 - BOLLARDS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Steel pipe bollard with plastic sleeve at dumpsters.

2. Square steel tube bollard at electric vehicle charging stations.

B. The Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. The Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. ASTM International (ASTM).

1. ASTM A366—Standard Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

2. ASTM A500—Standard Specification for Cold-Formed Welded and Seamless Carbon Tubing in Rounds and Shapes.

3. ASTM D1640—Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature.

4. ASTM D5893—Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

C. State of Connecticut

1. State Building Code, including all Amendments, Supplements, and Errata.

D. United States Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

E. United States General Services Administration, Federal Standards.

1. Federal Standard No. 595—Colors Used in Government Procurement.

1.3 PERFORMANCE REQUIREMENTS

A. Bollards are to be installed as a single unit with specified dimensions and is secured in the ground.

1.4 SUBMITTALS

A. Submit Shop Drawings, manufacturer's literature, material certificates or other data indicating compliance with these Specifications.

B. Submit testing data for concrete as required by Section 03 3200—Site Cast-in-Place Concrete.

1.5 DELIVERY, STORAGE AND HANDLING

A. Supply: Bollard units of all types must be supplied by a single manufacturer having the resources to provide consistent quality in appearance and physical properties.

B. Materials shall be wrapped for shipment and storage, delivered to the jobsite in manufacturer's original packaging.

C. Store units to avoid damage from moisture, abrasion, and other construction activities.

PART 2 PRODUCTS

2.1 STEEL PIPE BOLLARDS WITH PLASTIC SLEEVE

A. Concrete filled steel pipe with plain shaft.

1. Shape: Round.

2. Pipe Diameter: As indicated on Drawings.

3. Height above Grade: As indicated on Drawings.

4. Materials:

a. Steel Pipe: ASTM A53/A53M, standard weight.

b. Factory Finish: Hot-dipped galvanized.

5. Mounting: In-ground.

6. Accessories: Plastic Cover.

a. Material: LDPE plastic injected with UV resistor fade resistant additive.

b. Wall Thickness: 1/4 inch.

c. Size: 7-inch inside diameter designed to fit over 6-inch diameter pipe.

d. Height: Cut to length as required by manufacturer.

e. Top: Domed.

f. Color: Black.

g. Manufacturer: Ideal Shield, 2525 Clark Street, Detroit, MI 48209 (866) 825-8659 or approved equal.

2.2 SQUARE STEEL TUBE BOLLARD WITH CAST IRON CAP

A. Hollow steel pipe with plain shaft.

B. Shape: Square.

C. Width: As indicated on Drawings.

D. Height Above Grade: As indicated on Drawings.

E. Cast Iron Bollard Cap:

1. Model No. 45-811.

2. Manufacturer: King Architectural Metals, 3131 Washington Boulevard, Baltimore MD 21230 (800) 542-2379 or approved equal.

F. Materials:

1. Steel Tube: ASTM A513/A513M, standard weight.

2. Factory Finish: hot-dip galvanized with primed finish 05 0513 - Shop-Applied Coatings for Metal.

3. Final Finish: Field painted conforming to Section 09 9113 - Exterior Painting.

4. Color: Black.

5. Mounting: In-ground.

2.3 CONCRETE

A. Concrete shall be as specified in Section 03 3200—Site-Cast-in-Place Concrete.

2.4 JOINT FILLER

A. One-part, cold-applied silicone that cures to a durable, flexible, low modulus silicone rubber joint seal, ASTM D5893.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install bollards at the locations indicated on the Drawings.

B. Install bollards level and true to the specific depths and exposures as indicated on the Drawings.

C. Provide temporary bracing as required to maintain desired installation until concrete has cured.

D. Protect newly-installed bollards from damage or movement.

END OF DOCUMENT 33 3305

DOCUMENT 32 9119.13 - TOPSOIL PLACEMENT AND GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Testing of topsoil for use in creating amended topsoil and as an ingredient in planting soils of other sections.

B. Placing and finished grading of amended topsoil.

1.2 RELATED REQUIREMENTS

A. Section 31 1100 – Clearing and Grubbing: Clearing and protection of vegetation.

B. Section 32 9300 - Plants: Placing planting soil for plantings.

1.3 UNIT PRICES

A. Work of this Section is affected by unit prices specified in Section 01 2200 - Unit Prices.

1.4 DEFINITIONS

A. AAPFCO: Association of American Plant Food Control Officials.

B. Amended Topsoil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

C. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.

D. CEC: Cation exchange capacity.

E. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

F. Duff Layer: A surface layer of soil, typical of forested areas, which is composed of mostly decayed leaves, twigs, and detritus.

G. Imported Soil: Soil that is transported to Project site for use.

H. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.

I. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.

J. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.

K. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."

L. Planting Soil: Amended topsoil that has been modified as specified with soil amendments and fertilizers to produce a soil mixture for use in planting beds.

M. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.

N. SSSA: Soil Science Society of America.

O. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

P. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

Q. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

R. USCC: U.S. Composting Council.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at project site.

1.6 SUBMITTALS

A. Product Data: For each type of product.
   1. Include recommendations for application and use.
   2. Include test data substantiating that products comply with requirements.
   3. Include sieve analyses for aggregate materials.
   4. Material Certificates: For each type of imported soil before delivery to the site, according to the following:
      a) Manufacturer's qualified testing agency's certified analysis of standard products.
      b) Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.

c) Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

B. Samples: For each bulk-supplied material, 1 quart (1 liter) volume of each in sealed containers labeled with content, source, and date obtained. Each sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

C. Qualification Data: For each testing agency.

D. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" article.

E. Field quality-control reports.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.
1. Laboratories: Subject to compliance with requirements, provide testing by one of the following:
a) UConn Soil Nutrient Analysis Laboratory, 6 Sherman Place U-5102, University of Connecticut, Storrs, CT 06269-5102 (860) 486-4274 email: soiltest@uconn.edu.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil.
1. Notify Architect seven days in advance of the dates and times when laboratory samples will be taken.

B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.9 SOIL-SAMPLING REQUIREMENTS

A. General: Extract soil samples according to requirements in this article.

B. Sample Collection and Labeling: Have samples taken and labeled by Owner or Contractor in presence of Architect under the direction of the testing agency.

1. Number and Location of Samples: Minimum of three representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.
2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Soils".
3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.10 TESTING REQUIREMENTS

A. General: Perform tests on soil samples according to requirements in this article.

B. Physical Testing:
1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
a) Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
b) Hydrometer Method: Report percentages of sand, silt, and clay.
2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D698 (Standard Proctor).

C. Chemical Testing:
1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."

D. Fertility Testing: Soil-fertility analysis according to standard laboratory protocol of SSSA NAPT NCR-13, including the following:
1. Percentage of organic matter.
2. CEC, calcium percent of CEC, and magnesium percent of CEC.
3. Soil reaction (acidity/alkalinity pH value).
4. Buffered acidity or alkalinity.
5. Nitrogen ppm.
6. Phosphorous ppm.
7. Potassium ppm.

8. Manganese ppm.
9. Manganese-availability ppm.
10. Zinc ppm.
11. Zinc availability ppm.
12. Copper ppm.
13. Sodium ppm [and sodium absorption ratio].
14. Soluble-salts ppm.
15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
16. Other deleterious materials, including their characteristics and content of each.

E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory amended topsoil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. (100 sq. m) for 6-inch (150-mm) depth of soil.
2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. (100 sq. m) for 6-inch (150-mm) depth of soil.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways, and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Do not move or handle materials when they are wet or frozen.
4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 PRODUCTS

2.1 TOPSOILS SPECIFIED BY COMPOSITION

A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed.

B. The Soil shall not contain refuse, roots larger than ¼-inch diameter, heavy, sticky, or stiff clay, stones larger than ½-inches in diameter, noxious seeds, sticks, brush, litter, concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, or any substances deleterious to plant growth. The percentage of the above objects shall be controlled by source selection not by screening the soil. The Soil shall be suitable for the germination of seeds and the support of vegetative growth in line with the requirements of the project. The Soil shall not contain weed seeds in quantities that cause noticeable weed infestations in the final planting beds.

C. Amended Topsoil: Required Properties of topsoil after amendments have been added:
1. Friable and with sufficient structure to give good tilth and aeration.
2. Soil reaction of pH: 6 to 7.
3. Organic Matter Content: Minimum of 6 percent following addition of compost.
4. No stones greater than 0.5 inches (13 mm).
5. Infiltration Rate: Greater than 4 inches per hour.
6. Combined silt and clay shall not exceed 40 percent.
7. Soluble salts shall be no more than 2 mmho/cm.
8. Soil shall not be compactable to more than 200 psi.
9. Soils shall conform to the following gradations:

Percentage of Main Fraction		
Description	Size (mm)	Percent
Sand	0.05 to 2.0	59 to 70
Silt	0.002 to 0.05	15 to 25
Clay	Less than 0.002	5 to 15
Percentage of Sand Fraction		
Description	Size (mm)	Percent
Very Coarse	1.0 to 2.0	12 to 14
Coarse	0.5 to 1.0	18 to 21
Medium	0.25 to 0.5	18 to 21
Fine	0.10 to 0.25	8 to 9
Very Fine	0.05 to 0.10	3 to 4

D. On-Site Topsoil: Existing, on-site surface soil, with the duff layer, if any, retained; and stockpiled on-site; modified to produce viable amended topsoil.

1. Blend existing, on-site surface soil with soil amendments and fertilizers according to the soil analysis to produce amended topsoil:
   a) Inorganic soil amendments as recommended by testing laboratory.
   b) Organic soil amendments as recommended by testing laboratory.
   c) Fertilizer as recommended by testing laboratory.

E. Imported Topsoil: Imported, naturally formed soil from off-site sources and consisting of sandy loam soil according to USDA textures; and modified to produce viable amended topsoil.
   1. Sources: Take imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep, not from agricultural land, bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass.
   2. Blend imported topsoil with soil amendments and fertilizers according to the soil analysis to produce amended topsoil:
      a) Inorganic soil amendments as recommended by testing laboratory.
      b) Organic soil amendments as recommended by testing laboratory.
      c) Fertilizer as recommended by testing laboratory.

2.2 INORGANIC SOIL AMENDMENTS

A. The following inorganic soil amendments shall be added to topsoil when recommended by soil analysis and as indicated on drawings to produce amended topsoil.

B. Lime: ASTM C602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
   1. Class: T, with a minimum of 99 percent passing through a No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through a No. 60 (0.25-mm) sieve.
   2. Class: O, with a minimum of 95 percent passing through a No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through a No. 60 (0.25-mm) sieve.
   3. Form: Provide lime in form of ground dolomitic limestone.

C. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through a No. 40 (0.425-mm) sieve.

D. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

E. Perlite: Horticultural perlite, soil amendment grade.

F. Agricultural or Recycled Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 (0.30-mm) sieve.

G. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C33/C33M.

2.3 ORGANIC SOIL AMENDMENTS

A. The following organic soil amendments shall be added to topsoil when recommended by soil analysis and as indicated on drawings to produce amended topsoil.

B. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:

C. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture with 100 percent passing through a 1/2-inch (13-mm) sieve, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.

D. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture with 100 percent passing through a 1/2-inch (13-mm) sieve, a pH of 6 to 7.5, a soluble-salt content measured by electrical conductivity of maximum 5 dS/m, having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.

E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.4 FERTILIZERS

A. The following fertilizers shall be added to topsoil when recommended by soil analysis and as indicated on drawings to produce amended topsoil.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
   1. Composition: 1 lb./1000 sq. ft. (0.5 kg/100 sq. m of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
   2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
   1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
   2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

E. Chelated Iron: Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

PART 3 EXECUTION

3.1 GENERAL

A. Place amended topsoil and fertilizers according to requirements in other specification sections.

B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.

C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

A. Excavation: Excavate soil from designated area(s) to a depth of 6 inches (150 mm) and stockpile until amended.

B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.

C. Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.

D. Screening: Pass unamended soil through a 2-inch (50-mm) sieve to remove large materials.

3.3 PLACING AND MIXING UNAMENDED TOPSOIL OVER EXPOSED SUBGRADE

A. General: Apply and mix unamended soil with amendments on-site to produce required amended topsoil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Subgrade Preparation: Till subgrade to a minimum depth of 4 inches (100 mm). Remove stones larger than 1-1/2 inches (38 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
   1. Apply, add soil amendments, and mix approximately half the thickness of unamended topsoil over prepared, loosened subgrade according to "Mixing" paragraph below. Mix thoroughly into top 2 inches (50 mm) of subgrade. Spread remainder of planting soil.

C. Mixing: Spread unamended topsoil to total depth of 6 inches (150 mm), but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if topsoil or subgrade is frozen, muddy, or excessively wet.

1. Amendments: Apply soil amendments, except compost, and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended topsoil to produce amended topsoil.
   a) Mix lime with dry soil before mixing fertilizer.
   b) Mix fertilizer with planting soil no more than seven days before planting.
2. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 8 inches (200 mm) in loose depth for material compacted by compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

D. Compaction: Compact each blended lift of amended topsoil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D698 and tested in-place except where a different compaction value is indicated on Drawings.

E. Finish Grading: Grade amended topsoil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:
1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D698. Space tests at no less than one for each 1000 sq. ft. (100 sq. m) of in-place soil or part thereof.

C. Soil will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.5 PROTECTION

A. Protection Zone: Identify protection zones according to Section 01 5639 - Temporary Tree and Plant Protection

B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Vehicle traffic.
4. Foot traffic.

5. Erection of sheds or structures.
6. Impoundment of water.
7. Excavation or other digging unless otherwise indicated.

C. If amended topsoil or subgrade is over compacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

3.6 CLEANING

A. Protect areas adjacent to amended topsoil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF DOCUMENT 32 9119.13

DOCUMENT 32 3219 - SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Hydroseeding, mulching and fertilizer.

B. Maintenance.

1.2 RELATED REQUIREMENTS

A. Section 32 9119.13 - Topsoil Placement and Grading: Topsoil testing, planting soil placement and finish grading.

1.3 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer; and [_____].

C. Maintenance Contract.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
   1. Grass seed mixture shall be as indicated on the Drawings.

2.2 SOIL MATERIALS

A. Amended Topsoil: As specified in Section 32 9119.13 - Topsoil Placement and Grading.

2.3 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

C. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth of grass.

2.4 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb./sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

2.5 PESTICIDES

A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.6 TESTS

A. Provide analysis of topsoil fill under provisions of Section 01 4000 and according to Section 32 9119.13 - Topsoil Placement and Grading.

2.7 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Spring Planting: March 15th to June 15th.
   2. Fall Planting: August 15th to October 15th.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this Section.

3.2 PREPARATION

A. Prepare subgrade in accordance with Section 31 2200.

B. Place amended topsoil in accordance with Section 32 9119.13 - Topsoil Placement and Grading.

C. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
   2. Protect grade stakes set by others until directed to remove them.

D. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.3 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions and per recommendations per Section 32 9119.13 - Topsoil Placement and Grading.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into upper 2 inches (50 mm) of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.4 HYDROSEEDING

A. Apply seeded slurry with a hydraulic seeder at a rate of 3 to 4 lbs. per 1000 sq ft (1.4 to 1.8 Kg per 1000 sq m) evenly in two intersecting directions unless indicated to apply at a heavier rate on the Drawings.

B. Do not hydroseed area in excess of that which can be mulched on same day.

C. Immediately following seeding, apply mulch to a thickness of 1/8 inches (3 mm). Maintain clear of shrubs and trees.

D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches (100 mm) of soil.

E. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches (100 by 100 mm).

3.5 TURF RENOVATION

A. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
   1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
   2. Install new planting soil as required.

B. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

C. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

D. Mow, dethatch, core aerate, and rake existing turf.

E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

H. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches (100 mm) of existing soil. Install new planting soil to fill low spots and meet finish grades.
   1. Soil Amendment(s): according to requirements of Section 32 9119.13 - Topsoil Placement and Grading. Apply as recommended by topsoil analysis.
   2. Initial Fertilizer: Commercial fertilizer or Slow-release fertilizer applied according to manufacturer's recommendations.

I. Apply seed and protect with straw mulch as required for new turf.

J. Water newly planted areas and keep moist until new turf is established.

3.6 PROTECTION

A. Identify seeded areas with stakes and string around area periphery. Set string height to 24 inches (600 mm). Space stakes at 5 feet.

B. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil

C. Cover seeded slopes where grade is 4 inches per foot (100 mm per m) or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

D. Lay fabric smoothly on surface, bury top end of each section in 6 inch (150 mm) deep excavated topsoil trench. Provide 12 inch (300 mm) overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
   1. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.
   2. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

E. Secure outside edges and overlaps at 36-inch (900 mm) intervals with stakes.

F. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

G. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches (150 mm).

3.7 MAINTENANCE

A. Provide maintenance at no extra cost to Owner; Owner will pay for water.

B. See Section 01 7000 - Execution Requirements, for additional requirements relating to maintenance service.

C. Provide a separate maintenance contract for specified maintenance service.

D. Provide maintenance of seeded areas for a minimum of three months from Date of Substantial Completion or until grass is well established and exhibits a vigorous growing condition. Continue maintenance until turf is satisfactory.

E. Turf installations shall meet the following criteria as determined by Landscape Architect
   1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).

F. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches (65 mm). Do not cut more than 1/3 of grass blade at any one mowing.

G. Neatly trim edges and hand clip where necessary.

H. Immediately remove clippings after mowing and trimming.

I. Water to prevent grass and soil from drying out.

J. Roll surface to remove minor depressions or irregularities.

K. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
   1. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
   2. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

L. Immediately reseed areas that show bare spots.

M. Protect seeded areas with warning signs during maintenance period.

3.8 RESTORATION OF SETTLED GRADES

A. At the end, twelve months after the date of substantial completion of the soil installation work, inspect the site and restore any areas where the grades have settled beyond the elevations shown on the drawings.
   1. Lawn areas: Remove the sod using mechanical sod cutter from the settled area and add the specified top soil or planting mix. Re sod the area using the sod cut from the lawn. In the event that the sod cannot be reused, install new sod that matches the seed mix on the lawn.
   2. Planting Areas: Where the settlement is 3-inches or less, remove the mulch, top dress the area with the specified topsoil or planting mix and re mulch.
   3. Planting Areas: Where the settlement is greater than 3-inches remove the mulch and plants, add the specified topsoil or planting mix and re mulch.

3.9 CLEANUP

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout maintenance period and remove after plantings are established.

C. Remove nondegradable erosion-control measures after grass establishment period.

END OF DOCUMENT 32 9219

DOCUMENT 32 9300 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

1.2 SUMMARY

A. Section Includes:

1. Plants.

B. Related Sections:

1. Division 01 Section "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
2. Division 31 Section "Clearing and Grubbing" for topsoil stripping and stockpiling, and site clearing.
3. Division 31 Section "Earthwork" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
4. Division 32 Section “Topsoil and Grading” for planting medium.
5. Division 32 Section "Seeding" for turf (lawn), hydroseeding and sod.

1.3 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than sizes indicated; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

D. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.

E. Finish Grade: Elevation of finished surface of planting soil.

F. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

G. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

H. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

I. Planting Area: Areas to be planted.

J. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

K. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

L. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

M. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

O. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

P. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 COORDINATION

A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
2. Plant Photographs: Include color photographs in [digital] [3- by 5-inch (76- by 127-mm) print] format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than [20] <Insert number> plants are required, include a minimum of [three] <Insert number> photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

B. Samples for Verification: For each of the following:

1. Organic and Compost Mulch: 1-quart (1-L) volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
2. Weed Control Barrier: 12 by 12 inches (300 by 300 mm).

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

1. Manufacturer's certified analysis of standard products.
2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

D. Sample Warranty: For special warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: Five years' experience in landscape installation in addition to requirements in Division 01 Section "Quality Requirements."
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Pesticide Applicator: State licensed, commercial.

B. Soil-Testing Laboratory Qualifications: An independent or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.

1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
2. The soil-testing laboratory shall oversee soil sampling; with depth, location, and number of samples to be taken per instructions from Architect. A minimum of three one gallon representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
3. Report suitability of tested soil for plant growth.

    a. Based upon the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. (92.9 sq. m) or volume per cu. yd. (0.76 cu. m) for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
    b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.

D. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

E. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches (150 mm) above the root flare for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the root flare for larger sizes.
2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

F. Plant Material Observation: Landscape Architect shall be given the opportunity to observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Provide transportation and accompany Landscape Architect to this location. Landscape Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

G. Preinstallation Conference: Conduct conference at Project site.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

C. Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or

bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

E. Handle planting stock by root ball.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

H. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

1.11 FIELD CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring Planting of Deciduous Plants: March 1st to May 15th
2. Spring Planting of Evergreen Plants: March 1st to June 1st.
3. Fall Planting of both Deciduous and Evergreen Plants: October 1st until soil becomes frozen.

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

D. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.12 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
b. Structural failures including plantings falling or blowing over.
c. Faulty performance of edgings.
d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Periods from Date of Substantial Completion:

a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

3. Include the following remedial actions as a minimum:

a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning.

Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch (19 mm) in diameter; or with stem girdling roots will be rejected.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

2.2 PLANTING SOILS

A. Planting Soil: Amend topsoil for planting beds as outlined in topsoil test results as indicated in Division 32 Section ‘Soil Preparation”.

2.3 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of the following:

1. Type: 100 percent shredded bark.
2. Size Range: 3 inches (76 mm) maximum, 1/2 inch (13 mm) minimum.
3. Color: Natural.

B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through a 1-inch (25-mm) sieve; soluble-salt content of 2 to 5 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

2.4 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. (101g/sq. m) minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally-encountered chemicals, alkalis, and acids.

2.5 PESTICIDES

A. General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.6 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

B. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb (0.45 kg) of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb (0.45 kg) of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

C. Filter Fabric: Nonwoven geotextile manufactured for separation applications and made of polypropylene, polyolefin, or polyester fibers or combination of them.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.1 CARE OF PLANTS PRIOR TO PLANTING

A. When plants are taken from storage to the planting site, roots of plants shall be immersed in water immediately upon opening the bundle and kept in water until planted. The Contractor shall have sufficient tanks and pails to keep roots of plants from opened bundles in water until planted. Rootball and container plants shall be immersed for a minimum of 10 minutes prior to planting. Do not remove containers or wire baskets until plant is at planting pit.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

D. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

3.3 PLANTING AREA ESTABLISHMENT

A. Loosen subgrade of planting areas to a minimum depth of 12 inches (300 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply approved fertilizer as required by Division 32 Section “Soil Preparation” directly to subgrade before loosening.
2. Thoroughly blend planting soil off-site before spreading.

    a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
    b. Mix lime with dry soil before mixing fertilizer.

3. Spread planting soil to a minimum depth of 18 inches (450 mm) as indicated on the Drawings, but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

    a. Spread approximately one-half the thickness of planting soil over loosened subgrade. Mix thoroughly into top 4 inches (100 mm) of subgrade. Spread remainder of planting soil.

B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Application of Mycorrhizal Fungi: At time directed by Architect, broadcast dry product uniformly over prepared soil at rate recommended by the manufacturer.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

1. Excavate approximately three times as wide as ball diameter for balled and burlapped or container-grown stock.
2. Excavate at least 12 inches (300 mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
4. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
5. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
6. Maintain supervision of excavations during working hours.
7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

B. Backfill Soil: Subsoil and topsoil removed from excavations may not be used as backfill soil unless otherwise indicated.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

1. Hardpan Layer: Drill 6-inch- (150-mm-) diameter holes, 24 inches (600 mm) apart, into free-draining strata or to a depth of 10 feet (3 m), whichever is less, and backfill with free-draining material.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Only plants which have had their roots immersed in water for at least 10 minutes immediately prior to planting shall be installed. The Contractor shall have sufficient tanks and pails for immersing rootball and container plants prior to planting. Containers and wire baskets are to be removed only after plant has been immersed at the planting pit.

B. Before planting, fill excavations with water and allow to percolate away before positioning trees and shrubs.

C. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

D. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

E. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 inch (25 mm) above adjacent finish grades.

1. Use planting soil conforming to Division 32 Section “Soil Preparation” for backfill.
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

F. Set container-grown stock plumb and in center of planting pit or trench with root flare 1 inch (25 mm) above adjacent finish grades.

1. Use planting soil conforming to Division 32 Section “Soil Preparation” for backfill.
2. Carefully remove root ball from container without damaging root ball or plant.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

G. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.6 TREE, SHRUB, AND VINE PRUNING

A. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

B. Do not apply pruning paint to wounds.

3.7 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated in even rows with triangular spacing.

B. Use planting soil conforming to Division 32 Section “Soil Preparation” for backfill.

C. Dig holes large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes.

E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.8 APPLYING COMPOST TO SURFACE OF PLANTING SOIL

A. Application: Apply compost 3 inches (76 mm) of compost to surface of in-place planting soil in planting beds prior to installation of weed control fabric and mulch. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet. Rake compost into top 3 inches (76 mm) of planting soil.

3.9 PLANTING AREA MULCHING

A. Prior to installing weed-control barriers, incorporate a 3 to 4 inches depth of composted mulch into the top 6 inches of the planting bed.

B. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches (150 mm) and secure seams with galvanized pins.

C. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees and Tree-like Shrubs in Turf Areas: Apply organic mulch ring of 3-inch (75-mm) average thickness, with radius around trunks or stems as indicated on the Drawings. Do not place mulch within 3 inches (75 mm) of trunks or stems.
2. Organic Mulch in Planting Areas: Apply 3-inch (75-mm) average thickness of organic mulch extending 12 inches (300 mm) beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches (75 mm) of trunks or stems.

3.10 BED EDGING

A. Shovel-Cut Edging: Separate mulched areas from turf areas with a 45-degree, 4- to 6-inch- (100- to 150-mm-) deep, shovel-cut edge as shown on Drawings.

3.11 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

B. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated past management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.12 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written recommendations. Do not apply to seeded areas.

C. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.13 AIR AND REPLACEMENT

A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Landscape Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.

1. Provide new trees of same size as those being replaced for each tree of 6 inches (150 mm) or smaller in caliper size.
2. Species of Replacement Trees: Same species being replaced.

3.14 RESTORATION OF SETTLED GRADES

A. At the end, twelve months after the date of substantial completion of the soil installation work, inspect the site and restore any areas where the grades have settled beyond the elevations shown on the Drawings.

1. Lawn areas: Remove the sod using mechanical sod cutter from the settled area and add the specified top soil or planting mix. Re sod the area using the sod cut from the lawn. In the event that the sod cannot be reused, install new sod that matches the seed mix on the lawn.
2. Planting Areas: Where the settlement is 3-inches or less, remove the mulch, top dress the area with the specified topsoil or planting mix and re mulch.
3. Planting Areas: Where the settlement is greater than 3-inches remove the mulch and plants, add the specified topsoil or planting mix and re mulch.

3.15 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

C. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

3.16 DISPOSAL

A. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

3.17 MAINTENANCE SERVICE

A. Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.

1. Maintenance Period: 12 months from date of Substantial Completion.

B. Maintenance Service for Ground Cover and Other Plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.

1. Maintenance Period: 12 months from date of Substantial Completion.

END OF DOCUMENT 32 9300

DOCUMENT 33 1900 – WATER SUPPLY SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Water distribution and fire protection piping.
2. Pipe fittings, valves, and valve boxes.
3. Hydrants.
4. Anchors and thrust blocks.
5. Miscellaneous water system appurtenances.
6. Connections to existing water systems.
7. Disinfection and testing of new systems and appurtenances.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 COORDINATION WITH JURISDICTIONAL AUTHORITY

A. Contractor shall notify and coordinate the work of this Section with the local authority having jurisdiction over water supply, whether public or private system owner/operator.

B. Obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied.

C. Contractor shall obtain all required approvals for connection to, or extension of, any portion of the domestic or fire protection water systems.

D. The closing of valves necessary for making connections with the existing water systems will be done by Contractor with the assistance of Engineer. Sufficient notice shall be given the jurisdictional authority for a planned connection. No allowance will be made for any delay in the closing of valves. A 48-hour notice shall be given to adjacent buildings/residences affected by the shutdown, and shall be done by Contractor to the satisfaction of jurisdictional authority and Engineer. Jurisdictional authority or Engineer may require the work be completed outside of normal working hours during low use time periods.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut.

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818 and any supplements.

D. ASTM International (ASTM)

1. ASTM B88—Standard Specification for Seamless Copper Water Tube.
2. ASTM F477—Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
3. ASTM D3139—Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
4. ASTM A536—Ductile Iron Castings.
5. ASTM D1557—Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

E. American National Standards Institute (ANSI)

1. ANSI A21.50—Thickness Design of Ductile-Iron Pipe
2. ANSI A21.51—Ductile-Iron Pipe, Centrifugally Cast, for Water
3. ANSI A21.4—Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
4. ANSI A21.10—Ductile-Iron and Gray-Iron Fittings, 3 in through 48 in (75 mm through 1200 mm), for Water and Other Liquids
5. ANSI 61—Drinking Water System Components—Health Effects

F. American Water Works Association (AWWA)

1. AWWA C104—Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C110—Standard for Ductile-Iron and Gray-Iron Fittings.
3. AWWA C111—Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
4. AWWA C150—Standard for Thickness Design of Ductile-Iron Pipe.
5. AWWA C151—Standard for Ductile-Iron Pipe, Centrifugally Cast.

6. AWWA C207—Standards for Steel Pipe Flanges for Waterworks Service—Sizes 4 In. through 144 In. (100 mm Through 3,600 mm).
7. AWWA C502—Standard for Dry-Barrel Fire Hydrants.
8. AWWA C504—Standard for Rubber-Seated Butterfly Valves.
9. AWWA C509—Standard for Resilient-Seated Gate Valves for Water Supply Service.
10. AWWA C550—Standard for Protective Epoxy Interior Coatings for Valves and Hydrants.
11. AWWA C651—Disinfecting Water Mains.
12. AWWA C900—Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In.–12 In. (100 mm–300 mm), for Water Transmission and Distribution.
13. AWWA C800—Standard for Underground Service Line Valves and Fittings.

G. State of Connecticut

1. State Building Code, including all Amendments, Supplements, and Errata.

H. Local Jurisdictional Authority

1. Comply with standards of the Local Jurisdictional Authority. Should this Specification differ from those standards, the standards of the Local Jurisdictional Authority will govern.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section.

B. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

C. Maintain all temporary facilities and controls in proper and safe condition throughout the progress of the work.

1.5 COORDINATION WITH JURISDICTIONAL AUTHORITY

A. Contractor shall notify and coordinate the work of this Section with the local authority having jurisdiction over water supply, whether public or private system owner/operator.

B. Contractor shall obtain all required approvals for connection to, or extension of, any portion of the domestic or fire protection water systems.

C. Service Interruption: Provide Jurisdictional Authority five (5) days advanced notice for any planned interruption associated with the work. Comply with customer notification requirements of the Jurisdictional Authority.

D. Jurisdictional Authority may require the work be completed outside of normal working hours during low use time periods.

1.6 SAFETY

A. Contractor shall conduct all excavation activities in conformance with applicable regulations, including those relating to warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Contractor shall provide and maintain barricades, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas and open excavations. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

D. Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to completely construct the excavation support system, permanent or temporary, including sheet piling, trench shields, trench boxes, timber trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping and benching. All of the proper materials and all equipment necessary to protect employees in excavations against cave-ins shall be furnished and installed.

E. Any time an excavation is to remain open, at a minimum, provide full enclosure with safety barriers and fencing, warning signs, and additional safety control measures as appropriate.

1.7 SUBMITTALS

A. Copies of all permits and/or approvals from Jurisdictional Authority.

B. Shop Drawings:

1. Submit shop drawings, descriptive literature, or both, showing pipe materials and appurtenances to be furnished. Shop Drawings shall be submitted to Engineer for approval prior to ordering materials.

2. Shop drawings showing the configuration, dimensions, layout, and spacing of major and minor components such as pipe, joints, restraints, valves, and other proposed details of assembly. Show in large-scale details any unique assembly, and/or installation requirements.

C. Copies of manufacturer-provided installation instructions, operation instructions, and maintenance material for all equipment furnished under this Section.

D. Manufacturer's warranties and associated warranty registration data in Owner's name. Submit two (2) copies of each warranty to Engineer in the manufacture's/supplier's standard form or if there is no standard form available, in a form specified by Engineer.

E. As-Built Drawings.

1.8 DELIVERY, STORAGE AND HANDLING

A. Storage of pipe, fittings, valves, hydrants and other water line appurtenances on the site shall be in accordance with the manufacturer's recommendations, subject to the approval of Engineer.

B. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe, fittings, valves, hydrants, and other water line appurtenances. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective. Any damage to pipe and fitting coatings shall be repaired as directed by Engineer.

C. Pipe, fittings, valves, hydrants and other water system appurtenances which are defective from any cause, including damage caused by handling, and determined by Engineer as non-repairable, shall be unacceptable for installation and shall be replaced at no cost to the Owner.

D. Pipe, and all water system appurtenances that are damaged or disturbed through any cause prior to acceptance of the work shall be repaired, realigned or replaced as required by Engineer at no additional cost to the Owner.

PART 2 PRODUCTS

2.1 GENERAL

A. The drawings are diagrammatic only and are intended to indicate the extent, but not all details, of the system, which shall be constructed. All materials and fittings are not shown; but Contractor shall furnish and install all materials and fittings required for the complete system.

2.2 DUCTILE IRON PIPE

A. Centrifugally-cast ductile iron pipe, AWWA C151/A21.51, thickness Class 52, AWWA C150/A21.50. Pipe shall be furnished in 18-foot or 20-foot nominal lengths, unless otherwise required by Jurisdictional Authority standards.

B. Pipes shall be cement-mortar lined in accordance with ANSI A21.4-03/AWWA C104, except that the cement lining shall be double thickness.

C. The exterior of all pipe shall be factory coated, with a double coat of asphaltic material conforming to ANSI A21.51-02/AWWA C151. The interior of all pipe shall have a seal coat of

bituminous material applied over the cement lining in accordance with ANSI A21.4-03/AWWA C104.

2.3 DUCTILE IRON PIPE FITTINGS

A. Ductile iron pipe fittings shall have a pressure rating of 350 psi and shall conform to AWWA C110/ANSI A21.10-03. All fitting shall be compatible with pipe.

B. The type of fittings for pipe and valve connections shall be determined by Contractor in accordance with the requirements shown on the Drawings prior to ordering the fittings.

C. Fittings shall be cement-mortar lined and coated as specified for pipe.

2.4 DUCTILE IRON PIPE COUPLINGS

A. Couplings and accessories shall be pressure rated at least equal to that of the pipe. Couplings shall be Dresser Style 153, Smith Blair 441 style, Rapidfit by Cascade Waterworks, or approved equal. Couplings shall be provided with corrosion resistant nuts and bolts. The interior of the coupling shall be epoxy-coated. Epoxy coating shall conform to AWWA C550-01.

B. Transition couplings for joining pipe of different diameters shall be provided with corrosion resistant nuts and bolts.

C. After assembly, all exterior surfaces including the bolts and nuts shall be completely coated with two coats of a heavy-duty protective asphaltic coating.

2.5 JOINTS FOR DUCTILE IRON PIPE

A. Joints shall be mechanical joints, ANSI A21.11-00/AWWA C111-80. Mechanical joints shall be provided with required gaskets, lubricants and accessories conforming to ANSI A21.11-00/AWWA C111-80.

B. Restrainers shall be MEGALUG by EBBA Iron, MJ Field Lok Gasket by U.S. Pipe & Foundry, Allgrip 3600 by Star Pipe Products, or approved equal.

2.6 GATE VALVES

A. Gate valves shall be resilient seated conforming to the requirements of AWWA C509-01 and the requirements of the local water authority.

B. Gate valves shall be cast iron body, bronze mounted, double disk, non-rising stem, O-ring type stuffing box.

C. Gate valves shall open to the left (counter clockwise) and shall be mechanical joint type.

D. Bolts, studs and nuts shall be made from a corrosion-resistant material such as low-zinc bronze, nickel copper alloy, or stainless steel.

E. The operating nut shall be 2 inches square at the base, tapering to $1^{15}/_{16}$ inches square at the top.

2.7 BUTTERFLY VALVES

A. Butterfly valves are generally used on pipe 16 inches and greater in diameter, and shall be installed in accordance with the standard practices of the Jurisdictional Authority.

B. Butterfly valves shall be pressure Class 150B mechanical joint end with ductile iron body conforming to ASTM A536-84, Grade 65-45-R and stainless steel body seat, all in accordance with ANSI F1433-97/AWWA C504-00 Rubber-Seated Butterfly Valves.

2.8 VALVE BOXES

A. Each gate valve shall be provided with a valve box and cover.

B. Valve boxes shall be of the adjustable, telescoping, heavy-pattern type designed and constructed to prevent the direct transmission of traffic loads to the pipe or valve.

C. Valve boxes shall be cast iron, asphalt coated with cast iron covers. The smallest inside diameter of the shaft shall not be less than 5¼ inches. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve. Provisions shall be made for adjustment through at least 6-inches vertically while retaining a lap of at least 4 inches between sections.

D. Covers shall be close fitting and substantially dirt-tight. The top of the cover shall be flush with the top of the box rim. Unless otherwise required by the Jurisdictional Authority, the word “WATER” shall be cast in the top surface of the cover.

2.9 HYDRANTS

A. Hydrants: AWWA C502.

1. Type of Thread: National Standard.
2. Number of Outlets: 2 at 2½-inch hose connections and 1 at 4½-inch steamer connection.
3. Diameter of Opening: 4½ inch.
4. Size and Type of Inlet Connection: 6-inch mechanical joint
5. Direction of Opening: Open left.
6. Depth of cover: 5’ feet minimum.
7. Size and Shape of Operating Nut: Pentagonal.
8. Bolts and nuts: corrosion-resistant material.

B. Coatings: Two coats of primer; final finish color as required by the Jurisdictional Authority.

2.10 TAPPING SLEEVE AND VALVE

A. Tapping sleeves: AWWA C223, bolted-sleeve type with mechanical joint connection to the existing water pipe and flanged end outlets for connecting the tapping valves. Tapping sleeves shall be suitable for a working water pressure of 200 psi and outlet flanges shall conform to the 125-pound American Standard with Cor-Ten or cadmium plated cast iron nuts and bolts.

2.11 THRUST BLOCKS

A. Thrust blocks shall be installed in accordance with the details shown on the Drawings and/or as required by the Jurisdictional Authority.

B. Concrete: Minimum 28-day compressive strength of 3,000 psi.

C. In certain areas, thrust blocks cannot be used because of the density of other utilities and inability to construct thrust blocks bearing against “undisturbed soil”. In such case, restrained joints shall be used at that location.

2.12 CORPORATION STOPS AND CURB STOPS

A. Corporation stops: ball type corporation valves threaded to a receive compression-type fitting as manufactured by Mueller Co., Ford Meter Box Co., Grand Junction Pipe & Supply, or approved equal.

B. Curb stops: ball valve threaded to receive compression-type fittings by Mueller Co., Ford Meter Box Co., Grand Junction Pipe & Supply, or approved equal.

C. Stops shall be sized to receive the service tubing without the use of enlargement/reduction fittings.

2.13 SERVICE BOXES

A. Service boxes shall be cast iron improved extension type with arch pattern base. Covers shall be held in place with bronze bolts and the word “WATER” shall be cast into the top surface of the cover. Service box shafts shall have a minimum inside diameter of 2½ inches. Service boxes shall be as manufactured by Mueller Co., Ford Meter Box Co., Grand Junction Pipe & Supply, or approved equivalent.

2.14 WATER SERVICE

A. Services, two inches or smaller: Copper water tubing, Type K, ASTM B88 and ANSI Standard 61 for underground water service.

1. Joints: Three part compression couplings or an approved equal.

B. Water Service Fittings: Fittings, couplings, adapters, check valves and service saddles shall be in conformance with AWWA C800.

C. Services, 3 inches and greater: Ductile iron pipe or as otherwise required by the Jurisdictional Authority.

2.15 METER PITS/VAULTS

A. As required by Jurisdictional Authority.

2.16 BACKFLOW PREVENTERS

A. As required by Jurisdictional Authority.

2.17 PRESSURE REDUCING VALVES

A. As required by Jurisdictional Authority.

2.18 METERS

A. As required by Jurisdictional Authority.

2.19 BEDDING

A. Unless otherwise indicated, bedding shall consist of screened gravel, maximum size ¾ inches and minimum size ⅜ inches.

B. When clay, wet, soft or silty soil conditions prevail, ¾-inch crushed stone shall be used for bedding.

PART 3 EXECUTION

3.1 GENERAL

A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures, utilities, and other site features prior to start of work and notify Engineer in writing, of any hazardous conditions and/or discrepancies.

B. All water pipes, fittings, valves, hydrants and other appurtenances shall be installed at the locations as shown on the Drawings and/or directed by Engineer.

C. The proposed location and vertical alignment may be altered to avoid conflicts with existing and proposed utilities, as approved by Engineer.

3.2 LAYING DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe and fittings shall be installed in accordance with the requirements of AWWA C600.

B. Each length of pipe shall be laid with firm, full and even bearing throughout its entire length, in a trench prepared and maintained in accordance with Section 31 2310—Earthwork.

C. All pipe shall be clean before laying. When installation is stopped for any reason, the open ends of the pipe shall be closed by watertight plugs or other approved means. If water is in the trench when work is resumed, the plug shall not be removed until the trench has been dewatered and all danger of water entering the pipe has been eliminated.

D. Fittings, in addition to those shown on the Drawings, shall be provided if required to avoid utility conflicts.

E. When cutting of pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a push-on bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged.

F. Maximum allowable deflection for pipe laid without fittings shall not exceed the allowable amount established by the pipe manufacturer and shall not exceed those shown in AWWA C600.

G. The pipe shall be laid with a minimum cover of 4½ feet (4.5 ft) below finished grade, unless otherwise required by the Municipality or directed by Engineer.

3.3 JOINTING DUCTILE IRON PIPE, PUSH-ON TYPE

A. Push-on joints shall be made in strict accordance with the manufacturer's instructions. A rubber gasket shall be inserted in the groove of the bell end of the pipe and the joint surface cleaned and lubricated using the pipe manufacturer's suggested methods and materials. The plain end of the pipe to be laid shall be inserted in alignment with the bell of the pipe to which it is to be jointed and pushed home with a jack or by other means. After joining the pipe, a metal feeler gauge shall be used to make certain that the rubber gasket is correctly located and has not been twisted or otherwise displaced.

3.4 JOINTING MECHANICAL JOINT PIPE AND FITTINGS

A. Mechanical joints shall be made in strict accordance with the manufacturer's instructions. Mechanical joints shall be made by first cleaning the surfaces against which the gaskets will come in contact with a wire brush. The gasket, bell and spigot shall be lubricated by washing with soapy water just prior to assembling the joint. After the nuts have been made up finger tight, the bottom nut, then top and then diametrically opposite nuts shall be progressively tightened. Bolts shall be tightened to the torques listed:

Bolt Size (Inches)	Range of Torque (Foot-Pounds)
⅝	45–60
¾	75–90
1	85–100

B. After installation, a heavy bitumastic coating shall be applied to all bolts and nuts.

C. Restraining device shall be ductile iron and shall have dimensions such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI A21.11 and ANSI A21.53-00/AWWA C153 latest revision.

3.5 CONCRETE THRUST BLOCKS

A. Where pipes change horizontal and vertical direction, at hydrants, tees and other fittings, and wherever abnormal thrust forces may be developed, the Contractor shall construct thrust and anchor blocks as detailed on the Drawings. They shall be concrete, of minimum dimensions as detailed on the drawings or of adequate additional size to suit actual conditions to withstand pressures anticipated, and shall be founded in undisturbed soil.

B. Concrete for thrust blocks shall have a minimum 28-day compressive strength of 3,000 psi.

C. Fittings, which do not use thrust blocks resting against natural occurring material with passive resistance pressure of 1,500 psf, shall be installed with a restrained joint system as specified in Article 3.7.

3.6 RESTRAINED JOINTS

A. Restrained joints shall be installed at bends, reducers, tees, valves, dead ends, and hydrants. The minimum length of pipe to be restrained on either side of the joint shall be as shown on the table below. The fittings of the new piping shall be for restrained joints, as marked on the Drawings.

Number of Joints to Restrain
on Either Side of Fitting

Fitting Type	Number of Joints to Restrain on either Side of Fitting (Based on 18-foot pipe length)
90 Degree bend	3
45 Degree bend	2
22 ½ degree bend	2
Tee, Branch	3
Tee, Run	2

B. No restraining is required in the direction of the existing pipe if only a short length of it is exposed in the trench for making a connection.

C. Restrained joint assemblies for push-on pipe and fittings shall be made in strict accordance with the manufacturer’s recommended installation procedures.

D. Restrained joint assemblies for mechanical joint pipe shall be EBAA Iron MEGALUG, Cascade Waterworks Rapidfit, U.S Pipe Co. MJ Field Lok, or approved equivalent.

3.7 WATER / SANITARY SEWER SEPARATION

A. When a sewer pipe crosses above or below a water pipe, Contractor shall comply with these following procedures:

1. Relation to Water Mains

    a. Horizontal Separation: Whenever possible, sewers shall be laid below, and at a minimum at least 10 feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet, but no closer than 2 feet, to a water main if:

        1) It is laid in a separate trench, or

        2) It is laid in the same trench with the water main located at one side on a bench of undistributed earth, and

        3) In either case, the elevation of the top (crown) of the sewer is at least 18 inches below the bottom (invert) of the water main.

    b. Vertical Separation: Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be varied to meet the above requirements, the water main shall be relocated to provide this separation or reconstructed with mechanical-joint pipe for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

    c. When it is impossible to obtain horizontal and/or vertical separation as stipulated above, both the water main and sewer shall be constructed of mechanical-joint cement lined ductile iron pipe, or other equivalent based on watertightness and structural soundness. Both pipes shall be pressure tested by an approved method to assure watertightness, or both pipes shall be encased in concrete.

3.8 GATE VALVES AND BOXES

A. Valves shall be set in firmly compacted and shaped soil. Where the soil in the trench subgrade is found to be soft, loose, freshly filled earth, unstable or unsuitable as a base, the unsuitable material shall be excavated to such additional depth and width as required. The excavated area shall be backfilled with gravel or crushed stone, compacted and shaped.

B. Valve boxes shall be set centered and plumb over the operating nuts of all valves. The top of each valve box shall be set to finished grade with at least 10 inches of overlap remaining between the upper sections for vertical adjustment. Minimum overlap for lower, extension pieces shall be 4 inches.

C. Boxes shall be adequately supported during backfilling to maintain vertical alignment.

3.9 TAPPING SLEEVES AND GATE VALVES

A. Installation shall be made under pressure and the flow of water through the existing pipe shall be maintained at all times. The diameter of the tap shall be a minimum of ¼ inch less than the inside diameter of the branch line.

B. The entire operation shall be conducted by workmen thoroughly experienced in the installation of tapping sleeves and valves, and under supervision of qualified personnel furnished by the manufacturer. The tapping machine shall be furnished by the Contractor.

C. Contractor shall determine the location of the existing pipe to be tapped to confirm that interference will not be encountered from existing utilities or a joint or a fitting. No tap shall be made closer than 3 feet from a pipe joint.

D. Pipe upon which tapping sleeve is to be installed shall be thoroughly cleaned of all foreign matter with scraping tools and wire brushes to a minimum of six inches beyond each side of the sleeve. The cleaned area shall be washed with a hypochlorite solution. The interior of tapping valve shall also be washed with hypochlorite solution.

E. Tapping sleeves and valves with boxes shall be set vertically and squarely centered on the pipe to be tapped. Adequate support shall be provided under the sleeve and valve during the tapping operation. Thrust blocks shall be provided behind all tapping sleeves. the supporting earth around and under the valve and sleeve shall be compacted. After completing the tap, the valve shall be flushed to ensure that the valve set is clean.

F. Before backfilling, all exposed portions of any bolts used to hold the two halves of the sleeve together shall be heavily coated with two coats of bituminous paint.

3.10 HYDRANTS

A. Hydrants shall be installed at the locations and in conformance with the details shown on the drawings.

B. Each hydrant shall be set vertically and be properly braced. Hydrants shall be installed with thrust blocks or restrained joints as specified in Articles 3.6 and 3.7. Care shall be taken to ensure that thrust block concrete does not plug the drain ports.

3.11 WATER SERVICES

A. Service Pipe: Care shall be exercised in placing and laying of services to prevent kinks or sharp bends and contact with sharp stones or ledge which would damage to the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.

B. Corporation Stop: Taps to the pipe shall be threaded and shall be made at the horizontal diameter of the main. The tap shall be made by means of a tapping machine manufactured for this purpose and supplied by the Contractor. The tap and drill shall be kept sharp and shall have threads matching those of the stop. Corporation stop threads shall be coated with sealing compound and the stop screwed firmly into the water with the key upward and the inlet end

projecting at least ⅛-inch beyond the inside face of the pipe. The corporation stop shall be left in the on (open) position after installation of the service pipe.

C. Curb Stop and Curb Boxes shall be of a size equal to the size of the service pipe and shall be installed in the locations shown on the drawings, or as ordered by Engineer. The boxes shall be set in a vertical position and flush with the proposed finish grade.

D. Ductile Iron Service Pipe: ductile iron service pipe connections to the water main shall be made with tee fittings or tapping sleeves.

3.12 POLYETHYLENE ENCASEMENT

A. Installation of polyethylene encasement shall be in accordance with the recommended procedures contained in ANSI A21.5-99/AWWA C105 and when directed by Engineer Water Department or Engineer.

B. Care shall be taken during backfilling to prevent damage to polyethylene wrap. backfilling shall be in accordance with AWWA C600-99.

3.13 PRESSURE TESTING

A. Hydrostatic and leakage test shall be conducted in accordance with AWWA Standard C600-99 and C900-97, and as directed by Engineer. Testing shall be conducted by a certified Independent Water Testing Company.

B. Conduct pipe tests after concrete thrust blocks have cured to the required 3000-psi strength. Fill pipe 24 hours prior to testing, and apply test pressure to stabilize system. Use only potable water.

C. Prior to pressure testing, the entire pipe section shall be flushed to remove any rocks or debris, which may have inadvertently entered the pipe during construction.

D. Once the pipe section has been filled at normal pressure and all entrapped air removed, the Contractor shall raise the pressure to 150 psi or two times the operating pressure (whichever is greater) by a special pressure pump, taking water from a small tank of proper dimensions for satisfactorily measuring the rate of pumping into the pipe. This pressure shall be maintained for a minimum of 2 hours, during which time the line shall be checked for leaks. Measured rate of water leakage shall not exceed the allowable leakage listed below.

Maximum Allowable Leakage

Test Pressure (psi)		Nominal Pipe Diameter (inches)		Allowable Leakage (gallons per hour per 1,000 feet of pipeline)	
PART 1	150	PART 2	4	PART 3	0.36
PART 4	150	PART 5	6	PART 6	0.55
PART 7	150	PART 8	8	PART 9	0.74
PART 10	150	PART 11	10	PART 12	0.92
PART 13	150	PART 14	12	PART 15	1.10
PART 16	150	PART 17	16	PART 18	1.47

A. Interior piping in vaults, buildings, etc. shall have zero leakage.

B. Should leakage exceed this rate, the Contractor shall immediately locate the leak or leaks and repair them. Pipe will be accepted only when leakage is zero, or less than the allowable amount. Approval does not absolve the Contractor from responsibility if leaks develop later within the period of warranty.

18.2 DISINFECTION

A. Before being placed in service, all new water pipe shall be chlorinated in accordance with AWWA C651-99 Standard for Disinfecting Water Mains or Engineer requirements/regulations, whichever is the more stringent.

B. The location of the chlorination and sampling points will be determined by the jurisdictional authority in the field. Taps for chlorination and sampling shall be installed by Contractor. Contractor shall uncover and backfill the taps as required.

C. The pipe section being disinfected shall be flushed to remove discolored water and sediment from the pipe. a 25-mg/l chlorine solution in approved dosages shall be inserted through a tap at one end while water is being withdrawn at the other end of the pipe section. The chlorine concentration in the water in the pipe shall be maintained at a minimum 25-mg/l available chlorine during filling. To assure that this concentration is maintained, the chlorine residual shall be measured at regular intervals in accordance with procedures described in Standard Methods and AWWA M12, Simplified Procedure for Water Examination [Section K].

D. During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the pipe supplying the water. Chlorine application shall not cease until the entire pipe section is filled with chlorine solution. The chlorinated water shall be retained in the pipe for at least a twenty-four hour period. the treated water shall contain chlorine residual throughout the length of the pipe section as indicated in AWWA C651-99.

E. Following the chlorination period, all treated water shall be flushed from the pipe section and replaced with water from the distribution system. Prior to disposal of treated water the Contractor shall check with local authorities to determine if the discharge will cause damage to the receiving body or sewer and, if required, the Contractor shall neutralize the chlorinated

water in accordance with AWWA recommendations. Bacteriological sampling and analysis of the replacement water may then be made by the Contractor in full accordance with AWWA C651-99. A minimum of three samples shall be taken by the Contractor at locations directed by Engineer along the length of water pipe being chlorinated and sent to a State approved private laboratory for analyses. The Contractor shall rechlorinate if the samples show presence of coliform, and the pipe section shall not be placed in service until all of the repeat samples show no presence of coliform.

F. Furnish two copies of a Certificate of Disinfection Report to Engineer and one copy to Engineer.

G. Contractor shall pay all costs for all testing, flushing, chlorinating, laboratory analyses, sampling, water supply and municipal charges.

18.3 AS-BUILT DRAWINGS

A. Contractor shall be solely responsible for complying with the requirements of local permitting authorities for preparation and submittal of as-built drawings. The requirements for the preparation of as-built drawings as defined herein shall be considered the minimum requirements of Engineer, but shall in no way relive Contractor from satisfying the requirements of local permitting authorities.

B. As work progresses, record the following on two (2) sets of Drawings:

C. All changes and deviations from the design in location, grade, size, material, or other feature as appropriate.

D. Any uncharted locations of utilities or other subsurface feature encountered during installation, including the characteristics of such uncharted utility or subsurface feature such as utility type, size, depth, material of construction, etc.

E. Recording of changes shall be clearly and neatly marked in red pen or pencil. All changes shall be noted on the appropriate Drawing sheets.

F. Make measurements from fixed, permanent points on the Project Site to accurately locate the work completed. Such measurements shall consist of at least three (3) ties showing the distance of each item relative to each of the fixed, permanent points.

G. As-Built Drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new construction. As-Built drawings shall also contain any additional information required by Engineer.

18.4 CLEAN UP

A. Contractor shall remove all debris, residuals, and materials at the conclusion of the work.

END OF DOCUMENT 33 1900

DOCUMENT 33 4000 – STORM DRAINAGE SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation of new storm drain pipe, manholes and catch basins.
2. Connection of exterior building roof drains and perimeter drains.
3. Installation of under-drains.
4. Installation of stormwater treatment units.

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

D. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied. Notify and obtain such permits or approvals from all agencies having jurisdiction prior to starting work.

1.2 REFERENCE STANDARDS

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. ASTM International (ASTM)

1. ASTM A36—Standard Specification for Carbon Structural Steel.
2. ASTM A48—Standard Specification for Gray Iron Castings.
3. ASTM A123—Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
4. ASTM A307—Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

5. ASTM A536—Standard Specification for Ductile Iron Castings.
6. ASTM A615—Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
7. ASTM C12—Standard Practice for Installing Vitrified Clay Pipe Lines.
8. ASTM C14—Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
9. ASTM C55—Standard Specification for Concrete Building Brick.
10. ASTM C76—Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
11. ASTM C94—Standard Specification for Ready-Mixed Concrete.
12. ASTM C139—Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
13. ASTM C150—Standard Specification for Portland Cement.
14. ASTM C207—Standard Specification for Hydrated Lime for Masonry Purposes.
15. ASTM C270—Standard Specification for Mortar for Unit Masonry.
16. ASTM C387—Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
17. ASTM C425—Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
18. ASTM C443—Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
19. ASTM C443—Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
20. ASTM C478—Standard Specification for Precast Reinforced Concrete Manhole Sections.
21. ASTM F493—Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.
22. ASTM C507—Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.
23. ASTM C564—Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

24. ASTM F656—Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

25. ASTM C700—Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.

26. ASTM C877—Standard Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections.

27. ASTM C890—Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

28. ASTM C913—Standard Specification for Precast Concrete Water and Wastewater Structures.

29. ASTM C923—Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.

30. ASTM C990—Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants.

31. ASTM C1479—Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations

32. ASTM C 1628—Standard Specification for Joints for Concrete Gravity Flow Sewer Pipe, Using Rubber Gaskets.

33. ASTM D1784—Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

34. ASTM D1785—Standard Specification for Poly(Vinyl Chloride) (PVC), Plastic Pipe, Schedules 40, 80, and 120.

35. ASTM D2235—Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.

36. ASTM D2241—Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

37. ASTM D2321—Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

38. ASTM D2412—Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

39. ASTM D2466—Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

40. ASTM D2467—Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.

41. ASTM D2564—Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.

42. ASTM D2855—Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

43. ASTM D2665—Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

44. ASTM D2729—Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

45. ASTM D2855—Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

46. ASTM D3212—Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

47. ASTM D3350—Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

48. ASTM D4396—Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds for Plastic Pipe and Fittings Used in Nonpressure Applications.

49. ASTM F402—Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings.

50. ASTM F405—Corrugated Polyethylene (PE) Tubing and Fittings.

51. ASTM F477—Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

52. ASTM F656—Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

53. ASTM F679—Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

54. ASTM F714—Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

55. ASTM F758—Smooth-Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage.

56. ASTM F894—Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe.

57. ASTM F1803—Standard Specification for Poly (Vinyl Chloride)(PVC) Closed Profile Gravity Pipe and Fittings Based on Controlled Inside Diameter.

58. ASTM F2306—Standard Specification for 12 to 60 inch [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.

59. ASTM F2648—Standard Specification for 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications.

D. American Concrete Pipe Association (ACPA).

1. ACPA 01-103—Concrete Pipe and Box Culvert Installation (latest revision and applicable supplements thereto).

E. American Association of State High and Transportation Officials (AASHTO).

1. AASHTO H20—Standard Specifications for HS-20, Highway Loading.

2. AASHTO M105—Standard Specification for Gray Iron Castings.

3. AASHTO M198—Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.

4. AASHTO M252—Standard Specification for Corrugated Polyethylene Drainage Pipe.

5. AASHTO M294—Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter.

F. Corrugated Polyethylene Pipe Association (CPPA), division of the Plastics Pipe Institute (PPI).

1. Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings (latest revision and applicable supplements thereto).

G. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction, Form 818 and any supplements.

1.3 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings, descriptive literature, or both, showing pipe materials and appurtenances to be furnished. Shop drawings shall be submitted to Engineer for approval prior to ordering materials.

2. Shop drawings showing the configuration, dimensions, layout, and spacing of major and minor components such as pipe, joints, couplings, restraints, and other proposed details of assembly. Show in large-scale details any unique assembly, pipe/pipe transitions, pipe/structure transitions, and/or installation requirements.

B. Copies of manufacturer-provided installation instructions, operation instructions, and maintenance material for all equipment furnished under this Section.

C. Manufacturer's warranties and associated warranty registration data in Owner's name. Submit two (2) copies of each warranty to Engineer in the manufacture/supplier standard form or if there is no standard form available, in a form specified by Engineer.

D. As-Built Drawings.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

C. Sample pipe for testing, when requested by Engineer, shall be furnished by Contractor in sufficient numbers. The Contractor and/or the pipe manufacturer shall make the facilities and services for making the load tests available.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage

1. Manufacturer shall package the pipe and other drainage materials in a manner designed to deliver the pipe to the Project Site neatly, intact, and without physical damage. Transportation carrier shall use an appropriate method to ensure the pipe is properly supported, stacked, and restrained during transport. Inspect materials delivered to site for damage; store with minimum of handling.

2. Unloading of the pipe and other drainage materials should be controlled so as not to collide with the other pipe sections or fittings, and care should be taken to avoid chipping or spalling, especially to the spigots and bells. For manhole sections, cone sections, bases, fittings and other precast appurtenances, utilize lifting holes or lifting eyes provided.

3. In cold weather conditions, use caution to prevent impact damage. Handling methods considered acceptable for warm weather may be unacceptable during cold weather.

4. Storage:

a. Store materials on site in enclosures or under protective coverings. Do not store materials directly on the ground. Keep inside of pipes and fittings free of dirt and debris.

b. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging.

c. Store solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials under cover out of direct sunlight. Provide additional storage measures in accordance with the manufacturer's recommendations. Discard materials if storage period exceeds the recommended shelf life. Solvents in use shall be discarded when the recommended pot life is exceeded.

d. Metal Items: Check upon arrival; identify and segregate as to types, functions, and sizes. Store off the ground in a manner affording easy accessibility and not causing excessive rusting or coating with grease or other objectionable materials.

e. Cement, Aggregate, and Reinforcement: As specified in Section 033200—Site Cast-in-Place Concrete.

f. Store manhole units in an upright position.

PART 2 MATERIALS

2.1 GENERAL

A. Products furnished under this Section which are damaged or found defective in any way prior to being set in place and final acceptance, may be rejected. Engineer may reject an entire lot of pipe should the sample pipe from such lot fail to meet requirements.

2.2 CONCRETE GRAVITY PIPE

A. Reinforced concrete pipe:

1. Pipe less than 12 inches in diameter: ASTM C14, Class 3.

2. Pipe greater than 12 inches in diameter: ASTM C76, Class 3.

3. Class 4 pipe shall be required when cover is less than 12 inches.

B. Fittings and specials: conform to the applicable requirements specified for the pipe.

C. Gaskets and pipe ends for rubber gasket joint: ASTM C443.

2.3 CORRUGATED POLYETHYLENE PIPE

A. Pipe: High density polyethylene, corrugated, smooth interior, ASTM D3350, Cell Classification 424420C.

1. Four (4) inch through 10 inch diameter pipe: AASHTO M252, Type S.

2. 12 inch through 60 inch diameter pipe: AASHTO M294, Type S or ASTM F2306.

B. Joints: Bell-and-spigot joint, AASHTO M252, AASHTO M294, or ASTM F2306. Bell shall be an integral part of the pipe and provide a minimum pull-apart strength of 400 pounds. Bell-and-spigot joint shall incorporate a gasket making it silt-tight. Gaskets shall be installed in the bell, or on the pipe by the pipe manufacturer.

1. Four-inch (4") through 60-inch (60") diameter pipe joint, watertight, ASTM D3212. Gaskets: polyisoprene, ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

2. 12-inch (12") through 60-inch (60") diameter pipe shall have a reinforced bell with a bell tolerance device. The bell tolerance device shall be installed by the manufacturer.

3. Coupling bands shall conform to the manufacturer's specifications. Couplers shall cover not less than one corrugation on each section of pipe.

C. Fittings: AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.

D. Saddle Tee

1. Saddle tees shall be manufactured saddle tees designed to connect to the corrugated polyethylene pipe.

2. Fittings shall conform to AASHTO M 294. Fabricated fittings shall be welded on the interior and exterior of all junctions.

3. A soil-tight seal shall be obtained with the coupling at the saddle tee stub to the storm service pipe.

2.4 POLYVINYL CHLORIDE (PVC) GRAVITY PIPE

A. Polyvinyl Chloride Pipe formaulated for drainage application:

1. Pipe 4-inch to 15-inch diameter: ASTM D3034, SDR-35. Elastomeric gasket joints, retained gaskets, part of a complete pipe section and supplied as such.

2. Pipe 18 inch to 36 inch diameter: ASTM F679. Elastomeric gasket joints, retained gaskets, part of a complete pipe section and supplied as such.

B. PVC Cell classification: 12454 or 12364, ASTM D1784.

C. Pipe shall have a minimum pipe stiffness that equals or exceeds 46 psi (lbs/in.^{2}).

D. Pipe shall be marked along the outside of the barrel with the following:

1. The manufacturer's name or trademark.

2. The standard to which it conforms/ASTM Designation.

3. Pipe size.

4. Material designation code/PVC cell classification.

5. SDR number or schedule number.

E. Standard length of pipe: maximum of 20 feet with the following exceptions.

1. Length of 6-inch pipe shall be a maximum of 13 feet unless otherwise approved by Engineer.

2. Pipe used in house connections and/or laterals shall not exceed 6.5 feet in length unless otherwise approved by Engineer.

F. PVC Plastic Gravity Joints and Jointing Material.

1. Joints: ASTM D3213, gasketed, bell-and-spigot, push-on type.

2. Gaskets: ASTM F477. Since each pipe manufacturer has a different design for push-on joints, gaskets shall be part of a complete pipe section and provided as such. Gaskets may be factory installed or field installed as recommended by the pipe manufacturer. Lubricant shall be as recommended by the pipe manufacturer.

G. Fittings: SDR-35, ASTM D3034 and ASTM F1336, specifications as pipe.

H. The manufacturer shall provide waterstops acceptable to Engineer, which shall be applied to the outside of the plastic pipe where the pipe is to be enclosed in any structure where concrete or mortar is used to prevent leakage along the outer wall of the barrel of the pipe.

I. No single piece of pipe shall be laid on any project covered by these specifications unless it is found to be generally straight. Such pipe shall have a maximum ordinate as measured from

the concave side of the pipe not to exceed 1/16 inch per foot of length. If the deviation from straightness exceeds this requirement, then the particular piece of pipe shall be rejected.

2.5 UNDERDRAIN

A. Pipe: Perforated Polyvinyl Chloride (PVC) Gravity Pipe or Corrugated Polyethylene Pipe as indicated on the Drawings.

1. Perforated Polyvinyl Chloride (PVC) Gravity Pipe: ASTM F758.

a. Perforations shall be uniformly spaced along the length and circumference of the pipe.

b. Joints: Solvent weld with primer (ASTM F656) and solvent cement (ASTM F493) per ASTM D2855 or integrally-formed bell and spigot gasketed connections with elastomeric seals (gaskets) meeting the requirements of ASTM F477.

2. Corrugated Polyethylene Pipe: AASHTO M252 Type SP (Double Wall).

a. Perforations: Class 2 slotted perforations per AASHTO M252. Perforations shall be uniformly spaced along the length and circumference of the pipe.

b. Joints: Joint: Silt-tight, ASTM D3212.

2.6 JOINT LUBRICANT

A. As specified by pipe manufacturer, ANSI/AWWA C111/A21.11.

2.7 CATCH BASINS

A. Reinforced precast concrete base, sump, transition, riser, corbel, and top: ASTM C913 for precast rectangular catch basins, ASTM C478 for precast circular catch basins. Type, construction, and dimensions as indicated on the Drawings.

1. Concrete: 4,000 psi minimum, 4%–7% entrained air.

2. Reinforcement: ASTM C890. Steel bars, ASTM A615. Welded-wire fabric, ASTM A185. Additional reinforcing at openings.

3. Precast sections shall consist of smooth sections in standard nominal inside diameters. All precast concrete sections shall be free from cracks, damaged joints, exposed reinforcing, aggregate pockets, spalls, and dimensional distortions or other irregularities. Lifting holes shall be filled with mortar, or other approved material.

4. Openings or “knockouts” in precast units shall be located as shown on the Drawings and to accommodate the inflow and outflow pipe orientation required. Openings shall be sized sufficiently to permit passage of the largest outside dimension of pipe or fittings.

Prior to ordering precast manhole bases, all angles between incoming pipes are to be field checked to incorporate possible line changes required in the field layout.

B. Gaskets for joints between sections: Butyl rubber, ASTM C443.

C. Grade Rings: ASTM C478, precast reinforced concrete, 1-inch to 4-inch thickness, dimensions to match basin and top section.

D. Frame and Grate.

1. Cast iron: AASHTO M 105, Class 25 for frames and Class 30 for grates.

2. Cast steel: ASTM A27, Grade optional, thoroughly annealed.

3. Structural Steel: ASTM A36, or A283, Grade B or better, as to quality and details of fabrication, except that in the chemical composition of the steel, the 2/10 of 1% of copper may be omitted.

4. Grate type: ConnDOT “Type A” unless otherwise specified.

5. Covers and gratings shall bear uniformly on their supports.

6. Frame and grate shall be galvanized, ConnDOT Form 818 M.06.03. Cast Iron frames and grates shall not be galvanized.

2.8 YARD DRAIN/AREA DRAIN

A. Configured as indicated on the Drawings. Precast concrete.

B. Frame and Grate: Ductile iron as an integral part of the surface drainage inlet and furnished by the same manufacturer of the drain, frame and grate set manufactured for use on PVC pipe, or insert-type grate manufactured for use on PVC pipe.

1. Grates for drain basins shall be capable of supporting H-20 wheel loading for traffic areas or H-10 loading for pedestrian areas.

2. 12” and 15” square grates will be hinged to the frame using pins. Metal used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05 for ductile iron.

3. Grates shall be provided painted black.

2.9 CONCRETE MANHOLE

A. Precast concrete manhole risers, base sections, and tops: ASTM C478. Precast manhole sections shall consist of smooth circular sections in standard nominal inside diameters. All precast concrete manhole sections shall be free from cracks, damaged joints, exposed reinforcing, aggregate pockets, spalls, and dimensional distortions or other irregularities. Lifting holes, when provided, shall be filled with mortar, or other approved material.

1. Concrete: 4,000 psi minimum, 4%–7% entrained air.

2. Diameter: 48 inches unless otherwise indicated.

3. Base and first riser: Monolithic and built to the dimensions and requirements indicated on the Drawings.

    a. Bottoms shall be integrally cast unless specialty bases at points of connection to existing piping ("Dog-House") is indicated on the Drawings or otherwise proposed for use. Unless indicated on the Drawings, any special bases or riser used must be detailed in shop drawings and submitted for approval.

4. Riser sections: As required to provide depths indicated.

5. Top Section: Concentric-cone type, unless eccentric-cone or flat-slab-top type is indicated. Cones shall have the same wall thickness and reinforcement as riser sections. If required or called-for, flat slab shall be a minimum of 8 inches thick designed to carry AASHTO H-20 loading with one foot cover and conform to ASTM C478.

6. External damp-proofing: Asphalt, ASTM D449, Type A.

7. Openings or "knockouts" in precast units shall be located as shown on the Drawings and to accommodate the inflow and outflow pipe orientation required. Openings shall be sized sufficiently to permit passage of the largest outside dimension of pipe or fittings. Prior to ordering precast manhole bases, all angles between incoming pipes are to be field checked to incorporate possible line changes required in the field layout.

B. Gaskets for joints between manhole sections: Butyl rubber, ASTM C443.

C. Grade Rings: ASTM C478, precast reinforced concrete, 1 inch to 4 inch thickness, diameter to match manhole and frame.

D. Mortar: Packaged, ASTM C387 or as Specified in Section 033200—Site Cast-in-Place Concrete.

E. Frame and Cover: Ductile Cast Iron, ASTM A536, Grade 60-40-18.

F. Frame and Cover: Grey Cast Iron, ASTM A48, Class 25B (Frame) and Class 30B (Covers), uncoated.

1. Cover: 26 inch diameter, non-vented with non-penetrating pickholes. Unless otherwise detailed or indicated, covers shall be cast with 1½ inch wide, raised letters, indicating "STORM SEWER" unless other lettering is called-for.

2. Frame and cover shall be supplied as a pair from the same manufacturer. Castings shall be of tough, even-grained iron, free from scale, lumps, blisters, sand-holes and other injurious defects, and of the size and type shown on the Drawings. Frames and covers shall have machined bearing surfaces to seat firmly and prevent rocking and rattling

under traffic loads. Before leaving the foundry, castings shall be thoroughly cleaned, subjected to hammer tests for soundness and given two coats of coal tar pitch varnish.

G. Resilient connectors for joints between manhole and pipes entering manhole: Continuous boot of ⅜ inch minimum thickness neoprene, ASTM C923 or ASTM C990. Boots shall be either cast into the manhole wall or installed into a cored opening using internal compression rings. Installed boot shall result in a water-tight connection meeting the performance requirements of ASTM C443.

H. Manhole Steps: ASTM C478 and OSHA 29 CFR 1910.27, drop front or equivalent. Steps shall be nine inches in depth and at least twelve inches in width with an abrasive step surface.

1. [Cast Aluminum Alloy: Aluminum alloy, 6061-T6, tensile 38,000 psi, yield 35,000 psi. Drop front design with upturned embedded ends. All parts of aluminum steps to be embedded in concrete or masonry shall be coated with bituminous paint or zinc chromate primer.]

2. [Composite Plastic-Steel: One-half (½) inch deformed steel reinforcing rod, ASTM A615, Grade 60, encapsulated in a co-polymer polypropylene plastic, ASTM D2146, Type II, Grade 16906.]

3. Steps shall be placed in vertical alignment as indicated on the Drawings. Steps shall be uniformly spaced not more than sixteen inches (16”) on center, including the spacing between the top step and the manhole cover. Steps shall be embedded in the wall a minimum distance of 4 inches in either cast or drilled holes. Steps shall not be driven or vibrated into fresh concrete and shall withstand a pullout resistance of 2000 lbs when tested in accordance with ASTM C497. Each step shall project a minimum of 5 inches from the wall measured from the point of embedment.

2.10 DROP MANHOLE

A. Drop inlet shall be constructed with ductile iron gravity pipe laid in undisturbed soil in conformance with ASTM A746-82. Adapt to PVC with Fernco coupling or approved equivalent.

B. Vertical drop pipe shall be 8", 10", or 12" maximum SDR 35 PVC with 90 degree short bend radius shall conform to ASTM D3034.

C. Vertical drop pipe shall be anchored a minimum of every 4 feet with ⅛" x 1½" type 304 stainless steel pipe straps set as ordered with lag bolts and shields.

2.11 MASONRY UNITS

A. Brick: ASTM C32 Grade MS or ASTM C62 Grade SW.

B. Concrete block: Solid block, ASTM C139.

2.12 MORTAR

A. Mortar: ASTM C387.

1. Portland Cement: ASTM C150, Type I.

2. Sand: ASTM C144.

3. Hydrated Lime: ASTM C207.

4. Water: Potable.

5. Mix proportions for manhole rims and covers: 1 part portland cement, 2 parts sand, and ¼ part hydrated lime by dry volume. Hydrated lime shall not exceed 10 percent by weight of the total dry mix. Quantity of water in mixture shall be sufficient to produce a stiff, workable mortar, but in no case shall exceed 5½ gallons of water per sack of cement.

6. Mix Proportions for invert construction: 1 part portland cement and 2 parts sand by volume. Quantity of water in mixture shall be sufficient to produce a stiff, workable mortar, but in no case shall exceed 5½ gallons of water per sack of cement.

2.13 STORMWATER TREATMENT UNIT

A. Stormwater Treatment Units shall be hydrodynamic separators made of precast concrete sections and shall have the capacity and dimensions indicated on the Drawings. Treatment units shall be Vortechs→, as manufactured by CONTECH Stormwater Solutions, Scarborough, Maine (877-907-8676); Stormceptor® by CSR—Farmington, CT (860-677-1374); or approved equivalent.

B. Units shown on the Drawings have been sized to meet specific criteria as indicated. Contractor shall submit only those units that are sized and manufactured to meet such criteria as shown with the details and/or listed below:

1. Unit 1

a. Conveyed flow = xxxxxx c.f.s. (total flow to the treatment system)

b. Treated flow = xxxxx c.f.s. (total flow actually subjected to treatment)

c. Removal efficiency particle size = maximum of 100 microns

d. Evidence of Independent Third Party field testing

e. Evidence of full scale laboratory testing

f. Minimum removal of 80% Total Suspended Solids (TSS) for 1 inch of rainfall on the impervious surfaces within its drainage area.

C. Precast Sections: portland cement shall be Type II, ASTM C150, 4,000 psi minimum.

D. Loading requirements:

1. H-20 loading, manhole riser with frame and cones, plus the weight of soil above.

2. Weight of precast concrete structure.

3. Initial handling and erection loadings.

E. Construction joints shall be sealed with a butyl rubber based sealant.

F. Manhole riser sections, manhole steps, frames and covers shall be as detailed on the Drawings.

2.14 BEDDING

A. Bedding for concrete and PVC pipes: Bedding, Haunching and Initial Backfill shall consist of screened gravel, maximum size ¾ inches and minimum size ⅜ inches.

B. Bedding for HDPE pipes: Bedding, Haunching and Initial Backfill shall consist of ConnDOT No. 6, No. 67, or No. 8 aggregate, or other materials meeting the requirements of ASTM D2321 for Class IA, Class IB, Class II, or Class III unless otherwise specified by the pipe manufacturer.

C. Bedding for Catch Basins: Screened Gravel or Crushed Stone, well graded in size from ¾ inch to ⅜ inch consisting of clean, hard, and durable fragments. No limestone shall be permitted.

PART 3 EXECUTION

3.1 PIPE INSTALLATION

A. As soon as the excavation is completed to the normal grade of the bottom of the trench, the Contractor shall immediately place the bedding material in the trench. Then the pipe shall be firmly bedded in the compacted bedding material to conform accurately to the lines and grade indicated on the Drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions.

1. Concrete pipe shall be installed per ASTM C1479, as may be modified by the pipe manufacturer's instructions.

2. HDPE pipe shall be installed per ASTM D2321, as may be modified by the pipe manufacturer's instructions.

C. Notch under pipe bells and joints, where applicable to provide for uniform bearing under entire length of pipe.

D. Excavation, backfilling and compaction shall be as specified in Section 312310—Earthwork of these Specifications.

E. Maintain optimum moisture content of bedding material to attain required compaction density.

3.2 MANHOLES AND CATCH BASINS

A. Manholes and Catch Basins shall be constructed at the locations and to the lines, grades and dimensions noted on the Drawings, or as required.

B. Precast concrete construction shall be done in a manner to insure watertight construction and all leaks in precast concrete shall be sealed. If required, precast concrete shall be repaired or replaced to obtain watertight construction.

C. Concrete barrels and cones shall be precast concrete sections.

1. Bases shall be either precast with a barrel integrally cast with the base, or poured concrete suitably shaped by means of accurate bell-rung forms to receive the barrel sections. Manhole invert channels in manholes shall be formed in concrete.

2. Precast manholes shall have an adjustment ring at the top of the cone to permit the frame and cover to meet the finished surface. This shall consist of courses of brick or reinforced grading rings not to exceed 11 inches.

D. Stubs shall be short pieces cut from the bell ends of the appropriate size and class of pipe. Concrete stubs shall be plugged with brick masonry unless otherwise directed.

E. Manhole inverts shall conform accurately to the size of the adjoining pipes.

1. Manhole inverts shall be constructed of concrete developing 3,500 psi with the concrete being placed to the spring line of the pipe form.

2. Smooth plastic pipe, matching the dimension of the outlet pipe, shall be used to form the invert.

3. Side inverts and main inverts, where the direction changes, shall be laid out in smooth curves of the longest possible radius, which is tangent, within the manhole, to the centerline of adjoining pipelines.

4. Invert shelves shall be graded to provide a 1-inch per 1-foot wash from the manhole walls.

F. Manhole sections shall contain manhole steps accurately positioned and embedded in the concrete when the section is cast. Precast-reinforced concrete manhole sections shall be set so as to be vertical and with sections and steps in true alignment.

G. All holes in sections used for their handling shall be thoroughly plugged with rubber plugs, made specifically for this purpose, or with mortar. The mortar shall be one part cement to 1½ parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

H. The Contractor may, as an alternate to suitable nonshrink mortar joints, use premolded elastomeric-sealed joints for pipe into precast manhole bases.

1. All materials, accessories and construction methods used in making the joints shall be supplied or approved by the manufacturer of the premolded elastomeric-sealed joint.

I. Openings for pipe and materials to be embedded in the walls of the base for these joints shall be cast in the base at the required locations during the manufacturer of the base. Incorrectly cast and patched pipe openings will be rejected.

J. Manhole risers and tops shall be installed using approved "o-ring" type, neoprene gaskets for sealing joints. Units shall be installed level and plumb. Water shall not be permitted to rise over newly made joints nor until after inspection as to their acceptability. All jointing shall be done in a manner to insure water tightness.

K. Openings shall be provided in the risers to receive entering pipes. These openings may be made at the place of manufacture. The openings shall be sized to provide a uniform 1 inch maximum annular space between the outside of the pipe wall and the opening in the riser. After the pipe is in position, the annular space shall be solidly filled with nonshrink mortar. Care shall be taken to assure that the openings are located to permit setting of the entering pipe at its correct elevation as indicated.

L. Openings, which are cut in the risers in the field, shall be carefully made by coring so as not to damage the riser. Damaged risers will be rejected and shall be replaced at no additional expense to the Owner.

M. Where required by the Drawings, a slot and opening shall be cast in the catch basin wall suitable for mounting the cast iron hood and discharge pipe. The hood hinge may be furnished

to the precast supplier by the Contractor for incorporation into the casting during manufacture.

3.3 BRICK MASONRY

A. Brick Masonry Construction shall be done in a manner to insure watertight construction and all leaks in brick masonry shall be sealed. All workmanship shall conform to the best standard practice and all brick masonry shall be laid by skilled workmen.

B. All beds on which masonry is to be laid shall be cleaned and wetted properly. Brick shall be wetted as required and shall be damp but free of any surface water when placed in the Work. Bed joints shall be formed of a thick layer of mortar, which shall be smoothed or furrowed slightly. Head joints shall be formed by applying to the brick to be laid a full coast of mortar on the entire end, or on the entire side as the case requires, and then shoving the mortar covered end or side of the brick tightly against the bricks laid previously. The practice of buttering at the corners of the brick and then throwing the mortar or crappings in the empty joints will not be permitted. Dry or butt joints will not be permitted. Joints shall be uniform in thickness and shall be approximately 1¼ inch thick.

C. Brickwork shall be constructed accurately to dimensions and brickwork at top of manholes shall be to the dimensions of the flanges of the cast-iron frames.

D. Joints on the inside face of walls shall be tooled slightly concave with an approved jointer when the mortar is thumbprint hard. The mortar shall be compressed with complete contact along the edges to seal the surface of the joints.

E. All castings to be embedded in the brickwork shall be accurately set and built-in as the Work progresses. Cast-iron frames and manhole covers shall be well bedded in mortar and accurately set to finished graded indicated or as directed.

F. Water shall not be allowed to flow against brickwork or to rise on the masonry for 60 hours after it has been laid, and any brick masonry damaged in this manner shall be replaced as directed at no additional expense to the Owner. Adequate precautions shall be taken in freezing weather to protect the masonry from damage by frost.

3.4 CONCRETE MASONRY UNITS

A. Concrete Masonry unit construction shall be soaked in water before laying. As circular concrete block walls are laid-up, the horizontal joints and keyways shall be flushed full with mortar. As rectangular blocks are laid-up, all horizontal and vertical joints shall be flushed full with mortar. Plastering of the outside of block structures will not be required. The joints in precast units shall be wetted and completely mortared immediately prior to setting a section. No structure shall be backfilled until all mortar has completely set.

3.5 MANHOLE STEPS

A. Placement of steps into the precast walls shall be by a proven method as recommended by the supplier of the precast manhole sections. Details of the steps and method of placement shall be submitted for approval.

B. Plastic steps shall be placed into the wet concrete wall during manufacture or if designed for press fit installation shall be driven into a wall opening according to the manufacturer's specifications. Steps shall not be mortared into place after the concrete has set.

C. All manholes, catch basins, lawn inlets, etc., which are in excess of five feet in depth, shall be constructed with standard aluminum steps, spaced at 12-inch on center.

3.6 DROP INLETS

A. Drop inlets shall be constructed to the lines, grades, dimensions and design at the locations indicated on the Drawings or as required.

B. Construction shall conform to requirements outlined in Section 033013—Site Cast-in-Place Concrete.

C. Engineer may permit brick or concrete masonry construction. If this alternate is being employed, construction shall be done in accordance with paragraphs 3.04 or 3.05 in this Section.

3.7 CASTINGS

A. Cast-iron frames for grates and covers shall be well bedded in cement mortar and accurately set to the grades indicated or as directed. The frames shall be encased with a thick cement-mortar collar around the entire perimeter of the frames.

B. All voids between the bottom flange shall be completely filled to make a watertight fit. A ring of mortar, at least one inch thick and pitched to shed water away from the frame shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.

C. Structures within the limits of bituminous concrete pavement shall be temporarily set at the elevation of the bottom of the binder course or as ordered. After the binder course has been compacted, these structures shall be set at their final grade. Backfill necessary around such structures after the binder course has been completed shall be made with Class A concrete unless otherwise ordered.

3.8 TRENCH DRAINS/SLOTTED DRAINS

A. Precast, pre-sloped trench drain metals, accessories, and installation methods shall be in accordance with the manufacturer's recommendations and the details shown on the Drawings.

B. Slotted drains shall be installed in accordance with the manufacturer's recommendations and the details shown on the Drawings.

C. Contractor shall furnish to Engineer the manufacturer's written instructions for installation prior to such installation.

3.9 STORMWATER TREATMENT UNIT

A. Stormwater Treatment Units shall be installed in accordance with the manufacturer's instructions.

B. Vaults shall be placed on a minimum foundation of 12 inches of gravel material. If groundwater is encountered, the foundation base shall be a minimum of 12 inches of crushed stone.

C. If precast sections are to be field assembled, adequate waterproofing shall be used at the joints.

D. Stormwater Treatment Units installed on interior floor drain discharges from parking garages shall have gasoline trapping capabilities in accordance with local and state regulations.

3.10 CLEANING

A. At the completion of the Work, clean all piping, structures and open drainage courses, through and to which water from this construction is directed, to the satisfaction of Engineer.

3.11 AS-BUILT DRAWINGS

A. Contractor shall be solely responsible for complying with the requirements of local permitting authorities for preparation and submittal of as-built drawings. The requirements for the preparation of as-built drawings as defined herein shall be considered the minimum requirements of Engineer, but shall in no way relive Contractor from satisfying the requirements of local permitting authorities.

B. As work progresses, record the following on two (2) sets of Drawings:

1. All changes and deviations from the design in location, grade, size, material, or other feature as appropriate.

2. Any uncharted locations of utilities or other subsurface feature encountered during installation, including the characteristics of such uncharted utility or subsurface feature such as utility type, size, depth, material of construction, etc.

C. Recording of changes shall be clearly and neatly marked in red pen or pencil. All changes shall be noted on the appropriate Drawing sheets.

D. Make measurements from fixed, permanent points on the Project Site to accurately locate the work completed. Such measurements shall consist of at least three (3) ties showing the distance of each item relative to each of the fixed, permanent points.

E. As-Built drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new construction. As-Built drawings shall also contain any additional information required by Engineer.

END OF DOCUMENT 33 4000

November 2, 2023

Mr. Dan Dryzgula
Project Manager
Friar Architecture, Inc.
21 Talcott Notch Road
Farmington, Connecticut 06032

RE: Pre-Renovation Hazardous Building Materials Inspection Report
Former St. Lucy's Church
24 Branch Street
Waterbury, Connecticut
Eagle Project No. 23-080.13T1

Dear Mr. Dryzgula:

Please find the report for the hazardous building materials inspection conducted at the Former St. Lucy's Church located at 24 Branch Street in Waterbury, Connecticut (Site). The scope of services included an asbestos-containing materials inspection, a lead-based paint screen, lead waste characterization sampling and analysis, and an inspection for universal waste materials.

The inspection was performed to support the renovation of the building.

Please do not hesitate to contact us if you have any questions regarding the contents of this report.

Sincerely,
Eagle Environmental, Inc.

Report Prepared By:
Chris Liberti
Vice President of Operations

Report Reviewed By:
Jason Eberhard
Senior Project Manager

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1. INTRODUCTION

On October 17, 2023, Eagle Environmental, Inc. (Eagle) conducted a hazardous building materials inspection of the Former St. Lucy's Church located at 24 Branch Street in Waterbury, Connecticut (Site). The scope of the hazardous building materials inspection included an asbestos-containing materials inspection, a lead-based paint screen, lead waste characterization sampling and analysis, and an inspection for universal waste materials. The inspection was performed to support the renovation of the building from a former church into the Waterbury Community Health Center.

1.1 Building Description

The subject building located at 24 Branch Street is an elevated single-story structure of block construction. The structure was built in 1900 for use as a church. The building has a full finished basement. The mechanical equipment consists of a gas fired hot water baseboard system with wall mounted radiators. The mechanical system distribution system is insulated. The basement piping is exposed and all risers are contained within the walls on the floor above. The boiler is located in the mechanical room within the basement of the structure. The interior walls are a combination of concrete, two-coat plaster on wire mesh construction, painted masonry block, and marble. The ceilings consist mainly of 1'x1' acoustical ceiling tiles glued to suspended sheetrock systems and sheetrock and joint compound systems coated with textured ceiling paint. The window frames and sashes are of metal construction. The door frames are metal with wood and metal doors. The floors are finished with various resilient flooring finishes including vinyl floor tiles on the ground floor, terrazzo on the first floor, ceramic tile in the bathrooms, and bare concrete in the mechanical rooms. The exterior facades are clad with brick. The main roof is pitched and consists of two (2) layers of asphalt shingles. The flat roofs are located at the rear of the building and over the side entry doors. The flat roofs are covered by a rubber roof membrane that was not penetrated during this inspection.

2. SCOPE OF INSPECTION

The inspection included asbestos-containing materials, lead-based paint, and a visual inspection for universal waste materials. This inspection focused on the accessible interior spaces as well as the roofing systems and exterior suspect materials associated with the main church building. The adjacent parish building was not included with the inspection. The inspection was semi-destructive but did not include opening up walls or ceilings for inspection of interstitial spaces; existing holes in walls and ceilings were examined where feasible. To the best extent feasible, a reasonable effort was made to determine the presence or absence of suspect materials within concealed spaces.

2.1 Asbestos Containing Materials

The asbestos inspection was conducted in order to satisfy the United States Environmental Protection Agency (USEPA) National Emission Standard for Hazardous Air Pollutants Act (NESHAP) as amended November 20, 1990. The USEPA NESHAP final rule requires the identification and removal of all regulated asbestos-containing materials (ACM) in an area of renovation prior to renovating the area if the renovation work will impact the ACM.

The asbestos inspection was performed by Angelo Folino; a State of Connecticut Department of Health (CT DPH) licensed Asbestos Inspector (license #001163).

2.2 Lead-based Paint

2.2.1 X-Ray Fluorescence Screen

The lead-based paint (LBP) screen was performed in accordance with the requirements of the State of Connecticut, Department of Energy and Environmental Protection (DEEP), Guidance for the Management and Disposal of Lead Contaminated Materials Generated in the Lead Abatement, Renovation and Demolition Industries. The DEEP regulates the disposal of hazardous lead waste in the State of Connecticut. Lead-contaminated debris, not contaminated with other hazardous materials, is classified either as hazardous lead waste or as non-hazardous solid waste.

Additionally, the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) regulates lead dust exposure to workers in the construction industry under 29 CFR 1926.62 Lead in Construction.

The lead-based paint screen was performed by Michael Stewart; a CT DPH licensed Lead Inspector/Risk Assessor (license #002115).

2.2.2 Lead Waste Characterization

DEEP regulates the disposal of hazardous waste. The required analytical test to determine a materials waste classification is the Toxicity Characteristic Leachate Procedure, or TCLP (Regulation of State DEP 22a-449© - 101 (a) (1), incorporating 40 CFR 262.24). Eagle anticipated collecting samples of building materials for lead waste characterization.

2.3 Universal Waste Materials and Other Environmental Concerns

2.3.1 Polychlorinated Biphenyls (PCB) and Di-ethylhexlpthalate (DEHP) Containing Items

PCB and DEHP lighting ballasts and electrical equipment, including capacitors and switches that contain PCBs, are regulated under the Toxic Substances Control Act of 1976 (TSCA) which bans the manufacturing and distribution of PCBs and regulates their storage and disposal.

PCBs and DEHP can be found in a number of items, including lighting ballast and electrical equipment, including capacitors and switches. DEHP and PCB-containing items such as these must be managed and disposed of in accordance with special requirements. A visual inspection for PCB and DEHP containing items was performed at the Site building.

2.3.2 Mercury Containing Items

Fluorescent lamps, thermostats, mercury switches, manometers, natural gas meters and other items can contain enough mercury to be classified as a special waste, and therefore may not be disposed of as regular construction debris. The mercury and mercury vapors associated with these products must be reclaimed prior to disposal or recycling of the products. A visual inspection for the presence of fluorescent lamps, thermostats and switches potentially containing mercury was performed at the Site building.

2.3.3 Used Electronics and Batteries

Used electronics and batteries may contain enough lead, mercury, cadmium or acid electrolytes to be classified as universal waste. In such cases, they may not be disposed of as regular construction debris. A visual inspection for the presence of used electronic devices was performed at the Site building.

2.3.4 Chlorofluorocarbons

Freon gas includes a number of gaseous, colorless chlorofluorocarbons (CFCs) that are commonly used as refrigerants. Freon is listed as a controlled substance by governments around the world. In the United States, the USEPA regulates the emission of Freon gas into the atmosphere due to its ozone depleting capabilities. Through Title VI, Stratospheric Ozone Protection, of the Clean Air Act Amendments of 1990, the USEPA regulates Freon gas and requires mandatory recycling and a ban on the intentional venting or releasing of refrigerants during maintenance, service and or repair. A visual inspection for the presence of building materials potentially containing Freon was performed at the Site building.

3. INSPECTION PROTOCOLS

3.1 Asbestos Containing Materials

3.1.1 Inspection

The ACM inspection included the accessible interior and exterior portions of the building including the roofing systems. Semi-destructive testing techniques were utilized during the inspection process. This included cutting through various layers of flooring and roofing materials to verify and sample individual layers of suspect ACM where feasible. Suspect building materials that are inaccessible for inspection and sampling are assumed to be ACM for the purpose of this report. These suspect materials are generally located in operational equipment, behind rigid walls and ceilings, below rubber roof membranes or otherwise concealed areas of the building, including below grade materials.

During the inspection, suspect materials are located, sampled, quantified and the friability of the material is determined. Friable materials are those materials that hand pressure can crumble, pulverize or reduce to powder when dry. An estimated quantity of identified ACM is provided for positive materials only. The materials are quantified in linear or square feet, depending on the nature of the material.

3.1.2 Bulk Sampling

During the sampling process, suspect ACM is separated into three (3) USEPA categories. These categories are: Thermal System Insulation (TSI), Surfacing Materials (SURF) and Miscellaneous materials (MISC). TSI includes all materials used to prevent heat loss or gain or water condensation on mechanical systems. Examples of TSI are pipe covering, boiler insulation, duct wrap and mudpack fitting cement. Surfacing ACM includes all ACM that is sprayed, toweled or otherwise applied to an existing surface. These applications are most commonly used in fireproofing, decorative and acoustical applications. Miscellaneous materials include all ACM not listed in thermal or surfacing, such as linoleum, vinyl asbestos flooring and ceiling tile.

Bulk sampling was performed in a random method. Bulk sampling methods and number of samples collected meets or exceeds the USEPA requirements.

3.1.3 Bulk Sample Analysis

The samples of the suspect asbestos containing materials were sent to a CT DPH approved laboratory for analysis by Polarized Light Microscopy (PLM). PLM is the USEPA accepted method of analysis for identification of asbestos in bulk matrices. Samples are collected individually or in sets. When sets of samples are collected, each set is systematically analyzed until one sample is determined to contain asbestos. Upon the determination of the presence of asbestos in one sample in the set, analysis of the remaining samples in the set is discontinued. If no asbestos is observed during analysis of the set of samples, the suspect material is determined to be negative for asbestos content.

Sample analysis results are reported in percentage of asbestos and non-asbestos components. The USEPA defines any material that contains greater than one percent (>1%) asbestos, utilizing PLM, as being an ACM. CT DPH defines any material containing equal to or greater than one percent (≥1%) as being ACM. Suspect materials containing greater than one percent (>1%) asbestos utilizing the PLM Point Count Method and the NOB TEM method are also considered to be asbestos-containing. Materials determined to contain greater than one percent (>1%) asbestos are regulated by the USEPA, CT DPH and DEEP and the United States Department of Labor. Sample results indicating "no asbestos detected" (NAD) are specified as non-asbestos containing materials. Samples results indicating "Did Not Analyze" (DNA) are not analyzed due to the stop on first positive request to the laboratory.

3.1.3.1 Friable ACM Analysis

Certain samples of friable materials shown to contain less than ten percent (<10%) asbestos are analyzed further by the "Point Count Method". This procedure is recommended by the USEPA to confirm friable bulk samples shown to have less than ten percent (<10%) asbestos by PLM to be definitively negative or positive for asbestos. This method is accepted as providing statistically reliable results when analyzing bulk samples with very low asbestos concentrations. Friable materials containing "Trace" or "less than one percent (<1%)" asbestos must be analyzed by the PLM Point Count Method. None of the samples were further analyzed by the PLM Point Count Method.

3.1.3.2 Non Friable ACM Analysis

Certain samples of organically bound non-friable materials shown to contain "less than 1% asbestos", "TRACE" or "NAD" are recommended for analyses by the "NOB TEM ELAP 198.4 Method". This procedure is recommended by the United States Environmental Protection Agency to further evaluate non-friable organically bound materials for asbestos. Suspect materials confirmed by NOB TEM to be "less than one percent (<1%) asbestos", "TRACE" or "NAD" are considered non-asbestos containing. A total of two (2) samples were further analyzed by the NOB TEM Method.

3.2 Lead-based Paint

3.2.1 X-Ray Fluorescence Screen

The lead-based paint screen was performed utilizing an X-Ray Fluorescence (XRF) Radiation Monitoring Device (RMD) Lead Paint Analyzer (LPA 1), serial number 3611 within the limits of the inspection area(s). The screen includes only accessible areas within the inspection area(s) and accessible building materials.

The lead-based paint screen includes testing limited components and or surfaces throughout the structure. It is not the intent to test all painted components, but to identify on a broad scale the impact of lead paint as it relates to the disposal of lead paint contaminated debris and potential worker exposure issues. Generally, wall and ceiling surfaces, painted floors, window and door systems are tested. Other components such as baseboards, cabinets, columns, trim, etc. are tested on a limited basis. Component and surface locations are identified by side designations represented by the letters "A", "B", "C", and "D". The "A" side is considered the front of the building with the "B", "C", and "D" sides following in a clockwise order.

The data is presented on computer generated Lead Inspection Reports contained in Appendix C. The Summary Report provides an inventory of each surface coating that contains lead at or above 1.0 mg/cm². The Detailed Report is an inventory of each tested surface on a room-by-room basis.

For the purpose of this report, the XRF results are separated into two (2) categories; high levels of lead (≥1.0 mg/cm²) and low levels of lead (<1.0 mg/cm²). Building materials containing high levels of lead have a greater probability of creating worker exposures during construction than do building materials with low levels of lead. Additionally, lead waste characterization sampling is required for building materials containing high levels of lead (≥1.0 mg/cm²) and will become a waste product as a result of demolition or renovation activities.

OSHA regulates lead dust exposure to workers in the construction industry under 29 CRF 1926.62 Lead Exposure in Construction; Interim Final Rule. Currently, OSHA does not define a threshold level of lead in paint that may cause worker exposure. Any detectable level of lead in paint (>0.0 mg/cm² +/- 0.3 mg/cm² by XRF or ≥0.01 % by AAS) requires task specific exposure monitoring.

3.2.2 Lead Waste Characterization

The DEEP regulates the disposal of hazardous waste. The required analytical test to determine a materials waste classification is the Toxicity Characteristic Leachate Procedure, or TCLP (Regulation of State DEEP 22a-449© - 101 (a) (1), incorporating 40 CFR 262.24).

The TCLP test subjects a 100-gram sample of waste material to a simulated landfill leaching condition, and assesses the ability of the sample to leach out lead into the environment. The waste is classified as hazardous lead waste if the TCLP sample result is greater than 5.0 mg/l of lead. The waste is classified as non-hazardous solid waste if the TCLP sample result is less than 5.0 mg/l of lead. Building debris containing equal to or greater than 1.0 mg/cm² of lead by XRF requires waste classification analysis.

There are two (2) primary approaches for TCLP sampling. Both methods utilize the data generated during the lead screen to determine which building materials contain lead in paint coatings and what percentage of the waste stream will consist of the leaded materials. The two (2) basic approaches are described below.

Screen, Sample, and Segregate Method

The Screen, Sample, and Segregate method of TCLP sampling is conducted in accordance with the DEEP Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation, and Demolition Industries. This method entails screening the building components scheduled to be removed with an XRF lead paint analyzer. Components that are determined to be lead containing are sampled and analyzed by TCLP based on their contribution into the waste stream. The waste stream is made up of those building components that will be removed from the structure as part of the renovation or demolition process and will become a waste product.

Sample and Demolish Method

The Composite Sample and Demolish Method of TCLP sampling is conducted in accordance with the DEEP Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation and Demolition Industries. This method utilizes composite samples to assess the total amount of leachable lead of the entire quantity of debris to be removed. This sampling method is best utilized for whole building demolitions where the quantity of non-lead debris is expected to be much greater than that of the leaded debris. The first step in the sampling process requires the inspector to identify the potential waste stream of the structure to be demolished. The waste stream is made up of those building components that will be disposed of once the structure is demolished. The inspector calculates the mass by weight of each group of building components within the building (i.e. studs, framing, sheathing, siding, doors, windows, etc.). The lead testing results enables the inspector to determine the percentages of components, within each group, that contain lead. With this information, the inspector can than calculate the percent by weight contribution of each components contribution into the waste stream. This takes into account the ratio of leaded components verse non-leaded components within each group.

3.3 Universal Waste Materials and Other Environmental Concerns

3.3.1 PCB and Di-ethylhexlpthalate (DEHP) Containing Items

A visual inspection for the presence of lighting ballasts and electrical equipment potentially containing PCB's or DEHP was performed within the inspection areas. Lighting ballasts and oil-filled capacitor manufactured after 1979 may have "NO PCB's" stamped on its casing. These are filled with oil which does not contain PCB's but may contain DEHP. Lighting ballasts and Capacitors with date stamps prior to 1979 or no date stamps are assumed to contain PCB's. Lighting ballasts and capacitors labeled as "No PCB's" are assumed to contain DEHP if the date stamp is illegible or non-existent. Electronic ballasts are not assumed to contain PCB's or DEHP.

3.3.2 Mercury Containing Items

During the visual inspection process, fluorescent, metal halide and sodium lamps are assumed to contain mercury vapors. Thermostatic controls, switches, manometers, capacitors and other used electronic components are inventoried during the inspection process.

3.3.3 Used Electronics and Batteries

An inventory of used electronics that may fall under the Universal Waste regulations was developed during the inspection. These materials include but are not limited to lead acid batteries in emergency lighting and exit signs and stored electronic equipment that may contain hazardous or regulated substances. Electronic components such as computers, copy machines, etc that are in use at the time of the inspection are generally not included in the inventory.

3.3.4 Chlorofluorocarbons

Eagle inspected the building for compressor tanks associated with water fountains, portable air conditioning units, the indoor environmental cooling system and walk-in coolers or freezers where applicable. The inspectors also inspected rooftop HVAC units where present. These tanks are all assumed to contain Freon. The size and quantity of tanks are estimated and recorded.

4. INSPECTION RESULTS

4.1 Asbestos Containing Materials

During the course of the building inspection one hundred seventy-five (175) bulk samples of suspect ACM were collected and one hundred forty (140) samples were analyzed by PLM based on the “stop on first positive” request to the laboratory. Additionally, there were two (2) samples analyzed by the NOB TEM Method.

From the one hundred forty (140) samples analyzed, the following materials were found to be ACM:

- Black mastic (associated with 9”x9” floor tiles)
- Adhesive associated with 12” x 12” floor tile
- 12” x 12” Floor tile – white
- 9” x 9” Floor tile – tan
- 9” x 9” Floor tile – green
- 9” x 9” Floor tile – red
- Glue daubs associated with 1’ x 1’ ceiling tile – brown
- 1’ x 1’ Ceiling tile – fissure, white
- 1’ x 1’ Decorative ceiling tile
- 1’ x 1’ Ceiling tile – large pin hole, white
- Mudded fitting cement associated with fiberglass pipe insulation
- Door frame caulk – grey
- Mud insulation at black pipe wall entrance
- Interior door frame caulk – yellow
- Bottom layer caulk at metal step flashing – soft, white
- Brittle caulk at metal step flashing – pale, white (verticals, horizontals)
- Top layer caulk at metal step flashing – white (verticals)
- Interior gutter liner tar
- Tar on bottom layer asphalt shingles at gutter edge flashing
- Window glazing compound debris – on floor (mezzanine)

- Tar on CMU at floor to closet – black
- Caulk at seams and edges of fiber board
- Thin tar on CMU walls – black
- Window caulk – brittle, white
- Window caulk – rubbery, white

Additionally, the following suspect materials were inaccessible during the inspection and have been assumed to be asbestos-containing:

- Interior boiler components
- Valve packings
- Valve gaskets
- Roof fields under rubber membranes
- Flashing cement at parapets and roof wall junctions under rubber membrane
- Vapor paper under bottom layer of asphalt roof shingles

Within all of the rooms with vinyl flooring, the bottom layer of black mastic associated with the 9”x9” floor tiles was identified on the concrete floors and was determined to be asbestos-containing. The remaining samples of flooring and associated adhesives applied on top the black mastic were included in the group of samples marked as a set with the black mastic on the chain of custody. Once the black mastic was identified as ACM, the remaining flooring materials included in the set were not analyzed based on the “stop on first positive” request to the laboratory. The floor tiles cannot be removed without disturbing the asbestos containing adhesive below. Therefore, the asbestos contaminated flooring materials, including all 9”x9” floor tiles, 12”x12” floor tiles, and the 12”x12” floor tile adhesive, have been included as ACM.

The ceilings throughout most of the building consist of 1’x1’ acoustical ceiling tiles glued to a suspended sheetrock ceiling system. The sheetrock, glue daubs, and three (3) types of ceiling tiles were included in a single set on the chain of custody. The sheetrock was confirmed to be non-asbestos but the glue daubs were confirmed to be ACM. Once the glue daubs were identified as ACM, the remaining samples of ceiling tiles included in the set were not analyzed based on the “stop on first positive” request to the laboratory. The ceiling tiles cannot be removed without disturbing the asbestos containing glue daubs adhering them to the sheetrock. Therefore, the asbestos contaminated ceiling tiles have been included as ACM. Three (3) samples of the glue daubs were analyzed and confirmed to be ACM by the PLM analysis. One (1) sample was additionally analyzed by the NOB TEM analysis and confirmed to contain 0.49% chrysotile asbestos.

On the main roof, the bottom layer of soft white caulk surrounding the metal step flashing was determined to be asbestos-containing. Two (2) additional caulks were applied on top the original caulk and were included in the group of samples marked as a set on the chain of custody. Once the bottom layer of caulk was identified as ACM, the remaining caulks included in the set were not analyzed based on the “stop on first positive” request to the laboratory. The top layers of caulk cannot be removed without disturbing the asbestos containing caulk underneath. Therefore, the asbestos contaminated caulks have been included as ACM. The step flashing and caulks have been identified where the two (2) hip-roofs meet the main roof and at the base of the bell tower.

The mudded fitting cement associated with fiberglass pipe insulation was confirmed to be ACM. The fitting cement was exposed in several rooms within the lower level and has been assumed to be present behind select walls and above suspended sheetrock ceilings. The walls and ceilings were not impacted based on the limitations of the inspection; an estimated number of fittings has been assumed within these rooms.

The first sample of the bottom layer of asphalt shingles within a set of two (2) samples was initially identified as ACM by PLM analysis. The NOB TEM analyses confirmed this sample to be non-asbestos. The PLM analysis of the second sample in the set was confirmed to be non-asbestos. The shingles have been confirmed to be non-asbestos.

Interior window glazing compound debris identified on the mezzanine was confirmed to be ACM. The window glazing compound debris was identified in several piles on the floor of the mezzanine and within metal tracks where an inner window system had been removed from the existing window openings. Due to the presence of damaged regulated asbestos, an Alternative Work Practice (AWP) will be required to facilitate the decontamination and abatement of the window glazing debris on the mezzanine. AWPs are variances submitted by a licensed Asbestos Designer to the CT DPH to request a site-specific variance in the Asbestos Abatement Standard. AWPs are variances that the CT DPH will issue on a case-by-case basis that enables the abatement contractor to modify their abatement procedures to accommodate site-specific conditions.

The thin tar on the interior face of CMU block walls exposed within the attic was confirmed to be ACM. The tar was also observed behind the plaster walls within the main chapel (Room 1-17) and is presumed to be present on all first floor and upper level perimeter masonry walls to the building. If the plaster and marble surrounds will be removed from the walls, the tar on the CMU may be impacted. Additional investigation of the walls may be required to confirm the locations and the impact on the ACM if the overlying components will be removed.

Several suspect materials were assumed to be ACM. At the time of the inspection, the heating system was still operational preventing access to the interior of the boiler and inspection of the associated piping for gaskets and packing materials. The roofs were in good condition and were not penetrated to maintain a weather tight covering to the building. Older roof fields and flashing cements have been assumed to be present under the rubber roof membrane covering the three (3) flat roofs associated with the building. Additionally, there was no feasible access under the bottom layer of asphalt shingles on the Main Roof without penetrating all layers of the intact roof shingles and causing irreparable damage. If these suspect materials will be impacted during the renovation activities, the materials must either be sampled for asbestos or removed and disposed of as ACM.

The remaining suspect materials that were sampled during the inspection were confirmed to be non-ACM.

The summaries of asbestos and non-asbestos materials are presented in Tables I and II respectively. The asbestos analysis laboratory reports are provided in Appendix B.

Any suspect material not specifically identified in this report as non-ACM should be assumed to contain asbestos unless sample results prove otherwise. Eagle recommends that a project specification for asbestos abatement be prepared to further clarify the type, location and quantity of ACM requiring abatement. This report is not intended to serve as a scope of work or technical specification for asbestos abatement.

All regulated friable and regulated non-friable ACM that will be impacted by the renovation project must be removed prior to or concurrently with renovation activities. A State of Connecticut licensed Asbestos Abatement Contractor must be retained to perform the removal work. Visual inspections and air clearances must be performed within each abatement area at the completion of the abatement work. The visual inspections and air clearances must be performed by a State of Connecticut licensed Asbestos Project Monitor. Each abatement area must meet final visual and air clearance inspection criteria prior to being re-occupied.

State of Connecticut Regulatory Notification Requirements

The Asbestos Abatement Contractor must submit a notice of asbestos abatement to the CT DPH post marked or hand delivered ten (10) calendar days prior to the commencement of any asbestos abatement activities involving the abatement of greater than ten (10) linear feet or twenty-five (25) square feet of asbestos-containing materials. The asbestos abatement notification satisfies the CT DPH regulatory requirements for demolition notification. For asbestos abatement projects involving less than ten (10) linear feet or twenty-five (25) square feet of asbestos-containing materials or projects where no regulated asbestos-containing materials are identified, the facility owner or any person who will be conducting demolition must submit a demolition notification to the CT DPH post marked or hand delivered ten (10) days prior to the commencement of demolition activities.

United States Environmental Protection Agency Notification Requirements

As of December 14, 2017, the facility owner/operator must provide a notification of demolition and renovation under the USEPA National Emission Standard for Hazardous Air Pollutants (NESHAP) regulation 40 CFR Part 61 Subpart M. The facility owner must submit notification to the USEPA for all demolition projects ten (10) working days prior to all demolition projects, which fall under the NESHAP regulation regardless of the presence of asbestos-containing materials. The facility owner must also provide notification to the USEPA for all renovation project ten (10) working days prior to all renovation projects involving greater than one hundred sixty (>160) square feet or greater than two hundred sixty (>260) linear feet or thirty-five (35) cubic feet of regulated asbestos-containing materials.

State and federal notifications are completely independent of one another and both regulatory agencies must be notified when applicable.

4.2 Lead-based Paint

4.2.1 X-Ray Fluorescence Screen

A total of ninety-seven (97) XRF readings were collected during the lead-based paint screen of the building, including instrument calibration readings. From the ninety-seven (97) readings, four (4) surfaces or components were found to contain high levels of lead.

The general inventory of surfaces containing high levels of lead include the following surfaces:

Interior

- Rooms (018), (023), (029), (031) – metal door casings

During the inspection of the roofs, lead strip flashing was identified within the seams of the concrete parapet cap on the perimeter of the Flat Roof. Thirty-two (32) seams were identified. If the lead strips will be removed from the concrete cap, the lead must be recycled in an appropriate facility.

Additionally, several building materials were determined to contain low levels of lead in paint. Although these levels of lead in paint were less than 1.0 mg/cm^2, the contractor must perform an exposure assessment on employees during tasks that disturb the painted materials.

The remaining components and surfaces that were tested contain no lead in their respective paint coatings.

OSHA regulates lead dust exposure to workers in the construction industry under 29 CFR 1926.62 Lead Exposure in Construction; Interim Final Rule. Currently, OSHA does not define a threshold level of lead in paint that may cause worker exposure. Any detectable level of lead in paint (>0.0 mg/cm^2 +/- 0.3 mg/cm^2 by XRF or >0.01 % by AAS) requires task specific exposure monitoring. This "initial exposure assessment" must be conducted by trained workers utilizing appropriate personal protective equipment. Exposure assessments must be conducted for each task where painted surfaces or components are disturbed.

Examples of task subject to initial monitoring when detectable levels of lead are identified include but are not limited to surface preparation for repainting, manual demolition of components with detectable levels of lead paint and the welding, cutting or grinding of steel with detectable levels of lead in paint.

A complete inventory of tested building materials is presented in Detailed Reports contained Appendix C.

4.2.2 Lead Waste Characterization Results

Lead waste characterization was not performed since the lead-based paint screen only identified metal door casings to be coated with lead-based paint. If the metal door casings will be removed during the renovations, the metal must be recycled in a facility that accepts metal coated with lead-based paint.

4.3 Universal Waste Materials and Other Environmental Concerns

4.3.1 PCB and Di-ethylhexlpthalate (DEHP) Containing Items

No PCB or DEHP containing lighting ballasts or capacitors potentially containing dielectric fluid were identified during the inspection.

No electronic ballasts were identified during the inspection.

4.3.2 Mercury Containing Items

No fluorescent light tubes, round lamps, U-shaped lamps, or compact fluorescent lamps were identified during this inspection. Three (3) mercury containing thermostats were identified during the inspection. The thermostats must be removed from the building for proper recycling if they will become a waste material as a result of renovation activities.

The associated inspection data is provided in Table III.

4.3.3 Used Electronics and Batteries

Nine (9) exit signs and nine (9) emergency lighting systems, for a total of eighteen (18) emergency lights containing lead-acid/nickel cadmium batteries, were identified during the inspection. The batteries must be removed for proper recycling if they will become a waste material as a result of renovation activities.

The associated inspection data is provided in Table III.

4.3.4 Chlorofluorocarbons

A total of one (1) refrigerator and one (1) water cooler, each containing a Freon tank, were identified during the inspection. The Freon must be reclaimed from the tanks if they will become a waste material as a result of renovation activities.

The associated inspection data is provided in Table III.

5. COST ESTIMATES

This is a budgetary opinion of cost that is expected to be within -15 to + 30 percent of the actual cost. Eagle has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor or Contractors' methods of determining prices, or over competitive bidding or market conditions. Eagle's opinion of probable cost of abatement are made on the basis of Eagle's experience and qualifications and represent Eagle's judgment as an experienced and qualified consultant familiar with the abatement industry; but Eagle cannot and does not guarantee that proposals, bids or actual Total Project or Abatement Cost will not vary from opinions of probable cost prepared by Eagle. If, prior to the bidding or negotiating phase, the Owner wishes greater assurance as to Total Project or Abatement Cost, the Owner shall employ an independent cost estimator.

The cost estimates are provided in Appendix D.

TABLE I

ASBESTOS CONTAINING MATERIALS SUMMARY TABLE

TABLE I
ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE
FORMER ST. LUCY'S CHURCH
24 BRANCH STREET
WATERBURY, CONNECTICUT

LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS				ESTIMATED QUANTITY	F/NF
				PLM	PLM PC	TEM NOB	ACM		
0-01, 0-04, 0-05, 0-06, 0-07, 0-09, 0-11, 0-14, 1-15, 1-24, 1-26, 1-27, 1-28, 2-32, 2-33	Black mastic - residual under 12" x 12" floor tile	10-17-AF-01A	MISC	5% Chrys			YES	10,900 SF	NF
	Black mastic - under 9" x 9" floor tile	10-17-AF-01B	MISC	DNA			YES		NF
		10-17-AF-01C		DNA					
0-01, 0-04, **0-14**	Adhesive associated with 12" x 12" floor tile	10-17-AF-01A-A	MISC	DNA			YES		NF
		10-17-AF-01A-B		DNA					
0-01, 0-04, **0-14**	12" x 12" Floor tile - white	10-17-AF-02A	MISC	DNA			YES		NF
		10-17-AF-02B		DNA					
0-04, 0-05, 0-06, 0-07, 0-09, **0-11,** 1-24, 1-26, 1-27	9" x 9" Floor tile - tan	10-17-AF-19A	MISC	DNA			YES		NF
		10-17-AF-19B		DNA					
0-05, 0-06	9" x 9" Floor tile - green (in pattern)	10-17-AF-24A	MISC	DNA			YES		NF
		10-17-AF-24B		DNA					
0-05, 0-06	9" x 9" Floor tile - red (in pattern)	10-17-AF-25A	MISC	DNA			YES		NF
		10-17-AF-25B		DNA					
0-01, 0-04, 0-05, 0-06, **0-07,** 0-09, 0-14, 1-15, 1-16, **1-17,** 1-18, 1-19, 1-20, 1-22, 1-23, 1-24, 1-26, 1-27, 1-29, 1-31	Glue daubs associated with 1' x 1' ceiling tile - brown	10-17-AF-08A	MISC	2% Chrys		.49% Chrys	YES		NF
		10-17-AF-08B		2% Chrys					
		10-17-AF-08C		2% Chrys					
0-01, 0-04, 0-05, 0-06, 0-14, 1-15, 1-16, 1-17, 1-18, 1-19, 1-20, 1-22, 1-23, 1-24, 1-26, 1-27, 1-29, 1-31	1' x 1' Ceiling tile - fissure, white	10-17-AF-09A	MISC	DNA			YES	18,050 SF	NF
		10-17-AF-09B		DNA					
1-17, 1-29	1' x 1' Decorative ceiling tile	10-17-AF-64A	MISC	DNA			YES		NF
		10-17-AF-64B		DNA					
0-07, 0-09	1' x 1' Ceiling tile - large pin hole, white	10-17-AF-28A	MISC	DNA			YES		NF
		10-17-AF-28B		DNA					
0-04, 0-05, 0-06, 0-08, 0-09, 0-12, **0-13**	Mudded fitting cement associated with fiberglass pipe insulation	10-17-AF-23A	TSI	35% Chrys			YES	75 Each	F
		10-17-AF-23B		DNA					
		10-17-AF-23C		DNA					
0-01, 0-02, 0-03, 0-04, 0-05, 0-07, 0-09, 0-11, 0-14	Mudded fitting cement assumed in walls and above hard ceilings	10-17-AF-23A	TSI	35% Chrys			YES	~75 Each	F
0-10	Door frame caulk - gray	10-17-AF-34A	MISC	3% Chrys			YES	14 LF	NF
		10-17-AF-34B		DNA					

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LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS				ESTIMATED QUANTITY	F/NF
				PLM	PLM PC	TEM NOB	ACM		
0-10	Mud insulation at black pipe wall entrance	10-17-AF-35A	MISC	30% Chrys			YES	3 SF	NF
		10-17-AF-35B		DNA					
0-12	Interior door frame caulk - yellow	10-17-AF-38A	MISC	3% Chrys			YES	12 LF	NF
		10-17-AF-38B		DNA					
Main Roof	Bottom layer caulk at metal step flashing - soft white	10-17-AF-39A	MISC	3% Chrys			YES	110 LF	NF
		10-17-AF-39B		DNA					
Main Roof	Brittle caulk at metal step flashing - pale white (verticals, horizontals)	10-17-AF-40A	MISC	DNA			YES		NF
		10-17-AF-40B		DNA					
Main Roof	Top layer caulk at metal step flashing - white (verticals)	10-17-AF-41A	MISC	DNA			YES		NF
		10-17-AF-41B		DNA					
Main Roof	Interior gutter liner tar	10-17-AF-42A	MISC	5% Chrys			YES	170 LF	NF
		10-17-AF-42B		5% Chrys					
Main Roof	Tar on bottom layer asphalt shingles at gutter edge flashing	10-17-AF-44A	MISC	12% Chrys			YES	170 SF	NF
		10-17-AF-44B		DNA					
Mezzanine	Window glazing compound debris - on floor	10-17-AF-67A	MISC	3% Chrys			YES	5 SF	NF
		10-17-AF-67B		DNA					
Mezzanine	Residual window glazing compound associated with removed window system	10-17-AF-67A	MISC	3% Chrys			YES	~225 LF	NF
		10-17-AF-67B		DNA					
Attic Closet	Tar on CMU at floor to closet - black	10-17-AF-70A	MISC	3% Chrys			YES	20 LF @ 3" wide	NF
		10-17-AF-70B		DNA					
Attic Closet	Caulk at seams and edges of fiber board wall panels	10-17-AF-72A	MISC	3% Chrys			YES	75 LF	NF
		10-17-AF-72B		DNA					
Attic	Thin tar on CMU walls - black (exposed)	10-17-AF-73A	MISC	5% Chrys			YES	1,500 SF	NF
		10-17-AF-73B		DNA					
1-15, 1-16, 1-17, 1-18, 1-19, 1-20, 1-21, 1-22, 1-23, 1-24, 1-25, 1-27, 1-29, 1-30, 1-31, ST-1, ST-2, ST-3	Thin tar on CMU walls - black (assumed behind plaster and marble wall coverings at perimeter walls)	10-17-AF-73A	MISC	5% Chrys			YES	18,000 SF	NF
		10-17-AF-73B		DNA					
Exterior Facades	Window caulk - brittle, white	10-17-AF-80A	MISC	3% Chrys			YES	1,300 LF	NF
		10-17-AF-80B		DNA					
Exterior Facades	Window caulk - rubbery, white	10-17-AF-79A	MISC	2% Chrys			YES		NF
		10-17-AF-79B		DNA					

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24 BRANCH STREET
WATERBURY, CONNECTICUT

LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS				ESTIMATED QUANTITY	F/NF
				PLM	PLM PC	TEM NOB	ACM		
Exterior Facades	Window caulk - brittle, white at 'flower' window	10-17-AF-80A	MISC	3% Chrys			YES	11 Panes	NF
		10-17-AF-80B		DNA					
Exterior Facades	Window caulk - brittle, white at doors (lower level)	10-17-AF-80A	MISC	3% Chrys			YES	40 LF	NF
		10-17-AF-80B		DNA					
Exterior Facades	Window caulk - brittle, white at vents	10-17-AF-80A	MISC	3% Chrys			YES	84 LF	NF
		10-17-AF-80B		DNA					
0-10	Interior boiler components	Assume	TSI	Assume			Assume	1 Boiler	NF
0-10	Valve gaskets	Assume	MISC	Assume			Assume	35 Each	NF
0-10, 0-13	Valve packing	Assume	MISC	Assume			Assume	37 Each	NF
Flat Roof, Roof 3, Roof 4	Roof fields under rubber membrane	Assume	MISC	Assume			Assume	1,500 SF	NF
Flat Roof, Roof 3, Roof 4	Flashing cement at parapet/roof wall junctions under rubber membrane	Assume	MISC	Assume			Assume	125 SF	NF
Main Roof	Vapor paper under bottom layer asphalt shingles	Assume	MISC	Assume			Assume	10,000 SF	NF

TABLE II

NON-ASBESTOS-CONTAINING MATERIALS SUMMARY TABLE

TABLE II
NON - ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE
FORMER ST. LUCY'S CHURCH
24 BRANCH STREET
WATERBURY, CONNECTICUT

SAMPLE LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS			
				PLM	PLM PC	TEM NOB	ACM
0-01, 0-07	Adhesive associated with black 4" vinyl cove base - brown	10-17-AF-03A	MISC	NAD			NO
		10-17-AF-03B		NAD			
0-01, 0-07	4" Vinyl cove base - black	10-17-AF-04A	MISC	NAD			NO
		10-17-AF-04B		NAD			
0-01, 0-11, 1-17, 1-27, 1-32	Plaster rough coat (wall)	10-17-AF-05A	SURF	NAD			NO
		10-17-AF-05B		NAD			
		10-17-AF-05C		NAD			
		10-17-AF-05D		NAD			
		10-17-AF-05E		NAD			
		10-17-AF-05F		NAD			
		10-17-AF-05G		NAD			
0-01, 0-11, 1-17, 1-27, 1-32	Plaster skim coat (wall)	10-17-AF-06A	SURF	NAD			NO
		10-17-AF-06B		NAD			
		10-17-AF-06C		NAD			
		10-17-AF-06D		NAD			
		10-17-AF-06E		NAD			
		10-17-AF-06F		NAD			
		10-17-AF-06G		NAD			
0-01, 0-04	Sheetrock (ceiling)	10-17-AF-07A	MISC	NAD			NO
		10-17-AF-07B		NAD			
0-02, 0-03	Mud base under ceramic floor tile	10-17-AF-10A	MISC	NAD			NO
		10-17-AF-10B		NAD			
0-02, 0-03	Mortar associated with pink 4" x 4" ceramic wall tile - white	10-17-AF-11A	MISC	NAD			NO
		10-17-AF-11B		NAD			
0-02, 0-03	Window glazing compound - gray	10-17-AF-12A	MISC	NAD			NO
		10-17-AF-12B		NAD			
0-02, 0-03	Window sill (slate) - black	10-17-AF-13A	MISC	NAD			NO
		10-17-AF-13B		NAD			
0-04, 0-14	Sheetrock (wall)	10-17-AF-16A	MISC	NAD			NO
		10-17-AF-16B		NAD			
0-04, 0-14	Joint compound associated with sheetrock - white	10-17-AF-17A	MISC	NAD			NO
		10-17-AF-17B		NAD			

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WATERBURY, CONNECTICUT

SAMPLE LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS			
				PLM	PLM PC	TEM NOB	ACM
0-04	Adhesive associated with plastic cove base at stair risers (at alter) - brown	10-17-AF-20A	MISC	NAD			NO
		10-17-AF-20B		NAD			
0-04	Concrete foundation (wall)	10-17-AF-21A	MISC	NAD			NO
		10-17-AF-21B		NAD			
0-04	Window glazing compound at partition windows - gray	10-17-AF-22A	MISC	NAD			NO
		10-17-AF-22B		NAD			
0-05	Adhesive associated with 4" vinyl cove base - yellow	10-17-AF-26A	MISC	NAD			NO
		10-17-AF-26B		NAD			
0-05, 0-07	4" Vinyl cove base - brown	10-17-AF-27A	MISC	NAD			NO
		10-17-AF-27B		NAD			
0-09, 0-13	Flex connector - black	10-17-AF-29A	MISC	NAD			NO
		10-17-AF-29B		NAD			
0-09	Laminate counter top - tan	10-17-AF-31A	MISC	NAD			NO
		10-17-AF-31B		NAD			
0-09	Laminate floating floor - wood pattern	10-17-AF-32A	MISC	NAD			NO
		10-17-AF-32B		NAD			
0-09	Sink undercoating - white	10-17-AF-33A	MISC	NAD			NO
		10-17-AF-33B		NAD			
0-10	Cement at flue	10-17-AF-36A	MISC	NAD			NO
		10-17-AF-36B		NAD			
0-10	Red fire stop caulk at flue	10-17-AF-37A	MISC	NAD			NO
		10-17-AF-37B		NAD			
Main Roof	Bottom layer asphalt shingles - black	10-17-AF-43A	MISC	2% Chrys		NAD	NO
		10-17-AF-43B		NAD			
Main Roof	Top layer architectural asphalt shingles - gray	10-17-AF-45A	MISC	NAD			NO
		10-17-AF-45B		NAD			
Main Roof	Caulk at gutter/brick junction - gray, flexible	10-17-AF-46A	MISC	NAD			NO
		10-17-AF-46B		NAD			
Flat Roof	Caulk at lead flashing in concrete cap seams - black	10-17-AF-47A	MISC	NAD			NO
		10-17-AF-47B		NAD			
Flat Roof	Reglet caulk at brick - gray	10-17-AF-48A	MISC	NAD			NO
		10-17-AF-48B		NAD			

TABLE II
NON - ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE
FORMER ST. LUCY'S CHURCH
24 BRANCH STREET
WATERBURY, CONNECTICUT

SAMPLE LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS			
				PLM	PLM PC	TEM NOB	ACM
Flat Roof	Caulk at metal flashing seams - white	10-17-AF-49A	MISC	NAD			NO
		10-17-AF-49B		NAD			
1-19	Wall panel adhesive - grey	10-17-AF-60A	MISC	NAD			NO
		10-17-AF-60B		NAD			
1-21	Carpet glue - brown	10-17-AF-61A	MISC	NAD			NO
		10-17-AF-61B		NAD			
1-21	Textured ceiling paint - sandy	10-17-AF-62A	SURF	NAD			NO
		10-17-AF-62B		NAD			
		10-17-AF-62C		NAD			
1-24	Sink undercoating - green	10-17-AF-63A	MISC	NAD			NO
		10-17-AF-63B		NAD			
1-30	Textured ceiling paint - white, thick, webbed appearance	10-17-AF-65A	SURF	NAD			NO
		10-17-AF-65B		NAD			
		10-17-AF-65C		NAD			
First Floor	Window glazing compound - grey	10-17-AF-66A	MISC	NAD			NO
		10-17-AF-66B		NAD			
1-17	Terrazzo - brown at perimeter	10-17-AF-68A	MISC	NAD			NO
		10-17-AF-68B		NAD			
1-17	Mud associated with marble wall panels	10-17-AF-69A	MISC	NAD			NO
		10-17-AF-69B		NAD			
Attic Closet	Fiber board on walls	10-17-AF-71A	MISC	NAD			NO
		10-17-AF-71B		NAD			
Attic	Tectum roof deck	10-17-AF-74A	MISC	NAD			NO
		10-17-AF-74B		NAD			
Attic	Skim coat concrete on tectum at platform	10-17-AF-75A	MISC	NAD			NO
		10-17-AF-75B		NAD			
Attic	Blown-in insulation on top of fiberglass batt insulation	10-17-AF-76A	MISC	NAD			NO
		10-17-AF-76B		NAD			
Exterior	Door caulk - black, outer	10-17-AF-77A	MISC	NAD			NO
		10-17-AF-77B		NAD			
Exterior	Door caulk - white, inner	10-17-AF-78A	MISC	NAD			NO
		10-17-AF-78B		NAD			

TABLE II
NON - ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE
FORMER ST. LUCY'S CHURCH
24 BRANCH STREET
WATERBURY, CONNECTICUT

SAMPLE LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS			
				PLM	PLM PC	TEM NOB	ACM
Exterior	Window glazing compound - white	10-17-AF-81A	MISC	NAD			NO
		10-17-AF-81B		NAD			
1-17	Terrazzo floor - tan	10-17-AF-82A	MISC	NAD			NO
		10-17-AF-82B		NAD			
1-17	Terrazzo mud base	10-17-AF-83A	MISC	NAD			NO
		10-17-AF-83B		NAD			
0-14	Fabric wrap on fiberglass pipe insulation	10-17-AF-84A	TSI	NAD			NO
		10-17-AF-84B		NAD			
		10-17-AF-84C		NAD			
0-10	Boiler rib rope	10-17-AF-85A	MISC	NAD			NO
		10-17-AF-85B		NAD			
0-13	Plaster ceiling rough coat	10-17-AF-86A	SURF	NAD			NO
		10-17-AF-86B		NAD			
		10-17-AF-86		NAD			
0-10	Sealant at boiler plates - red	10-17-AF-87A	MISC	NAD			NO
		10-17-AF-87B		NAD			

TABLE II
NON - ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE
FORMER ST. LUCY'S CHURCH
24 BRANCH STREET
WATERBURY, CONNECTICUT

SAMPLE LOCATION(S)	MATERIAL TYPE	SAMPLE NUMBER	CATEGORY	BULK SAMPLE ANALYSIS RESULTS			
				PLM	PLM PC	TEM NOB	ACM
A Façade	Stone foundation mortar	10-17-AF-88A	MISC	NAD			NO
		10-17-AF-88B		NAD			
A Façade	Stained glass window glazing compound in doors	10-17-AF-89A	MISC	NAD			NO
		10-17-AF-89B		NAD			
A Façade	Ceramic tile mosaic mud base - gray	10-17-AF-90A	MISC	NAD			NO
		10-17-AF-90A		NAD			
A Façade	Ceramic tile mosaic grout - white	10-17-AF-91A	MISC	NAD			NO
		10-17-AF-91B		NAD			
1-24, 1-26	Cove base adhesive - orange/brown	10-17-AF-92A	MISC	NAD			NO
		10-17-AF-92A		NAD			

TABLE III

UNIVERSAL WASTE MATERIALS SUMMARY TABLE

TABLE III
UNIVERSAL WASTE PRODUCTS SUMMARY TABLE
FORMER ST. LUCY'S CHURCH
24 BRANCH STREET
HARTFORD, CONNECTICUT

ROOM	FIXT. TYPE	BALLASTS			LAMPS				ELECTRONICS		CAPACITORS		CFC UNITS		T-STAT	BATTERIES		
		PCB	DEHP	ELEC.	LF	RD	U-S	CF	#	DESC.	#	DESC.	#	DESC.		FA	ES	ELS
0-01																	2	2
0-04													1	Water Cooler	1		5	5
0-05																	1	1
0-09													1	Refrigerator				
0-14																	1	1
1-27															2			
TOTAL		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**		**2**		**3**	**0**	**9**	**9**
Key:	**LF = Linear Feet / RD = Round / U-S = U-Shaped / CF = Compact Fluorescent / T-STAT = Thermostats** **FA = Fire Alarm / ES = Exit Sign / ELS = Emergency Lighting System**																	
Fixture Type Description & Notes	Room 1-17 exit signs are the word "exit" on glass																	

APPENDIX A

FLOOR PLANS AND ROOF PLANS WITH SAMPLE LOCATION DIAGRAMS

FRIAR ARCHITECTURE

WATERBURY COMMUNITY HEALTH CENTER

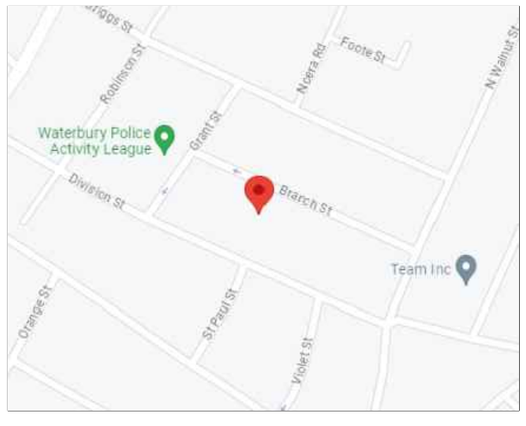
24 BRANCH STREET
WATERBURY, CONNECTICUT

EAGLE PROJECT NUMBER: 23-080.13T1

INDEX OF DRAWINGS

BP-1	LOWER LEVEL
FP-1	FIRST FLOOR
FP-2	MEZZANINE
FP-3	ATTIC
RP-1	ROOF

LOCATION MAP



OCTOBER 23, 2023

EAGLE Environmental, Inc.

8 SOUTH MAIN STREET, SUITE 3
TERRYVILLE, CONNECTICUT 06786
860-589-8257

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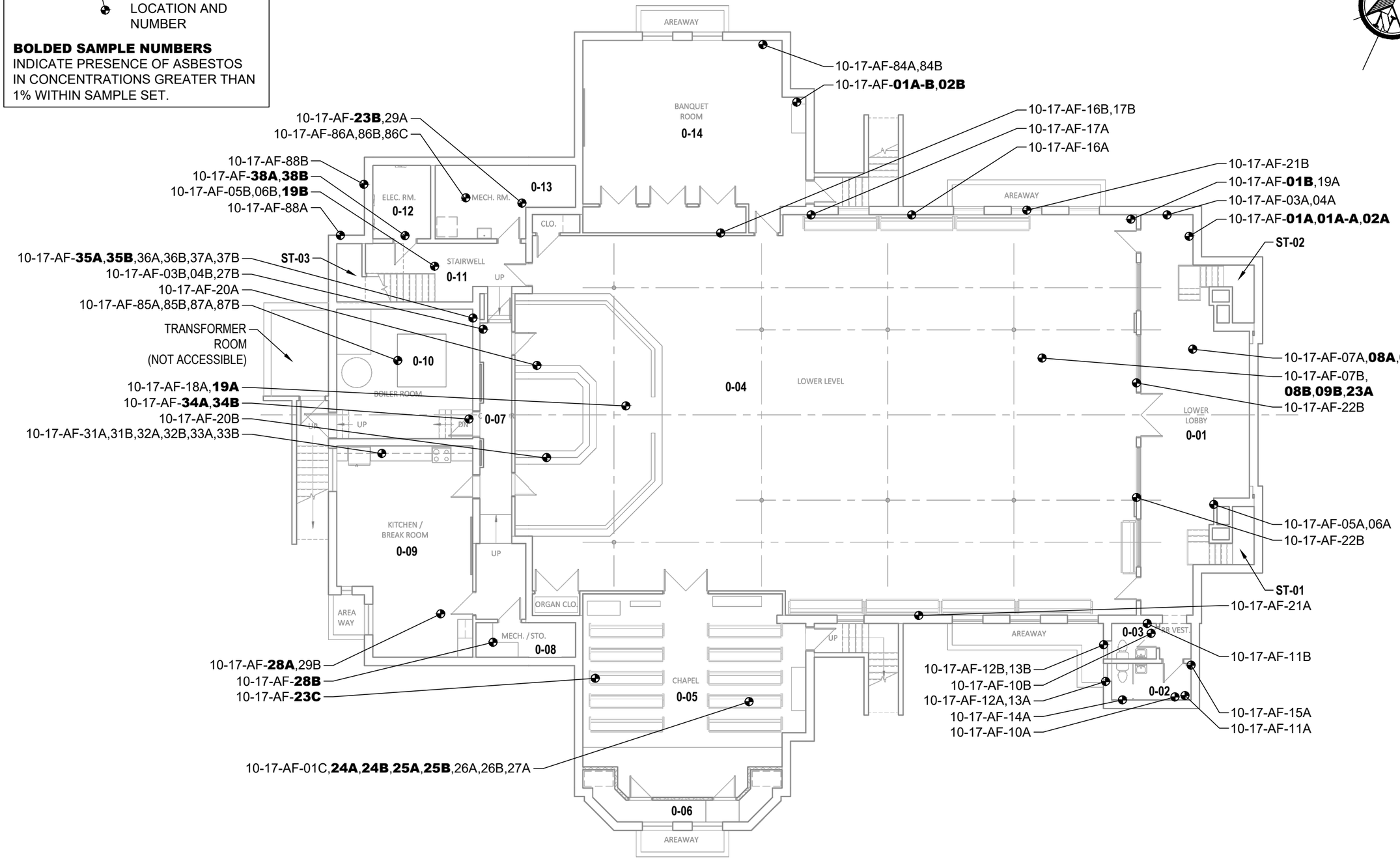
SIDE-D

SAMPLE KEY:

10-17-AF-### = ASBESTOS SAMPLE LOCATION AND NUMBER

BOLDED SAMPLE NUMBERS
INDICATE PRESENCE OF ASBESTOS IN CONCENTRATIONS GREATER THAN 1% WITHIN SAMPLE SET.



LOWER LEVEL

NOT TO SCALE

SIDE-C

SIDE-B

SIDE-A (STREET SIDE)

PROJECT NO.: 23-080.13T1
DATE: 10/23/2023
DRAWN BY: BB
REVIEWED BY: CL

PRE-RENOVATION HAZARDOUS BUILDING MATERIAL INSPECTION
FRIAR ARCHITECTURE
24 BRANCH STREET
WATERBURY, CONNECTICUT

EAGLE Environmental, Inc.
8 SOUTH MAIN STREET, SUITE 3,
TERRYVILLE, CONNECTICUT 06786
860-589-8257

SHEET NO.
BP-1
SHEET 1 OF 5

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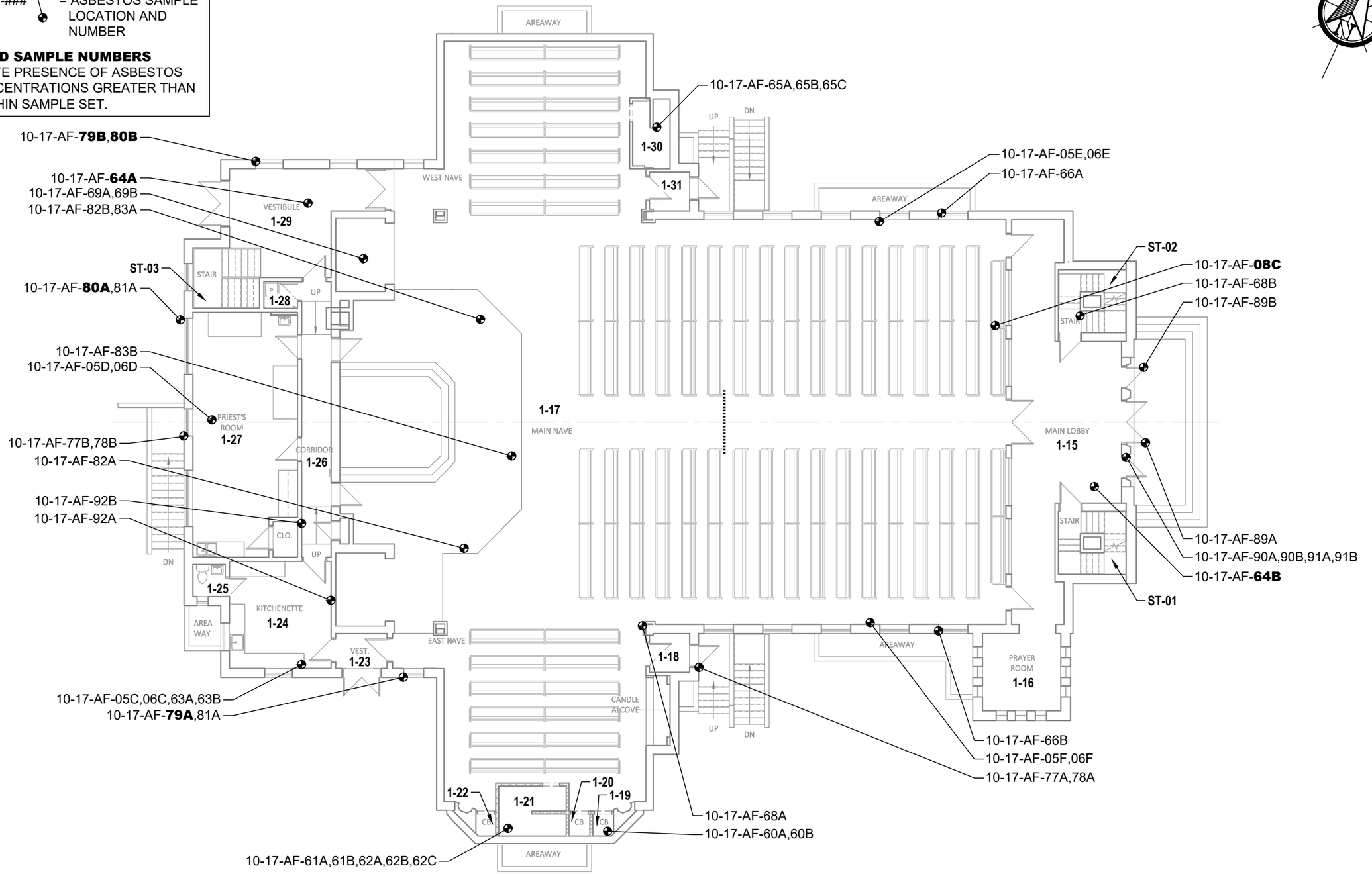
SIDE-D

SAMPLE KEY:

10-17-AF-### = ASBESTOS SAMPLE LOCATION AND NUMBER

BOLDED SAMPLE NUMBERS INDICATE PRESENCE OF ASBESTOS IN CONCENTRATIONS GREATER THAN 1% WITHIN SAMPLE SET.



FIRST FLOOR

NOT TO SCALE

SIDE-C

SIDE-A (STREET SIDE)

SIDE-B

PROJECT NO.: 23-080.13T1
DATE: 10/23/2023
DRAWN BY: BB
REVIEWED BY: CL

PRE-RENOVATION HAZARDOUS BUILDING MATERIAL INSPECTION
FRIAR ARCHITECTURE
24 BRANCH STREET
WATERBURY, CONNECTICUT

EAGLE Environmental, Inc.
8 SOUTH MAIN STREET, SUITE 3
TERRYVILLE, CONNECTICUT 06786
860-589-8257

SHEET NO.
FP-1
SHEET 2 OF 5

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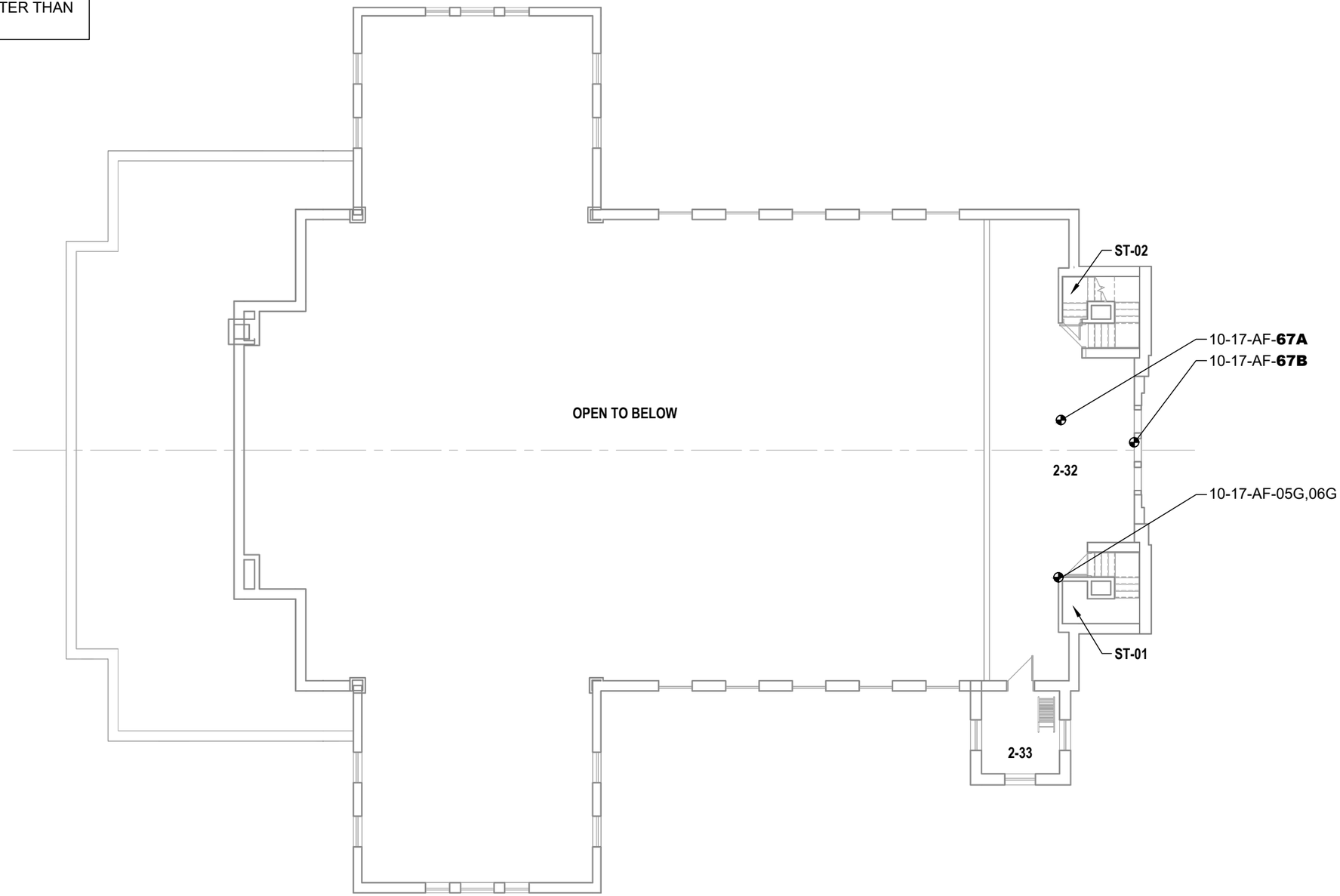
SIDE-D

SAMPLE KEY:

10-17-AF-### = ASBESTOS SAMPLE LOCATION AND NUMBER

BOLDED SAMPLE NUMBERS
INDICATE PRESENCE OF ASBESTOS IN CONCENTRATIONS GREATER THAN 1% WITHIN SAMPLE SET.



MEZZANINE

NOT TO SCALE

SIDE-C

SIDE-A (STREET SIDE)

SIDE-B

PROJECT NO.: 23-080.13T1
DATE: 10/23/2023
DRAWN BY: BB
REVIEWED BY: CL

PRE-RENOVATION HAZARDOUS BUILDING MATERIAL INSPECTION
FRIAR ARCHITECTURE
24 BRANCH STREET
WATERBURY, CONNECTICUT

EAGLE Environmental, Inc.
8 SOUTH MAIN STREET, SUITE 3
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860-589-8257

SHEET NO.
FP-2
SHEET 3 OF 5

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SIDE-D

SIDE-C

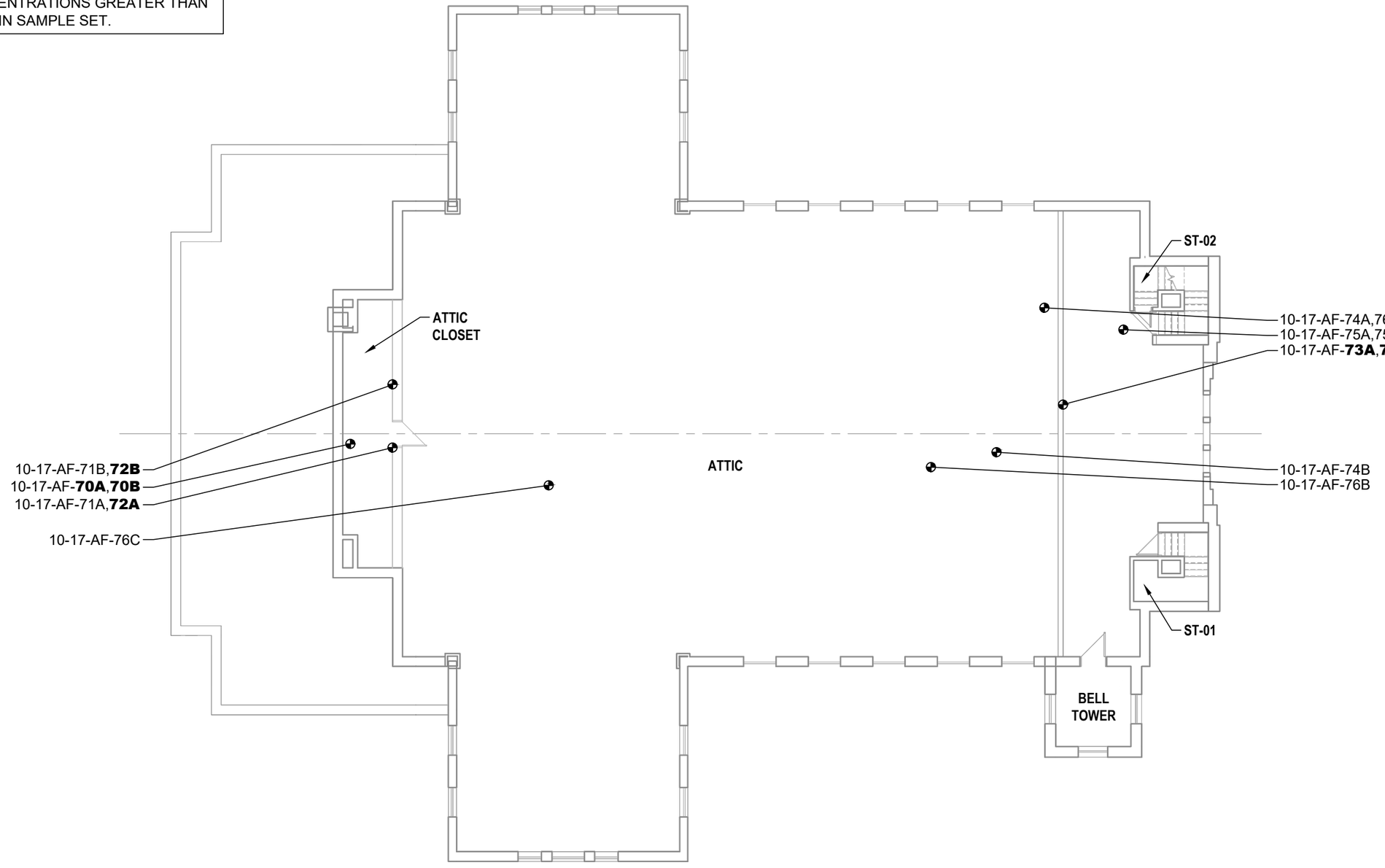
SIDE-A (STREET SIDE)

SIDE-B

SAMPLE KEY:

10-17-AF-### = ASBESTOS SAMPLE LOCATION AND NUMBER

BOLDED SAMPLE NUMBERS
INDICATE PRESENCE OF ASBESTOS IN CONCENTRATIONS GREATER THAN 1% WITHIN SAMPLE SET.



ATTIC

NOT TO SCALE

PROJECT NO.: 23-080.13T1
DATE: 10/23/2023
DRAWN BY: BB
REVIEWED BY: CL

PRE-RENOVATION HAZARDOUS BUILDING MATERIAL INSPECTION
FRIAR ARCHITECTURE
24 BRANCH STREET
WATERBURY, CONNECTICUT

EAGLE Environmental, Inc.
8 SOUTH MAIN STREET, SUITE 3
TERRYVILLE, CONNECTICUT 06786
860-589-8257

SHEET NO.
FP-3
SHEET 4 OF 5

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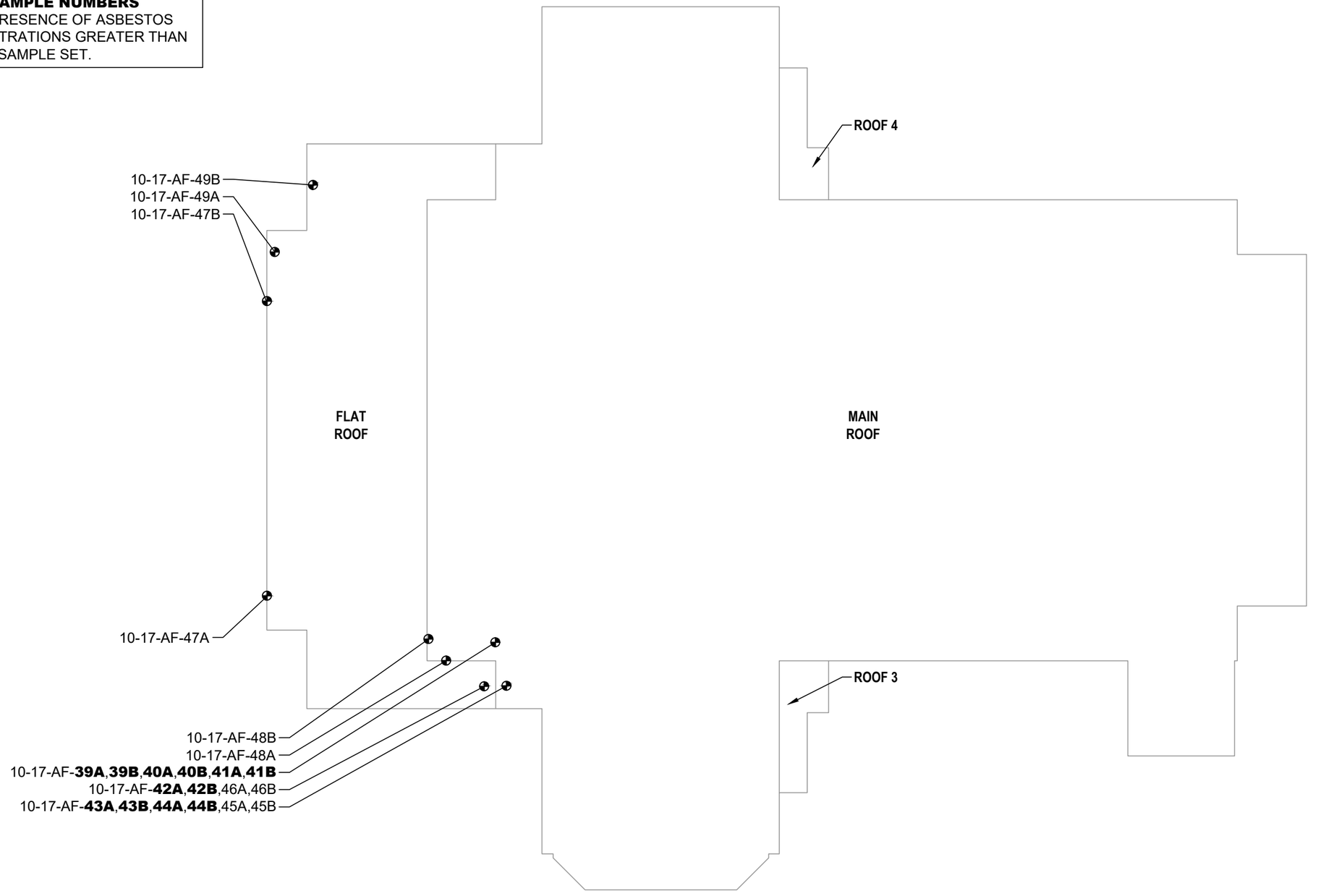
SIDE-D

SAMPLE KEY:

10-17-AF-### = ASBESTOS SAMPLE LOCATION AND NUMBER

BOLDED SAMPLE NUMBERS
INDICATE PRESENCE OF ASBESTOS IN CONCENTRATIONS GREATER THAN 1% WITHIN SAMPLE SET.



ROOF
NOT TO SCALE

SIDE-C

SIDE-A (STREET SIDE)

SIDE-B

PROJECT NO.: 23-080.13T1
DATE: 10/23/2023
DRAWN BY: BB
REVIEWED BY: CL

PRE-RENOVATION HAZARDOUS BUILDING MATERIAL INSPECTION
FRIAR ARCHITECTURE
24 BRANCH STREET
WATERBURY, CONNECTICUT

EAGLE Environmental, Inc.
8 SOUTH MAIN STREET, SUITE 3
TERRYVILLE, CONNECTICUT 06786
860-589-8257

SHEET NO.
RP-1
SHEET 5 OF 5

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APPENDIX B

ASBESTOS BULK SAMPLE LABORATORY REPORTS

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-01A	Black mastic - residual under 12"x12" floor tile	**5% Chrysotile**		**95% Other**	Black Non-Fibrous Homogeneous
10035213_0001					Dissolved
10-17-AF-01B	Black mastic - under 9"x9" floor tile	**Not Analyzed**			
10035213_0002					
10-17-AF-01C	Black mastic - under 9"x9" floor tile	**Not Analyzed**			
10035213_0003					
10-17-AF-01A-A	Adhesive associated with 12"x12" floor tile	**Not Analyzed**			
10035213_0004					
10-17-AF-01A-B	Adhesive associated with 12"x12" floor tile	**Not Analyzed**			
10035213_0005					
10-17-AF-02A	12"x12" floor tile - white	**Not Analyzed**			
10035213_0006					
10-17-AF-02B	12"x12" floor tile - white	**Not Analyzed**			
10035213_0007					
10-17-AF-19A	9"x9" floor tile - tan	**Not Analyzed**			
10035213_0008					

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (176)
Analyst

Approved Signatory

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-19B	9"x9" floor tile - tan	**Not Analyzed**			
10035213_0009					
10-17-AF-24A	9"x9" floor tile - green	**Not Analyzed**			
10035213_0010					
10-17-AF-24B	9"x9" floor tile - green	**Not Analyzed**			
10035213_0011					
10-17-AF-25A	9"x9" floor tile - red	**Not Analyzed**			
10035213_0012					
10-17-AF-25B	9"x9" floor tile - red	**Not Analyzed**			
10035213_0013					
10-17-AF-03A	Adhesive associated with black 4" vinyl cove base - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0014					Dissolved
10-17-AF-03B	Adhesive associated with black 4" vinyl cove base - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0015					Dissolved
10-17-AF-04A	4" vinyl cove base - black	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0016					Dissolved

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Charmel Dozier (176)
Analyst

Nathaniel Durham
Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-04B	4" vinyl cove base - black	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0017					Dissolved
10-17-AF-05A	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0018					Crushed
10-17-AF-05B	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0019					Crushed
10-17-AF-05C	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0020					Crushed
10-17-AF-05D	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0021					Crushed
10-17-AF-05E	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0022					Crushed
10-17-AF-05F	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0023					Crushed
10-17-AF-05G	Plaster rough coat (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0024					Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (176)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-06A	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0025					Crushed
10-17-AF-06B	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0026					Crushed
10-17-AF-06C	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0027					Crushed
10-17-AF-06D	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0028					Crushed
10-17-AF-06E	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0029					Crushed
10-17-AF-06F	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0030					Crushed
10-17-AF-06G	Plaster skim coat (wall)	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0031					Crushed
10-17-AF-07A	Sheet rock (ceiling)	**None Detected**	**10% Cellulose**	**90% Other**	White Fibrous Homogeneous
10035213_0032					Crushed

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Charmel Dozier (176)
Analyst

Nathaniel Durham
Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-07B	Sheet rock (ceiling)	**None Detected**	**10% Cellulose**	**90% Other**	White Fibrous Homogeneous
10035213_0033					Crushed
10-17-AF-08A	Glue duabs associated with 1'x1' ceiling tile - brown	**2% Chrysotile**		**98% Other**	Brown Non-Fibrous Homogeneous
10035213_0034					Dissolved
10-17-AF-08B	Glue duabs associated with 1'x1' ceiling tile - brown	**2% Chrysotile**		**98% Other**	Brown Non-Fibrous Homogeneous
10035213_0035					Dissolved
10-17-AF-08C	Glue duabs associated with 1'x1' ceiling tile - brown	**2% Chrysotile**		**98% Other**	Brown Non-Fibrous Homogeneous
10035213_0036					Dissolved
10-17-AF-09A	1'x1' ceiling tile - fissure / white	**Not Analyzed**			
10035213_0037					
10-17-AF-09B	1'x1' ceiling tile - fissure / white	**Not Analyzed**			
10035213_0038					
10-17-AF-64A	1'x1' decorative ceiling tile	**Not Analyzed**			
10035213_0039					
10-17-AF-64B	1'x1' decorative ceiling tile	**Not Analyzed**			
10035213_0040					

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-28A	1'x1' ceiling tile - large pin hole / white	**Not Analyzed**			
10035213_0041					
10-17-AF-28B	1'x1' ceiling tile - large pin hole / white	**Not Analyzed**			
10035213_0042					
10-17-AF-10A	Mud base under ceramic floor tile	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0043					Crushed
10-17-AF-10B	Mud base under ceramic floor tile	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0044					Crushed
10-17-AF-11A	Mortar associated with pink 4"x4" ceramic wall tile - white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0045					Crushed
10-17-AF-11B	Mortar associated with blue 4"x4" ceramic wall tile - white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0046					Crushed
10-17-AF-12A	Window glazing compound - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0047					Crushed
10-17-AF-12B	Window glazing compound - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0048					Crushed

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-13A	window sill (slate) - black	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0049					Crushed
10-17-AF-13B	window sill (slate) - black	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0050					Crushed
10-17-AF-16A	Sheet rock (wall)	**None Detected**	**10% Cellulose**	**90% Other**	White Fibrous Homogeneous
10035213_0051					Crushed
10-17-AF-16B	Sheet rock (wall)	**None Detected**	**10% Cellulose**	**90% Other**	White Fibrous Homogeneous
10035213_0052					Crushed
10-17-AF-17A	Joint compound associated with sheet rock - white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0053					Crushed
10-17-AF-17B	Joint compound associated with sheet rock - white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0054					Crushed
10-17-AF-20A	Adhesive associated with plastic cove base at stair risers at alter - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0055					Dissolved
10-17-AF-20A		**Not Submitted**			
10035213_0176	*duplicate sample ID*				

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-20B	Adhesive associated with plastic cove base at stair risers at alter - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0056					Dissolved
10-17-AF-21A	Concrete foundation (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0057					Crushed
10-17-AF-21B	Concrete foundation (wall)	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0058					Crushed
10-17-AF-22A	Window glazing compound at partician windows - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0059					Dissolved
10-17-AF-22B	Window glazing compound at partician windows - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0060					Dissolved
10-17-AF-23A	Mudded fittings associated with 4" pipe	**35% Chrysotile**		**65% Other**	White Fibrous Homogeneous
10035213_0061					Teased
10-17-AF-23B	Mudded fittings associated with 4" pipe	**Not Analyzed**			
10035213_0062					
10-17-AF-23C	Mudded fittingsassociated with 2" pipe	**Not Analyzed**			
10035213_0063					

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-26A	Adhesive associated with 4" vinyl cove base - yellow	**None Detected**		**100% Other**	Yellow Non-Fibrous Homogeneous
10035213_0064					Dissolved
10-17-AF-26B	Adhesive associated with 4" vinyl cove base - yellow	**None Detected**		**100% Other**	Yellow Non-Fibrous Homogeneous
10035213_0065					Dissolved
10-17-AF-27A	4" vinyl cove base - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0066					Dissolved
10-17-AF-27B	4" vinyl cove base - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0067					Dissolved
10-17-AF-29A	Flex connector - black	**None Detected**	**90% Cellulose**	**10% Other**	Gray Fibrous Homogeneous
10035213_0068					Teased
10-17-AF-29B	Flex connector - black	**None Detected**	**90% Cellulose**	**10% Other**	Gray Fibrous Homogeneous
10035213_0069					Teased
10-17-AF-31A	Laminant counter top - tan	**None Detected**	**60% Cellulose**	**40% Other**	Tan Fibrous Homogeneous
10035213_0070					Ashed
10-17-AF-31B	Laminant counter top - tan	**None Detected**	**60% Cellulose**	**40% Other**	Tan Non-Fibrous Homogeneous
10035213_0071					Ashed

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-32A	Laminant floating floor - wood pattern	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0072					Dissolved
10-17-AF-32B	Laminant floating floor - wood pattern	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0073					Dissolved
10-17-AF-33A	Sink undercoating - white	**None Detected**	**5% Cellulose**	**95% Other**	White Non-Fibrous Homogeneous
10035213_0074					Dissolved
10-17-AF-33B	Sink undercoating - white	**None Detected**	**5% Cellulose**	**95% Other**	White Non-Fibrous Homogeneous
10035213_0075					Dissolved
10-17-AF-34A	Door frame caulk - gray	**3% Chrysotile**		**97% Other**	Gray Non-Fibrous Homogeneous
10035213_0076					Dissolved
10-17-AF-34B	Door frame caulk - gray	**Not Analyzed**			
10035213_0077					
10-17-AF-35A	Mud insulation at black pipe wall entrance	**30% Chrysotile**	**30% Mineral Wool**	**40% Other**	Gray Fibrous Homogeneous
10035213_0078					Teased
10-17-AF-35B	Mud insulation at black pipe wall entrance	**Not Analyzed**			
10035213_0079					

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-36A	Cement at flue	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0080					Crushed
10-17-AF-36B	Cement at flue	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0081					Crushed
10-17-AF-37A	Red fire stop caulk at flue	**None Detected**		**100% Other**	Red Non-Fibrous Homogeneous
10035213_0082					Dissolved
10-17-AF-37B	Red fire stop caulk at flue	**None Detected**		**100% Other**	Red Non-Fibrous Homogeneous
10035213_0083					Dissolved
10-17-AF-38A	Interior door frame caulk - yellow	**3% Chrysotile**		**97% Other**	Yellow Non-Fibrous Homogeneous
10035213_0084					Crushed, Dissolved
10-17-AF-38B	Interior door frame caulk - yellow	**Not Analyzed**			
10035213_0085					
10-17-AF-39A	Bottom layer Caulk at metal step flashing - soft white	**3% Chrysotile**		**97% Other**	White Non-Fibrous Homogeneous
10035213_0086					Dissolved
10-17-AF-39B	Bottom layer Caulk at metal step flashing - soft white	**Not Analyzed**			
10035213_0087					

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-40A	Brittle caulk at metal step flashing - pale white (verticals, horizontals)	**Not Analyzed**			
10035213_0088					
10-17-AF-40B	Brittle caulk at metal step flashing - pale white (verticals, horizontals)	**Not Analyzed**			
10035213_0089					
10-17-AF-41A	Top layer caulk at metal step flashing - white (verticals)	**Not Analyzed**			
10035213_0090					
10-17-AF-41B	Top layer caulk at metal step flashing - white (verticals)	**Not Analyzed**			
10035213_0091					
10-17-AF-42A	Interior gutter liner tar	**5% Chrysotile**		**95% Other**	Black, Silver Non-Fibrous Homogeneous
10035213_0092					Dissolved
10-17-AF-42B	Interior gutter liner tar	**5% Chrysotile**		**95% Other**	Silver, Black Non-Fibrous Homogeneous
10035213_0093					Dissolved
10-17-AF-43A	Bottom layer asphalt shingles - black	**2% Chrysotile**	**28% Cellulose**	**70% Other**	Black Fibrous Homogeneous
10035213_0094					Dissolved
10-17-AF-43B	Bottom layer asphalt shingles - black	**None Detected**	**20% Cellulose**	**80% Other**	Black Fibrous Homogeneous
10035213_0095					Dissolved

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-44A	Tar on bottom layer asphalt shingles at gutter edge flashing	**12% Chrysotile**		**88% Other**	Black Fibrous Homogeneous
10035213_0096					Dissolved
10-17-AF-44B	Tar on bottom layer asphalt shingles at gutter edge flashing	**Not Analyzed**			
10035213_0097					
10-17-AF-45A	Top layer architectural asphalt shingles - gray	**None Detected**	**10% Fiber Glass**	**90% Other**	Black Fibrous Homogeneous
10035213_0098					Dissolved
10-17-AF-45B	Top layer architectural asphalt shingles - gray	**None Detected**	**10% Fiber Glass**	**90% Other**	Black Fibrous Homogeneous
10035213_0099					Dissolved
10-17-AF-46A	Caulk at gutter / brick junction - gray / felxible	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0100					Dissolved
10-17-AF-46B	Caulk at gutter / brick junction - gray / felxible	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0101					Dissolved
10-17-AF-47A	Caulk at lead flashing in concrete cap seams - black	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0102					Dissolved
10-17-AF-47B	Caulk at lead flashing in concrete cap seams - black	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0103					Dissolved

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-48A	Reglet caulk at brick - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0104					Dissolved
10-17-AF-48B	Reglet caulk at brick - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0105					Dissolved
10-17-AF-49A	Caulk at metal flashing seams - white	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0106					Ashed
10-17-AF-49B	Caulk at metal flashing seams - white	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0107					Ashed
10-17-AF-60A	Wall Pannel adhesive - grey	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0108					Dissolved
10-17-AF-60B	Wall Pannel adhesive - grey	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0109					Dissolved
10-17-AF-61A	Carpet glue - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0110					Dissolved
10-17-AF-61B	Carpet glue - brown	**None Detected**		**100% Other**	Brown Non-Fibrous Homogeneous
10035213_0111					Dissolved

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Charmel Dozier (176)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-62A	Textured ceiling paint - sandy	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0112					Crushed, Dissolved
10-17-AF-62B	Textured ceiling paint - sandy	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0113					Dissolved, Crushed
10-17-AF-62C	Textured ceiling paint - sandy	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0114					Crushed, Dissolved
10-17-AF-63A	Sink undercoating - green	**None Detected**		**100% Other**	Green Non-Fibrous Homogeneous
10035213_0115					Dissolved, Crushed
10-17-AF-63B	Sink undercoating - green	**None Detected**		**100% Other**	Green Non-Fibrous Homogeneous
10035213_0116					Crushed, Dissolved
10-17-AF-65A	Textured ceiling paint - white / thick / webbed apperance	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0117					Dissolved, Crushed
10-17-AF-65B	Textured ceiling paint - white / thick / webbed apperance	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0118					Dissolved, Crushed
10-17-AF-65C	Textured ceiling paint - white / thick / webbed apperance	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0119					Dissolved, Crushed

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8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-66A	Window glazing compound - grey	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0120					Dissolved
10-17-AF-66B	Window glazing compound - grey	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0121					Dissolved
10-17-AF-67A	window glazing compound debris - on floor	**3% Chrysotile**		**97% Other**	Gray Non-Fibrous Homogeneous
10035213_0122					Crushed, Dissolved
10-17-AF-67B	window glazing compound debris - on floor	**Not Analyzed**			
10035213_0123					
10-17-AF-68A	Terrazzo - brown at perimeter	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0124					Crushed
10-17-AF-68B	Terrazzo - brown at perimeter	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0125					Crushed
10-17-AF-69A	Mud associated with marble wall panels	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0126					Crushed
10-17-AF-69B	Mud associated with marble wall panels	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0127					Crushed

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Charmel Dozier (176)
Analyst

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Bulk Asbestos Analysis

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NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-70A	Tar on CMU at floor to closet - black	**3% Chrysotile**		**97% Other**	Black Non-Fibrous Homogeneous
10035213_0128					Dissolved
10-17-AF-70B	Tar on CMU at floor to closet - black	**Not Analyzed**			
10035213_0129					
10-17-AF-71A	Fiber board on walls	**None Detected**	**95% Cellulose**	**5% Other**	Tan Fibrous Homogeneous
10035213_0130					Teased
10-17-AF-71B	Fiber board on walls	**None Detected**	**95% Cellulose**	**5% Other**	Tan Fibrous Homogeneous
10035213_0131					Teased
10-17-AF-72A	Caulk at seams and edges of fiber board	**3% Chrysotile**		**97% Other**	Gray Non-Fibrous Homogeneous
10035213_0132					Dissolved
10-17-AF-72B	Caulk at seams and edges of fiber board	**Not Analyzed**			
10035213_0133					
10-17-AF-73A	Thin tar on CMU walls - black	**5% Chrysotile**		**95% Other**	Black Non-Fibrous Homogeneous
10035213_0134					Dissolved
10-17-AF-73B	Thin tar on CMU walls - black	**Not Analyzed**			
10035213_0135					

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Charmel Dozier (176)
Analyst

Nathaniel Durham
Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
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40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-74A	Tectum roof deck	**None Detected**	**90% Cellulose**	**10% Other**	Tan, Gray Fibrous Homogeneous
10035213_0136					Teased
10-17-AF-74B	Tectum roof deck	**None Detected**	**90% Cellulose**	**10% Other**	Tan, Gray Fibrous Homogeneous
10035213_0137					Teased
10-17-AF-75A	Skim coat concrete on tectum at platform	**None Detected**	**85% Cellulose**	**15% Other**	Gray, Tan Fibrous Homogeneous
10035213_0138					Teased
10-17-AF-75B	Skim coat concrete on tectum at platform	**None Detected**	**85% Cellulose**	**15% Other**	Tan, Gray Fibrous Homogeneous
10035213_0139					Teased
10-17-AF-76A	Blown in insulation on top of fiberglass batt insulation	**None Detected**	**98% Mineral Wool**	**2% Other**	White Fibrous Homogeneous
10035213_0140					Teased
10-17-AF-76B	Blown in insulation on top of fiberglass batt insulation	**None Detected**	**98% Mineral Wool**	**2% Other**	White Fibrous Homogeneous
10035213_0141					Teased
10-17-AF-77A	Door caulk / black / outer	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0142					Ashed
10-17-AF-77B	Door caulk / black / outer	**None Detected**		**100% Other**	Black Non-Fibrous Homogeneous
10035213_0143					Ashed

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Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
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Lab ID # 173190

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8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-78A	Door caulk / white / inner	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0144					Dissolved
10-17-AF-78B	Door caulk / white / inner	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0145					Dissolved
10-17-AF-80A	Window caulk / brittle / white	**3% Chrysotile**		**97% Other**	White Non-Fibrous Homogeneous
10035213_0146					Dissolved
10-17-AF-80B	Window caulk / brittle / white	**Not Analyzed**			
10035213_0147					
10-17-AF-79A	Window caulk / rubbery / white	**2% Chrysotile**		**98% Other**	White Non-Fibrous Homogeneous
10035213_0148					Dissolved
10-17-AF-79B	Window caulk / rubbery / white	**Not Analyzed**			
10035213_0149					
10-17-AF-81A	Window glazing compound / white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0150					Crushed, Dissolved
10-17-AF-81B	Window glazing compound / white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0151					Crushed, Dissolved

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Lab ID # 173190

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: PLM
Date Received: 10/19/2023
Date Amended: 10/30/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-82A	Terrazzo floor - tan	None Detected		100% Other	Tan Non-Fibrous Homogeneous
10035213_0152					Crushed
10-17-AF-82B	Terrazzo floor - tan	None Detected		100% Other	Tan Non-Fibrous Homogeneous
10035213_0153					Crushed
10-17-AF-83A	Terrazzo mud base	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10035213_0154					Crushed
10-17-AF-83B	Terrazzo mud base	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10035213_0155					Crushed
10-17-AF-84A	Fabric wrap on fiberglass pipe insulation	None Detected	95% Cellulose	5% Other	Beige Fibrous Homogeneous
10035213_0156					Teased
10-17-AF-84B	Fabric wrap on fiberglass pipe insulation	None Detected	95% Cellulose	5% Other	Beige Fibrous Homogeneous
10035213_0157					Teased
10-17-AF-84C	Fabric wrap on fiberglass pipe insulation	None Detected	95% Cellulose	5% Other	Beige Fibrous Homogeneous
10035213_0158					Teased
10-17-AF-85A	Boiler rib rope	None Detected	95% Mineral Wool	5% Other	White Fibrous Homogeneous
10035213_0159					Teased

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Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

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Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-85B	Boiler rib rope	**None Detected**	**95% Mineral Wool**	**5% Other**	White Fibrous Homogeneous
10035213_0160					Teased
10-17-AF-86A	Plaster ceiling rough coat	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0161					Crushed
10-17-AF-86B	Plaster ceiling rough coat	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0162					Crushed
10-17-AF-86	Plaster ceiling rough coat	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0163					Crushed
10-17-AF-87A	Sealant at boiler plates - red	**None Detected**		**100% Other**	Red Non-Fibrous Homogeneous
10035213_0164					Dissolved
10-17-AF-87B	Sealant at boiler plates - red	**None Detected**		**100% Other**	Red Non-Fibrous Homogeneous
10035213_0165					Crushed
10-17-AF-88A	Stone foundation mortar	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0166					Crushed
10-17-AF-88B	Stone foundation mortar	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0167					Crushed

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Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
10-17-AF-89A	Stained glass window glazing compound in doors	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0168					Dissolved
10-17-AF-89B	Stained glass window glazing compound in doors	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0169					Dissolved
10-17-AF-90A	Ceramic tile mosaic mud base - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0170					Crushed
10-17-AF-90A	Ceramic tile mosaic mud base - gray	**None Detected**		**100% Other**	Gray Non-Fibrous Homogeneous
10035213_0171	*bag labeled 10-17-AF-90B*				Crushed
10-17-AF-91A	Ceramic tile mosaic grout - white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0172					Crushed
10-17-AF-91B	Ceramic tile mosaic grout - white	**None Detected**		**100% Other**	White Non-Fibrous Homogeneous
10035213_0173					Crushed
10-17-AF-92A	Cove base adhesive - orange/brown	**None Detected**		**100% Other**	Orange, Brown Non-Fibrous Homogeneous
10035213_0174					Dissolved
10-17-AF-92A	Cove base adhesive - orange/brown	**None Detected**		**100% Other**	Orange, Brown Non-Fibrous Homogeneous
10035213_0175	*bag labeled 10-17-AF-92B*				Dissolved

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Charmel Dozier (176)
Analyst

Approved Signatory

16035213

Client:	Eagle Environmental, Inc.	***Instructions:**	
Contact:	Victoria Farkas, Brandy Christen	*Use Column "B" for your contact info*	
Address:	8 South Main Street, Terryville, CT		
Phone:	860-589-8257	*To See an Example Click the bottom Example Tab.*	
Fax:	860-585-7034		
Email:	vfarkas@eagleenviro.com bleblanc@eagleenviro.com		
Project:	HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury	***Enter samples between "<<" and ">>" Begin Samples with a "<< "above the first sample and end with a ">>" below the last sample.***	
Client Notes:	Please stop on first positive in sets Please do not split samples	*Only Enter your data on the first sheet "Sheet1"*	
P.O. #.	23-080.13T1		
Date Submitted:	10/18/2023 0:00	*Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.*	
Analysis:	PLM EPA 600R - 93/116		
TurnAroundTime:	5 Day		

Scientific Analytical Institute

4604 Dundas Drive
Greensboro, NC 27407
Phone: 336.292.3888
Fax: 336.292.3313
Email: lab@sailab.com

Sample Number	Data 1	Sample Description	Data 2
<<			
10-17-AF-01A		Black mastic - residual under 12"x12" floor tile	0-01
10-17-AF-01B		Black mastic - under 9"x9" floor tile	0-04
10-17-AF-01C		Black mastic - under 9"x9" floor tile	0-05
10-17-AF-01A-A		Adhesive associated with 12"x12" floor tile	0-01
10-17-AF-01A-B		Adhesive associated with 12"x12" floor tile	0-14
10-17-AF-02A		12"x12" floor tile - white	0-01
10-17-AF-02B		12"x12" floor tile - white	0-14
10-17-AF-19A		9"x9" floor tile - tan	0-04
10-17-AF-19B		9"x9" floor tile - tan	0-11
10-17-AF-24A		9"x9" floor tile - green	0-05
10-17-AF-24B		9"x9" floor tile - green	0-05
10-17-AF-25A		9"x9" floor tile - red	0-05
10-17-AF-25B		9"x9" floor tile - red	0-05
10-17-AF-03A		Adhesive associated with black 4" vinyl cove base - brown	0-01
10-17-AF-03B		Adhesive associated with black 4" vinyl cove base - brown	0-07
10-17-AF-04A		4" vinyl cove base - black	0-01
10-17-AF-04B		4" vinyl cove base - black	0-07
10-17-AF-05A		Plaster rough coat (wall)	0-01

Relinquished By

Accepted ☐

Rejected ☐

Received By 10-19 10:30

10635213

10-17-AF-05B		Plaster rough coat (wall)	0-11
10-17-AF-05C		Plaster rough coat (wall)	1-27
10-17-AF-05D		Plaster rough coat (wall)	1-17
10-17-AF-05E		Plaster rough coat (wall)	1-17
10-17-AF-05F		Plaster rough coat (wall)	1-17
10-17-AF-05G		Plaster rough coat (wall)	1-32
10-17-AF-06A		Plaster skim coat (wall)	0-01
10-17-AF-06B		Plaster skim coat (wall)	0-11
10-17-AF-06C		Plaster skim coat (wall)	1-27
10-17-AF-06D		Plaster skim coat (wall)	1-17
10-17-AF-06E		Plaster skim coat (wall)	1-17
10-17-AF-06F		Plaster skim coat (wall)	1-17
10-17-AF-06G		Plaster skim coat (wall)	1-32
10-17-AF-07A		Sheet rock (ceiling)	0-01
10-17-AF-07B		Sheet rock (ceiling)	0-04
10-17-AF-08A		Glue duabs associated with 1'x1' ceiling tile - brown	0-01
10-17-AF-08B		Glue duabs associated with 1'x1' ceiling tile - brown	0-07
10-17-AF-08C		Glue duabs associated with 1'x1' ceiling tile - brown	1-17
10-17-AF-09A		1'x1' ceiling tile - fissure / white	0-01
10-17-AF-09B		1'x1' ceiling tile - fissure / white	0-04
10-17-AF-64A		1'x1' decorative ceiling tile	1-29
10-17-AF-64B		1'x1' decorative ceiling tile	1-17
10-17-AF-28A		1'x1' ceiling tile - large pin hole / white	0-09
10-17-AF-28B		1'x1' ceiling tile - large pin hole / white	0-08
10-17-AF-10A		Mud base under ceramic floor tile	0-02
10-17-AF-10B		Mud base under ceramic floor tile	0-03
10-17-AF-11A		Mortar associated with pink 4"x4" ceramic wall tile - white	0-02
10-17-AF-11B		Mortar associated with blue 4"x4" ceramic wall tile - white	0-03
10-17-AF-12A		Window glazing compound - gray	0-02
10-17-AF-12B		Window glazing compound - gray	0-03
10-17-AF-13A		window sill (slate) - black	0-02
10-17-AF-13B		window sill (slate) - black	0-03
10-17-AF-16A		Sheet rock (wall)	0-04
10-17-AF-16B		Sheet rock (wall)	0-14
10-17-AF-17A		Joint compound associated with sheet rock - white	0-04
10-17-AF-17B		Joint compound associated with sheet rock - white	0-14
10-17-AF-20A		Adhesive associated with plastic cove base at stair risers at alter - brown	0-04

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10-17-AF-20A		Adhesive associated with plastic cove base at stair risers at alter - brown	0-04
10-17-AF-20B		Adhesive associated with plastic cove base at stair risers at alter - brown	0-04
10-17-AF-21A		Concrete foundation (wall)	0-04
10-17-AF-21B		Concrete foundation (wall)	0-04
10-17-AF-22A		Window glazing compound at partician windows - gray	0-04
10-17-AF-22B		Window glazing compound at partician windows - gray	0-04
10-17-AF-23A		Mudded fittings associated with 4" pipe	0-04
10-17-AF-23B		Mudded fittings associated with 4" pipe	0-13
10-17-AF-23C		Mudded fittingsassociated with 2" pipe	0-05
10-17-AF-26A		Adhesive associated with 4" vinyl cove base - yellow	0-05
10-17-AF-26B		Adhesive associated with 4" vinyl cove base - yellow	0-05
10-17-AF-27A		4" vinyl cove base - brown	0-07
10-17-AF-27B		4" vinyl cove base - brown	0-13
10-17-AF-29A		Flex connector - black	0-09
10-17-AF-29B		Flex connector - black	0-09
10-17-AF-31A		Laminant counter top - tan	0-09
10-17-AF-31B		Laminant counter top - tan	0-09
10-17-AF-32A		Laminant floating floor - wood pattern	0-09
10-17-AF-32B		Laminant floating floor - wood pattern	0-09
10-17-AF-33A		Sink undercoating - white	0-09
10-17-AF-33B		Sink undercoating - white	0-10
10-17-AF-34A		Door frame caulk - gray	0-10
10-17-AF-34B		Door frame caulk - gray	0-10
10-17-AF-35A		Mud insulation at black pipe wall entrance	0-10
10-17-AF-35B		Mud insulation at black pipe wall entrance	0-10
10-17-AF-36A		Cement at flue	0-10
10-17-AF-36B		Cement at flue	0-10
10-17-AF-37A		Red fire stop caulk at flue	0-10
10-17-AF-37B		Red fire stop caulk at flue	0-12
10-17-AF-38A		Interior door frame caulk - yellow	0-12
10-17-AF-38B		Interior door frame caulk - yellow	roof - main
10-17-AF-39A		Bottom layer Caulk at metal step flashing - soft white	roof - main
10-17-AF-39B		Bottom layer Caulk at metal step flashing - soft white	roof - main
10-17-AF-40A		Brittle caulk at metal step flashing - pale white (verticals, horizontals)	roof - main

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10-17-AF-40B		Brittle caulk at metal step flashing - pale white (verticals, horizontals)	roof - main
10-17-AF-41A		Top layer caulk at metal step flashing - white (verticals)	roof - main
10-17-AF-41B		Top layer caulk at metal step flashing - white (verticals)	roof - main
10-17-AF-42A		Interior gutter liner tar	roof - main
10-17-AF-42B		Interior gutter liner tar	roof - main
10-17-AF-43A		Bottom layer asphalt shingles - black	roof - main
10-17-AF-43B		Bottom layer asphalt shingles - black	roof - main
10-17-AF-44A		Tar on bottom layer asphalt shingles at gutter edge flashing	roof - main
10-17-AF-44B		Tar on bottom layer asphalt shingles at gutter edge flashing	roof - main
10-17-AF-45A		Top layer architectural asphalt shingles - gray	roof - main
10-17-AF-45B		Top layer architectural asphalt shingles - gray	roof - main
10-17-AF-46A		Caulk at gutter / brick junction - gray / felxible	roof - main
10-17-AF-46B		Caulk at gutter / brick junction - gray / felxible	roof - main
10-17-AF-47A		Caulk at lead flashing in concrete cap seams - black	roof - flat
10-17-AF-47B		Caulk at lead flashing in concrete cap seams - black	roof - flat
10-17-AF-48A		Reglet caulk at brick - gray	roof - flat
10-17-AF-48B		Reglet caulk at brick - gray	roof - flat
10-17-AF-49A		Caulk at metal flashing seams - white	roof - flat
10-17-AF-49B		Caulk at metal flashing seams - white	roof - flat
10-17-AF-60A		Wall Pannel adhesive - grey	1-19
10-17-AF-60B		Wall Pannel adhesive - grey	1-19
10-17-AF-61A		Carpet glue - brown	1-21
10-17-AF-61B		Carpet glue - brown	1-21
10-17-AF-62A		Textured ceiling paint - sandy	1-21
10-17-AF-62B		Textured ceiling paint - sandy	1-21
10-17-AF-62C		Textured ceiling paint - sandy	1-21
10-17-AF-63A		Sink undercoating - green	1-24
10-17-AF-63B		Sink undercoating - green	1-24
10-17-AF-65A		Textured ceiling paint - white / thick / webbed apperance	1-30
10-17-AF-65B		Textured ceiling paint - white / thick / webbed apperance	1-30
10-17-AF-65C		Textured ceiling paint - white / thick / webbed apperance	1-30
10-17-AF-66A		Window glazing compound - grey	first floor
10-17-AF-66B		Window glazing compound - grey	first floor
10-17-AF-67A		window glazing compound debris - on floor	mezzanine
10-17-AF-67B		window glazing compound debris - on floor	mezzanine
10-17-AF-68A		Terrazzo - brown at perimeter	1-17
10-17-AF-68B		Terrazzo - brown at perimeter	1-17

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10-17-AF-69A		Mud associated with marble wall panels	1-17
10-17-AF-69B		Mud associated with marble wall panels	1-17
10-17-AF-70A		Tar on CMU at floor to closet - black	Attic closet
10-17-AF-70B		Tar on CMU at floor to closet - black	Attic closet
10-17-AF-71A		Fiber board on walls	Attic closet
10-17-AF-71B		Fiber board on walls	Attic closet
10-17-AF-72A		Caulk at seams and edges of fiber board	Attic closet
10-17-AF-72B		Caulk at seams and edges of fiber board	Attic closet
10-17-AF-73A		Thin tar on CMU walls - black	Attic
10-17-AF-73B		Thin tar on CMU walls - black	Attic
10-17-AF-74A		Tectum roof deck	Attic
10-17-AF-74B		Tectum roof deck	Attic
10-17-AF-75A		Skim coat concrete on tectum at platform	Attic
10-17-AF-75B		Skim coat concrete on tectum at platform	Attic
10-17-AF-76A		Blown in insulation on top of fiberglass batt insulation	Attic
10-17-AF-76B		Blown in insulation on top of fiberglass batt insulation	Attic
10-17-AF-77A		Door caulk / black / outer	Exterior
10-17-AF-77B		Door caulk / black / outer	Exterior
10-17-AF-78A		Door caulk / white / inner	Exterior
10-17-AF-78B		Door caulk / white / inner	Exterior
10-17-AF-80A		Window caulk / brittle / white	Exterior
10-17-AF-80B		Window caulk / brittle / white	Exterior
10-17-AF-79A		Window caulk / rubbery / white	Exterior
10-17-AF-79B		Window caulk / rubbery / white	Exterior
10-17-AF-81A		Window caulk / white	Exterior
10-17-AF-81B		Window caulk / white	Exterior
10-17-AF-82A		Terrazzo floor - tan	1-17
10-17-AF-82B		Terrazzo floor - tan	1-17
10-17-AF-83A		Terrazzo mud base	1-17
10-17-AF-83B		Terrazzo mud base	1-17
10-17-AF-84A		Fabric wrap on fiberglass pipe insulation	0-14
10-17-AF-84B		Fabric wrap on fiberglass pipe insulation	0-14
10-17-AF-84C		Fabric wrap on fiberglass pipe insulation	0-04
10-17-AF-85A		Boiler rib rope	0-10
10-17-AF-85B		Boiler rib rope	0-10
10-17-AF-86A		Plaster ceiling rough coat	0-13
10-17-AF-86B		Plaster ceiling rough coat	0-13
10-17-AF-86		Plaster ceiling rough coat	0-13

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160 35213

10-17-AF-87A		Sealant at boiler plates - red	0-10
10-17-AF-87B		Sealant at boiler plates - red	0-10
10-17-AF-88A		Stone foundation mortar	Façade - A
10-17-AF-88B		Stone foundation mortar	Façade - A
10-17-AF-89A		Stained glass window glazing compound in doors	Façade - A
10-17-AF-89B		Stained glass window glazing compound in doors	Façade - A
10-17-AF-90A		Ceramic tile mosaic mud base - gray	Façade - A
10-17-AF-90A		Ceramic tile mosaic mud base - gray	Façade - A
10-17-AF-91A		Ceramic tile mosaic grout - white	Façade - A
10-17-AF-91B		Ceramic tile mosaic grout - white	Façade - A
10-17-AF-92A		Cove base adhesive - orange/brown	1-24
10-17-AF-92A		Cove base adhesive - orange/brown	1-26

>>

Relinquished By

Received By

Bulk Asbestos Analysis
by Transmission Electron Microscopy

Semi-Quantitative
Chatfield SOP 1988-02 Rev. 1

Customer: Eagle Environmental, Inc
8 South Main Street Suite 3
Terryville, CT 06786

Attn: Victoria Farkas
Brandy LeBlanc-Christen

Project: HBMI - Frair - Main Church Building, 24 Branch Street, Waterbury

Lab Order ID: **10035213**
Analysis: TBS
Date Received: 10/26/2023
Date Reported: 10/27/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Organic (Wt %)	Acid Soluble (Wt. %)	Asbestos (Wt %)		LCL-UCL (Wt. %)
10-17-AF-08A	**Glue duabs associated with 1'x1' ceiling tile - brown**	**51%**	**0%**	**0.49%**	**Chrysotile**	**0.44 - 0.54%**
10035213_0034						
10-17-AF-43A	**Bottom layer asphalt shingles - black**	**46%**	**0%**	None Detected		
10035213_0094						

Disclaimer: This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government.

Daniel Schwartz (2)
Analyst

Approved Signatory

10035213

Client:	Eagle Environmental, Inc.
Contact:	Victoria Farkas, Brandy Christen
Address:	8 South Main Street, Terryville, CT
Phone:	860-589-8257
Fax:	860-585-7034
Email:	vfarkas@eagleenviro.com bleblanc@eagleenviro.com
Project:	HBMI - Friar - Main Church Building, 24 Branch Street, Waterbury
Client Notes:	Please stop on first positive in sets Please do not split samples
P.O. #	23-080.13T1
Date Submitted:	10/18/2023 0:00
Analysis:	TEM: Chatfield
TurnAroundTime:	24 Hour

Instructions:
Use Column "B" for your contact info

To See an Example Click the bottom Example Tab.

Enter samples between "<<" and ">>"
Begin Samples with a "<< "above the first sample and end with a ">>" below the last sample.
Only Enter your data on the first sheet "Sheet1"

Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.

Scientific Analytical Institute

4604 Dundas Drive
Greensboro, NC 27407
Phone: 336.292.3888
Fax: 336.292.3313
Email: lab@sailab.com

Sample Number	Data 1	Sample Description	Data 2
<<			
10-17-AF-08A		Glue duabs associated with 1'x1' ceiling tile - brown	0-01
10-17-AF-43A		Bottom layer asphalt shingles - black	roof - main
>>			

Accepted ☑

Rejected ☐

Relinquished By

Received By

10/27. 1:30pm

APPENDIX C

XRF LEAD-BASED PAINT INSPECTION REPORTS

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: S#03611 - 10/17/23 09:31

INSPECTION FOR: Mr. Dan Dryzgula
Friar Architecture, Inc.
21 Talcott Notch Road
Farmington, Connecticut 06032

PERFORMED AT: Former St. Lucy's Church
24 Branch Street
Waterbury, Connecticut

INSPECTION DATE: 10/17/23

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 03611

ACTION LEVEL: 1.0 mg/cm^2

OPERATOR LICENSE: 002115

Pre-renovation lead based paint screen

SIGNED: _____ **Date:** 10/17/23

Michael Stewart
Lead Inspector Risk Assessor
Eagle Environmental, Inc
8 South Main Street, Suite #3
Terryville, CT 06786

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: Mr. Dan Dryzgula

Inspection Date:	10/17/23	Former St. Lucy's Church
Report Date:	10/18/2023	24 Branch Street
Abatement Level:	1.0	Waterbury, Connecticut
Report No.	S#03611 - 10/17/23 09:31	
Total Readings:	97 Actionable: 4	
Job Started:	10/17/23 09:31	
Job Finished:	10/17/23 14:51	

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
Interior Room 018 Number Only									
050	A	Door	Ctr	Casing	I	Metal	black	1.3	QM
Interior Room 023 Number Only									
059	B	Door	Ctr	Casing	I	Metal	black	1.1	TC
Interior Room 029 Number Only									
066	C	Door	Ctr	Casing	I	Metal	black	1.3	QM
Interior Room 031 Number Only									
068	A	Door	Ctr	Casing	I	Metal	black	1.1	TC

---- End of Readings ----

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Mr. Dan Dryzgula

Inspection Date:	10/17/23	Former St. Lucy's Church
Report Date:	10/18/2023	24 Branch Street
Abatement Level:	1.0	Waterbury, Connecticut
Report No.	S#03611 - 10/17/23 09:31	
Total Readings:	97	
Job Started:	10/17/23 09:31	
Job Finished:	10/17/23 14:51	

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
Exterior Room 001 Number Only									
080	A	siding	Ctr		I	Concrete	White	-0.6	QM
079	A	Door	Ctr	Casing	I	Metal	black	-0.1	TC
081	B	Door	Ctr	Casing	I	Metal	black	-1.0	QM
082	C	Door	Ctr	Casing	I	Metal	black	0.1	QM
083	D	Door	Ctr	Casing	I	Metal	black	0.2	QM
Interior Room 001 Number Only									
011	A	Radiator	Ctr		I	Metal	Biege	-0.2	QM
004	A	Wall	Ctr		I	Concrete	Biege	-0.1	QM
005	A	Wall	Ctr		I	Plaster	Biege	-0.2	QM
006	A	Wall	Rgt		I	Dry wall	Biege	0.5	QM
015	A	Stairs	Ctr	Stringers	I	Metal	Biege	-0.3	QM
014	A	Stairs	Ctr	Baseboard	I	Metal	Biege	-0.1	QM
012	A	Stairs	Ctr	Risers	I	Metal	Biege	-0.1	QM
013	A	Stairs	Ctr	Newel post	I	Metal	Biege	-0.2	QM
016	A	Stairs	Ctr	Balusters	I	Metal	Biege	-0.2	QM
007	C	Wall	Ctr		I	CMU	Biege	-0.3	QM
008	C	Window	Ctr	Casing	I	Metal	Biege	-0.1	QM
009	C	Door	Ctr	Door	I	Wood	Varnish	-0.2	QM
010	C	Door	Ctr	Casing	I	Metal	Biege	-0.1	QM
Interior Room 002 Number Only									
017	B	Wall	Ctr		I	Plaster	White	-0.2	QM
084	B	Wall	Ctr		I	Ceramic	Pink	-0.2	QM
018	D	Door	Ctr	Casing	I	Metal	White	-0.3	QM
Interior Room 003 Number Only									
085	B	Wall	Ctr		I	Ceramic	blue	-0.3	QM
Interior Room 004 Number Only									
041	A	Steel Beam	Ctr		I	Steel	green	-0.1	QM
042	A	Truss	Ctr		I	Steel	black	0.7	TC
043	A	Column suppo	Ctr		I	Steel	Biege	-0.2	QM
020	A	Wall	Ctr		I	CMU	Biege	-0.4	QM
019	B	Wall	Ctr		I	Concrete	Biege	-0.3	QM
021	C	Door	Ctr	Door	I	Wood	Varnish	-0.3	QM
022	C	Door	Ctr	Casing	I	Metal	Biege	-0.1	QM
Interior Room 005 Number Only									
027	A	Radiator	Ctr		I	Metal	White	-0.1	QM
023	A	Wall	Ctr		I	Concrete	White	-0.5	QM

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Mr. Dan Dryzgula

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
025	A	Door	Ctr	Door	I	Wood	Stained	-0.4	QM
026	A	Door	Ctr	Casing	I	Metal	White	-0.3	QM
024	B	Wall	Ctr		I	Dry wall	White	-0.2	QM
Interior Room 007 Number Only									
028	A	Wall	Ctr		I	CMU	Yellow	-0.3	QM
029	C	Wall	Ctr		I	Concrete	Yellow	-0.6	QM
030	C	Door	Ctr	Door	I	Metal	Yellow	-0.2	QM
Interior Room 009 Number Only									
031	A	Wall	Ctr		I	CMU	Yellow	-0.5	QM
032	B	Wall	Ctr		I	Concrete	Yellow	-0.1	QM
Interior Room 011 Number Only									
034	A	Door	Ctr	Door	I	Wood	Varnish	-0.4	QM
035	A	Door	Ctr	Casing	I	Metal	White	-0.1	QM
033	B	Wall	Ctr		I	Plaster	Biege	-0.3	QM
038	C	Stairs	Ctr	Stringers	I	Metal	Brown	-0.3	QM
036	C	Stairs	Ctr	Baseboard	I	Metal	Brown	-0.2	QM
037	C	Stairs	Ctr	Risers	I	Metal	Brown	-0.2	QM
Interior Room 014 Number Only									
039	B	Wall	Ctr		I	Dry wall	White	-0.2	QM
040	D	Wall	Ctr		I	Concrete	White	-0.3	QM
Interior Room 015 Number Only									
044	A	Door	Ctr	Casing	I	Metal	black	0.6	TC
045	C	Window	Ctr	Casing	I	Wood	Stained	-0.4	QM
Interior Room 016 Number Only									
046	B	Radiator	Ctr		I	Metal	Biege	-0.1	QM
Interior Room 017 Number Only									
047	B	Radiator	Ctr		I	Metal	Biege	-0.3	QM
048	B	Wall	Ctr		I	Plaster	Biege	-0.3	QM
049	D	Wall	Ctr		I	Plaster	Biege	-0.6	QM
Interior Room 018 Number Only									
050	A	Door	Ctr	Casing	I	Metal	black	1.3	QM
053	B	Wall	Ctr		I	Plaster	Biege	-0.2	QM
051	C	Door	Ctr	Casing	I	Metal	White	-0.2	QM
052	C	Door	Ctr	Door	I	Wood	Varnish	-0.2	QM
Interior Room 021 Number Only									
057	B	Hatch	Ctr	Cover	I	Wood	White	-0.3	QM
058	B	Hatch	Ctr	Trim	I	Wood	White	-0.1	QM
054	B	Wall	Ctr		I	Dry wall	Biege	-0.4	QM
055	B	Chair rail	Ctr		I	Wood	Biege	-0.4	QM
056	B	Ceiling	Ctr		I	Dry wall	White	0.0	QM

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Mr. Dan Dryzgula

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
Interior Room 023 Number Only									
059	B	Door	Ctr	Casing	I	Metal	black	1.1	TC
060	C	Door	Ctr	Casing	I	Metal	White	-0.2	QM
Interior Room 024 Number Only									
061	C	Wall	Ctr		I	Plaster	Biege	-0.5	QM
Interior Room 025 Number Only									
062	C	Ceiling	Ctr		I	Plaster	Biege	-0.2	QM
Interior Room 026 Number Only									
063	A	Wall	Ctr		I	Plaster	Biege	-0.3	QM
Interior Room 027 Number Only									
064	A	Wall	Ctr		I	Plaster	Biege	-0.2	QM
065	A	Door	Ctr	Casing	I	Metal	Biege	-0.3	QM
Interior Room 029 Number Only									
067	B	Door	Ctr	Casing	I	Metal	Biege	-0.2	QM
066	C	Door	Ctr	Casing	I	Metal	black	1.3	QM
Interior Room 031 Number Only									
068	A	Door	Ctr	Casing	I	Metal	black	1.1	TC
Interior Room 032 Number Only									
069	A	Wall	Ctr		I	Plaster	Biege	0.2	QM
094	A	Window	Ctr	Casing	I	Wood	Biege	0.0	QM
092	A	Window	Ctr	Sash	I	Metal	black	-0.5	QM
093	A	Window	Ctr	Sill	I	Wood	Biege	-0.1	QM
071	A	Door	Ctr	Casing	I	Metal	Biege	-0.2	QM
072	A	Door	Ctr	Door	I	Wood	Stained	-0.4	QM
070	B	Wall	Ctr		I	Plaster	Biege	-0.2	QM
Interior Room 033 Number Only									
077	A	Stairs	Ctr	Stringers	I	Metal	White	-0.1	QM
078	A	Stairs	Ctr	Railing	I	Metal	White	-0.3	QM
074	C	Wall	Ctr		I	CMU	White	0.0	QM
075	D	Shelf	Ctr		I	Wood	White	-0.3	QM
076	D	Shelf	Ctr	Support	I	Wood	White	0.0	QM
073	D	Door	Ctr	Casing	I	Metal	White	0.0	QM
Calibration Readings									
001								0.7	TC
002								0.8	TC
003								0.7	TC
086								0.7	TC
087								0.7	TC
088								0.7	TC

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Mr. Dan Dryzgula

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm^2)	Mode
089								0.8	TC
090								0.8	TC
091								0.7	TC
095								0.7	TC
096								0.7	TC
097								0.7	TC

---- End of Readings ----

APPENDIX D

ABATEMENT AND CONSULTING COST ESTIMATES

HAZARDOUS MATERIALS ABATEMENT & CONSULTING COST ESTIMATES
24 BRANCH STREET
WATERBURY, CONNECTICUT

ASBESTOS ABATEMENT COST ESTIMATE

ASSUMES COMPLETE REMOVAL OF ALL IDENTIFIED ASBESTOS CONTAINING MATERIALS EXCEPT FOR THE THIN TAR ON CMU WALLS. AN ALLOWANCE FOR THE REMOVAL OF THE OVERLYING WALL MATERIALS HAS BEEN PROVIDED WHERE THE TAR MAY BE IMPACTED DURING RENOVATION ACTIVITIES.

MATERIALS	QUANTITY		UNIT COST			TOTAL COST
MASTIC AND ASSOCIATED FLOOR TILES	10,900	$	8.00	SF	$	87,200.00
MUDDED FITTING CEMENT	75	$	75.00	EA	$	5,625.00
MUDDED FITTING CEMENT (ASSUMED IN WALLS AND CEILINGS)	75	$	100.00	EA	$	7,500.00
GLUE DAUBS AND ASSOCIATED 1'X1' CEILING TILES ON SHEETROCK*	18,050	$	12.00	SF	$	216,600.00
INTERIOR DOOR CAULK	26	$	20.00	LF	$	520.00
MUD INSULATION AT PIPE WALL ENTRANCE	3	$	125.00	SF	$	375.00
EXTERIOR CAULKS AT METAL STEP FLASHING	110	$	20.00	LF	$	2,200.00
INTERIOR GUTTER LINER TAR	170	$	8.00	SF	$	1,360.00
TAR ON BOTTOM LAYER ASPHALT SHINGLES AT GUTTER EDGE FLASHING	170	$	15.00	SF	$	2,550.00
WINDOW GLAZING COMPOUND DEBRIS / MEZZANINE DECONTAMINATION	1	$	10,000.00	SUM	$	10,000.00
TAR ON CMU AT FLOOR TO CLOSET	20	$	50.00	LF	$	1,000.00
CAULK IN SEAMS / EDGES OF FIBER BOARD WALL PANELS	75	$	25.00	LF	$	1,875.00
THIN TAR ON CMU - ALLOWANCE FOR OVERLYING WALL REMOVAL**	1	$	64,000.00	SUM	$	64,000.00
EXTERIOR WINDOW, VENT, DOOR CAULK	1,424	$	15.00	LF	$	21,360.00
EXTERIOR WINDOW CAULK AT 'FLOWER' WINDOW	11	$	225.00	PANE	$	2,475.00
INTERIOR BOILER COMPONENTS	*1*	*$*	*7,500.00*	*EA*	*$*	*7,500.00*
VALVE GASKETS	*35*	*$*	*25.00*	*EA*	*$*	*875.00*
VALVE PACKING	37	*$*	*50.00*	*EA*	*$*	*1,850.00*
PARAPET/ROOF WALL FLASHING CEMENTS UNDER RUBBER ROOFING	*125*	*$*	*15.00*	*SF*	*$*	*1,875.00*
ROOF FIELDS UNDER RUBBER ROOFING	*1,500*	*$*	*15.00*	*SF*	*$*	*22,500.00*
*VAPOR PAPER UNDER BOTTOM LAYER ASPHALT SHINGLES****	*10,000*	*$*	*10.00*	*SF*	*$*	*100,000.00*
SUBTOTAL					$	559,240.00
ASBESTOS ABATEMENT CONTINGENCY					$	55,924.00
ASBESTOS ABATEMENT TOTAL					**$**	**615,164.00**

ITALICIZED MATERIALS ARE ASSUMED TO BE ASBESTOS-CONTAINING

**ASSUMES ABATEMENT WORK WILL BE PERFORMED UTILIZING LIFT EQUIPEMENT WITHIN THE MAIN CHAPEL. ADDITIONAL FEES MAY BE INCURRED IF SCAFFOLDING IS REQUIRED FOR ELEVATED ABATEMENT WORK.*

***ASSUMES PLASTER COVERING ASBESTOS TAR WILL BE REMOVED IN ITS ENTIRETY WITHIN AN ASBESTOS-REGULATED WORK AREA BUT WILL BE BE DISPOED OF AS NON-HAZARDOUS SOLID WASTE.*

****INCLUDES THE REMOVAL AND DISPOSAL OF ALL LAYERS OF ASPHALTIC ROOFING SHINGLES AND VAPOR PAPER ONLY AS ACM. FEES FOR SCAFFOLDING TO ACCESS ROOF NOT INCORPRATED INTO THIS LINE ITEM.*

LEAD BASED PAINT COST ESTIMATE

LEAD-BASED PAINT HAS BEEN IDENTIFIED ON METAL DOOR CASINGS WITHIN THE BUILDING AND LEAD FLASHING ON THE ROOF. THE COMPONENTS CAN BE RECYCLED IN AN APPROVED FACILITY IF THEY WILL BECOME A WASTE PRODUCT DURING RENOVATION ACTIVITIES.

TASK	QUANTITY	UNIT COST	TOTAL COST
LEAD PAINT REMOVAL AND DISPOSAL ALLOWANCE	1	$ 5,000.00 EA	$ 5,000.00
LEAD PAINT ALLOWANCE TOTAL			**$ 5,000.00**

UNIVERSAL WASTE ABATEMENT COST ESTIMATE

MATERIAL	QUANTITY	UNIT COST	TOTAL COST
MERCURY CONTAINING THERMOSTATS DISPOSAL	3	$ 10.00 EA	$ 30.00
CHLOROFLUOROCARBON RECLAMATION	2	$ 150.00 EA	$ 300.00
LEAD ACID BATTERY RECLAMATION	18	$ 5.00 EA	$ 90.00
LABOR	1	$ 600.00 DAY	$ 600.00
SUBTOTAL			$ 1,020.00
UNIVERSAL WASTE ABATEMENT CONTINGENCY			$ 255.00
UNIVERSAL WASTE TOTAL			**$ 1,275.00**

HAZARDOUS MATERIALS ABATEMENT SUBTOTAL **$ 621,439.00**

HAZARDOUS MATERIALS CONSULTING COST ESTIMATE

CONSULTING COST	QUANTITY	UNIT COST	TOTAL COST
ADDITIONAL INSPECTION SERVICES FOR ASSUMED MATERIALS/ROOFER	1	2500.00 SUM	$ 2,500.00
DESIGN SERVICES: PLANS, SPECS, PRE-BID	1	6500.00 SUM	$ 6,500.00
PRE-CONSTRUCTION MEETING (ONE MEETING WITH CONTRACTOR)	4	125.00 HOUR	$ 500.00
CONTRACTOR SUBMITTAL REVIEW	6	105.00 HOUR	$ 630.00
DAILY MONITORING* (9 HOURS/DAY AT $80.00/HR)	15	$720.00 DAY	$ 10,800.00
PCM AIR SAMPLES* (SAME DAY TURNAROUND TIME)	100	$10.00 EACH	$ 1,000.00
TEM AIR SAMPLES* (24 HOUR TURNAROUND TIME)	15	$95.00 EACH	$ 1,425.00
DOCUMENTATION REPORT - ASBESTOS	1	$1,000.00 EACH	$ 1,000.00
SENIOR PROJECT MANAGEMENT*	10	$125.00 HOUR	$ 1,250.00
PRINCIPAL PROJECT OVERSIGHT*	2	$170.00 HOUR	$ 340.00
ADMINISTRATION/CLERICAL SERVICES*	6	$55.00 HOUR	$ 330.00
SUBTOTAL			$ 26,275.00
CONSULTING CONTINGENCY			$ 2,627.50
CONSULTING TOTAL			**$ 28,902.50**

*ASSUMES PART-TIME MONITORING OF ABATEMENT ACTIVITIES AND ALL FINAL VISUAL INSPECTIONS WITH RE-OCCUPANCY AIR TESTING

GRAND TOTAL **$ 650,341.50**

APPENDIX E

EAGLE ENVIRONMENTAL INC. LICENSES AND LABORATORY CERTIFICATES

ATLAS

CERTIFICATE OF ACHIEVEMENT

This certifies that

Angelo Folino

has successfully completed the
4 Hour Asbestos Site Inspector Refresher Training
Asbestos Accreditation Under TSCA Title II
40 CFR Part 763

Training held via a Live Webinar

Score: 80%

conducted by:
ATC Group Services LLC dba ATLAS Technical
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Gregory J. Morsch

Principal Instructor: Gregory Morsch

June 22, 2023
Date of Course

June 22, 2024
Expiration Date

Gregory J. Morsch

Regional Training Director: Gregory Morsch

SIAR - 7479
Certificate Number

June 22, 2023
Examination Date

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
ASBESTOS CONSULTANT-INSPECTOR

ANGELO R FOLINO

CERTIFICATE NO.
001163

CURRENT THROUGH
01/31/24

VALIDATION NO.
03-049246

SIGNATURE

COMMISSIONER

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS LICENSED
BY THIS DEPARTMENT AS A

LEAD CONSULTANT CONTRACTOR

EAGLE ENVIRONMENTAL INC.

LICENSE NO.
001723

CURRENT THROUGH
04/30/24

VALIDATION NO.
03-038154

SIGNATURE

COMMISSIONER

CERT#: L-600-Virtual.1314

CHEMSCOPE TRAINING DIVISION

LEAD INSPECTOR/RISK ASSESSOR REFRESHER
8-HOUR TRAINING CERTIFICATE

Michael S. Stewart

8 South Main Street, Suite 3, Terryville CT

Has attended an 8-hour course on the subject discipline on

04/13/2023 and has passed a written examination.

The above individual has successfully completed the above training course approved in accordance with the Department of Public Health Standards established pursuant to Section 20-477 of the Connecticut General Statutes.

Course topics include all required topics of State of Connecticut DPH and EPA.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (U.S.C. 1001 and 15 U.S. C. 2615), I certify that this training complies with all applicable requirements of Title IV of TSCA, 40 CFR part 745 and any other applicable Federal, State or local requirements.

Examination Score: 98%
Exam Date: 04/13/2023
Expiration Date: 04/13/2024

Daniel Sullivan
Training Manager

Chem Scope, Inc.
15 Moulthrop Street
North Haven CT 06473
Phone: 203.865.5605
www.chem-scope.com

© GOES 340

Litho in U.S.A.

License Type	License Number	Expiration Date	Granted Date	License Name	License Status		Licensure Actions or Pending Charges
Lead Inspector Risk Assessor	2115	10/31/2023	06/21/2001	Michael S. Stewart	ACTIVE	CURRENT	None

State of Connecticut, Department of Public Health

Approved Environmental Laboratory

THIS IS TO CERTIFY THAT THE LABORATORY DESCRIBED BELOW HAS BEEN APPROVED BY THE STATE DEPARTMENT OF PUBLIC HEALTH PURSUANT TO APPLICABLE PROVISIONS OF THE PUBLIC HEALTH CODE AND GENERAL STATUTES OF CONNECTICUT, FOR MAKING THE EXAMINATIONS, DETERMINATIONS OR TESTS SPECIFIED BELOW WHICH HAVE BEEN AUTHORIZED IN WRITING BY THAT DEPARTMENT.

SCIENTIFIC ANALYTICAL INSTITUTE, INC.

LOCATED AT 4604 DUNDAS DRIVE IN GREENSBORO, NC 27407

AND REGISTERED IN THE NAME OF NATHANIEL DURHAM

THIS CERTIFICATE IS ISSUED IN THE NAME OF NATHANIEL DURHAM WHO HAS BEEN DESIGNATED BY THE REGISTERED OWNER/AUTHORIZED AGENT TO BE IN CHARGE OF THE LABORATORY WORK COVERED BY THIS CERTIFICATE OF APPROVAL AS FOLLOWS:

DRINKING WATER	ENVIRONMENTAL HEALTH & HOUSING	BUILDING MATERIALS
Examination For:	LEAD IN PAINT	Examination For:
ASBESTOS	LEAD (PAINT) IN SOIL	ASBESTOS FIBERS – PCM. TEM
	LEAD IN DUST WIPES	ASBESTOS IN BULK – PLM, TEM

SEE COMPUTER PRINT-OUT FOR SPECIFIC TESTS APPROVED

EFFECTIVE RENEWAL DATE JANUARY 1, 2022

THIS CERTIFICATE EXPIRES DECEMBER 31, 2023 AND IS REVOCABLE FOR CAUSE BY THE STATE DEPARTMENT OF PUBLIC HEALTH

DATED AT HARTFORD, CONNECTICUT, THIS 1st DAY OF November, 2021

Registration No.

PH–0336

Lori J. Mathieu '21

Lori J. Mathieu
Public Health Branch Chief

CITY OF WATERBURY

WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CONNECTICUT 06704

FRIAR PROJECT NO. 2023-026B
CITY OF WATERBURY RFP NO. 8801
CONSTRUCTION SET
MAY 01, 2026

Certifications of Local Approval:

I certify that I have local jurisdiction over the State Building Code and that the plans and project manual dated _____ for the above referenced project comply with all applicable building codes.

Local Building Official's Name _____ Signature _____ Date _____

I certify that I have local jurisdiction over the State Fire Safety Code and that the plans and project manual dated _____ for the above referenced project comply with all applicable fire codes

Local Fire Marshal's Name _____ Signature _____ Date _____

I certify that I have local jurisdiction over the State Health Code and that the plans and project manual dated _____ for the above referenced project comply with all applicable health codes.

Local Health Official's Name _____ Signature _____ Date _____

I certify that I have local jurisdiction over Section 504 of the Rehabilitation Act of 1973 including the Uniform Federal Accessibility Standards (UFAS) and the 504 Regulations. I further certify that the plans and project manual dated _____ for the above referenced project comply with all applicable accessibility codes.

Local Federal 504 Official's Name _____ Signature _____ Date _____

CIVIL/LANDSCAPE ENGINEER
BENESCH
200 GLASTONBURY BLVD., SUITE 201
GLASTONBURY, CT 06033

ARCHITECT
FRIAR ARCHITECTURE
21 TALCOTT NOTCH ROAD
FARMINGTON, CT 06032

STRUCTURAL ENGINEER
MHAI, INC.
780 EAST MAIN STREET, SUITE 1
BRANFORD, CT 06405

MEP / FP ENGINEER
CONSULTING ENGINEERING SERVICES
811 MIDDLE STREET
MIDDLETOWN, CT 06457

FRIAR
architecture
interior design
master planning

ENVIRONMENTAL ENGINEER
EAGLE ENVIRONMENTAL, INC.
150 MAIN STREET, SUITE B
BRISTOL, CT 06010



SITE LOCATION MAP

SET NUMBER

INDEX OF DRAWINGS

REFERENCE

R0.1	INDEX OF DRAWINGS
R1.1	REFERENCE SHEET
R1.2	UL RATINGS AND WALL TYPES
R1.3	CODE INFORMATION
R1.4	LOWER LEVEL EGRESS PLAN
R1.5	FIRST LEVEL & MEZZANINE EGRESS PLANS

CIVIL

L1.0	DEMOLITION SEDIMENTATION & EROSION CONTROL
L1.1	SEDIMENTATION & EROSION CONTROL DETAILS
L1.2	SEDIMENTATION & EROSION CONTROL DETAILS
L1.3	DEMOLITION SEDIMENTATION & EROSION CONTROL NOTES
L2.0	LAYOUT & MATERIALS PLAN
L3.0	GRADING DRAINAGE AND UTILITY PLAN
L3.1	DRAINAGE DETAILS
L3.2	UTILITY DETAILS
L4.0	PLANTING PLAN
L5.0	LANDSCAPE DETAILS
L5.1	LANDSCAPE DETAILS
L5.2	LANDSCAPE DETAILS
L5.3	LANDSCAPE DETAILS
L6.0	PHOTOMETRIC PLAN

HAZARDOUS MATERIALS

HM-1	LOWER FLOOR ABATEMENT PLAN
HM-2	FIRST FLOOR ABATEMENT PLAN
HM-3	MEZZANINE FLOOR ABATEMENT PLAN
HM-4	SOUTH & WEST EXTERIOR ABATEMENT ELEVATIONS
HM-5	NORTH & EAST EXTERIOR ABATEMENT ELEVATIONS

DEMOLITION

D1.1	LOWER FLOOR DEMOLITION PLAN
D1.2	FIRST FLOOR DEMOLITION PLAN
D1.3	MEZZANINE FLOOR DEMOLITION PLAN
D1.4	ROOF DEMOLITION PLAN
D3.1	SOUTH & WEST EXTERIOR DEMO ELEVATIONS
D3.2	NORTH & EAST EXTERIOR DEMO ELEVATIONS
D9.1	LOWER LEVEL REFLECTED CEILING - DEMO
D9.2	FIRST FLOOR REFLECTED CEILING - DEMOLITION
D9.3	MEZZANINE FLOOR REFLECTED CEILING - DEMOLITION
D11.1	INTERIOR DEMO ELEVATIONS

ARCHITECTURE

A1.1	LOWER FLOOR PLAN
A1.2	FIRST FLOOR PLAN
A1.3	MEZZANINE PLAN
A1.4	ATTIC PLAN
A2.1	ROOF PLAN
A2.2	TYPICAL ROOF DETAILS
A2.3	TYPICAL ROOF DETAILS
A2.4	ROOF DETAILS
A3.1	BUILDING ELEVATIONS
A3.2	BUILDING ELEVATIONS
A3.3	ENTRY CANOPY ADD ALT. NO. 03
A6.1	LARGE SCALE TOILET INTERIOR ELEVATIONS & PLAN
A6.2	LARGE SCALE BOILER ROOM STAIR, DETAILS & SECTION
A6.3	LARGE SCALE SOUTH STAIR, DETAILS & SECTION
A8.1	DOOR ELEVATIONS, DOOR DETAILS & DOOR SCHEDULE
A8.2	EXTERIOR WINDOW ELEVATIONS
A8.3	EXTERIOR WINDOW DETAILS
A9.1	LOWER LEVEL REFLECTED CEILING PLAN - BASE BID
A9.1A	ADD ALT. LOWER LEVEL REFLECTED CEILING PLAN
A9.2	FIRST FLOOR REFLECTED CEILING PLAN
A9.3	MEZZANINE FLOOR REFLECTED CEILING PLAN
A9.4	ATTIC REFLECTED CEILING PLAN
A12.0	FINISH SCHEDULE, LEGEND AND NOTES
A12.1	FIRST FLOOR FINISH PLAN

STRUCTURAL

S0.0	GENERAL NOTES
S0.1	GENERAL NOTES
S1.0	FOUNDATION PLAN & LOWER FLOOR
S1.1	FIRST FLOOR FRAMING PLAN
S1.2	MEZZANINE FLOOR FRAMING PLAN
S2.0	DETAILS
S3.0	FOUNDATION SECTIONS
S4.0	FLOOR SECTIONS
S5.0	ROOF SECTIONS
S6.0	TYPICAL DETAILS
S6.1	TYPICAL DETAILS

SITE UTILITY

FSU-1.1	FIRE PROTECTION SITE UTILITY PLAN
PSU-1.1	PLUMBING SITE UTILITY PLAN
ESU-1.1	ELECTRICAL SITE UTILITY PLAN
ESU5.0	ELECTRICAL SITE DETAILS
ESU5.1	ELECTRICAL SITE DETAILS

FIRE PROTECTION

FP0.0	FIRE PROTECTION ABBREVIATIONS, NOTES & SYMBOLS
FP1.1	FIRE PROTECTION LOWER FLOOR PLAN
FP1.1A	ADD ALT. FIRE PROTECTION LOWER FLOOR PLAN
FP1.2	FIRE PROTECTION FIRST FLOOR PLAN
FP1.3	FIRE PROTECTION MEZZANINE FLOOR PLAN
FP1.4	FIRE PROTECTION ATTIC FLOOR PLAN
FP5.0	FIRE PROTECTION DETAILS
FP9.0	FIRE PROTECTION SPECIFICATIONS

PLUMBING

P0.0	PLUMBING ABBREVIATIONS, NOTES & SYMBOLS
PD1.1	PLUMBING LOWER LEVEL DEMO PLAN
PD1.2	PLUMBING FIRST FLOOR DEMO PLAN
PD1.3	PLUMBING MEZZANINE LEVEL DEMO PLAN
P1.1U	PLUMBING UNDERGROUND FLOOR PLAN
P1.1	PLUMBING LOWER LEVEL PLAN
P1.2	PLUMBING FIRST FLOOR PLAN
P1.3	PLUMBING MEZZANINE FLOOR PLAN
P2.1	PLUMBING ROOF PLAN
P5.0	PLUMBING DETAILS
P5.1	PLUMBING DETAILS
P6.0	PLUMBING SCHEDULES & DIAGRAMS
P9.0	PLUMBING SPECIFICATIONS

MECHANICAL

M0.0	MECHANICAL ABBREVIATIONS, NOTES & SYMBOLS
M0.1	MECHANICAL ABBREVIATIONS, NOTES & SYMBOLS
MD1.1	MECHANICAL LOWER LEVEL DEMO PLAN
MD1.2	MECHANICAL FIRST FLOOR DEMO PLAN
MD1.3	MECHANICAL MEZZANINE LEVEL DEMO PLAN
M1.1	MECHANICAL DUCTWORK LOWER LEVEL PLAN
M1.2	MECHANICAL DUCTWORK FIRST FLOOR PLAN
M1.3	MECHANICAL DUCTWORK MEZZANINE FLOOR PLAN
M1.4	MECHANICAL DUCTWORK ATTIC FLOOR PLAN
MP1.1	MECHANICAL PIPING LOWER LEVEL PLAN
MP1.2	MECHANICAL PIPING FIRST FLOOR PLAN
MP1.3	MECHANICAL PIPING MEZZANINE FLOOR PLAN
MP1.4	MECHANICAL PIPING ATTIC FLOOR PLAN
M5.0	MECHANICAL DETAILS
M5.1	MECHANICAL DETAILS
M5.2	MECHANICAL DIAGRAMS
M5.3	MECHANICAL DIAGRAMS
M6.0	MECHANICAL SCHEDULES
M6.1	MECHANICAL SCHEDULES
M7.0	MECHANICAL CONTROLS DIAGRAMS
M7.1	MECHANICAL CONTROLS DIAGRAMS
M9.0	MECHANICAL SPECIFICATIONS
M9.1	MECHANICAL SPECIFICATIONS

ELECTRICAL

E0.0	ELECTRICAL ABBREVIATIONS, NOTES & SYMBOLS
ED1.1	ELECTRICAL LOWER LEVEL DEMO PLAN
ED1.2	ELECTRICAL FIRST FLOOR DEMO PLAN
ED1.3	ELECTRICAL MEZZANINE FLOOR DEMO PLAN
EL1.1	ELECTRICAL LIGHTING LOWER LEVEL PLAN
EL1.1A	ADD ALT. ELECTRICAL LIGHTING LOWER FLOOR PLAN
EL1.2	ELECTRICAL LIGHTING FIRST FLOOR PLAN
EL1.3	ELECTRICAL LIGHTING MEZZANINE LEVEL FLOOR PLAN
EL1.4	ELECTRICAL LIGHTING ATTIC FLOOR PLAN
EP1.1	ELECTRICAL POWER LOWER LEVEL PLAN
EP1.2	ELECTRICAL POWER FIRST FLOOR PLAN
EP1.3	ELECTRICAL POWER MEZZANINE FLOOR PLAN
EP1.4	ELECTRICAL POWER ATTIC FLOOR PLAN
E5.0	ELECTRICAL DETAILS
E5.1	ELECTRICAL DETAILS
E5.2	ELECTRICAL DETAILS
E5.3	ELECTRICAL DETAILS
E5.4	ELECTRICAL DETAILS
E6.0	ELECTRICAL SCHEDULES
E6.1	ELECTRICAL PANEL SCHEDULES
E6.2	ELECTRICAL PANEL SCHEDULES
E7.0	ELECTRICAL RISER DIAGRAM
E7.1	FIRE ALARM RISER DIAGRAM
E9.0	ELECTRICAL SPECIFICATIONS
E9.1	ELECTRICAL SPECIFICATIONS

FRIAR
architecture
interior design
master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY
HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT
DOCUMENTS

INDEX OF DRAWINGS

DATE: 2026-0501
SCALE
PROJ. #: 2023-026B
DRAWN: JNR
CHECKED: DRD
5/1/2026 4:08:48 PM

SHEET NO.

R0.1

ELECTRICAL MOUNTING HEIGHTS

ALL MOUNTING HEIGHTS TO BE COORDINATED WITH BLOCK COURSING AS OCCURS. CONSULT ARCHITECT IF EXISTING CONDITIONS DIFFER

ALL DIMENSIONS ARE TO THE CENTER OF DEVICE UNLESS OTHERWISE NOTED.
SEE ELECTRICAL DRAWINGS FOR TYPES AND LOCATIONS.

RECEPTACLES : 18" A.F.F. (AT LOCATIONS ABOVE CASEWORK, MOUNT BOTTOM OF RECEPTACLE AT 2" ABOVE BACKSPLASH. AT LOCATIONS BELOW CASEWORK, MOUNT AT 24" A.F.F.)

WIREMOLD: 24" A.F.F. (AT LOCATIONS ABOVE CASEWORK, MOUNT BOTTOM OF WIREMOLD AT 2" ABOVE BACKSPLASH)

EXTERIOR RECEPTACLES: 24" A.F.G. (20" A.F.F.)

SWITCHES: 48" A.F.F.

BOILER EMERGENCY SWITCHES: 60" A.F.F.

DATA/PHONE OUTLETS: 18" A.F.F.

TV OUTLETS: 18" A.F.F. OR 18" BELOW FINISHED CEILING*
*FIELD VERIFY CEILING HEIGHTS WITH COORDINATION DRAWINGS

WALL PHONE: 48" A.F.F. TO CENTER OF EARPIECE

SECURITY KEYPAD: 48" A.F.F.

MICROPHONE WALL JACK: 48" A.F.F.

FIRE ALARM PULL STATION: 48" A.F.F.

FIRE ALARM VISUAL/AUDIO INDICATING UNITS: 6'-8" TO BOTTOM OF UNIT

AREA OF REFUGE CALL STATION: 48" A.F.F.

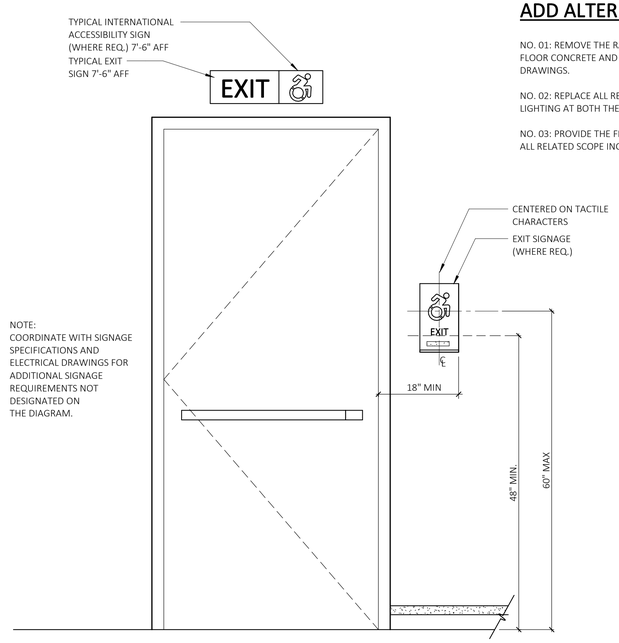
EMERGENCY SHUT-OFF SWITCH / PUSH BUTTON: 48" A.F.F.

EMERGENCY CALL SWITCH: 36" A.F.F.

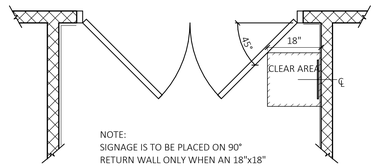
EMERGENCY CALL BELL / LIGHT: +/- 7'-6" A.F.F., CENTER ABOVE DOOR

WALL MOUNTED EXIT SIGNS: 7'-6" A.F.F

WALL MOUNTED CLOCKS AND SPEAKERS: +/- 7'-6" A.F.F.



SIGNAGE LOCATION DIAGRAM



SIGNAGE LOCATION DIAGRAM - ALT

CONSTRUCTION NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL CODES AND ORDINANCES.
2. DO NOT SCALE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATION OF DIMENSIONS FROM THE ARCHITECT BEFORE CONTINUING WITH CONSTRUCTION.
3. CONTRACT DRAWINGS MAY VARY FROM ACTUAL FIELD CONDITIONS. CONTRACTOR SHALL CORRECT DIMENSIONS OF ALL MATERIALS TO CARRY OUT OF THE INTENT OF THE CONTRACT DRAWINGS. VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS IN FIELD BEFORE ORDERING ANY MATERIALS. CONTRACTOR SHALL NOTIFY ARCHITECT PROMPTLY OF ANY CRITICAL DISCREPANCIES BEFORE PROCEEDING WITH WORK.
4. ALL NEW WORK SHALL BE IMPLEMENTED SO AS TO PROVIDE A SMOOTH AND CONTINUOUS SURFACE WITH ALL EXISTING CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE BE RESPONSIBLE FOR ALL WORK NECESSARY TO ACHIEVE THIS REQUIREMENT, EVEN THROUGH PROCEDURES ARE NOT DETAILED FOR EACH SPECIFIC CONDITION OR COMBINATION OF CONDITIONS. QUALITY OF WORKMANSHIP, MATERIALS AND FINISHES SHALL BE EQUAL TO THE LEVEL ESTABLISHED FOR SIMILAR CONSTRUCTION, EXCEPT WHERE EXISTING APPEARANCE IS TO BE MATCHED TO ACHIEVE CONTINUITY.
5. CUTTING AND PATCHING SHALL BE THE RESPONSIBILITY OF THE TRADE WHOSE WORK RESULTS IN THE NEED FOR CUTTING AND PATCHING UNLESS A SPECIFIC CONTRACTOR IS CALLED OUT ON THE DRAWINGS. ALL HOLES LEFT BY REMOVING MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT, ETC. SHALL BE PATCHED.
6. UNLESS OTHERWISE NOTED OR DIMENSIONED, NEW PARTITIONS SHALL BE CENTERED ON BUILDING COLUMN GRID OR WINDOW MULLIONS.
7. CONTRACTOR SHALL PROVIDE WOOD BLOCKING AT WALLS AS REQUIRED TO SUPPORT SHELVES, CABINETS TV BRACKETS AND RELATED ITEMS.
8. ALL EGRESS DOORS SHALL BE NON-LOCKING IN DIRECTION OF TRAVEL.
9. ALL PARTITIONS ARE TO EXTEND TO UNDERSIDE OF DECK ABOVE UNLESS NOTED ON WALL PARTITION DETAILS OR WALL SECTIONS.

GENERAL NOTES

1.) DIMENSION CRITERIA

A. FROM FACE TO METAL STUD TO FACE OF METAL STUD
B. FROM FACE TO METAL STUD TO FACE OF CONCRETE MASONRY UNIT
C. FROM FACE TO CONCRETE MASONRY UNIT TO FACE OF CONCRETE MASONRY UNIT

2.) REFER TO SHEET R1.3 FOR WALL TYPES

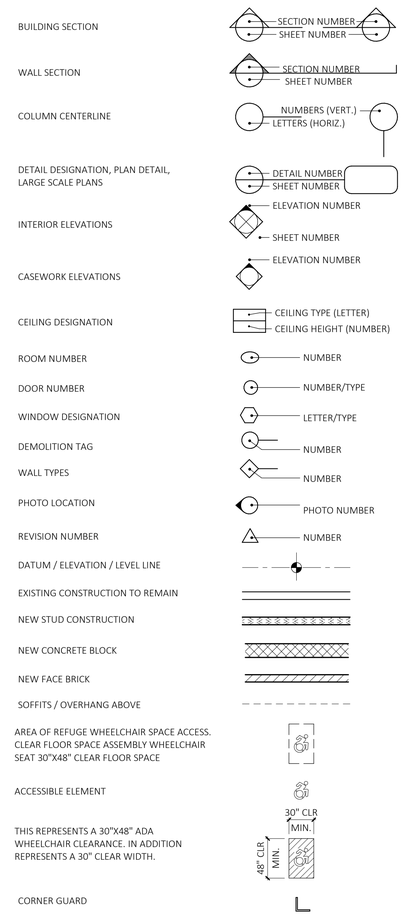
ADD ALTERNATE LIST

NO. 01: REMOVE THE RAISED STEPPED FLOORING AT THE LOWER-LEVEL CENTRAL MEETING AREA AND THE FIRST-FLOOR CONCRETE AND TERRAZZO TILE / MARBLE FLOORING AT THE MAIN PULPIT WHERE INDICATED ON THE DRAWINGS.

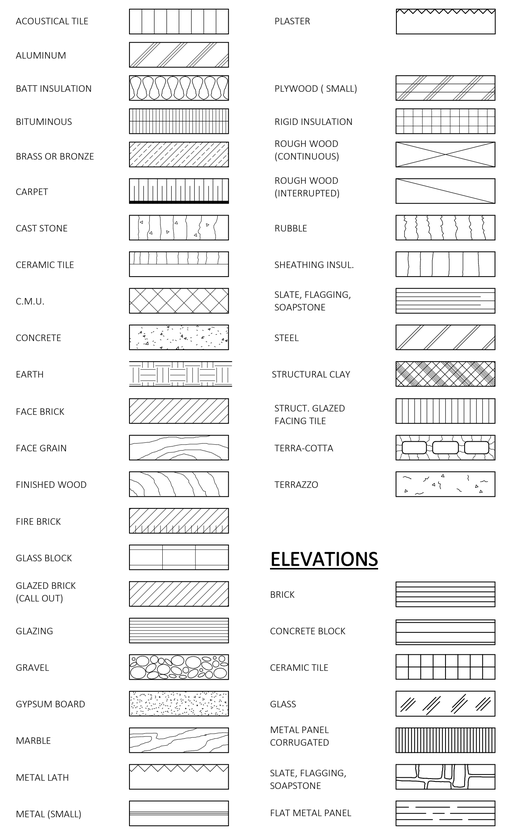
NO. 02: REPLACE ALL REMOVED / ABATED 12"X12" CEILINGS WITH NEW 2'X2' ACT CEILINGS WITH NEW 2'X2' LED LIGHTING AT BOTH THE LOWER-LEVEL AND THE FIRST FLOOR WHERE INDICATED ON THE DRAWINGS.

NO. 03: PROVIDE THE FRONT CANOPY AS PREVIOUSLY DESIGNED DURING THE LAST PHASE OF THE PROJECT; INCLUDE ALL RELATED SCOPE INCLUDING FOOTINGS, STEEL, LED LIGHTING, ETC.

ARCHITECTURAL SYMBOLS



ARCHITECTURAL MATERIALS



ELEVATIONS

ABBREVIATIONS

ABOVE FINISH FLOOR	A.F.F.	CENTER	CTR.	EXISTING	EXIST.	INCLUDE / INCLUDING	INCL.	PREFABRICATED	PREFAB.	STRUCTURAL STEEL.	STRUCT. STL.
ABOVE FINISH GRADE	A.F.G.	CENTERLINE	CL	EXISTING TO REMAIN	ETR.	INFORMATION	INFO.	PROJECT, PROJECTION	PROJ.	SUSPEND, SUSPENSION	SUSP.
ACOUSTIC	AC.	CERAMIC	CT	EXPANSION	EXP.	INSIDE DIAMETER	I.D.	POINT	PT.	SURFACE	SURF.
ACOUSTIC TILE	A.C.T.	CHALKBOARD	C.BD.	EXPANSION JOINT	E.J.	INSULATION	INSUL.	QUANTITY	QTY.	SYSTEM	SYS.
AIR CONDITIONING	A.C.	CHANNEL	CH.	EXTERIOR	EXT.	INTERIOR	INT.	QUARRY TILE	Q.T.	TACKBOARD	T.BD.
AIR HANDLING UNIT	A.H.U.	CLOSET	CLOS.	EXTERIOR INSULATION		JOINT	JT.	RADIUS	RAD.	TELEPHONE	TEL.
ALTERNATE	ALT.	COLUMN	COL.	FINISH SYSTEM	EIFS.	KICKPLATE	KP.	RAIN WATER LEADER	RWL.	TEMPERATURE/TEMPORARY	TEMP.
ALUMINUM	ALUM.	CONFERENCE	CONF.	EQUIPMENT	EQUIP.	LABORATORY	LAB.	RECEIVING	RECV.	TONGUE & GROOVE	T & G
ANCHOR, ANCHORAGE	ANCH.	CONTROL OR	C.J.	EXISTING	EXIST.	LAVATORY	LAV.	REFRIGERATOR	REF.	THRESHOLD	THLD.
ANCHOR BOLTS	AB	CONSTRUCTION JOINT		EXISTING TO REMAIN	ETR.	LIGHTING	LTG.	REINFORCED / REINFORCING	REINF.	THICK	THK.
ANGLE	L	CONTINUOUS	CONT.	EXPANSION	EXP.	MACHINE	MACH.	REQUIRED	REQ'D.	TOILET	TLT
ANODIZED	ANOD.	CONTRACTOR	CONTR.	EXPANSION JOINT	E.J.	MAINTENANCE	MAINT.	REVISION, REVISED	REV.	TOP OF	T/O
APPROVED	APPD.	CORRIDOR	CORR.	FEET, FOOT	FT.	MANUFACTURER	MFR.	RISER	R	TREAD	T.
ARCHITECTURAL / ARCHITECT	ARCH.	COURSE / COURSES	CRS.	FINISH, FINISHED	FIN.	MARKER BOARD	MBD.	ROOF DRAIN	R.D.	TYPICAL	TYP.
ASBESTOS	ASB.	DAMPPROOFING	DAMPR.	FIRE DAMPER	FDR.	MASONRY	MAS.	ROOM	RM.	UNDERWRITER'S LABORATORIES	U.L.
ASPHALT	ASPH.	DEGREE	DEG.	FIRE EXTINGUISHER	FE.	MASONRY OPENING	M.O.	SANITARY NAPKIN DISPENSER	S.N.D.	UNIT HEATER	U.H.
ASSEMBLY	ASSY.	DEMOLITION	DEMO.	FIRE RETARDANT	FR.	MATERIAL	MATL.	SANITARY NAPKIN RECEPTACLE	S.N.R.	UNIT VENTILATOR	U.V.
ASSISTANT	ASST	DEPARTMENT	DEPT.	FIREPROOFING	FPRFG.	MAXIMUM	MAX.	SCHEDULE	SCHED.	UNLESS NOTED OTHERWISE	U.N.O.
AT	@	DETAIL	DET.	FIXTURE	FIXT.	MECHANICAL	MECH.	SCUPPER	SC.	URINAL	UR.
AUTOMATIC	AUTO.	DIAMETER	DIA.	FLASHING	FLASH.	METAL	MET.	SECTION	SECT.	VENT THRU ROOF	V.T.R.
BEAM	BM.	DIMENSION	DIM.	FLOOR	FL.	MEZZANINE	MEZZ.	SEISMIC JOINT	S.J.	VERIFY IN FIELD	V.I.F.
BEARING	BRG.	DISTANCE	DIST.	FLOOR DRAIN	FD.	MINIMUM	MIN.	SERVICE SINK	S.S.	VERTICAL	VERT.
BETWEEN	BET.	DOOR	DR.	FLOOR FINISH	FLR. FIN.	MISCELLANEOUS	MISC.	SHEET	SHT.	VINYL ASBESTOS TILE	V.A.T.
BEVEL / BEVELED	BEV.	DOUBLE	DBL.	FOOTING.	FTG.	OFFICE	OFF.	SIMILAR	SIM.	VINYL COMPOSITION TILE	V.C.T.
BITUMINOUS	BIT.	DOUBLE HUNG	D.H.	FOUNDATION	FDN.	ON CENTER	O.C.	SOAP DISPENSER	S.D.	WATER CLOSET	W.C.
BLOCK	BLK.	DOWN	DN.	FURNISH / FURNISHED	FURN.	OPPOSITE HAND	O.H.	SOUND TRANSMISSION CLASS	S.T.C.	WATERPROOFING	W.P.
BLOCKING	BLKG.	DOWNSPOUT	D.S.	FURRED / FURRING	FURR.	OPENING	OPG.	SPECIFICATIONS	SPEC.	WELDED WIRE FABRIC	W.W.F.
BOARD	BD.	DRAWING	DWG.	GAUGE	GA.	OUTSIDE DIAMETER	O.D.	SPLASH BLOCK	S.B.	WEIGHT	WT.
BOTTOM OF	B/O	DRINKING FOUNTAIN	D.F.	GALVANIZED	GALV.	PAINTED	PTD.	SQUARE	SQ.	WHITE BOARD	WBD.
BOTTOM	BOTT.	EACH	EA.	GYPSUM BOARD	GYP.BD.	PAIR	PR.	SQUARE INCH (S)	SQ.IN.	WITH	W/
BUILDING	BLDG.	ELECTRIC / ELECTRICAL	ELEC.	HANDRAIL	HR.	PAPER TOWEL DISPENSER	P.T.D.	SQUARE YARD (S)	SQ.YD.	WOOD	WD.
BUILT-UP ROOF	B.U.R.	ELECTRIC WATER COOLER	EWC.	HANDICAPPED	H.C.	PERPENDICULAR	PERP.	SQUARE FEET (FOOT)	S.F.		
CABINET	CAB.	ELEVATION	EL.	HEIGHT	HGT.	PLASTER	PLAS.	STAINLESS STEEL	ST. STL.		
CABINET UNIT HEATER	C.U.H.	ELEVATOR	ELEV.	HIGH POINT	HP.	PLASTIC LAMINATE	P.LAM.	STANDARD	STD.		
CAPACITY	CAP.	EXISTING FIRE EXTINGUISHER	EXFE	HOLLOW METAL	HM.	PLATE	PL.	STEEL	STL.		
CEILING	CLG.	EMERGENCY	EMG.	HORIZONTAL	HORIZ.	PLUMBING	PLBG.	STORAGE	STOR.		
CEILING HEIGHT	CLG. HGT.	EQUAL	EQ.	HOSE BIB	HB.	PLYWOOD	PLYWD.	STRUCTURAL	STRUCT.		
CEMENT	CEM.	EQUIPMENT	EQUIP.	INCH OR INCHES	IN. OR "	PRECAST	P.C.	STRUCTURAL GLAZED FACING TILE	SGFT.		

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

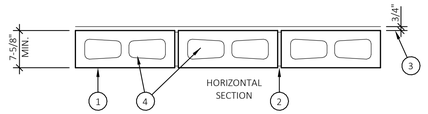
CONTRACT DOCUMENTS

REFERENCE SHEET

DATE: 2026-0501	SHEET NO.
SCALE As indicated	
PROJ. #: 2023-026B	R1.1
DRAWN: JNR, MDC	
CHECKED: DRD	
5/1/2026 4:08:50 PM	

DESIGN NO. U905

BEARING WALL RATING - 2 HOUR
NONBEARING WALL RATING - 2 HOUR



1. CONCRETE BLOCKS* - VARIOUS DESIGNS. CLASSIFICATION D-2 (2 HOUR)

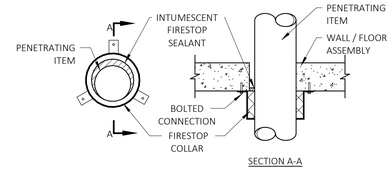
   SEE CONCRETE BLOCKS CATEGORY FOR LIST OF ELIGIBLE MANUFACTURERS

2. MORTAR - BLOCKS LAID IN FULL BED OF MORTAR, NOM. 3/8 IN. THICK, OF NOT LESS THAN 2-1/4 AND NOT MORE THAN 3-1/2 PARTS OF CLEAN SHARP SAND TO 1 PART PORTLAND CEMENT (PROPORTIONED BY VOLUME) AND NOT MORE THAN 50 PERCENT HYDRATED LIME (BY CEMENT VOLUME). VERTICAL JOINT STAGGERED.

3. PORTLAND CEMENT STUCCO OR GYPSUM PLASTER - ADD 1/2 HOUR TO CLASSIFICATION IF USED. WHERE COMBUSTIBLE MEMBERS ARE FRAMED IN WALL, PLASTER OR STUCCO MUST BY APPLIED ON THE FACE OPPOSITE FRAMING TO ACHIEVE A MAX. CLASSIFICATION OF 1-1/2 HOUR.

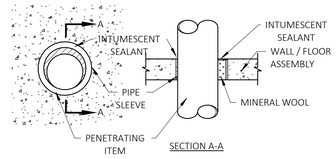
4. LOOSE MASONRY FILL - IF ALL CORE SPACES ARE FILLED WITH LOOSE DRY EXPANDED SLAG, EXPANDED CLAY OR SHALE (ROTARY KILN PROCESS), WATER REPELLANT VERMICULATE MASONRY FILL INSULATION, OR SILICONE TREATED PERLITE LOOSE FILL INSULATION ADD 2 HOUR TO CLASSIFICATION.

   * BEARING THE U.L. CLASSIFICATION MARKING



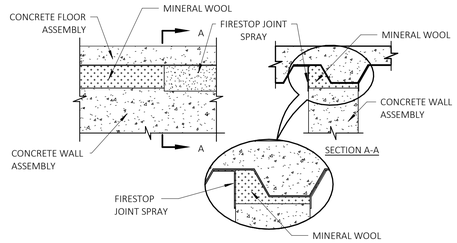
System No: C-AJ-2109

PLASTIC PIPE THROUGH CONCRETE FLOOR / WALL OR BLOCK WALL



System No: C-AJ-1226

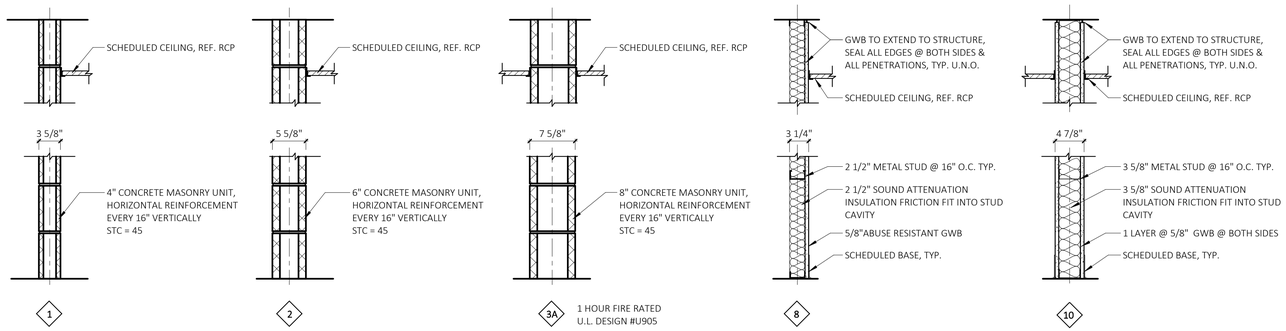
METAL PIPE THROUGH A SLEEVE IN CONC. FLOOR / WALL OR BLOCK WALL



System No: HW-D-0181

TOP OF WALL JOINT 1 HR. CONCRETE/BLOCK WALL ASSEMBLY

WALL TYPES



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WATERBURY COMMUNITY
HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

UL RATINGS AND WALL TYPES

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	JNR
CHECKED:	DRD
5/1/2026 4:08:51 PM	

SHEET NO.

R1.2

12. FIRE / SMOKE RESISTIVE ASSEMBLIES

Type of Assemblies	Construction	Code Reference
Corridors	No fire rating req'd	1020.1, table 1020.2
Furnace rooms where any equipment > 400,000 BTU/hour input	Smoke tight (w/ sprinkler system)	Table 509.1
Boiler room where largest piece of eqmt. is > 15 psi and 10 horsepower	Smoke tight (w/ sprinkler system)	Table 509.1
Elevator machine / contols room	n/a	n/a
Shafts	1 hour fire barrier	713.4
Electrical Room	Smoke tight	x
MDF room (w/ BDA equipment)	2 hour fire barrier	x

13. MISC. CODE SECTIONS & SUMMARIES

13A. Section 1019 Exit Access Stairways and Ramps
1019.2 All occupancies. Exit access stairways and ramps that serve floor levels within a single story are not required to be enclosed.

13B. Section 505 Mezzanines and Equipment Platforms
505.2.3 Openness. A mezzanine shall be open and unobstructed to the room in which such mezzanine is located except for walls not more than 42 inches in height, columns and posts.
Determination is required for if a code modification is required for this section. The Owner has requested a taller wall at the mezzanine area which is programmed for the Student Study Lounge to increase safety and help prevent objects being deposited onto the floor level below. Current design height of this wall is 9'-4".

BUILDING ENVELOPE REQUIREMENTS - FENESTRATION

IECC 2021 TABLE 802.2(1) - ZONE 5

ELEMENT	MINIMUM REQUIRED CONDITION/VALUE
VERTICAL FENESTRATION (40% MAX. ABOVE GRADE)	
U - FACTOR	0.35
FRAMING MATERIALS OTHER THAN METAL WITH OR WITHOUT METAL REINFORCEMENT OR CLADDING	
U - FACTOR	0.35
METAL FRAMING WITH OR WITHOUT THERMAL BREAK	
CURTAINWALL / STOREFRONT U - FACTOR	0.45
ENTRANCE DOOR U - FACTOR	0.80
ALL OTHER U - FACTOR	0.55
SHGC - ALL FRAME TYPES	
SHGC PF < 0.25	0.40
SHGC PF 0.25 ≤ PF < 0.5	NR
SHGC PF ≥ 0.5	NR

BUILDING ENVELOPE REQUIREMENTS - OPAQUE ASSEMBLIES

IECC 2021 TABLE 802.2(1) - ZONE 5

ELEMENT	MINIMUM REQUIRED CONDITION/VALUE
ROOFS	
INSULATION ENTIRELY ABOVE DECK	R-20 C.I.
ATTIC AND OTHER	R-30
WALLS, ABOVE GRADE	
MASS	R-7.6 C.I.
METAL FRAMED	R-13 + R- 3.8 C.I.
BELOW GRADE WALLS	NR
FLOORS	
MASS	R-10 C.I.
JOIST / FRAMING	R-19
SLAB ON GRADE FLOORS	
UNHEATED SLABS	NR
HEATED SLABS	R-7.5 FOR 24 IN. BELOW
OPAQUE DOORS	
SWINGING	U - 0.70
ROLL UP OR SLIDING	U- 1.45

CODE INFORMATION

Date of Original Construction: 1964 Renovation: 2024

1. GROUP CLASSIFICATION
(Primary): BUSINESS*
(Incidental): N/A

2. CONSTRUCTION TYPE (Chapter 6)
Minimum Type Required: IIB
Actual Type Provided: (existing) IIB
(new) IIB

3. BUILDING HEIGHT (Chapter 5)
Allowable Height (story/feet): 4 / 75'
Actual Height (story/feet): 2 / 63'-7"
(Stories Above Grade): 1*

*Section 505.2: A mezzanine or mezzanines in compliance with Section 505.2 shall be considered a portion of the story below. Such mezzanines shall not contribute to either the building area or number of stories as regulated by Section 503.1. The area of the mezzanine shall be included in determining the fire area. The clear height above and below the mezzanine floor construction shall be not less than 7 feet (2134 mm).

4. BUILDING AREA (Chapter 5)

(Lower Level)	Existing Construction	8,953 s.f.
	New Construction	0 s.f.
	Total Floor	8,953 s.f.
(Main Level)	Existing Construction	8,967 s.f.
	New Construction	0 s.f.
	Total Floor	8,967 s.f.
(Mezzanine Level)	Existing Construction	969* s.f.
	New Construction	0 s.f.
	Total Floor	969 s.f.
	Total Building Area	18,889 s.f.
	Total Area Allowed By Code (506.2)	69,000 s.f.

*11% of the floor area below.

5. FIRE-RESISTANCE RATED REQUIREMENTS FOR BUILDING ELEMENTS (Table 601)

1) Structural frame: including columns, girders, trusses: 0 Hr(s)
2) Bearing Walls:
Exterior: 0 Hr(s)
Interior: 0 Hr(s)
3) Nonbearing walls and partitions (Exterior): Table 705.5
4) Nonbearing walls and partitions (Interior): 0 Hr(s)
5) Floor Construction (Including supporting beams and joists): 0 Hr(s)
6) Roof Construction, (Including supporting beams and joists): 0 Hr(s)

Exception 1[b]: Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members in roof construction shall not be required, including protection of primary structural frame members, roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

6. OCCUPANCY LOAD

	Lower Level	First Floor	Mezz.
Design Totals - Each Floor*	56	71	3
Total Exit Capacity - Each Floor	765	1,157	153

Design Total for Building*: 130
Total Exit Capacity for Building: 2,075

* Design occupancies totals indicated above are based on projected worst case scenarios reflecting potential anticipated furniture layouts. Actual occupancy code calculated loads are less than these values; these values are provided to display over abundance of egress capacity.

7. ACCESSIBLE BUILDING
X Designated
_____ Non-designated

8. MINIMUM PLUMBING FIXTURE COUNT (IPC Chapter 4) (IBC Table 2902.1)
BASED ON OCCUPANT LOADS:

BUSINESS - B: 108 persons
STORAGE - S: 8 persons

Total Combined Occupants	Number Required	Number Provided
Water Closets	M 3 F 3	M 3 F 3
Lavatories	M 2 F 2	M 2 F 2
Drinking Fountains	1	1
Service Sinks	1	1

*NOTE: plumbing analysis is based on a change of building use from Assembly to Business, and also the direction from the City that the first floor only is intended to be occupied in Phase 01. The lower level is intended to be unoccupied however for the purposes of this Phase 01 business occupancy was included and first floor restrooms provided. Phase 02 will increase occupany and additional plumbing fixtures will be added at the lower level.

[P] 2902.1.2 Single-User Toilet and Bathing Room Fixtures
The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1110.2.1, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of their sex. The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.

9. SPRINKLER PROTECTION
X Entire Building
_____ Limited Area

10. CODES TO WHICH THIS PROJECT WAS DESIGNED

2024 International Building Code (IBC) by ICC
2024 International Existing Building Code (IEBC) by ICC
2024 International Energy Conservation Code (IECC) by ICC
2024 International Mechanical Code (IMC) by ICC
2024 International Plumbing Code (IPC) by ICC
2023 NFPA 70 National Electrical Code (NEC) by NFPA
2024 International Fire Code (IFC) by ICC
2021 NFPA 101 - Life Safety Code by the NFPA
2024 NFPA 1 - Fire Code by the NFPA
OSHA - Current Required
Section 504 - 1973 w/ current amendments
ADA - 2010

11. THRESHOLD BUILDING CONDITIONS _____ Yes X No

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CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

CODE INFORMATION

DATE: 2026-0501
SCALE
PROJ. #: 2023-026B
DRAWN: DRD
CHECKED: DRD
5/1/2026 4:08:51 PM

SHEET NO.
R1.3

EGRESS PLAN LEGEND

(101) ROOM NUMBER

ROOM OCCUPANCY LOAD

725 / 20 = 37

725 ← AREA IN SQUARE FEET

20 ← OCCUPANCY LOAD FACTOR

EXIT CAPACITY

100 ← ACTUAL EGRESS OCCUPANCY OF DOOR OR STAIR

342 ← MAXIMUM ALLOWABLE EGRESS OCCUPANCY OF DOOR OR STAIR

BR ——— Balance Exit. Minimum number of exits required per 1018.0

BD ——— Balance Exit. Exit required due to dead end corridor

BA ——— Balance Exit. Exit as required for Assembly space.

BT ——— Balance Exit. Exit as required due to travel distance.

15 → DIRECTION OF TRAVEL WITH ACCUMULATED OCCUPANCY LOAD

* – – – – – – – – – – – – – – – * MAXIMUM TRAVEL DISTANCE FROM FURTHEST POINT

– – – – – – – – – – – – – – – – SMOKE PARTITION (TIGHT TO DECK ABOVE)

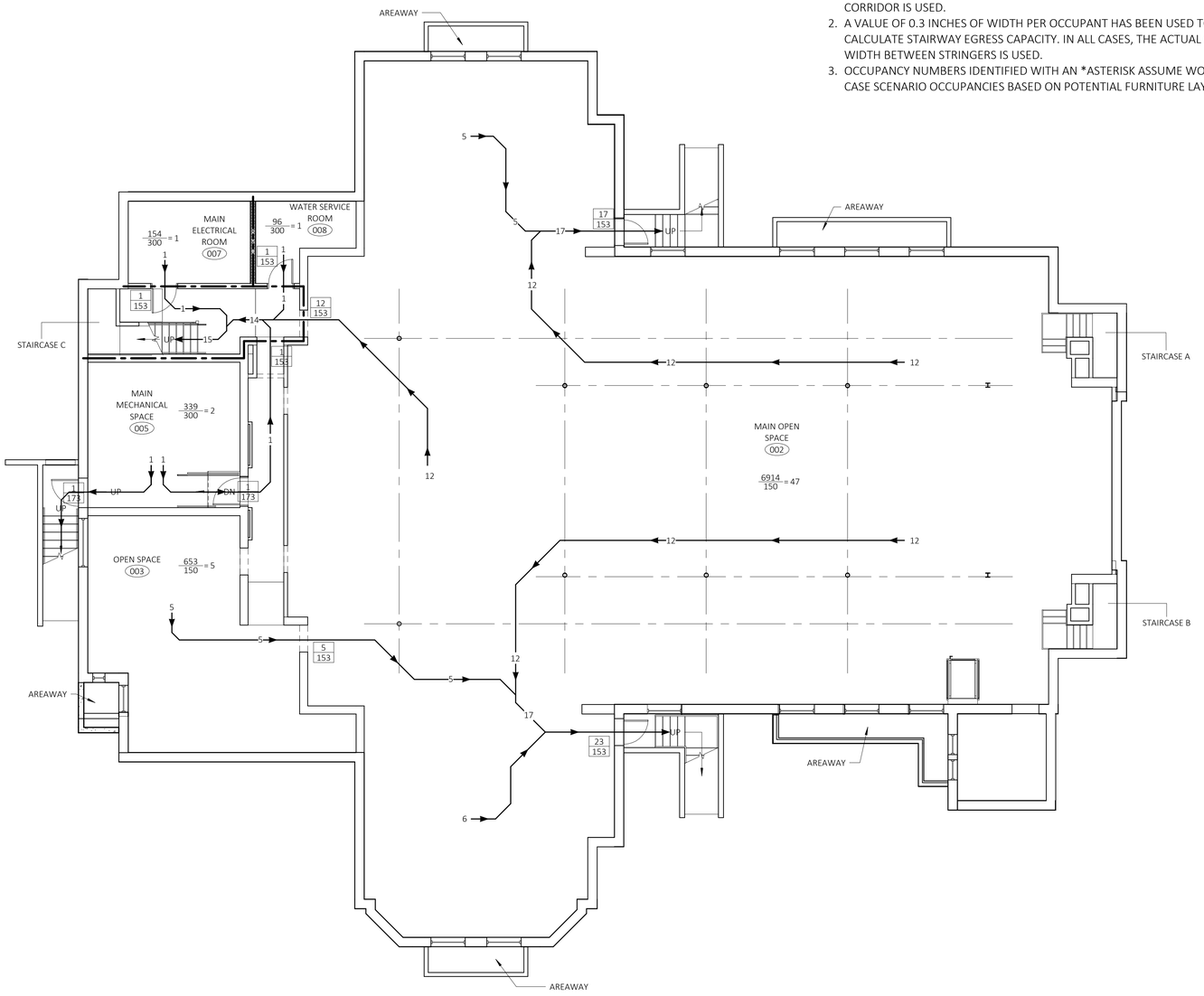
——— – – ——— BUILDING PROPERTY LINE

——— · ——— · ——— · ——— 1 HOUR RATED WALL (TIGHT TO DECK ABOVE)

——— · – ——— · – ——— · – ——— 2 HOUR RATED WALL (TIGHT TO DECK ABOVE)

NOTES:

1. A VALUE OF 0.2 INCHES OF WIDTH PER OCCUPANT HAS BEEN USED TO CALCULATE DOOR AND CORRIDOR EGRESS CAPACITY. IN ALL CASES, THE ACTUAL CLEAR OPENING OF THE DOOR AND ACTUAL CLEAR WIDTH OF THE CORRIDOR IS USED.
2. A VALUE OF 0.3 INCHES OF WIDTH PER OCCUPANT HAS BEEN USED TO CALCULATE STAIRWAY EGRESS CAPACITY. IN ALL CASES, THE ACTUAL CLEAR WIDTH BETWEEN STRINGERS IS USED.
3. OCCUPANCY NUMBERS IDENTIFIED WITH AN *ASTERISK ASSUME WORST CASE SCENARIO OCCUPANCIES BASED ON POTENTIAL FURNITURE LAYOUTS.



1 LOWER LEVEL EGRESS PLAN

SCALE: 1/8" = 1'-0"

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

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WATERBURY, CT 06704

RFP NO. 8801

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

LOWER LEVEL EGRESS PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: DRD, MDC
CHECKED: DRD
5/1/2026 4:08:52 PM

SHEET NO.
R1.4

EGRESS PLAN LEGEND

101 — ROOM NUMBER

ROOM OCCUPANCY LOAD

725 / 20 = 37 — AREA IN SQUARE FEET / OCCUPANCY LOAD FACTOR

EXIT CAPACITY

100 / 342 — ACTUAL EGRESS OCCUPANCY OF DOOR OR STAIR / MAXIMUM ALLOWABLE EGRESS OCCUPANCY OF DOOR OR STAIR

BR — Balance Exit. Minimum number of exits required per 1018.0

BD — Balance Exit. Exit required due to dead end corridor

BA — Balance Exit. Exit as required for Assembly space.

BT — Balance Exit. Exit as required due to travel distance.

15 → — DIRECTION OF TRAVEL WITH ACCUMULATED OCCUPANCY LOAD

* – – – – – – – – – – – – – – * — MAXIMUM TRAVEL DISTANCE FROM FURTHEST POINT

– – – – – – – – – – – – – – – — SMOKE PARTITION (TIGHT TO DECK ABOVE)

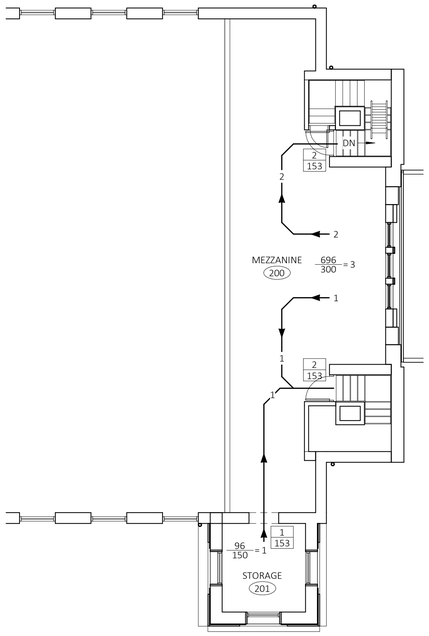
——— — — ——— — BUILDING PROPERTY LINE

——— · ——— · ——— · ——— 1 HOUR RATED WALL (TIGHT TO DECK ABOVE)

——— · — · ——— · — · ——— 2 HOUR RATED WALL (TIGHT TO DECK ABOVE)

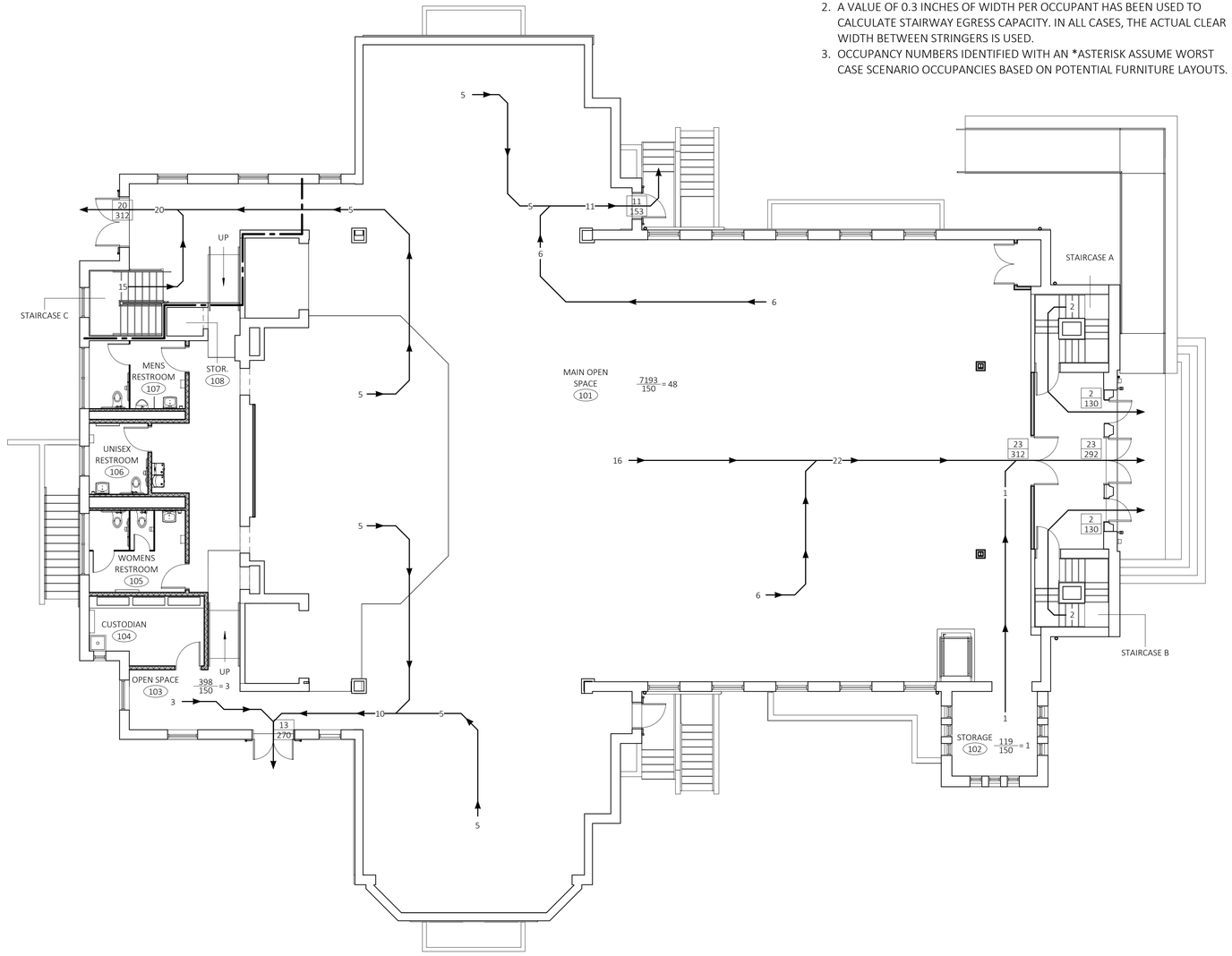
NOTES:

1. A VALUE OF 0.2 INCHES OF WIDTH PER OCCUPANT HAS BEEN USED TO CALCULATE DOOR AND CORRIDOR EGRESS CAPACITY. IN ALL CASES, THE ACTUAL CLEAR OPENING OF THE DOOR AND ACTUAL CLEAR WIDTH OF THE CORRIDOR IS USED.
2. A VALUE OF 0.3 INCHES OF WIDTH PER OCCUPANT HAS BEEN USED TO CALCULATE STAIRWAY EGRESS CAPACITY. IN ALL CASES, THE ACTUAL CLEAR WIDTH BETWEEN STRINGERS IS USED.
3. OCCUPANCY NUMBERS IDENTIFIED WITH AN *ASTERISK ASSUME WORST CASE SCENARIO OCCUPANCIES BASED ON POTENTIAL FURNITURE LAYOUTS.



2 MEZZANINE EGRESS PLAN

SCALE: 1/8" = 1'-0"



1 FIRST FLOOR EGRESS PLAN

SCALE: 1/8" = 1'-0"

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RFP NO. 8801

REVISIONS

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FIRST LEVEL & MEZZANINE EGRESS PLANS

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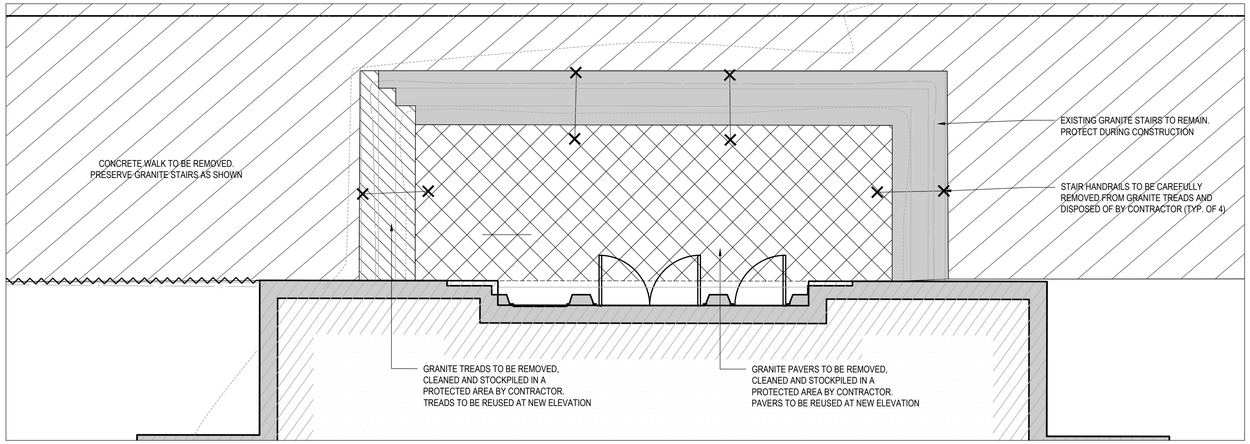
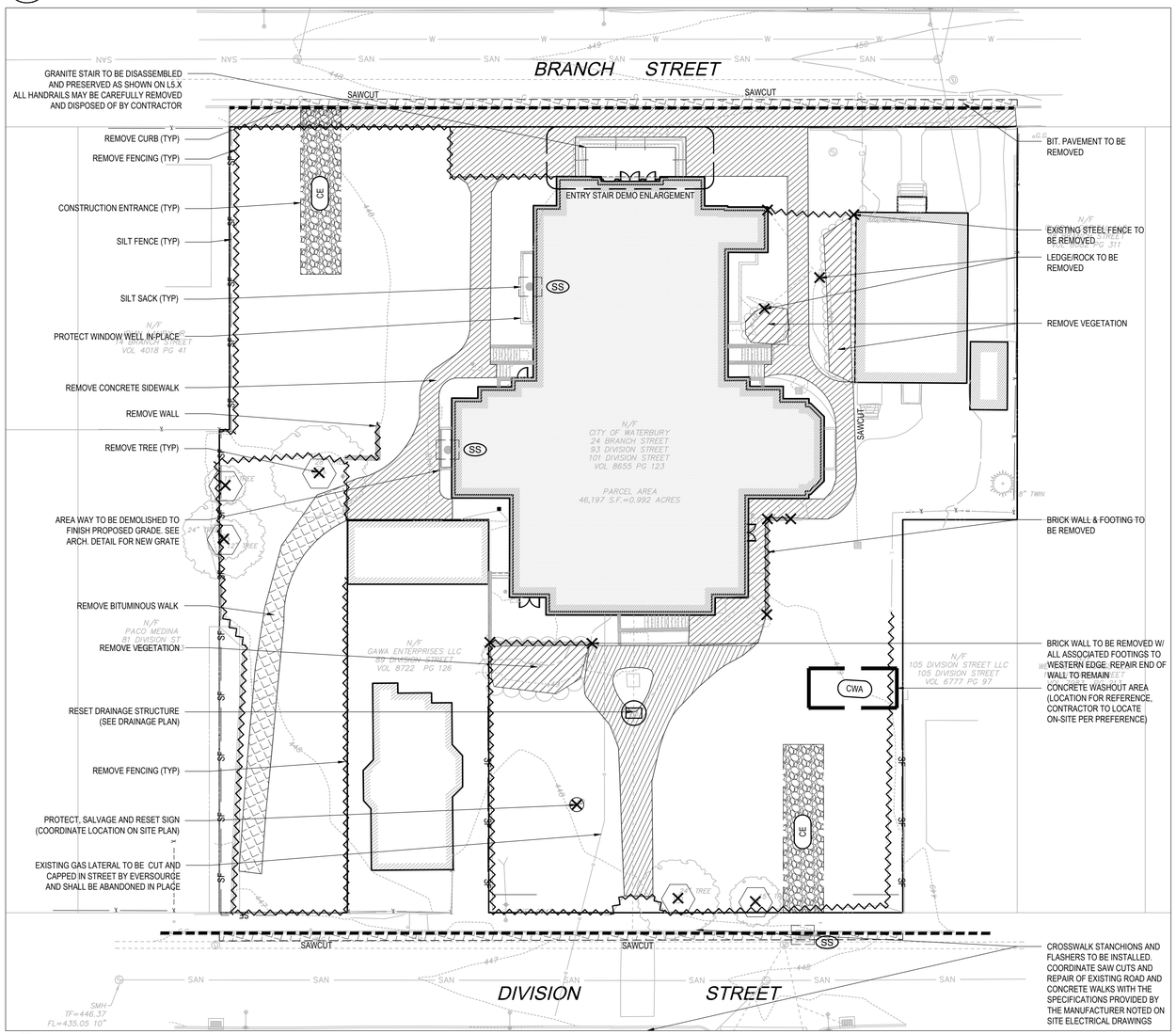


2 ENTRY STAIR DEMO ENLARGEMENT

1"=4'



1 DEMOLITION PLAN

1"=20'

GENERAL NOTES

1. LOCATIONS & ELEVATIONS OF UNDERGROUND UTILITIES AND STRUCTURES ARE TAKEN FROM RECORD PLANS AND LIMITED FIELD VERIFICATION AND ARE APPROXIMATE ONLY. THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR THAT ALL UTILITIES AND SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY SIZE, LOCATION AND INVERTS OF UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL DETERMINE FOR HIMSELF, PRIOR TO BIDDING, THE LOCATIONS AND ELEVATIONS OF ALL UTILITIES THAT MAY AFFECT HIS CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL ADEQUATELY SUPPORT ALL UTILITIES AND SHALL BE RESPONSIBLE FOR ALL DAMAGE. CONTACT "CALL BEFORE YOU DIG", 1-800-922-4455, AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR IS TO COORDINATE ACTIVITIES WITH INDIVIDUAL UTILITY COMPANY REPRESENTATIVES.
3. CONTRACTOR SHALL ESTABLISH AND/OR MAINTAIN AT LEAST ONE (1) BENCHMARK ON SITE FOR VERTICAL AND HORIZONTAL REFERENCE.
4. ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONSTRUCTION MANAGER.
5. ALL EXISTING CURBING ON SITE IS TO BE FULLY REMOVED AND DISPOSED OF PROPERLY UNLESS INDICATED OTHERWISE.VERIFIED PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONSTRUCTION MANAGER.
6. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES AT NO ADDED COST TO THE OWNER (TYP.).
7. ALL ITEMS REQUIRING REMOVAL SHALL BE REMOVED TO FULL DEPTH TO INCLUDE BASE MATERIAL AND FOOTINGS OR FOUNDATIONS AS APPLICABLE AND LEGALLY DISPOSED OF OFFSITE.
8. ALL EXISTING UTILITIES REQUIRING REMOVAL SHALL BE COORDINATED WITH THE RESPECTIVE UTILITY COMPANIES.
9. ALL POINTS OF CONSTRUCTION INGRESS & EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD ONTO PUBLIC WAYS. ANY SEDIMENT TRACKED ONTO PAVED PUBLIC WAYS SHALL BE SWEPT AT THE END OF EACH WORK DAY.
10. BORING LOCATIONS SHOWN ARE APPROXIMATE. REFERENCE GEOTECHNICAL REPORT FOR FURTHER DETAILS.
11. THE CONSTRUCTION LIMITS ARE AS DEFINED IN THE SPECIFICATIONS AND AS SHOWN IN THE DRAWINGS. DRAWINGS INDICATE MINIMUM LIMITS OF DEMOLITION/PAVEMENT REMOVAL REQUIRED FOR CONSTRUCTION OF NEW IMPROVEMENTS. WORK SHALL NOT EXCEED CONTRACT LIMIT LINES UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE OWNER'S REPRESENTATIVE.
12. COORDINATE WORK ON EACH SITE WORK SHEET WITH ALL OTHER DRAWINGS PERTAINING TO SITE WORK IN THE CONTRACT DOCUMENT SET. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIM OR HERSELF FAMILIAR WITH THE FULL SET OF DOCUMENTS FOR ALL SITE RELATED ITEMS.
13. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, LOCAL AND FEDERAL REGULATIONS.
14. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES AND OPERATIONS.
15. CONTRACTOR TO SECURE ALL NECESSARY TRADE PERMITS.
16. CONTRACTOR SHALL CONTROL DUST CAUSED BY HIS OPERATIONS BY APPLYING WATER OR DUST PALLIATIVE, OTHER THAN CALCIUM CHLORIDE.
17. CONTRACTOR SHALL CONTROL NOISE TO AS GREAT AN EXTENT AS POSSIBLE. ALL POWER EQUIPMENT USED DURING CONSTRUCTION SHALL BE EQUIPPED WITH MUFFLERS.
18. PRIOR TO PROJECT CLOSE-OUT, CONTRACTOR SHALL REMOVE ALL DEBRIS AND EXCESS MATERIALS FROM SITE. ALSO, ANY DAMAGE TO FIELD OR FACTORY APPLIED FINISHES SHALL BE REPAIRED.

SITE PREPARATION NOTES

1. CONTRACTOR SHALL NOTIFY "CALL BEFORE YOU DIG" (1-800-922-4455) AND VERIFY UTILITY MARK-OUT WITH THE OWNER PRIOR TO THE INITIATION OF ANY SITE DISTURBANCE.
2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFICATION OF THE LOCATION AND NATURE OF ALL SUBSURFACE UTILITIES AT THE PROJECT WHICH MAY BE AFFECTED BY THE WORK. COORDINATE WITH RESPECTIVE UTILITY OWNERS AND PERFORM VERIFICATION OF TYPE, LOCATION, AND INVERTS AS REQUIRED.
3. PROTECT ALL IMPROVEMENTS NOT INCLUDED WITHIN THE LIMITS OF WORK. ANY IMPROVEMENT WHICH IS DAMAGED SHALL BE REPAIRED OR REPLACED IN-KIND TO THE OWNER'S SATISFACTION.
4. DURING DEMOLITION, PROTECT ALL ADJACENT CURBING, SIDEWALKS, RAMPS, ABOVE-GRADE AND BELOW-GRADE UTILITIES, DRAINAGE STRUCTURES, LIGHT BASES, AND OTHER IMPROVEMENTS POTENTIALLY AFFECTED BY THE WORK. CLEARLY DELINEATE THE LIMITS OF WORK AND MARK, BARRICADE, OR OTHERWISE IDENTIFY THOSE IMPROVEMENTS THAT ARE TO BE PROTECTED AND/OR AVOIDED. ANY IMPROVEMENT WHICH IS DAMAGED SHALL BE REPAIRED OR REPLACED IN-KIND TO THE OWNER'S SATISFACTION.
5. THE LOCATIONS OF EXISTING SITE FEATURES AS SHOWN HAVE BEEN OBTAINED FROM MAPS, SURVEYS, FIELD INSPECTIONS, AND OTHER AVAILABLE INFORMATION. THEY MUST BE CONSIDERED APPROXIMATE BOTH TO LOCATION, SIZE, AND AS-BUILT CONDITION AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL FIELD CONDITIONS.
6. THE DIMENSIONS SHOWN ON THE PLANS, INCLUDING THE INTENDED DIMENSIONS OF THE WORK, MAY VARY FROM ACTUAL EXISTING CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL TAKE APPROPRIATE MEASUREMENTS TO VERIFY ALL DIMENSIONS SHOWN ON THE DRAWINGS AS WELL AS OTHER DIMENSIONS HE MAY DEEM APPROPRIATE TO FACILITATE THE COMPLETION OF THE WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.
7. IMPLEMENTING WORKER SAFETY AND/OR HEALTH PROTOCOLS THAT ADDRESS COMPLIANCE WITH RULES, LAWS, AND REGULATIONS PERTAINING TO CONSTRUCTION SAFETY AND/OR THE POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE-SPECIFIC PHYSICAL OR CHEMICAL HAZARDS IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
8. PRIOR TO THE TERMINATION, ABANDONMENT, OR REMOVAL OF ANY UTILITY, VERIFY THAT APPLICABLE NOTIFICATIONS HAVE BEEN MADE TO THE UTILITY OWNER/OPERATOR AND THAT THE UTILITY HAS BEEN PROPERLY TERMINATED, CAPPED, OR PLUGGED AS REQUIRED.
9. PROVIDE PAVEMENT SAWCUT AT THE EDGE OF EACH PAVEMENT REMOVAL AREA TO ESTABLISH A CLEAN EDGE WHERE NEW WORK WILL MEET EXISTING PAVEMENT. SAWCUT SHALL BE A MINIMUM OF 12 INCHES FROM EDGE OF PAVEMENT REMOVAL.
10. UNLESS OTHERWISE INDICATED, ALL DISTURBED AREAS SHALL BE RESTORED WITH SIX (6) INCHES OF LOAM, SEEDED, FERTILIZED, AND MULCHED. PROVIDE ADDITIONAL EROSION CONTROLS AS REQUIRED.

EROSION & SEDIMENTATION CONTROL LEGEND

- SF — SILT FENCE
- HB — HAYBALES
- SS — SILT SACKS
- RIP RAP
- CE — CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION
- TST — TEMPORARY SEDIMENTATION TRAP
- ECB — EROSION CONTROL BLANKET
- TSB — TEMPORARY SEDIMENTATION BASIN

DEMOLITION & SITE PREPARATION LEGEND

- CURB TO BE REMOVED
- BIT. PAVEMENT TO BE REMOVED
- CONC. PAVEMENT TO BE REMOVED
- CF — CONSTRUCTION FENCE
- SITE ELEMENT TO BE REMOVED
- SITE ELEMENT TO BE RELOCATED
- FENCE/WALL TO BE REMOVED
- VEGETATION TO BE REMOVED/GRUBBED
- TREE TO BE REMOVED
- P — TREE PROTECTION

0 20 50 100

SCALE: 1" = 20'

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DEMOLITION SEDIMENTATION & EROSION CONTROL

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PROJ. #: 70905.00
DRAWN: RCD
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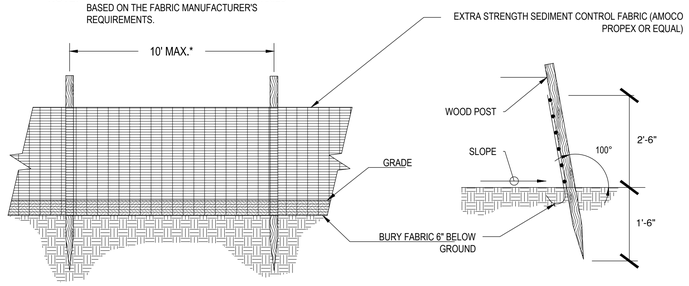
4/27/2026 10:47:28 AM

SHEET NO.
L1.0

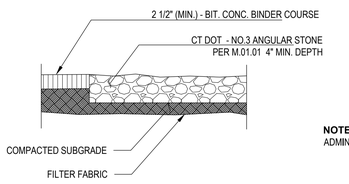
***NOTE:** POST SPACING AND EMBEDMENT VARIES BASED ON THE FABRIC MANUFACTURER'S REQUIREMENTS.



ELEVATION SECTION

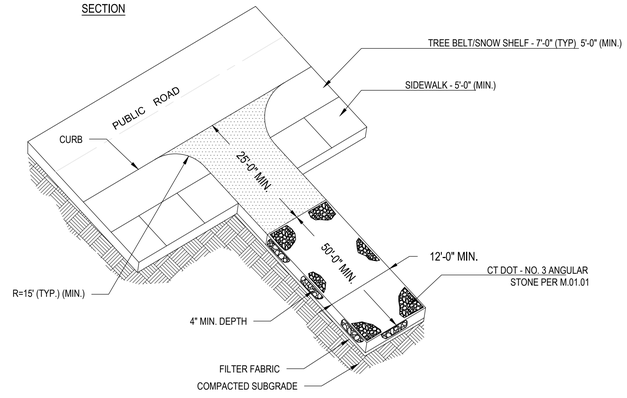
SILT FENCE BARRIER (SF)

N.T.S.



NOTE: LOCATION TO BE DETERMINED IN THE FIELD BY THE CONSTRUCTION ADMINISTRATOR

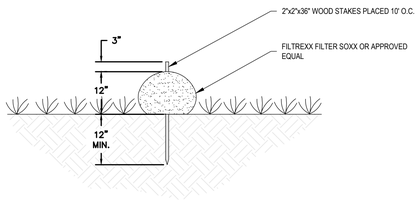
SECTION



PLAN

CONSTRUCTION ENTRANCE (CE)

N.T.S.



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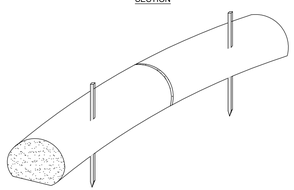
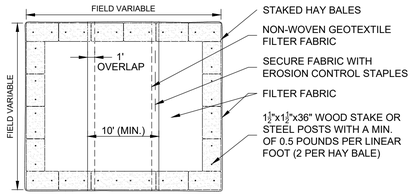
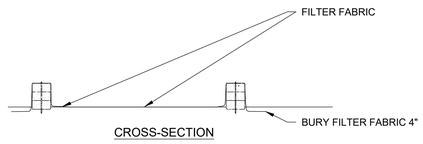


FILTER SOCK

N.T.S.



PLAN VIEW



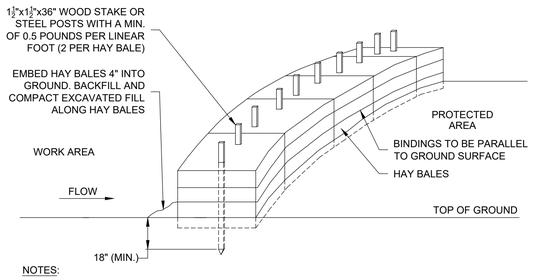
CROSS-SECTION

NOTES:

1. CONSTRUCT WASHOUT AREA LARGE ENOUGH TO ENSURE MATERIALS WILL BE CONTAINED WHERE WASTE CONCRETE CAN SOLIDIFY IN PLACE AND EXCESS WATER CAN SAFELY EVAPORATE.
2. WASHOUT AREA SHALL BE LARGE ENOUGH TO RETAIN ALL LIQUID AND WASTE CONCRETE MATERIALS FROM WASHOUT OPERATION.
3. WEEKLY INSPECTIONS OF WASHOUT AREAS SHALL BE CONDUCTED TO ASSESS THE HOLDING CAPACITY AND FUNCTIONALITY OF THE WASHOUT AREA.

TEMPORARY CONCRETE WASHOUT AREA (CWA)

N.T.S.

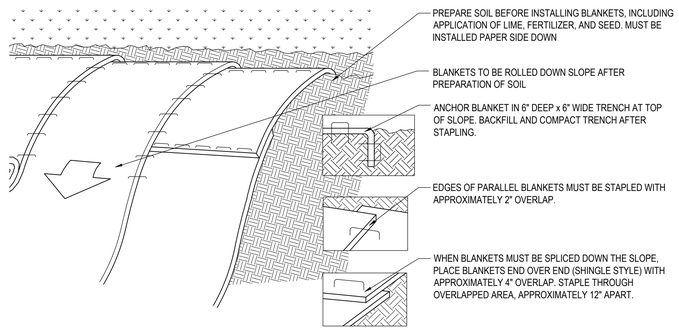


NOTES:

1. HAY BALES SHALL BE MADE OF HAY OR STRAW WITH 40 POUND MIN. WEIGHT AND 120 POUND MAX. WEIGHT HELD TOGETHER BY TWINE OR WIRE.
2. PLACE HAY BALES ON CONTOUR AND WING THE LAST HAY BALES UP SLOPE SO THAT THE TOP OF THE LAST SEVERAL HAY BALES ARE HIGHER THAN THE LINE OF HAY BALES.
3. DRIVE FIRST STAKE IN EACH BALE TOWARD THE PREVIOUSLY LAID BALE TO FORCE THEM TOGETHER.
4. PUT ONE HAY BALE PERPENDICULAR ALONG HAY BALE BARRIER EACH 100 FEET.

HAY BALE BARRIER (HB)

N.T.S.



SLOPE STABILIZATION USING EROSION CONTROL BLANKET (ECB)

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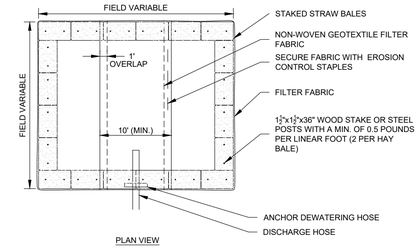
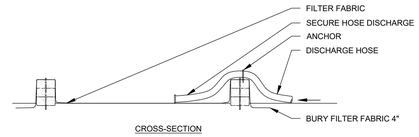


PLAN VIEW



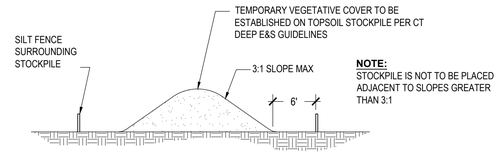
CROSS-SECTION

GENERAL NOTES

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS.
2. THE BASIN TO BE SIZED ACCORDING TO: CUBIC FEET OF STORAGE = PUMP DISCHARGE RATE(gpm) x 16.
3. SIZE SHOWN ON PLANS SHALL BE ADJUSTED AS REQUIRED FOR THE ACTUAL PUMPING RATE.

DEWATERING STRAW BALE BASIN

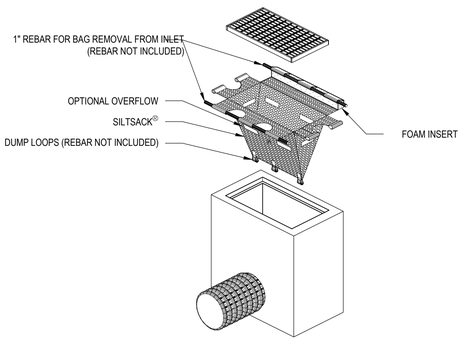
SCALE: NONE



NOTE: STOCKPILE IS NOT TO BE PLACED ADJACENT TO SLOPES GREATER THAN 3:1

TEMPORARY STOCKPILE (STK)

N.T.S.



'SILTSACK' SEDIMENT CONTROL DEVICE, TERRAFIX GEOSYNTHETICS INC. TORONTO, ONTARIO, CA WWW.TERRAFIXGEO.COM

SILT SACK DETAIL (SS)

N.T.S.

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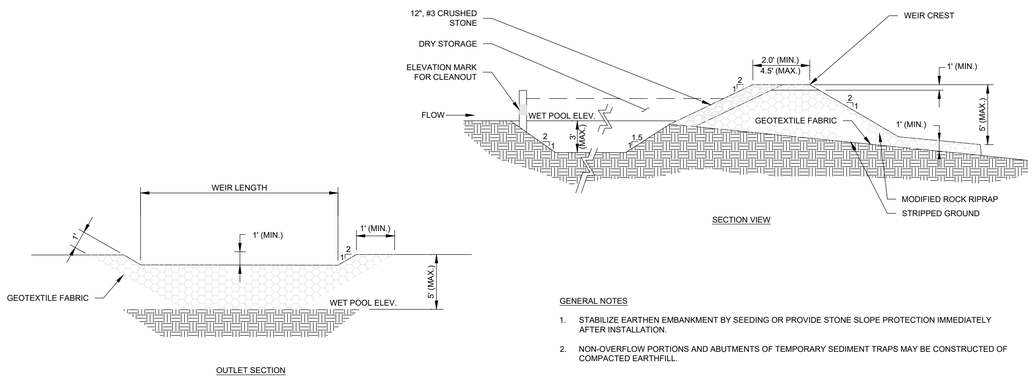


SECTION VIEW

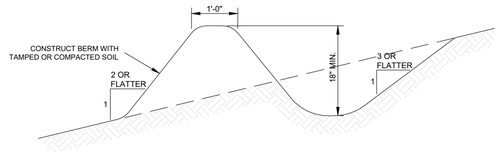
OUTLET SECTION

GENERAL NOTES

1. STABILIZE EARTHEN EMBANKMENT BY SEEDING OR PROVIDE STONE SLOPE PROTECTION IMMEDIATELY AFTER INSTALLATION.
2. NON-OVERFLOW PORTIONS AND ABUTMENTS OF TEMPORARY SEDIMENT TRAPS MAY BE CONSTRUCTED OF COMPACTED EARTHFILL.

TEMPORARY SEDIMENT TRAP

SCALE: NONE



GENERAL NOTES

1. INSTALL TEMPORARY DIVERSION SWALES TO CHANNEL WATER FROM DISTURBED AREAS TO THE TEMPORARY SEDIMENT BASIN. ADJUST SWALE LOCATIONS AS NECESSARY PER CHANGING SITE CONDITIONS.
2. CONTRIBUTING DRAINAGE AREA MUST NOT EXCEED ONE ACRE.

TEMPORARY DIVERSION SWALE

SCALE: NONE

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SITE PREPARATION NOTES:

1. CONTRACTOR SHALL NOTIFY "CALL BEFORE YOU DIG" (1-800-922-4455) AND VERIFY UTILITY MARK-OUT WITH THE OWNER PRIOR TO THE INITIATION OF ANY SITE DISTURBANCE.
2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFICATION OF THE LOCATION AND NATURE OF ALL SUBSURFACE UTILITIES AT THE PROJECT WHICH MAY BE AFFECTED BY THE WORK. COORDINATE WITH RESPECTIVE UTILITY OWNERS AND PERFORM VERIFICATION OF TYPE, LOCATION, AND INVERTS AS REQUIRED.
3. PROTECT ALL IMPROVEMENTS NOT INCLUDED WITHIN THE LIMITS OF WORK. ANY IMPROVEMENT WHICH IS DAMAGED SHALL BE REPAIRED OR REPLACED IN-KIND TO THE OWNER'S SATISFACTION.
4. DURING DEMOLITION, PROTECT ALL ADJACENT CURBING, SIDEWALKS, RAMPS, ABOVE-GRADE AND BELOW-GRADE UTILITIES, DRAINAGE STRUCTURES, LIGHT BASES, AND OTHER IMPROVEMENTS POTENTIALLY AFFECTED BY THE WORK. CLEARLY DELINEATE THE LIMITS OF WORK AND MARK, BARRICADE, OR OTHERWISE IDENTIFY THOSE IMPROVEMENTS THAT ARE TO BE PROTECTED AND/OR AVOIDED. ANY IMPROVEMENT WHICH IS DAMAGED SHALL BE REPAIRED OR REPLACED IN-KIND TO THE OWNER'S SATISFACTION.
5. THE LOCATIONS OF EXISTING SITE FEATURES AS SHOWN HAVE BEEN OBTAINED FROM MAPS, SURVEYS, FIELD INSPECTIONS, AND OTHER AVAILABLE INFORMATION. THEY MUST BE CONSIDERED APPROXIMATE BOTH TO LOCATION, SIZE, AND AS-BUILT CONDITION AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL FIELD CONDITIONS.
6. THE DIMENSIONS SHOWN ON THE PLANS, INCLUDING THE INTENDED DIMENSIONS OF THE WORK, MAY VARY FROM ACTUAL EXISTING CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL TAKE APPROPRIATE MEASUREMENTS TO VERIFY ALL DIMENSIONS SHOWN ON THE DRAWINGS AS WELL AS OTHER DIMENSIONS HE MAY DEEM APPROPRIATE TO FACILITATE THE COMPLETION OF THE WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.
7. IMPLEMENTING WORKER SAFETY AND/OR HEALTH PROTOCOLS THAT ADDRESS COMPLIANCE WITH RULES, LAWS, AND REGULATIONS PERTAINING TO CONSTRUCTION SAFETY AND/OR THE POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE-SPECIFIC PHYSICAL OR CHEMICAL HAZARDS IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
8. PRIOR TO THE TERMINATION, ABANDONMENT, OR REMOVAL OF ANY UTILITY, VERIFY THAT APPLICABLE NOTIFICATIONS HAVE BEEN MADE TO THE UTILITY OWNER/OPERATOR AND THAT THE UTILITY HAS BEEN PROPERLY TERMINATED, CAPPED, OR PLUGGED AS REQUIRED.
9. PROVIDE PAVEMENT SAWCUT AT THE EDGE OF EACH PAVEMENT REMOVAL AREA TO ESTABLISH A CLEAN EDGE WHERE NEW WORK WILL MEET EXISTING PAVEMENT. SAWCUT SHALL BE A MINIMUM OF 12 INCHES FROM EDGE OF PAVEMENT REMOVAL.
10. UNLESS OTHERWISE INDICATED, ALL DISTURBED AREAS SHALL BE RESTORED WITH SIX (6) INCHES OF LOAM, SEEDED, FERTILIZED, AND MULCHED. PROVIDE ADDITIONAL EROSION CONTROLS AS REQUIRED.
11. ALL SIDEWALK CLOSURES AND MEASURES FOR TEMPORARY PEDESTRIAN ACCESS, SIDEWALKS, CROSSINGS, AND BIKE LANES SHALL MEET THE APPROVAL OF THE TOWN OF LEDYARD.

EROSION AND SEDIMENTATION CONTROL NARRATIVE:

PER STATE OF CONNECTICUT
ALL APPLICABLE PRACTICES RECOMMENDED BY THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL AS AMENDED.

DESCRIPTION

THE PROJECT CONSISTS OF REDEVELOPING A PORTION OF THE FOXWOODS PROPERTY JUST SOUTHEAST OF THE EXISTING CASINO RESORT. THE EXISTING SITE CONSISTS OF PARKING LOTS, ACCESS DRIVES, AND WOODED AND MOUNDED AREAS. THE PROPOSED REDEVELOPMENT CONSISTS OF A NEW HOTEL AND ENTERTAINMENT BUILDING, NEW PARKING, STORM AND UTILITY UPGRADES, AND LANDSCAPING ENHANCEMENTS.

DESIGN AND CRITERIA

NOTE: THE CONTRACTOR SHALL NAME ONE INDIVIDUAL AS HIS SEDIMENT AND EROSION CONTROL SUPERVISOR WHOSE PRIMARY RESPONSIBILITY WILL BE THE MAINTENANCE OF ALL ON-SITE EROSION CONTROL MEASURES. HE WILL KEEP A DAILY LOG OF HIS ACTIVITIES AND AN UPDATED SCHEDULE OF PROPOSED CONSTRUCTION ACTIVITIES. THE LOG WILL BE MADE AVAILABLE TO INSPECTORS.

A. GEOTEXTILE SILT FENCE (SF) - SHALL BE NON-WOVEN MATERIAL, MINIMUM 36" HIGH AND FASTENED TO WOOD STAKES. SILT FENCE SHALL BE INSTALLED WITH END RUNS TURNED UP GRADE AT 45 DEGREES FOR A DISTANCE OF 10 FEET (SEE DETAIL THIS SHEET).

B. TEMPORARY SEEDING (TS)

1. CONTRACTOR SHALL SCARIFY THE SOIL TO A DEPTH OF 2" BEFORE APPLYING FERTILIZER, LIMESTONE AND SEED.
2. SEED MAY BE APPLIED BY HAND OR MECHANICALLY. SEED APPLICATION SHALL BE UNIFORM. SEED RATE SHALL BE IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL AS AMENDED (INCREASE SEEDING RATES BY 10% WHEN HYDROSEEDING, LIMESTONE, FERTILIZER AND SEED MAY BE APPLIED IN SLURRY.)
3. CONTRACTOR SHALL MULCH AREA (MS) IMMEDIATELY FOLLOWING SEEDING. (NOTE: IN THE EVENT SEEDING OPERATIONS ARE NOT FEASIBLE DUE TO SEASONAL RESTRICTIONS OR EXTENDED INCLEMENT WEATHER PATTERNS, THE CONTRACTOR SHALL INSTALL AN EROSION CONTROL BLANKET OVER EXPOSED SOILS.)

C. PERMANENT SEEDING (PS)

1. CONTRACTOR SHALL APPLY TOPSOIL AND FINE GRADE ALL AREAS BEFORE THE APPLICATION OF PERMANENT SEED. APPLY LIMESTONE AND FERTILIZER AS NEEDED, IN ACCORDANCE WITH SOIL TESTS.
2. REMOVE ALL SURFACE STONES ½ INCH AND LARGER. REMOVE ALL OTHER DEBRIS AND RAKE SEED BED.
3. APPLY SEED WITHIN 7 DAYS AFTER ESTABLISHING FINAL GRADES. SEE PLANTING PLAN.

D. STRAW BALE BARRIER (HB) - SHALL BE MADE OF STRAW WITH 40 POUNDS MINIMUM WEIGHT AND 120 POUNDS MAXIMUM WEIGHT, HELD TOGETHER BY TWINE OR WIRE. (SEE DETAIL THIS SHEET.)

E. CONSTRUCTION ENTRANCE (CE) - SHALL BE AN ANGULAR STONE PAD, A MINIMUM OF 12' WIDE AND 50' LONG. (SEE DETAIL THIS SHEET.)

F. EROSION CONTROL BLANKET (ECB) - EROSION MAT SHALL BE PLACED ON ALL EXPOSED CUT/FILL SLOPES STEEPER THAN 3:1 (INCLUDING SWALES & DITCHES) TO PROTECT AGAINST RAINFALL AND HOLD MOISTURE CONTENT TO ENHANCE VEGETATION GROWTH IN SEEDED AREAS. MAT (OR BLANKETS) SHALL BE STRAW OR STRAW/COCONUT FIBER COMBINATION SEWN TOGETHER WITH LIGHTWEIGHT NETTING. USE NORTH AMERICAN GREEN. S150 - SLOPES UP TO 3:1, SC150-SLOPES FROM 3:1 UP TO 2:1 OR GREATER. TEMPORARY HAY MULCH TO BE APPLIED TO AREAS LESS THAN 3:1 SLOPE AND ALL AREAS TO BE LEFT BARREN OVER THE WINTER, MULCH RATE TO BE 70 POUNDS/1000 S.F.

APPLICATION/GENERAL PROCEDURES

SOIL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO ANY SITE DISTURBANCE, AND DEVELOPMENT WILL PROCEED ACCORDING TO A SPECIFIC CONSTRUCTION SEQUENCE. THE OBJECTIVE IS TO MAXIMIZE THE REDUCTION OF SEDIMENT-LADEN RUNOFF THROUGH IMPLEMENTATION OF CONVENTIONAL SOIL SEDIMENTATION AND EROSION CONTROL PRACTICES CURRENTLY RECOMMENDED BY THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL

A. EARTHWORK WILL BE SCHEDULED FOR PERIODS WHEN SOIL SATURATION IS LOW AND SOIL LOSS HAZARD IS AT A MINIMUM.

B. SUSPEND EARTHWORK FOR MAJOR STORM EVENTS AND IMPLEMENT ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS NECESSARY.

C. THERE SHALL BE NO CUTS OR FILL LEFT EXPOSED FOR LONGER THAN 30 DAYS. THE ESTABLISHED PROCEDURE OF TEMPORARILY SEEDING AND/OR COVER WITH EROSION PROTECTION (MAT OR STRAW) SHALL BE FOLLOWED TO INSURE MINIMAL SOIL LOSS.

D. THE DISCHARGE OF UNTREATED STORMWATER TO ANY ADJACENT ROADWAYS, DRAINAGE INLETS, OR PROPERTIES IS NOT ALLOWED.

EROSION AND SEDIMENT CONTROL NOTES:

1. THIS PLAN IS FOR EROSION AND SEDIMENTATION (E&S) CONTROL ONLY. SEE OTHER PLANS FOR THE SCOPE OF CONSTRUCTION WORK.
2. THE MEASURES SPECIFIED HEREON ARE THE MINIMUM REQUIREMENTS FOR E&S CONTROL AND ARE SHOWN IN GENERAL SIZE AND LOCATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL E&S CONTROL MEASURES ARE CONFIGURED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO ANY RESOURCE AREAS. ALL EROSION CONTROLS SHALL BE INSTALLED PRIOR TO ANY SITE WORK. CONTROLS SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAINFALL. EXCAVATED MATERIAL SHOULD NOT BE DISPOSED OF IN THE WETLAND AREA. PROVIDE ADDITIONAL E&S MEASURES AS REQUIRED TO CONTROL EROSION AND SILTATION THROUGHOUT THE DURATION OF THE CONSTRUCTION AS CONDITIONS DICTATE AND/OR AS DIRECTED BY THE OWNER OR THE ENGINEER.
3. MONITOR AND INSPECT ALL E&S MEASURES IN AN ONGOING MANNER THROUGHOUT THE WORK AND TAKE CORRECTIVE MEASURES, AS REQUIRED, TO MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO ANY RESOURCE AREAS.
4. ANY EROSION AND SEDIMENTATION MEASURE IMPLEMENTED BEYOND THAT SHOWN HEREON SHALL CONFORM TO APPLICABLE SECTIONS OF THE STATE OF CONNECTICUT'S 2002 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL."
5. ANY STOCKPILED MATERIAL SHALL BE SUBJECT TO EROSION CONTROL MEASURES THAT INCLUDE A MINIMUM OF SILT FENCE OR HAY BALE BARRIER. COVER STOCKPILES IF SIGNIFICANT RAINFALL IS PREDICTED.
6. PROVIDE TEMPORARY SEEDING WITH MULCH ON ALL EXPOSED SOIL AREAS WHERE WORK WILL BE SUSPENDED FOR LONGER THAN 30 DAYS. APPLY SEED AND MULCH WITHIN THE FIRST 7 DAYS OF SUSPENDING WORK. WHEN SEEDING IS NOT POSSIBLE DUE TO SEASONAL WEATHER CONDITIONS OR OTHER FACTORS, PROVIDE TEMPORARY STRUCTURAL SOIL PROTECTION SUCH AS MULCH, WOODCHIPS, EROSION CONTROL MATTING, OR COMPOST.
7. ALL TEMPORARY SLOPES IN EXCESS OF 3 (HORIZONTAL) TO 1 (VERTICAL) SHALL BE STABILIZED WITH EROSION CONTROL MATTING OR APPROVED EQUIVALENT.
8. NO RUNOFF SHALL BE ALLOWED TO ENTER ANY STORMWATER SYSTEM OR EXIT THE SITE PRIOR TO TREATMENT FOR SEDIMENT REMOVAL.
9. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AND SHALL NOT ALLOW THE ACCUMULATION OF RUBBISH OR CONSTRUCTION DEBRIS. ALL TRASH SHALL BE CLEANED ON A DAILY BASIS AND THE SITE SHALL BE LEFT IN A NEAT CONDITION AT THE END OF EACH WORK DAY.
10. TAKE ALL NECESSARY PRECAUTIONS TO AVOID THE SPILLAGE OF FUEL OR OTHER POLLUTANTS AND ADHERE TO ALL APPLICABLE POLICIES AND REGULATIONS RELATED TO SPILL PREVENTION, CONTROL, AND RESPONSE.
11. FOR DUST CONTROL, PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER AND MAINTAIN ADEQUATE MOISTURE LEVELS.
12. SWEEP ADJACENT ROADWAYS IF MUD OR SOIL IS TRACKED ON TO THEM, OR AS DIRECTED BY THE ENGINEER.
13. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED BY THE PERMITTEE AND INSPECTED BY THE TOWN ENGINEER AND/OR THE WETLANDS ENFORCEMENT OFFICER / DULY AUTHORIZED AGENT; ADDITIONAL OR SUPPLEMENTAL CONTROLS MAY BE REQUIRED. THE PERMITTEE SHALL MAINTAIN THE CONTROLS DURING AND AFTER CONSTRUCTION AND REMOVE THEM UPON SITE STABILIZATION OF THE AFFECTED AREA.
14. AN ANTI-TRACKING APRON SHALL BE INSTALLED AT THE SITE ACCESS DRIVE AT A LOCATION APPROVED BY THE TOWN ENGINEER, WITH 6 INCHED OF CRUSHED STONE (SIZED 1 ½" TO 3") UNDERLAIN WITH CONSTRUCTION FRAME SPREAD TO THE TRAVELED WIDTH AND 40 FEET IN LENGTH OR WITH APRON MATS. THE APRON SHALL BE MAINTAINED AT ALL TIMES.
15. THE PERMITTEE AND THEIR CONTRACTOR SHALL MEET WITH AGENCY STAFF, INCLUDING BUT NOT LIMITED TO THE WETLANDS ENFORCEMENT OFFICER / DULY AUTHORIZED AGENT AND TOWN ENGINEER, TO REVIEW THE CONDITIONS OF THIS APPROVAL AND THE CONSTRUCTION PROGRAM TO BE UTILIZED TO IMPLEMENT THE APPROVED REGULATED ACTIVITY.
16. THE WETLANDS ENFORCEMENT OFFICER / DULY AUTHORIZED AGENT SHALL BE NOTIFIED IN WRITING FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.
17. DURING THE DURATION OF THIS APPROVAL, THE CHAIRMAN OF THE AGENCY OR THE WETLANDS ENFORCEMENT OFFICER / DULY AUTHORIZED AGENT SHALL HAVE PERMISSION TO ENTER UPON THE SUBJECT PROPERTY AT REASONABLE TIMES FOR THE PURPOSE OF VIEWING AND INSPECTING THE CONDUCT OF THE APPROVED REGULATED ACTIVITY.
18. NO WORK OTHER THAN MAINTENANCE OF SEDIMENT AND EROSION CONTROL SHALL BE PERFORMED DURING SIGNIFICANT RAINFALL OF ONE (1) INCH OR MORE WITHIN A TWENTY-FOUR (24) HOUR PERIOD. ALL WORK SHALL BE PERFORMED BETWEEN 8:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY. NO WORK MAY BE CONDUCTED ON LEGAL HOLIDAYS OR WEEKENDS WITHOUT THE EXPRESSED APPROVAL OF THE AGENCY.
19. UPON COMPLETION OF THE REGULATED ACTIVITY APPROVED HEREIN, THE PERMITTEE SHALL NOTIFY THE WETLANDS ENFORCEMENT OFFICER / DULY AUTHORIZED AGENT FOR A FINAL INSPECTION AND CONFIRMATION OF SATISFACTORY COMPLETION AND COMPLIANCE WITH THE APPROVED SITE PLANS AND ALL STANDARD AND SPECIAL SUPPLEMENTAL CONDITIONS, REQUIREMENTS AND MODIFICATIONS OF THIS APPROVAL.

SUGGESTED CONSTRUCTION SEQUENCE:

1. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE OWNER AND ENGINEER PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. INSTALL CONSTRUCTION ENTRANCE(S) AND PLACE CATCH BASIN FILTER INSERTS IN EXISTING CATCH BASINS.
3. INSTALL PERIMETER E&S CONTROLS AND REQUEST PRE-CONSTRUCTION INSPECTION FROM THE ENGINEER.
4. REFER TO PHASING PLAN FOR SEQUENCE.
5. REMOVE EXISTING PAVING AND CURBING.
6. PERFORM BULK EARTHWORK OPERATIONS.
7. BEGIN CONSTRUCTION OF BUILDING FOUNDATION.
8. CONSTRUCT UTILITIES.
9. BOX OUT PARKING LOT WITH IMPORTED BASE MATERIALS.
10. CONSTRUCT BOTTOM COURSE OF BITUMINOUS PAVEMENT.
11. CONSTRUCT LANDSCAPING AND OTHER SITE AMENITIES.
12. CONSTRUCT CURBING AND TOP COURSE OF BITUMINOUS PAVEMENT.
13. AT THE CONCLUSION OF CONSTRUCTION, COMPLETE THE INSTALLATION OF POST-CONSTRUCTION SITE STABILIZATION MEASURES AS SHOWN ON THE DRAWINGS.

TEMPORARY E&S MEASURES MAINTENANCE SCHEDULE

E&S MEASURE	MAINTENANCE MEASURES	SCHEDULE
FILTER INSERTS IN DRAINAGE SYSTEM	CLEAN CATCH BASIN GRATE, REMOVE SEDIMENT/DEBRIS FROM FILTER INSERTS	WEEKLY & WITHIN 24 HOURS AFTER STORM GENERATING A DISCHARGE
HAY BALES/ SILT FENCE BARRIER	REPAIR/REPLACE WHEN FAILURE OBSERVED, REMOVE SILT WHEN ACCUMULATION REACHES APPROX. HALF HEIGHT OF BARRIER	WEEKLY & WITHIN 24 HOURS AFTER STORM GENERATING A DISCHARGE
CONSTRUCTION ENTRANCE	SWEEP PAVED ROADWAY ADJACENT TO SITE ENTRANCE AS NECESSARY, REFRESH STONE AS NECESSARY, REMOVE SILTED GRAVEL	WEEKLY
MOISTEN EXPOSED SOILS	PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER ON UNPAVED TRAVELWAYS AND KEEP TRAVELWAYS DAMP	DAILY
TEMPORARY SEDIMENT TRAP	CHECK AND REPAIR STONE OUTLET, CLEAN WHEN HALF FULL OF SEDIMENT (DEWATER IF NECESSARY), RESTORE TRAP TO ORIGINAL DIMENSIONS	WEEKLY & WITHIN 24 HOURS AFTER STORM GENERATING A DISCHARGE
TEMPORARY DIVERSION SWALE	REPAIR DAMAGED AREAS WITHIN 24 HOURS OF OBSERVED FAILURE	WEEKLY & WITHIN 24 HOURS AFTER STORM GENERATING A DISCHARGE. INSPECT DAILY WHEN CONSTRUCTION ACTIVITIES ARE IN CLOSE PROXIMITY

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CONSULTANT

SEAL OF THE CITY OF WATERBURY · 1853 · CONN.

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

DEMOLITION SEDIMENTATION & EROSION CONTROL NOTES

DATE: 2026-0501
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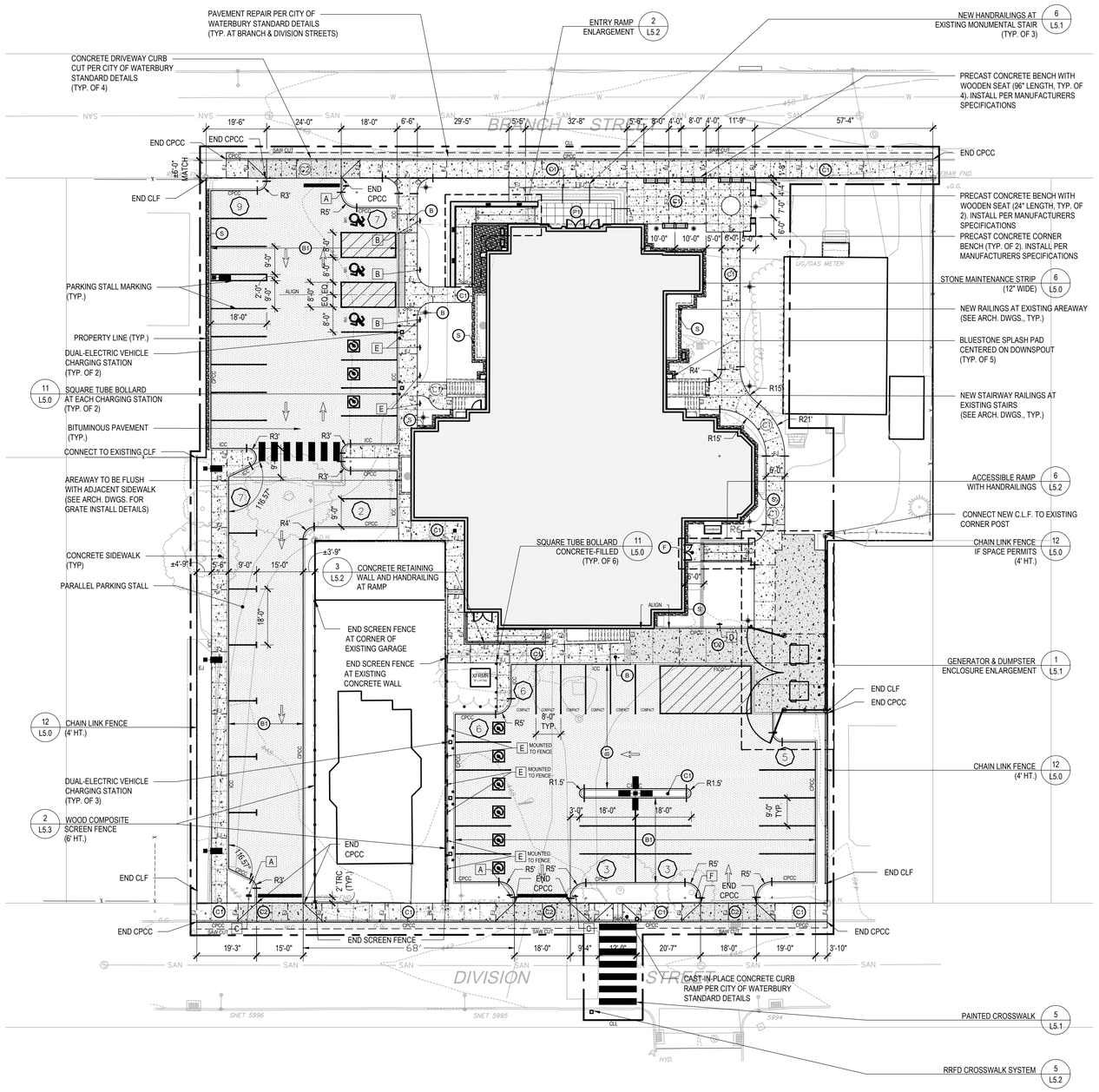

TRAFFIC SIGNAGE SCHEDULE

KEY	NAME	IMAGE	SIZE
A	STOP	STOP	18 X 18"
9	ACCESSIBLE VAN PARKING SPACE	HANDICAPPED PARKING PERMIT REQUIRED Violators Will Be Fined / VAN ACCESSIBLE	12" X 18" / 12" X 6"
C	DO NOT ENTER	DO NOT ENTER	18" X 18"
D	SERVICE VEHICLES ONLY	SERVICE VEHICLES ONLY	12" X 18"
E	EV CHARGING	ELECTRIC VEHICLE PARKING ONLY WHILE CHARGING	12" X 18"
F	ONEWAY	ONE WAY	12" X 18"

MATERIALS NOTES

1. MATERIALS AND CONSTRUCTION PROCEDURES SHALL COMPLY WITH CT DOT FORM 818, THE THE CITY OF WATERBURY AND THE PROJECT MANUAL.
2. ALL LOCATIONS WHERE EXISTING CURBING, BITUMINOUS CONCRETE ROADWAY OR CONCRETE ROADWAY OR CONCRETE SIDEWALK ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO PROVIDE A CLEAN, SMOOTH EDGE. TACK COAT EXPOSED EDGES OF EXISTING CONCRETE PRIOR TO PLACEMENT OF NEW BITUMINOUS CONCRETE PAVEMENT.
3. MANUFACTURED ITEMS SHALL BE INSTALLED, CONNECTED AND CLEANED ACCORDING TO THE MANUFACTURERS DIRECTIONS.
4. EXPANSION AND SCORE JOINTS FOR NEW CONCRETE WALKS SHALL BLEND TO MATCH EXISTING PATTERNS. CONTRACTOR TO ARRANGE TIMELY ON-SITE CONFERENCES WITH LANDSCAPE ARCHITECT TO APPROVE LAYOUT OF JOINT PATTERNS.
5. PROVIDE EXPANSION JOINTS FOR NEW CONCRETE PAVING AT ALL CURBS, TREE GRATES, BUILDING WALLS, SITE WALLS, STAIRS, LIGHT POLE BASES, MANHOLES, GRATES/VAULTS, EXISTING CONCRETE PAVING, STOP LIGHTS, FIRE HYDRANTS AND ALL OTHER FIXED MATERIALS. MAXIMUM DISTANCE BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 20 FEET.
6. ALL DAMAGED OR BROKEN SECTIONS OF EXISTING STREET SIDEWALK AND CURBING WITHIN THE TOWN / CITY / SOVEREIGN NATION RIGHT OF WAY SHALL BE REPLACED.

LAYOUT NOTES

1. NEW PAVEMENT TO MEET LINE & GRADE OF EXISTING PAVEMENTS.
2. ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED.
3. FIELD ADJUSTMENTS MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE AND APPROPRIATE MUNICIPAL OFFICIALS PRIOR TO CONSTRUCTION.
4. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE VERTICAL AND HORIZONTAL POSITION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
5. A DIGITAL CAD FILE CAN BE PROVIDED TO THE CONTRACTOR FOR THE LAYOUT OF SITE IMPROVEMENTS IN THE FIELD.

MATERIALS LEGEND

	PROPERTY LINE	
	SETBACK LINE	
EJ	EXPANSION JOINT	1 L5.0 / 2 L5.0
	CONTRACTION JOINT	1 L5.0 / 2 L5.0
	PAINTED ACCESSIBLE SYMBOL PAVEMENT MARKING	2 L5.1
	PAINTED CROSSWALK PAVEMENT MARKING	5 L5.1
	PAINTED STOP BAR PAVEMENT MARKING	5 L5.1
	TRAFFIC DIRECTIONAL ARRROW (NOT PAINTED)	
	PAINTED EV CHARGING STATION PAVEMENT MARKING	5 L5.1
COMPACT	PAINTED COMPACT PARKING SPACE PAVEMENT MARKING	5 L5.1
	EV CHARGING STATIONS	
	SITE AREA LIGHTING	10 L5.0
	PARKING LOT LIGHTING	10 L5.0
A	ACCESSIBLE RAMP - TYPE A (PER CITY OF WATERBURY STANDARD DETAILS)	
B	ACCESSIBLE RAMP - TYPE B	7 L5.1
C	ACCESSIBLE RAMP - TYPE C	8 L5.1
F	TRAFFIC SIGN (SEE TRAFFIC SIGNAGE SCHEDULE)	13 L5.0
CPCC	CAST IN PLACE CONCRETE CURB	8 L5.0
FICC	FLUSH INTEGRAL CONCRETE CURB	13 L5.0
ICC	INTEGRAL CONCRETE CURB	7 L5.0
F	FROST PAD (SEE STRUCTURAL DWGS.)	
B1	BITUMINOUS CONCRETE PAVEMENT	3 L5.0
C1	PEDESTRIAN CONCRETE PAVEMENT	2 L5.0
C2	VEHICULAR CONCRETE PAVEMENT (HEAVY-DUTY)	1 L5.0
P1	SALVAGED GRANITE PAVER PAVEMENT	4 L5.0
S	CRUSHED STONE MULCH	6 L5.0

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SCALE: 1" = 20'

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LAYOUT & MATERIALS PLAN

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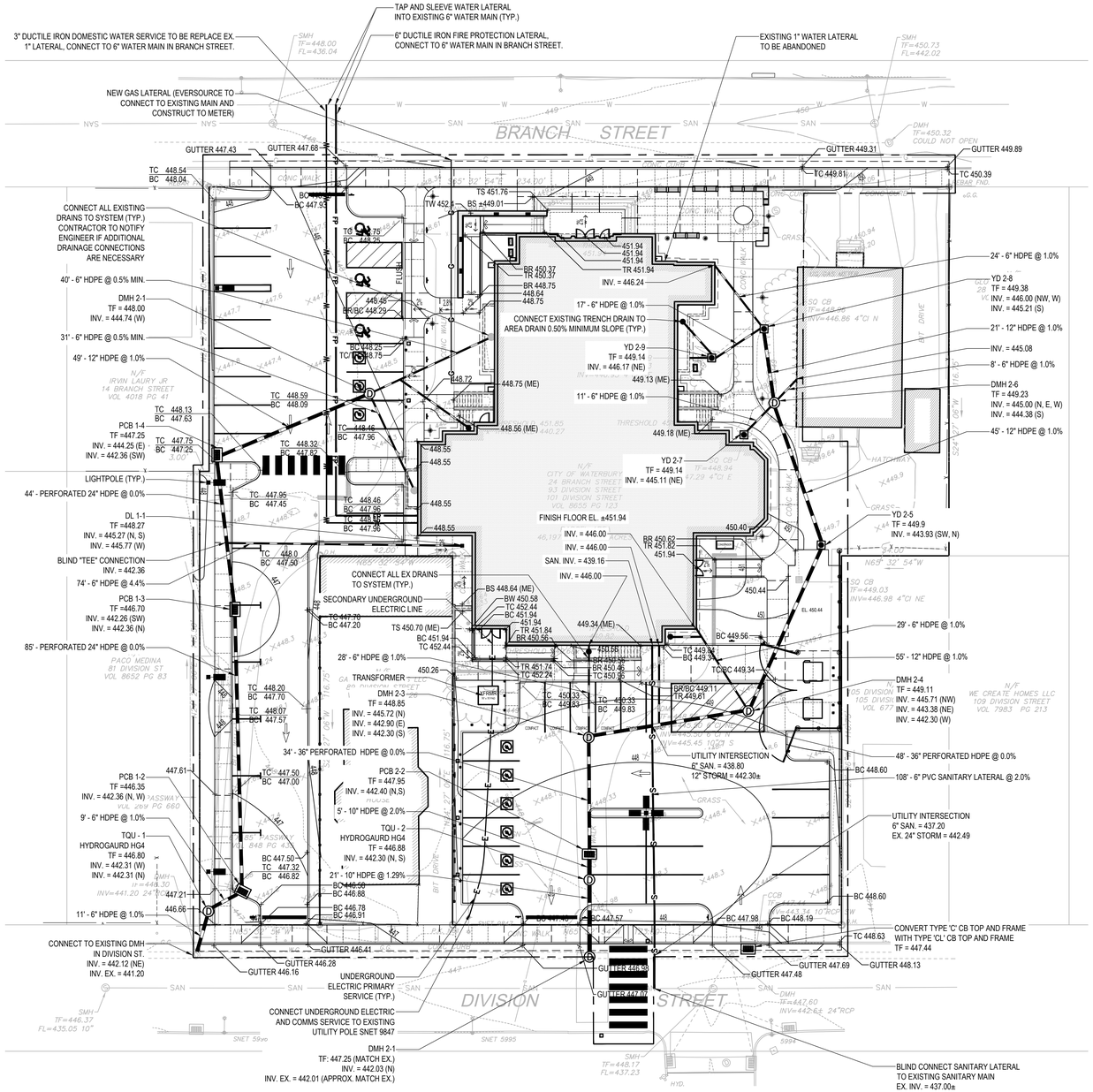

DRAINAGE NOTES

1. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT PROPER STORM DRAINAGE IS MAINTAINED THROUGHOUT CONSTRUCTION AND SHALL MAINTAIN ALL EXISTING AND NEW UTILITIES IN GOOD WORKING ORDER AND SHALL PROTECT THEM AT ALL TIMES UNTIL THE WORK IS COMPLETED AND ACCEPTED.
2. FUNCTIONAL COMPLETION OF STORM WATER DETENTION SYSTEMS AND STRUCTURES SHALL PRECEDE SITE DEVELOPMENT OF AREAS, ROADS, OR LOTS CONTRIBUTING TO THESE SYSTEMS.
3. CERTIFIED 'AS-BUILTS' VS 'AS-APPROVED' PLANS OF THE STORM WATER DETENTION-DISCHARGE SYSTEM SHALL BE SUBMITTED FOLLOWING ITS CONSTRUCTION AND PRIOR TO BOND RELEASE.

STORM SEWER

1. ALL PIPES ARE TO BE 12" HDPE WITH A MINIMUM 1.0% SLOPE AND 2 FT OF COVER UNLESS OTHERWISE NOTED.
2. ALL UNDERDRAINS ARE TO BE 4" PERFORATED PVC WITH A MINIMUM 0.0% SLOPE UNLESS OTHERWISE NOTED. REFER TO DETAIL SHEETS FOR DEPTH OF COVER ON UNDERDRAINS.
3. CONTRACTOR IS RESPONSIBLE TO ENSURE ADEQUATE SIZING OF MANHOLES TO ACCEPT PROPOSED PIPES.
4. ALL EXISTING UTILITY LINES TO BE ABANDONED SHALL BE ABANDONED ACCORDING TO UTILITY COMPANY REQUIREMENTS.
5. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH APPLICABLE STANDARDS.
6. DAMAGE TO EXISTING UTILITIES AS A RESULT OF THE CONTRACTOR'S OR ANY OF HIS SUBCONTRACTOR'S ACTIVITIES DURING THE CONSTRUCTION PROCESS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING DURING THE EXECUTION OF HIS WORK. REFER TO GEOTECHNICAL REPORT FOR GROUNDWATER OBSERVATIONS.
8. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS DEVELOPED FROM THE BEST AVAILABLE INFORMATION. THE ACTUAL LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF EXCAVATION ACTIVITIES.
9. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING DRAINAGE PIPES TO REMAIN. CONTRACTOR TO SUPPORT PIPE AS NEEDED/HAND EXCAVATE TO ENSURE PIPE FUNCTIONALITY IS MAINTAINED.

UTILITY NOTES

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER SHOULD THERE BE ANY CONFLICT BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
2. WATER SERVICE TAPS SHALL BE PERFORMED BY THE WATER COMPANY THE CONTRACTOR SHALL EXCAVATE, BACKFILL AND PAY THE APPLICABLE FEES.
3. SANITARY SEWER
   - ALL SANITARY SEWER WORK TO COMPLY WITH CITY OF WATERBURY WPC STANDARDS AND SPECIFICATIONS.
   - ALL SANITARY LATERALS ARE TO BE 6" SDR-35 WITH A MIN. PITCH OF 1% AND 3.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL SANITARY LATERALS ARE TO HAVE INTERNAL CLEANOUTS OR A CLEANOUT WITHIN 10 FT OF BUILDING FOOTPRINT.
   - LOCATION OF SANITARY LATERALS AT BUILDING TO BE COORDINATED WITH PLUMBING DRAWINGS.
4. WATER SERVICE
   - ALL WATER SERVICE WORK TO COMPLY WITH CITY OF WATERBURY WATER DEPARTMENT STANDARDS AND SPECIFICATIONS.
   - ALL WATER MAINS ARE TO BE 8" D.I. WITH 4.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL DOMESTIC WATER SERVICES ARE TO BE 4" DUCTILE IRON WITH 4.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL FIRE SERVICES ARE TO BE 6" D.I. WITH 4.5 FT OF COVER UNLESS OTHERWISE NOTED.
   - ALL WATER SERVICES ARE TO BE A MIN. 10 FT FROM ANY SANITARY SERVICE (UNLESS SHELVED IN THE SAME TRENCH) AND A MINIMUM OF 18" OF VERTICAL CLEARANCE FROM ANY OTHER UTILITY LINE.
   - LOCATION OF WATER SERVICES AT BUILDINGS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
5. GAS SERVICE (EVERSOURCE)
   - ALL GAS SERVICES ARE TO CONFORM TO THE MOST CURRENT GAS COMPANY STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH EVERSOURCE
   - METER LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
6. ELECTRICAL SERVICES (EVERSOURCE)
   - ALL ELECTRICAL SERVICES ARE TO CONFORM TO EVERSOURCE MOST CURRENT STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH EVERSOURCE.
   - METER LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
   - SEE ESU5.1 FOR TRENCH DETAILS.
7. TELEPHONE SERVICES (FRONTIER)
   - ALL TELEPHONE SERVICES ARE TO CONFORM TO FRONTIER MOST CURRENT STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH FRONTIER.
   - SERVICE LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
8. CABLE TELEVISION SERVICES (FRONTIER)
   - ALL CABLE TELEVISION SERVICES ARE TO CONFORM TO MOST CURRENT STANDARDS AND REGULATIONS.
   - FINAL DESIGN TO BE COORDINATED WITH FRONTIER.
   - SERVICE LOCATIONS TO BE COORDINATED WITH MECHANICAL DRAWINGS.
9. SEE SITE LIGHTING ESU1.1 FOR CONDUIT ROUTING.

GRADING LEGEND

- DIRECTION OF SURFACE DRAINAGE FLOW
- 123 — PROPOSED INTERMEDIATE CONTOUR
- 120 — PROPOSED INDEX CONTOUR
- 123.45 / TW 123.45 BW 122.45 — PROPOSED SPOT ELEVATION
- 123.45 (ME) — MATCH EXISTING SPOT ELEVATION
- FLUSH CONDITION
- ACCESSIBLE ROUTE
- B-# — SOIL BORING LOCATION

DRAINAGE AND UTILITIES LEGEND

- STORM DRAINAGE PIPE
- CATCH BASIN
- DRAINAGE MANHOLE
- AREA/YARD DRAIN
- TREATMENT UNIT
- RL / RL — ROOF LEADER
- SANITARY MANHOLE
- S — SANITARY SEWER
- VENT — VENT LINE
- CO — CLEANOUT
- FP — WATER LINE / FIRE LINE
- W — WATER LINE DOMESTIC
- WATER GATE VALVE
- WATER TAPPING SLEEVE
- WM — WATER METER
- ELECTRIC / COMM. DUCT BANK
- E — ELECTRIC / COMM. DUCT BANK
- G — GAS LINE
- GAS METER
- CO_2 SUPPLY
- COMMUNICATION CONDUITS

GENERAL NOTES

1. LOCATIONS & ELEVATIONS OF UNDERGROUND UTILITIES AND STRUCTURES ARE TAKEN FROM RECORD PLANS AND LIMITED FIELD VERIFICATION AND ARE APPROXIMATE ONLY. THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR THAT ALL UTILITIES AND SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY SIZE, LOCATION AND INVERTS OF UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL DETERMINE FOR HIMSELF, PRIOR TO BIDDING, THE LOCATIONS AND ELEVATIONS OF ALL UTILITIES THAT MAY AFFECT HIS CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL ADEQUATELY SUPPORT ALL UTILITIES AND SHALL BE RESPONSIBLE FOR ALL DAMAGE. CONTACT "CALL BEFORE YOU DIG", 1-800-922-4455, AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR IS TO COORDINATE ACTIVITIES WITH INDIVIDUAL UTILITY COMPANY REPRESENTATIVES.
3. CONTRACTOR SHALL ESTABLISH AND/OR MAINTAIN AT LEAST ONE (1) BENCHMARK ON SITE FOR VERTICAL AND HORIZONTAL REFERENCE.
4. ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS SHALL BE FIELD ALL EXISTING CURBING ON SITE IS TO BE FULLY REMOVED AND DISPOSED OF PROPERLY UNLESS INDICATED OTHERWISE.VERIFIED PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONSTRUCTION MANAGER.
5. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES AT NO ADDED COST TO THE OWNER (TYP.).
6. ALL ITEMS REQUIRING REMOVAL SHALL BE REMOVED TO FULL DEPTH TO INCLUDE BASE MATERIAL AND FOOTINGS OR FOUNDATIONS AS APPLICABLE AND LEGALLY DISPOSED OF OFFSITE.
7. ALL EXISTING UTILITIES REQUIRING REMOVAL SHALL BE COORDINATED WITH THE RESPECTIVE UTILITY COMPANIES.
8. ALL POINTS OF CONSTRUCTION INGRESS & EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD ONTO PUBLIC WAYS. ANY SEDIMENT TRACKED ONTO PAVED PUBLIC WAYS SHALL BE SWEPT AT THE END OF EACH WORK DAY.
9. THE CONSTRUCTION LIMITS ARE AS DEFINED IN THE SPECIFICATIONS AND AS SHOWN IN THE DRAWINGS. DRAWINGS INDICATE MINIMUM LIMITS OF DEMOLITION/PAVEMENT REMOVAL REQUIRED FOR CONSTRUCTION OF NEW IMPROVEMENTS. WORK SHALL NOT EXCEED CONTRACT LIMIT LINES UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE OWNER'S REPRESENTATIVE.
10. COORDINATE WORK ON EACH SITE WORK SHEET WITH ALL OTHER DRAWINGS PERTAINING TO SITE WORK IN THE CONTRACT DOCUMENT SET. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIM OR HERSELF FAMILIAR WITH THE FULL SET OF DOCUMENTS FOR ALL SITE RELATED ITEMS.
11. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, LOCAL AND FEDERAL REGULATIONS.
12. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES AND OPERATIONS.
13. CONTRACTOR TO SECURE ALL NECESSARY TRADE PERMITS.
14. CONTRACTOR SHALL CONTROL DUST CAUSED BY HIS OPERATIONS BY APPLYING WATER OR DUST PALLIATIVE, OTHER THAN CALCIUM CHLORIDE.
15. CONTRACTOR SHALL CONTROL NOISE TO AS GREAT AN EXTENT AS POSSIBLE. ALL POWER EQUIPMENT USED DURING CONSTRUCTION SHALL BE EQUIPPED WITH MUFFLERS.
16. PRIOR TO PROJECT CLOSE-OUT, CONTRACTOR SHALL REMOVE ALL DEBRIS AND EXCESS MATERIALS FROM SITE. ALSO, ANY DAMAGE TO FIELD OR FACTORY APPLIED FINISHES SHALL BE REPAIRED.

0 20 50 100

SCALE: 1" = 20'

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architecture interior design master planning
21 Talcott Notch Road Farmington, CT 06032
friar.com 860.678.1291

STATE OF CONNECTICUT WILLIAM G. WALTER LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL SEAL

benesch
Alfred Benesch & Company
120 Hebron Avenue, 2nd Floor
Glastonbury, Connecticut 06033
860-633-8341
CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

GRADING DRAINAGE & UTILITY PLAN

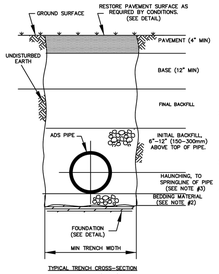
DATE: 2026-0501
SCALE 1" = 20'
PROJ. #: 70905.00
DRAWN: RCD
CHECKED: RCD
4/27/2026 10:47:28 AM

SHEET NO.

L3.0

30

TRENCH SECTION PIPE 30 in OR LESS (ADS)



TYPICAL TRENCH CROSS-SECTION
(N.T.S.)

NOTES:

1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE CITY AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE CITY, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I (1 1/2"- 3 1/2"), II (1 1/2"-2 1/2"), OR III (1"-2") AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITIONUNLESS OTHERWISE SPECIFIED BY THE CITY, MINIMUM BEDDING THICKNESS SHALL BE 4"(100mm), FOR 4"-24" (100-600mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"-60" (750-1500mm) CPEP.
3. HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
4. UNLESS OTHERWISE SPECIFIED BY THE CITY, MINIMUM TRENCH WIDTHS (PAY LIMITS) SHALL BE AS FOLLOWS:

NOMINAL Ø IN (mm)	MIN. RECOMMENDED TRENCH WIDTH IN (mm)
4 (100)	21 (530)
6 (150)	23 (580)
8 (200)	26 (661)
10 (250)	28 (710)
12 (300)	30 (762)
15 (375)	34 (860)
18 (450)	39 (990)
24 (600)	48 (1220)
30 (750)	56 (1423)
36 (900)	64 (1626)
42 (1050)	72 (1829)
48 (1200)	80 (2032)
54 (1372)	88 (2236)
60 (1500)	96 (2439)

5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300), 24 (600) FOR 60" (1500) PIPE
H25 (RIGID PAVEMENT)	12 (300), 24 (600) FOR 60" (1500) PIPE
E80 RAILWAY	24 (600)
HEAVY CONSTRUCTION	48 (1200)

TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT SECTION

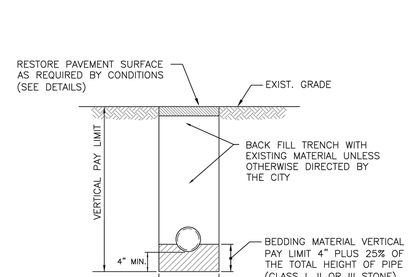
6. PAVEMENT AND BASE THICKNESS DEPEND UPON ROADWAY CLASSIFICATION. (SEE DETAIL)

VOLUMEREQ'D
VOLUMEPROVIDED

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

	TRENCH SECTION PIPE 30 in DIA. PIPE OR LESS (ADS)	DRAWN BY VT
	STANDARD DETAIL CITY OF WATERBURY	DATE 11/21
	BUREAU OF ENGINEERING	CK'D BY RC
	DWG. NAME Trench Section Over 30 in Dia. Pipe (ADS)	SCALE N.T.S
REVISED 11/17/2021		STD. NO. 6.51-2

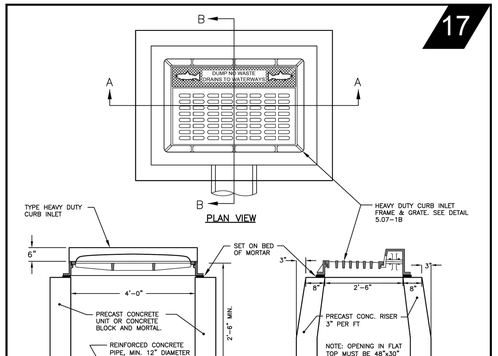
29



TRENCH SECTION 30" DIA. PIPE OR LESS (NON ADS)

	TRENCH SECTION 30" DIA. PIPE OR LESS (NON ADS)	DRAWN BY PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE JAN.2009
	BUREAU OF ENGINEERING	CK'D BY
	DWG. NAME STD. 6.51-1 Trench Section 30" Dia. Pipe or Less (non ADS).dwg	SCALE N.T.S.
REVISED 11/17/2021		STD. NO. 6.51-1

17



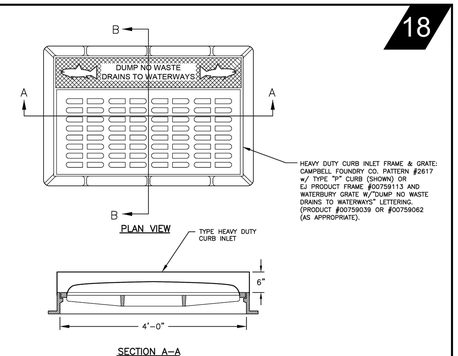
WATERBURY TYPE 'C' CATCH BASIN

NOTES:

1. ALL CONCRETE SHALL BE 4,000psi (PER CTDOT)
2. PROVIDE PRECAST RISERS AS REQUIRED, WITH WATERTIGHT SEALS.

	WATERBURY TYPE 'C' CATCH BASIN	DRAWN BY PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE NOV.2010
	BUREAU OF ENGINEERING	CK'D BY
	DWG. NAME STD 5.07-1A Waterbury type C Catch Basin.dwg	SCALE N.T.S.
Rev. 1 REC 5/15/2021		STD. NO. 5.07-1A

18



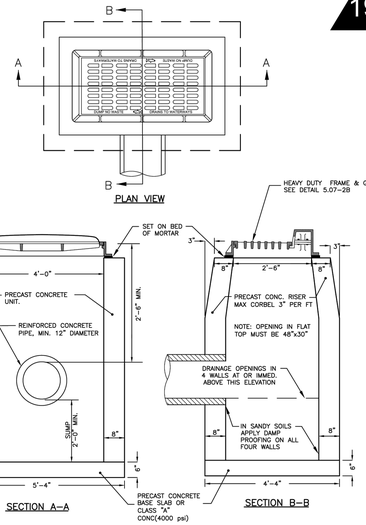
NOTES:

1. MATERIAL – GRAY CAST IRON ASTM A48-83, CLASS 35, AASHTO H520 LOAD RATED.
2. CASTING SUPPLIED WITHOUT SURFACE COATING.

WATERBURY CATCH BASIN TYPE 'C' FRAME AND GRATE

	WATERBURY CATCH BASIN TYPE 'C' FRAME AND GRATE	DRAWN BY PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE JAN.2011
	BUREAU OF ENGINEERING	CK'D BY
	DWG. NAME STD 5.07-1B Waterbury Type 'C' Catch Basin Frame and Grate.dwg	SCALE N.T.S.
Rev. 1 REC 5/15/2021		STD. NO. 5.07-1B

19



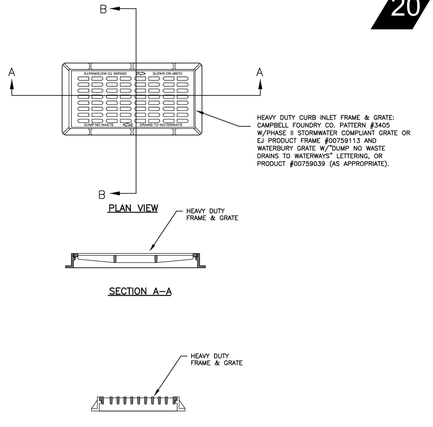
WATERBURY TYPE 'C-L' CATCH BASIN

NOTES:

1. ALL CONCRETE SHALL BE 4,000psi (PER CTDOT)
2. PROVIDE PRECAST RISERS AS REQUIRED, WITH WATERTIGHT SEALS.

	WATERBURY TYPE "C-L" CATCH BASIN	DRAWN BY PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE NOV.2010
Rev. 3 tk 9/24/2021	BUREAU OF ENGINEERING	CK'D BY
Rev. 2 REC 5/15/2021	DWG. NAME STD 5.07-2A Waterbury Type 'C-L' Catch Basin.dwg	SCALE N.T.S.
Rev. 1 PMB 2/3/2012		STD. NO. 5.07-2A

20



WATERBURY C-L CATCH BASIN FRAME AND GRATE

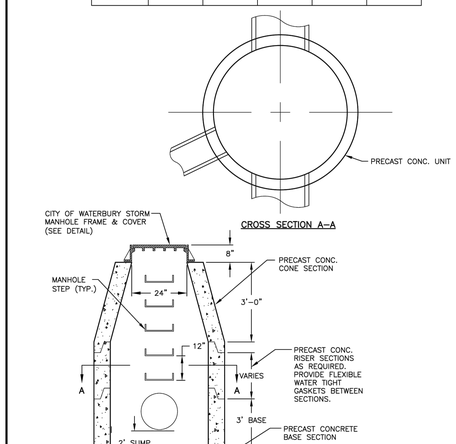
NOTES:

1. MATERIAL – GRAY CAST IRON ASTM A48-83, CLASS 35, AASHTO H520 LOAD RATED.
2. CASTING SUPPLIED WITHOUT SURFACE COATING.

	WATERBURY TYPE "C-L" CATCH BASIN FRAME AND GRATE	DRAWN BY PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE JAN.2011
	BUREAU OF ENGINEERING	CK'D BY
	DWG. NAME STD 5.07-2B Waterbury Type 'C-L' Catch Basin Frame & Grate.dwg	SCALE N.T.S.
Rev. 1 REC 5/15/2021		STD. NO. 5.07-2B

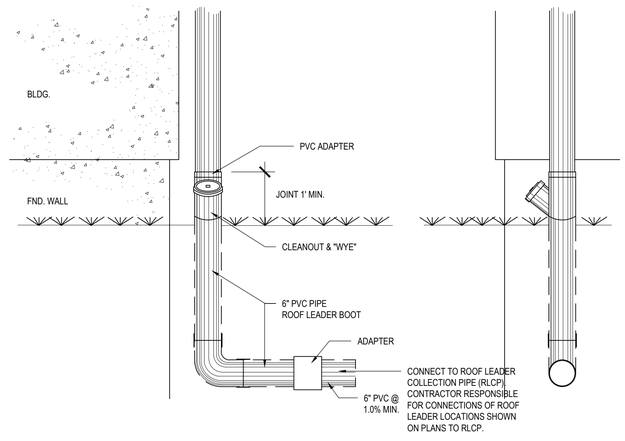
22

	MIN. MANHOLE INSIDE DIAMETER				
	4 FOOT MANHOLE 5" WALL	5 FOOT MANHOLE 6" WALL	6 FOOT MANHOLE 7" WALL	8FOOT MANHOLE 9" WALL	10 FOOT MANHOLE 11" WALL
MAX.PIPE O.D. STRAIGHT THRU TO 45° DEFLECTION	UP TO 30" O.D 18" R.C. PIPE	UP TO 44" O.D 36" R.C. PIPE	UP TO 51" O.D 42" R.C. PIPE	UP TO 72" O.D 60 R.C. PIPE	UP TO 86" O.D 72 R.C. PIPE
MAX.PIPE O.D. 45° DEFLECTION 90° DEFLECTION	UP TO 23" O.D 18" R.C. PIPE	UP TO 33.5" O.D 27" R.C. PIPE	UP TO 37 O.D 30" R.C. PIPE	UP TO 51" O.D 42" R.C. PIPE	UP TO 70" O.D 60" R.C. PIPE



STORM MANHOLE WITH PRECAST BASE

	WATERBURY STORM MANHOLE WITH PRECAST BASE	DRAWN BY JGR/PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE NOV.2010
	BUREAU OF ENGINEERING	CK'D BY
	DWG. NAME STD 5.07-4A Waterbury Storm Manhole with Precast Base.dwg	SCALE N.T.S.
Rev. 1 REC 5/15/2021		STD. NO. 5.07-4A



ROOF LEADER BOOT

3/4" = 1'-0"

FRIAR
architecture interior design master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

STATE OF CONNECTICUT · WILLIAM G. WALTER · LICENSED PROFESSIONAL ENGINEER

PROFESSIONAL SEAL

PR-38

benesch
Alfred Benesch & Company
120 Hebron Avenue, 2nd Floor
Glastonbury, Connecticut 06033
860-633-8341

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

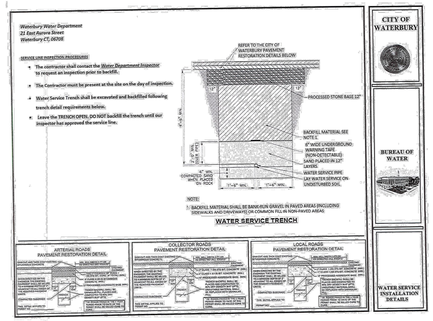
CONTRACT DOCUMENTS

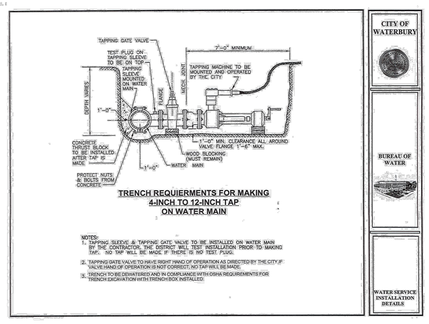
DRAINAGE DETAILS

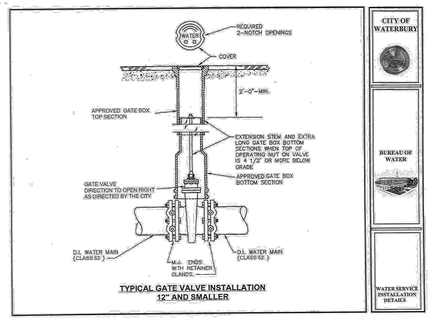
DATE: 2026-0501
SCALE AS SHOWN
PROJ. #: 70905.00
DRAWN: RCD
CHECKED: RCD
4/27/2026 10:47:28 AM

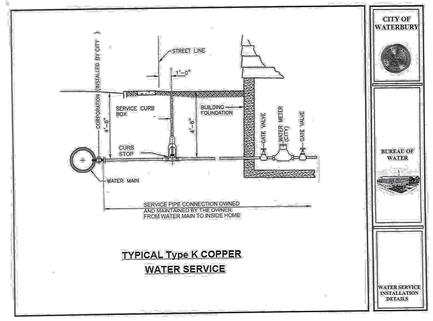
SHEET NO.

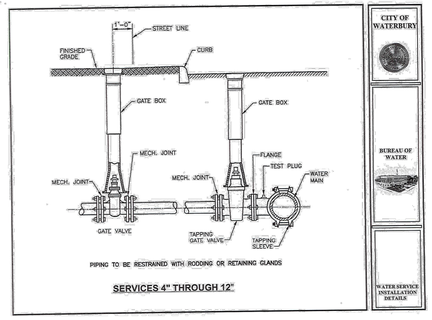
L3.1

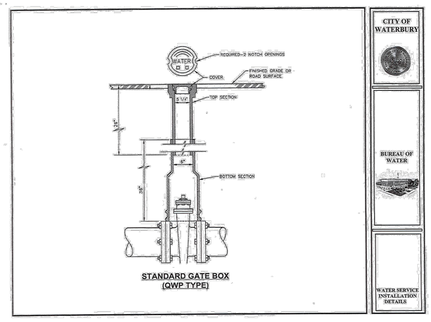


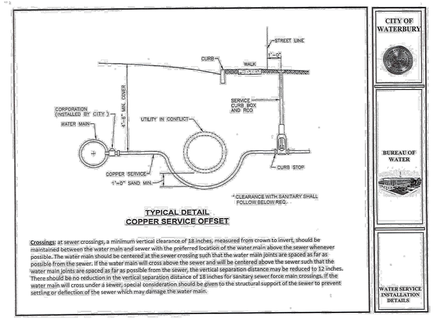


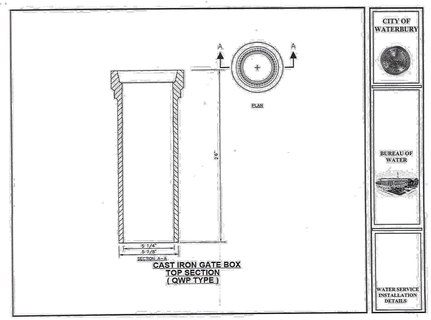












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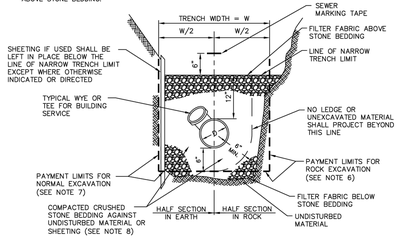
SANITARY SEWER PIPE OR FORCE MAIN TRENCH NOTES:

1. DEPTH OF SEWER SHALL BE AS SHOWN ON DRAWINGS.
2. SEWER TRENCHES MAY BE EXCAVATED WIDER THAN TRENCH WIDTH W ABOVE THE "LINE OF NARROW TRENCH LIMIT" AT THE CONTRACTOR'S EXPENSE.
3. BELOW THE "LINE OF NARROW TRENCH LIMIT" THE TRENCH SHALL NOT BE EXCAVATED BEYOND THE TRENCH WIDTH W.
4. THE ENGINEER MAY ORDER SHEETING IF EXCAVATION AND BACKFILL BELOW THE NORMAL DEPTH IS REQUIRED.
5. IF USED, SHEETING SHALL BE LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF THE SEWER PIPE, UNLESS OTHERWISE INDICATED OR DIRECTED BY THE ENGINEER.
6. REMOVE ALL ROCK WITHIN 3'-0" HORIZONTALLY OF THE ENDS OF SERVICE CONNECTIONS, BRANCHES AND STUBS, AND DOWN TO A HORIZONTAL PLANE 8" BELOW THE BOTTOM OF SUCH ITEMS.
7. THE FOLLOWING TRENCH WIDTH AND PAYMENT LIMITS SHALL APPLY:

DIAMETER OF PIPE "D"	TRENCH WIDTH "W"	PAYMENT LIMIT
12" OR SMALLER	4'-0"	4'-0"
12"-18"	7'-0"	7'-0"
18"-24"	7'-6"	7'-6"
>24"	8'-0"	8'-0"

8. REPLACE PIPE BEDDING AND TRENCH BACKFILL WITH 2' LONG IMPERVIOUS DAM WHERE CALLED FOR ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER. UNDER DRAIN SHALL BE INSTALLED WHERE CALLED FOR ON DRAWINGS OR AS DIRECTED BY THE ENGINEER.
9. WHERE CONCRETE ENCASEMENT IS CALLED FOR BY THE PLANS, OR WHEN DIRECTED BY THE ENGINEER, REPLACE BEDDING AND BACKFILL BELOW THE "LINE OF NARROW TRENCH LIMIT" WITH CLASS "A" CONCRETE.
10. SEWER MARKING TAPE SHALL BE INSTALLED A MINIMUM OF 18" ABOVE THE SANITARY SEWER, FORCE MAIN AND SERVICE CONNECTION PIPES.
11. SANITARY SEWER PIPE AND SERVICE CONNECTION PIPE SHALL HAVE FILTER FABRIC INSTALLED BELOW AND ABOVE STONE BEDDING.

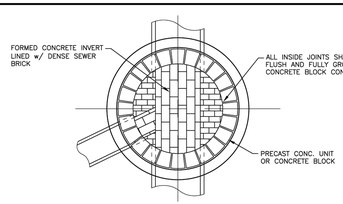


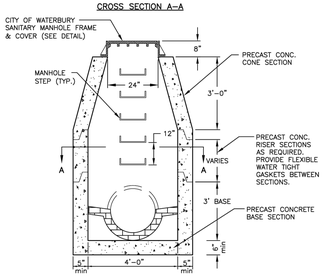
TYPICAL GRAVITY SEWER TRENCH

WPCF Ref fig. 23 & 24

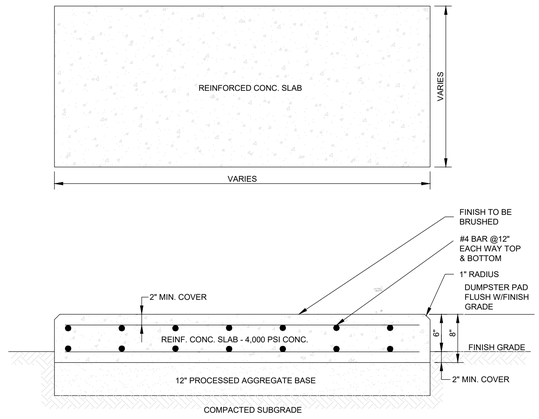
	TYPICAL GRAVITY SEWER TRENCH	DRAWN BY: PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE: DEC.2010 / DATE BY:
	WATER POLLUTION CONTROL	SCALE: N.T.S.
	DWG. NAME: STD 14.12 Typical Gravity Sewer Trench.dwg	STD. NO. 14.12

24





	WATERBURY SANITARY MANHOLE	DRAWN BY: PMB
	STANDARD DETAIL CITY OF WATERBURY	DATE: NOV.2010 / DATE BY:
	BUREAU OF ENGINEERING	SCALE: N.T.S.
	DWG. NAME: STD 5.07-4C Waterbury Sanitary Manhole.dwg	STD. NO. 5.07-4C



NOTE: THIS DETAIL IS TO BE USED FOR THE DUMPSTER PAD AND GENERATOR PAD.

REINFORCED CONCRETE PAD

SCALE: NONE

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CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

UTILITY DETAILS

DATE: 2026-0501
SCALE AS SHOWN
PROJ. #: 70905.00
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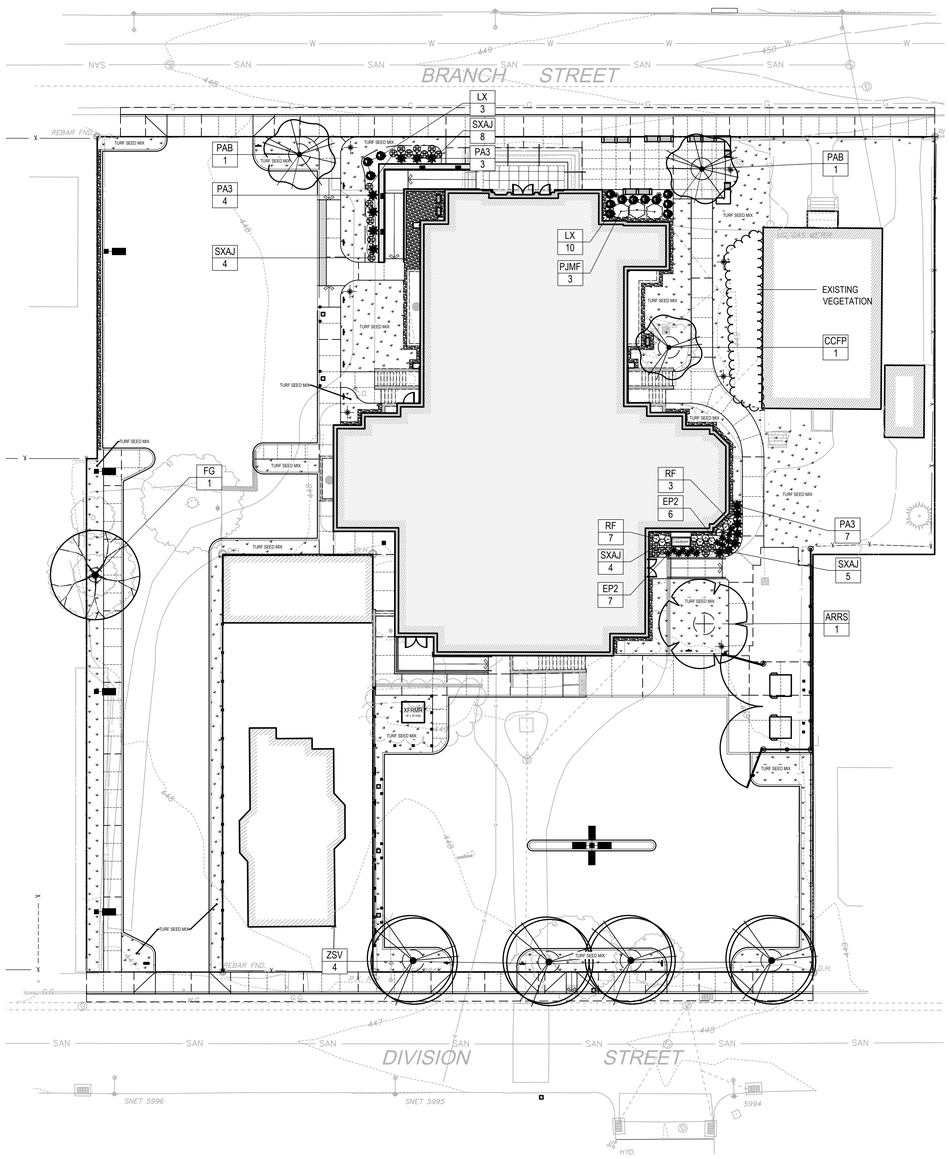
L3.2

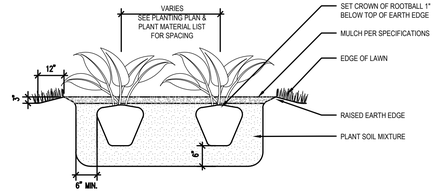


0 20 50 100

SCALE: 1" = 20'

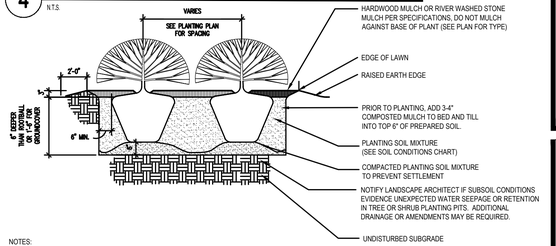
PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	CAL	SIZE		QTY
DECIDUOUS TREES							
	ARRS	ACER RUBRUM `RED SUNSET` / RED SUNSET MAPLE	B & B	3.0"-3.5" CAL	12-14` HT.		1
	FG	FAGUS GRANDIFOLIA / AMERICAN BEECH	B & B	3-3.5" CAL.	12-14` HT.		1
	PAB	PLATANUS X ACERIFOLIA `BLOODGOOD` / LONDON PLANE TREE	B & B	4-4.5" CAL.	16-18` HT.		2
	ZSV	ZELKOVA SERRATA `VILLAGE GREEN` / VILLAGE GREEN JAPANESE ZELKOVA	B & B	3-3.5" CAL.	16-18` HT.		4
ORNAMENTAL TREES							
	CCFP	CERCIS CANADENSIS `FOREST PANSY` TM / FOREST PANSY REDBUD	B & B	2.5-3" CAL.	10-12` HT.		1
SYMBOL	*CODE*	*BOTANICAL / COMMON NAME*	*SIZE*	*HEIGHT*	*SPREAD*		*QTY*
ANNUALS/PERENNIALS							
	EP2	ECHINACEA PURPUREA / CONEFLOWER	#3 CONT.	1-2` HT.	1-1.5` SPR.		13
	RF	RUDBECKIA FULGIDA / BLACKEYED SUSAN / ORANGE CONEFLOWER	#3 CONT.	1-2` HT.	1-1.5` SPR.		10
	SXAJ	SEDUM X `AUTUMN JOY` / AUTUMN JOY SEDUM	#3 CONT.	1-2` HT.	1-1.5` SPR.		23
GRASSES							
	PA3	PENNISETUM ALOPECUROIDES / FOUNTAIN GRASS	#5 CONT.	2-3` HT.	2-3` SPR.		14
EVERGREEN SHRUBS							
	LX	LEUCOTHOE FONTANESIANA `LITTLE FLAMES` / LEAFSCAPE™ LITTLE FLAMES LEUCOTHOE	#3 CONT.	1-2` HT.	1-1.5` SPR.		13
	PJMF	PIERIS JAPONICA `MOUNTAIN FIRE` / MOUNTAIN FIRE JAPANESE PIERIS	#5 CONT.	30-36" HT.	30-36" SPR.		3
SYMBOL	*CODE*	*BOTANICAL / COMMON NAME*	*CONT*	*HEIGHT*	*SPREAD*	*SPACING*	
GROUND COVERS							
	TH	TURF SEED MIX	SEED				



4 PERENNIAL PLANTING (CONTINUOUS PLANTING BED)

N.T.S.

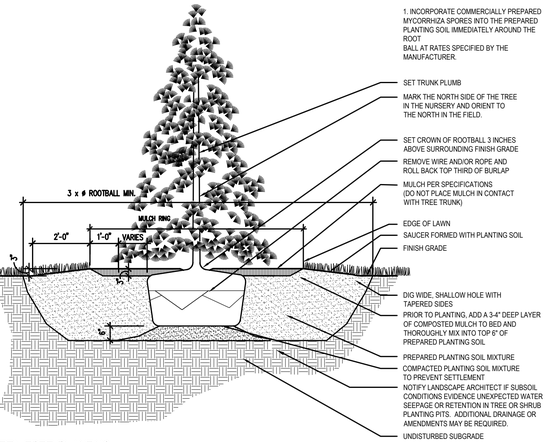


NOTES:

1. FOR CONTAINER GROWN SHRUBS, GENTLY PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF CONTAINER.
2. FOR B&B SHRUBS, FOLD BURLAP FROM TOP OF ROOT BALL DOWN TO GROUND.
3. INCORPORATE COMMERCIALLY PREPARED MYCORRHIZA SPORES IN THE SOIL IMMEDIATELY AROUND THE ROOT BALL AT RATES SPECIFIED BY THE MANUFACTURER.
4. CONFIRM THAT WATER DRAINS OUT OF THE SOIL DURING THE DESIGN PHASE, DESIGN ALTERNATIVE DRAINAGE SYSTEMS, AS REQUIRED.

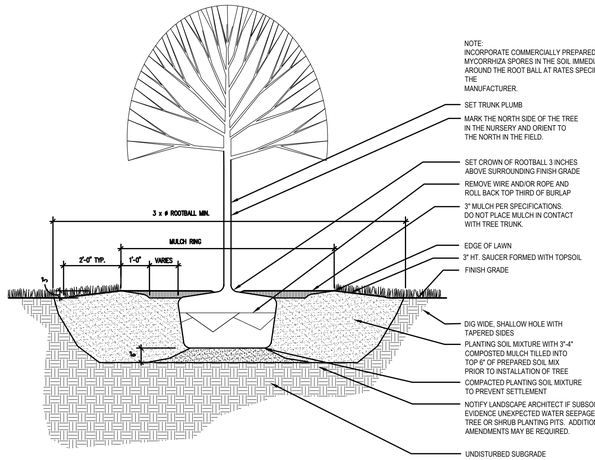
3 SHRUB PLANTING BED

N.T.S.



2 EVERGREEN TREE PLANTING

NOT TO SCALE



1 DECIDUOUS TREE PLANTING

1/2" = 1'-0"

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RFP NO. 8801

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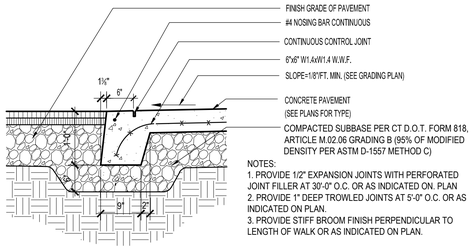
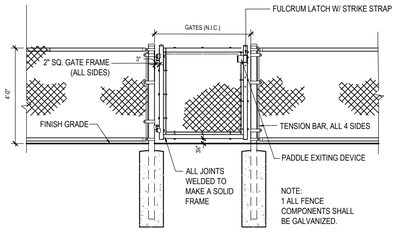
SHEET NO.

L4.0



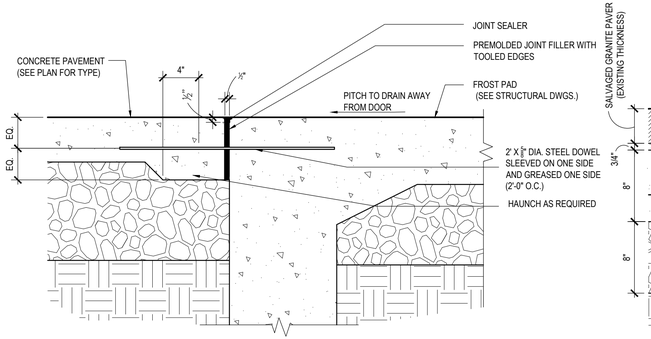
NOTES:
1. PROVIDE 1/2" EXPANSION JOINTS WITH PERFORATED JOINT FILLER AT 30'-0" O.C. OR AS INDICATED ON. PLAN
2. PROVIDE 1" DEEP TROWLED JOINTS AT 5'-0" O.C. OR AS INDICATED ON PLAN.
3. PROVIDE STIFF BROOM FINISH PERPENDICULAR TO LENGTH OF WALK OR AS INDICATED ON PLAN.

13 FLUSH INTREGRAL CAST-IN-PLACE CONCRETE CURB (FICC)
3/4" = 1'-0"

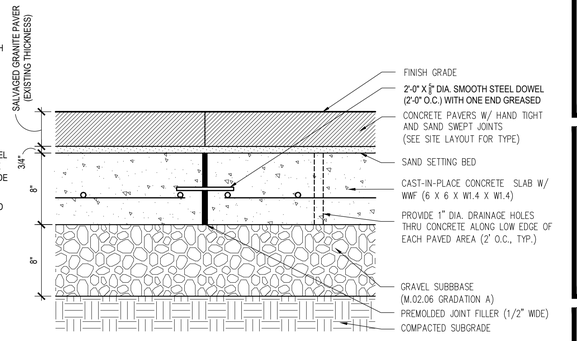


NOTE:
1 ALL FENCE COMPONENTS SHALL BE GALVANIZED.

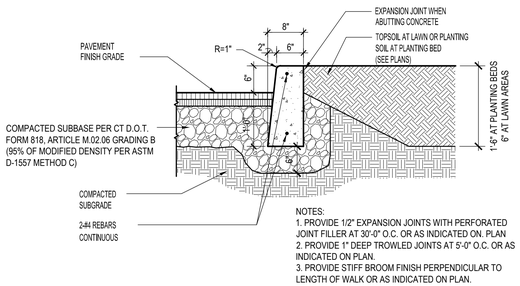
12 CHAIN LINK FENCE (4' HT.)
NTS



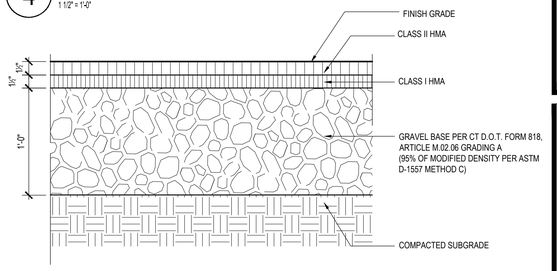
9 DOWELED EXPANSION JOINT AT FROST WALL
1 1/2" = 1'-0"



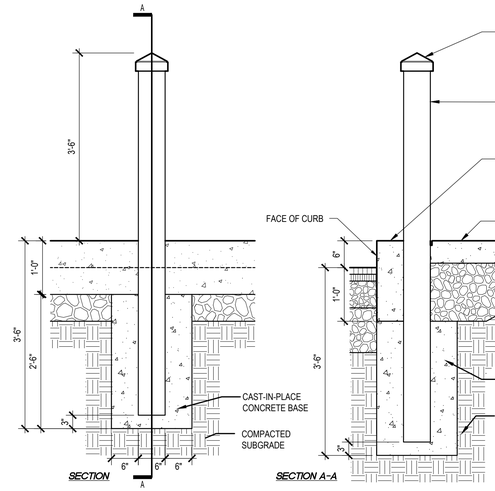
4 SALVAGED GRANITE PAVERS PAVEMENT
1 1/2" = 1'-0"



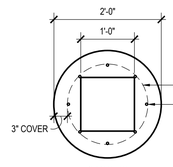
NOTES:
1. PROVIDE 1/2" EXPANSION JOINTS WITH PERFORATED JOINT FILLER AT 30'-0" O.C. OR AS INDICATED ON. PLAN
2. PROVIDE 1" DEEP TROWLED JOINTS AT 5'-0" O.C. OR AS INDICATED ON PLAN.
3. PROVIDE STIFF BROOM FINISH PERPENDICULAR TO LENGTH OF WALK OR AS INDICATED ON PLAN.

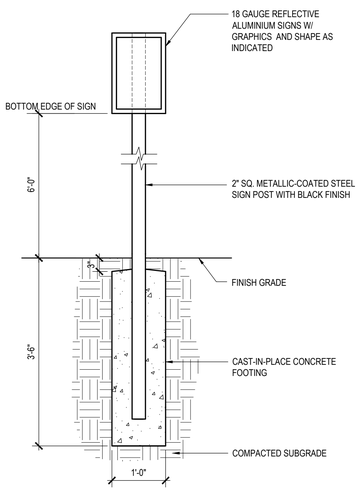


3 BITUMINOUS CONCRETE PAVEMENT
1 1/2" = 1'-0"

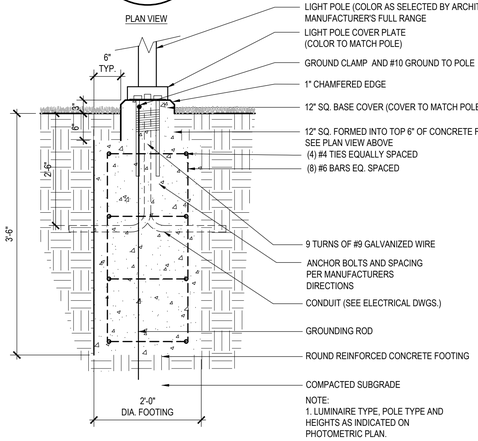


11 SQUARE TUBE BOLLARD (CONCRETE-FILLED)
3/4" = 1'-0"



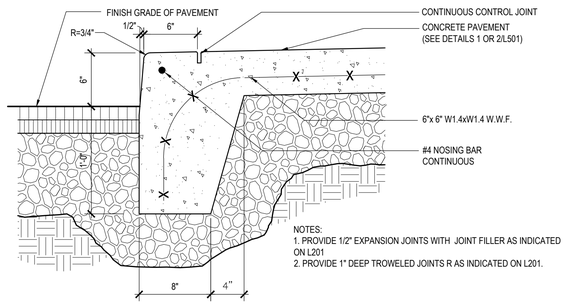


13 TRAFFIC CONTROL SIGNS (ON-SITE)
3/4" = 1'-0"



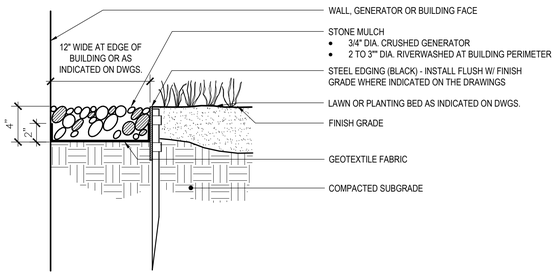
NOTE:
1. LUMINAIRE TYPE, POLE TYPE AND HEIGHTS AS INDICATED ON PHOTOMETRIC PLAN.

10 LIGHT POLE BASE
3/4" = 1'-0"

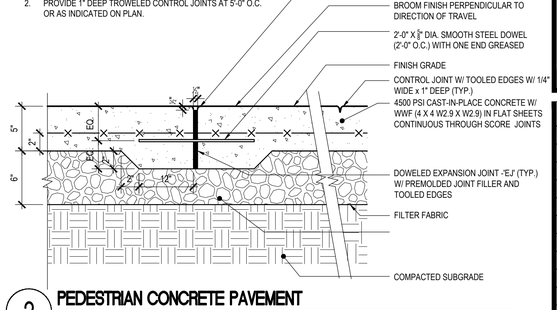


NOTES:
1. PROVIDE 1/2" EXPANSION JOINTS WITH JOINT FILLER AS INDICATED ON L201
2. PROVIDE 1" DEEP TROWELED JOINTS R AS INDICATED ON L201.

7 INTEGRAL CONCRETE CURB (ICC)
1 1/2" = 1'-0"

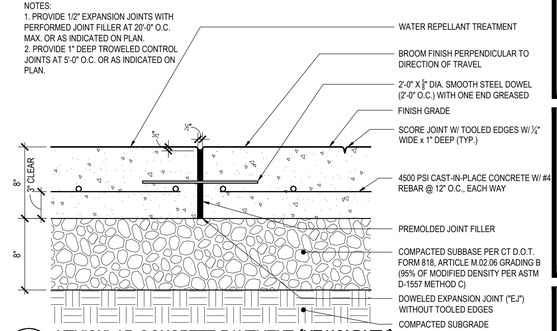


6 STONE MULCH MAINTENANCE STRIP
1 1/2" = 1'-0"



2 PEDESTRIAN CONCRETE PAVEMENT
1 1/2" = 1'-0"

NOTES:
1. PROVIDE 1/2" EXPANSION JOINTS WITH PERFORMED JOINT FILLER AT 20'-0" O.C. MAX. OR AS INDICATED ON PLAN.
2. PROVIDE 1" DEEP TROWELED CONTROL JOINTS AT 5'-0" O.C. OR AS INDICATED ON PLAN.



NOTES:
1. PROVIDE 1/2" EXPANSION JOINTS WITH PERFORMED JOINT FILLER AT 20'-0" O.C. MAX. OR AS INDICATED ON PLAN.
2. PROVIDE 1" DEEP TROWELED CONTROL JOINTS AT 5'-0" O.C. OR AS INDICATED ON PLAN.

1 VEHICULAR CONCRETE PAVEMENT (HEAVY DUTY)
1 1/2" = 1'-0"

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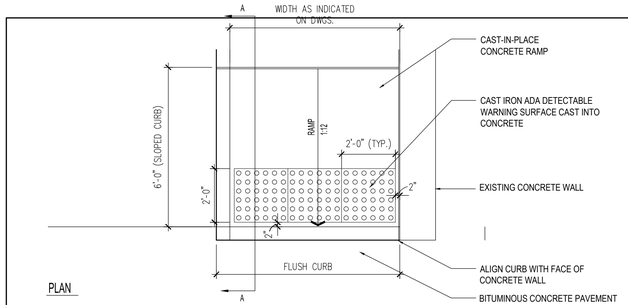
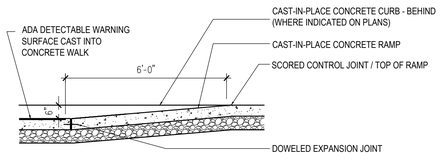


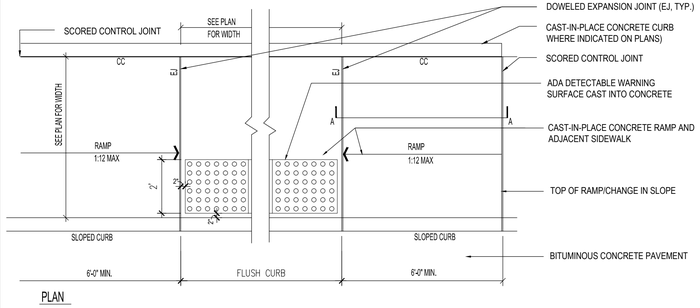
PLAN

8 ACCESSIBLE CURB RAMP - TYPE C

3/8" = 1'-0"



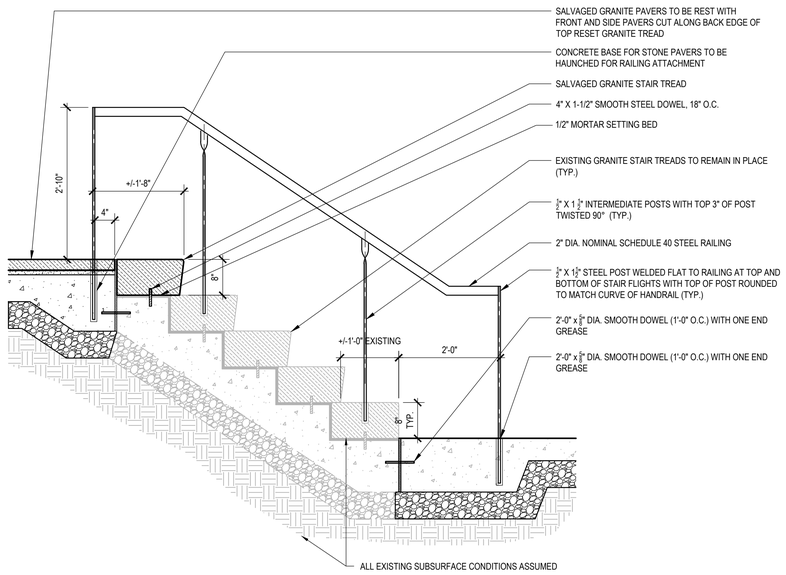
SECTION A-A



PLAN

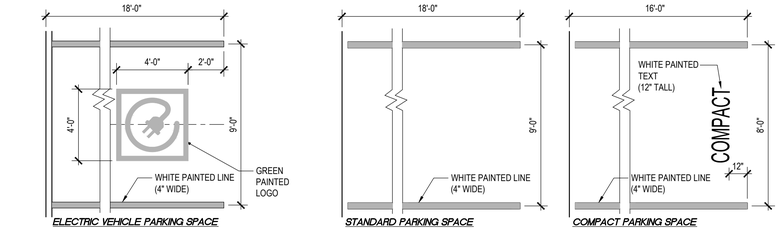
7 ACCESSIBLE CURB RAMP - TYPE B

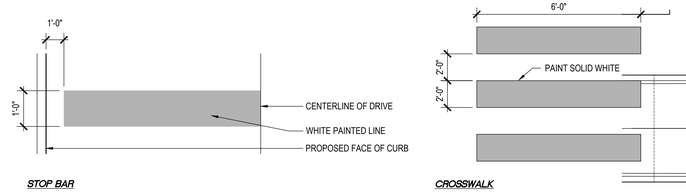
3/8" = 1'-0"



6 LIMESTONE STAIR AND CHEEKWALL

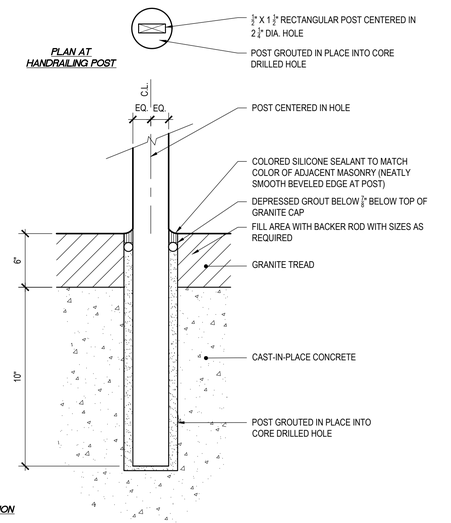
3/4" = 1'-0"





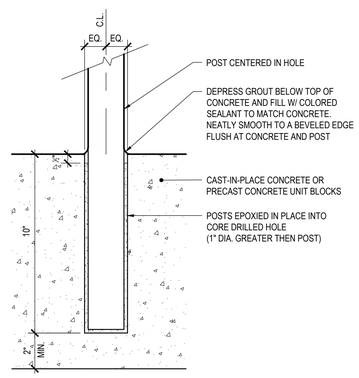
5 PAINTED PAVEMENT MARKINGS

1/4" = 1'-0"



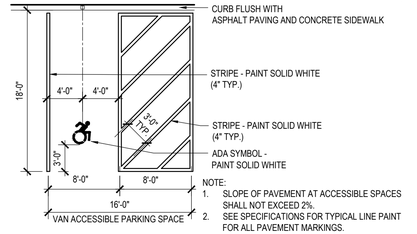
4 POST ATTACHMENT AT GRANITE TREAD

3" = 1'-0"



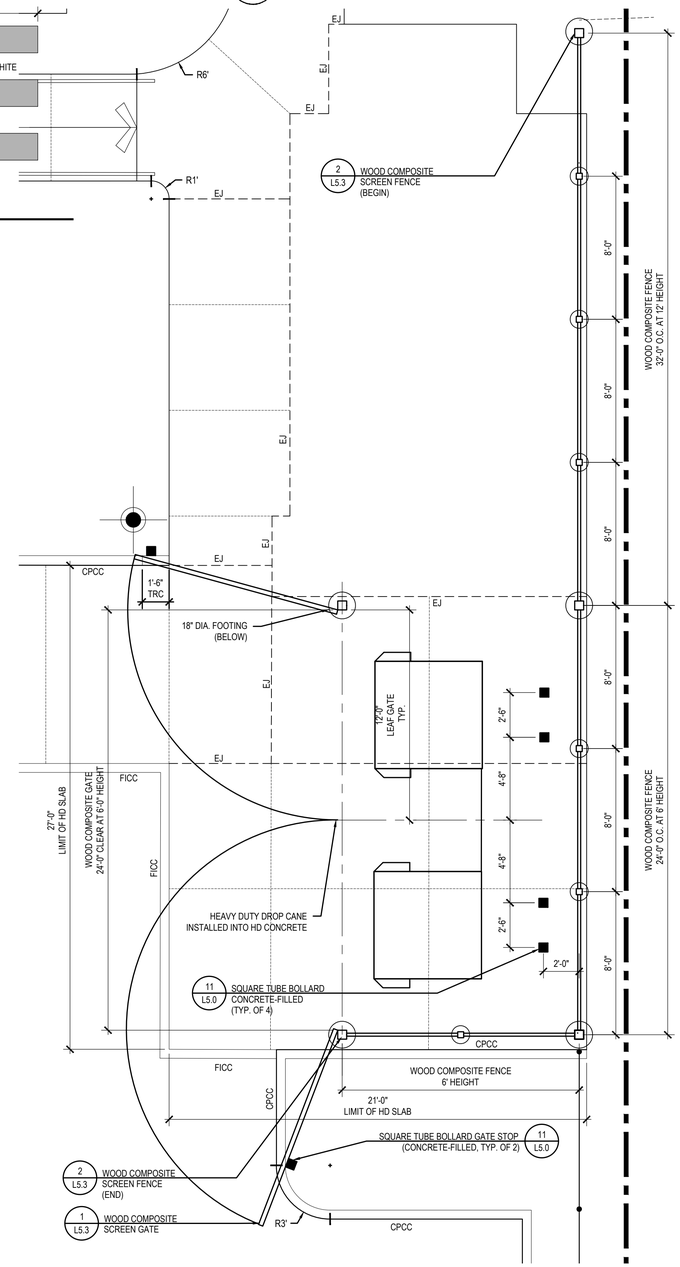
3 POST ATTACHMENT AT CONCRETE

3" = 1'-0"



2 VAN ACCESSIBLE PARKING SPACE PLAN

1/8" = 1'-0"



1 WOOD COMPOSITE SCREEN FENCE LAYOUT ENLARGEMENT

3/16" = 1'-0"

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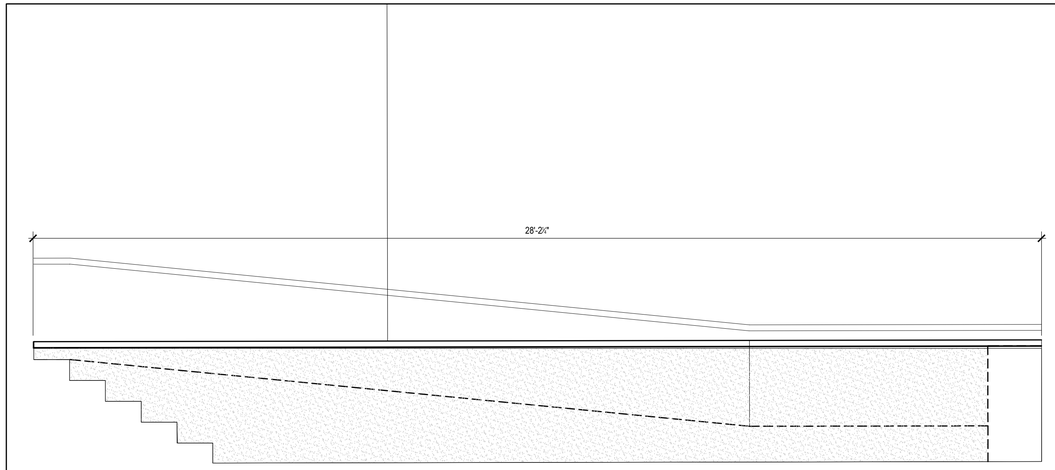
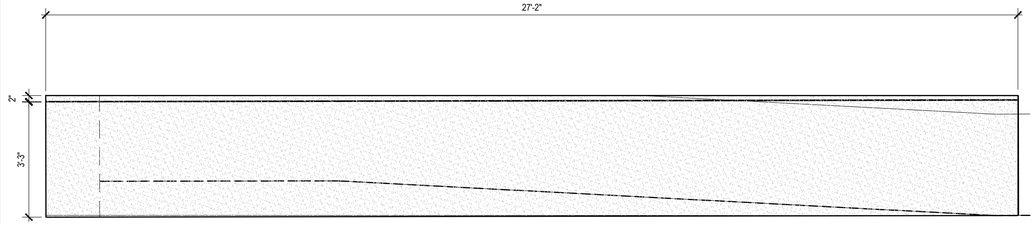
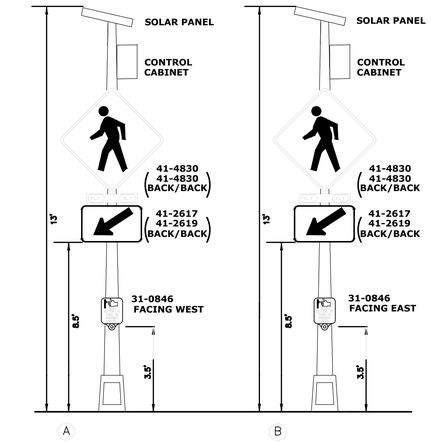


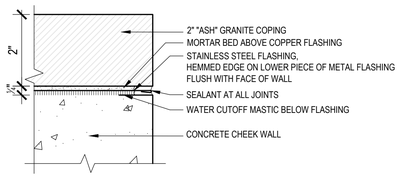
N RETAINING WALL AT HC RAMP (NORTH ELEVATION)
1/2" = 1'-0"



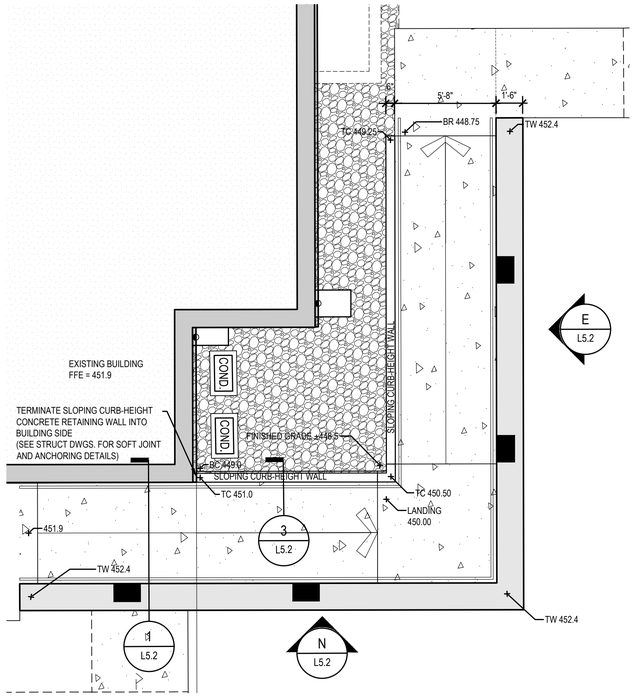
E RETAINING WALL AT HC RAMP (EAST ELEVATION)
1/2" = 1'-0"



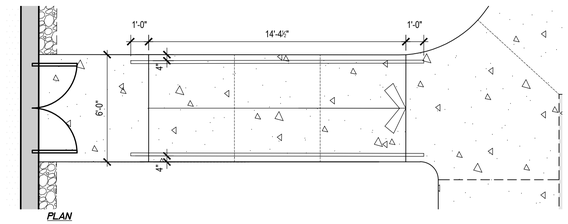
5 RRFB AND WARNING SIGN
NOT TO SCALE

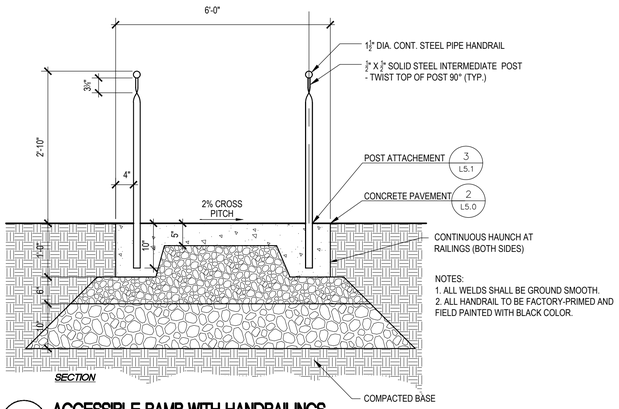


4 LIMESTONE CAP ENLARGEMENT
6" = 1'-0"

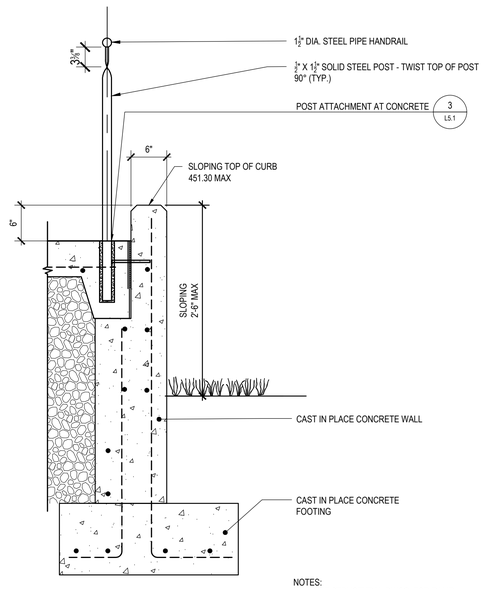


2 ENTRY RAMP LAYOUT ENLARGEMENT
1/4" = 1'-0"

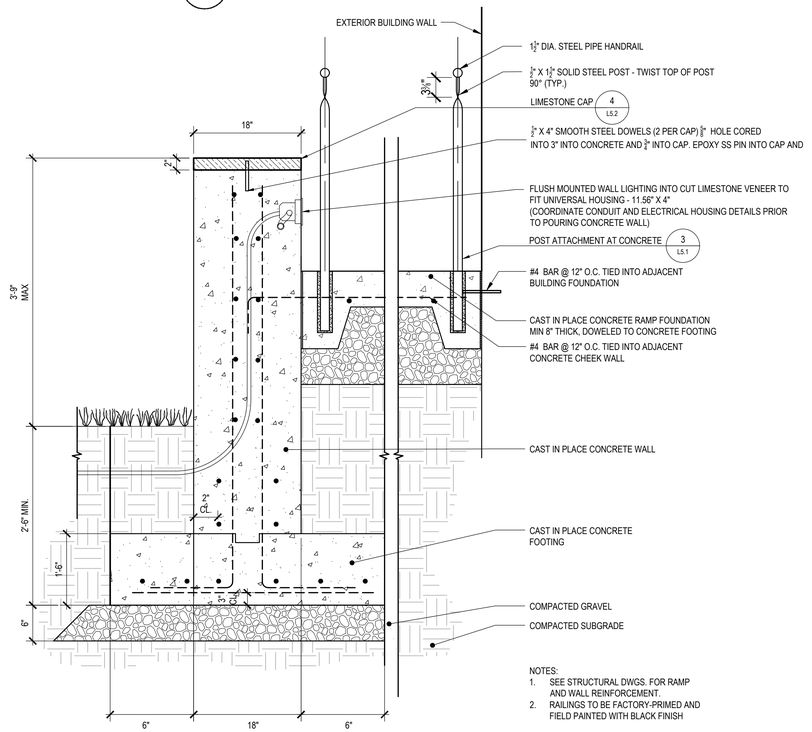




6 ACCESSIBLE RAMP WITH HANDRAILINGS
3/4" = 1'-0"



3 CONCRETE RETAINING WALL AT RAMP
1" = 1'-0"



1 CONCRETE CHEEK WALL WITH RECESSED LIGHTING
1" = 1'-0"

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WILLIAM G. WALTER
LICENSED PROFESSIONAL ENGINEER

PROFESSIONAL SEAL

benesch
Alfred Benesch & Company
120 Hebron Avenue, 2nd Floor
Glastonbury, Connecticut 06033
860-633-8341

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SEAL OF THE CITY OF WATERBURY CONN

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

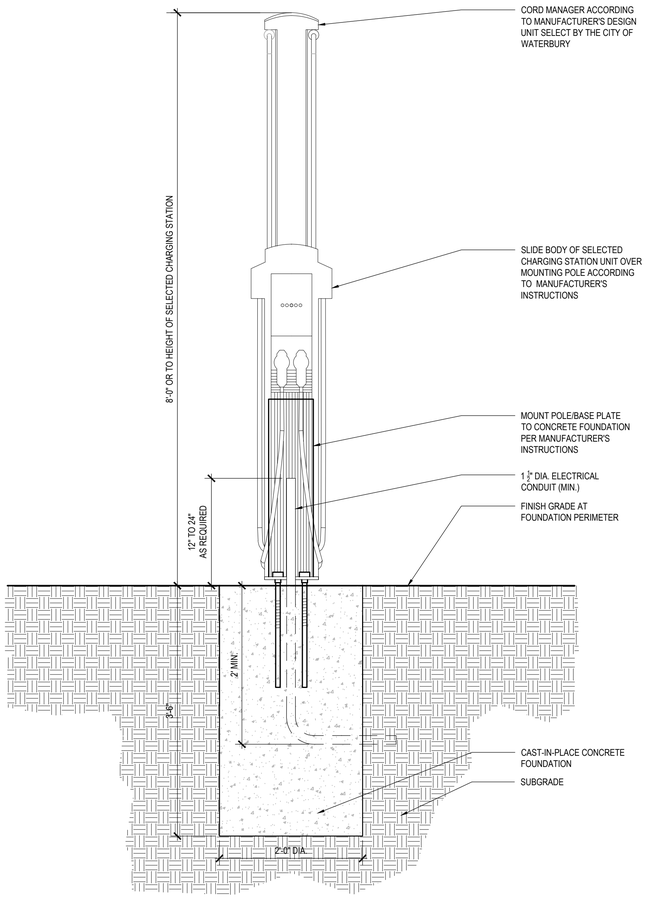
REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

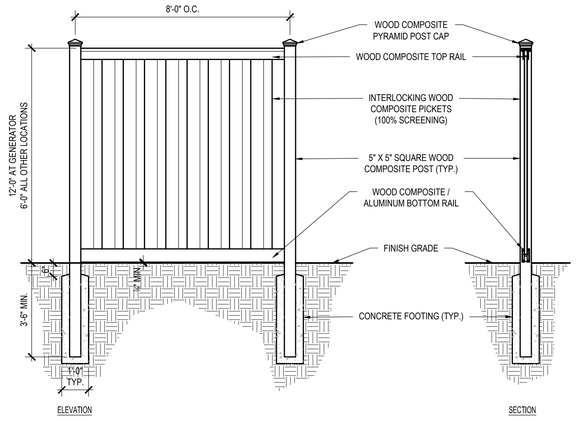
LANDSCAPE DETAILS

DATE: 2026-0501
SCALE AS SHOWN
PROJ. #: 70905.00
DRAWN: RCD
CHECKED: RCD
4/27/2026 10:47:28 AM

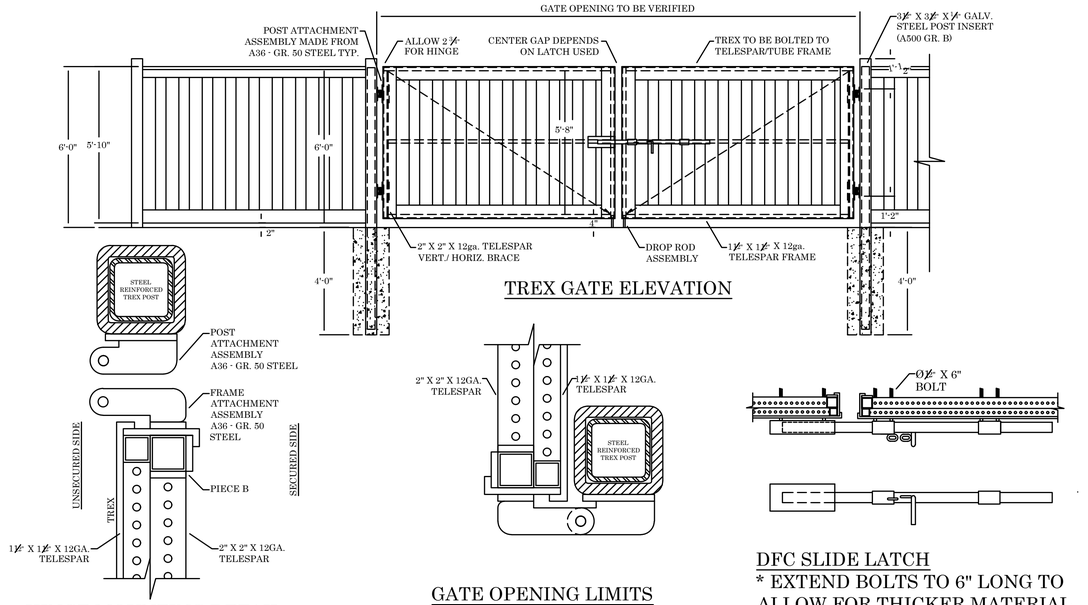
SHEET NO.
L5.2



3 **ELECTRIC VEHICLE CHARGING STATION**
1" = 1'-0"



2 **WOOD COMPOSITE SCREEN FENCE**
3/8" = 1'-0"



1 **WOOD COMPOSITE INDUSTRIAL DOUBLE-SWING GATE**
NOT TO SCALE

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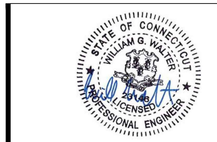

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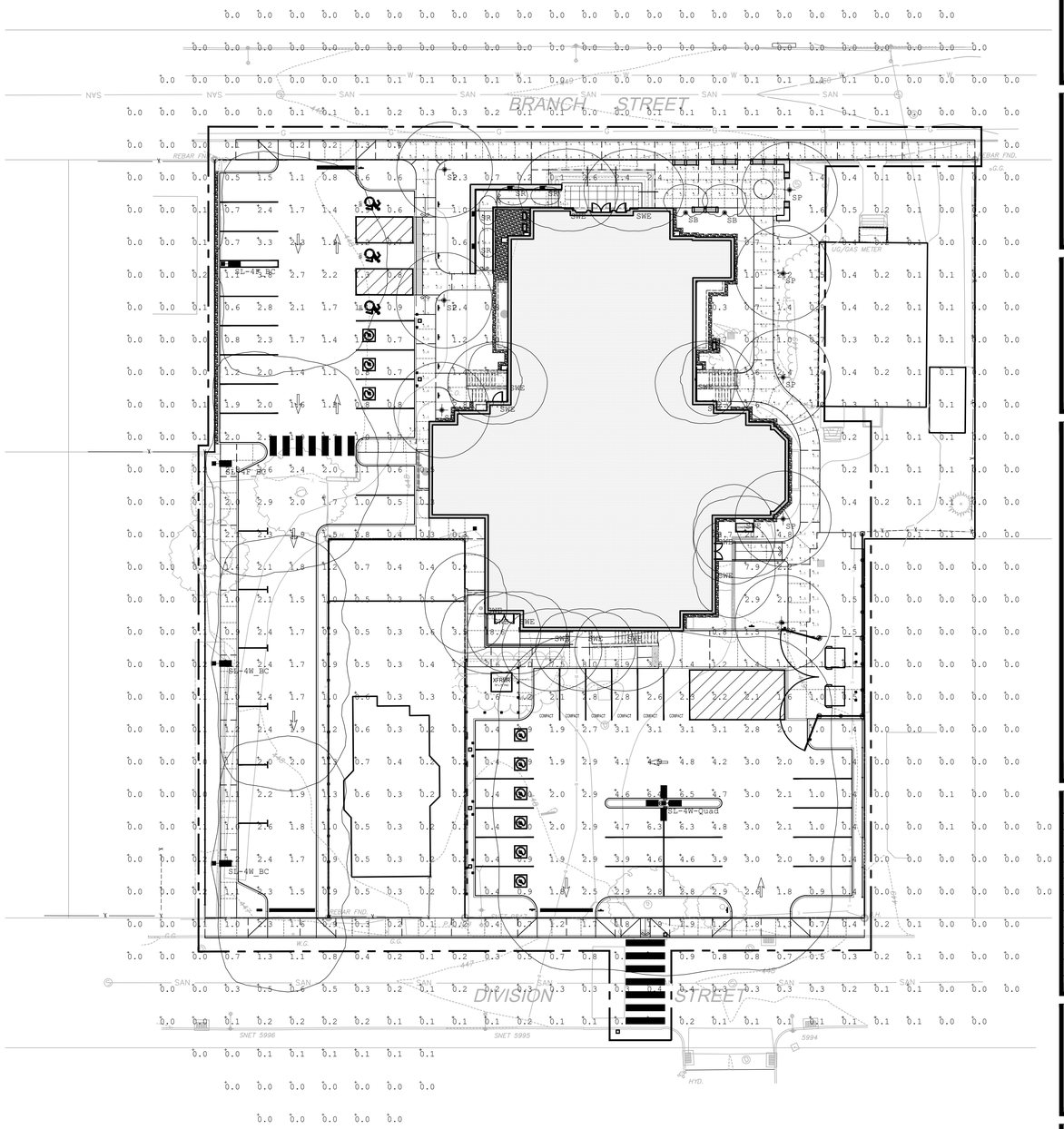

Calculation Summary							
Label	Units	Avg	Max	Min	Avg/Min	Max/Min	Grid Height
Bollard Area	Fc	1.12	2.6	0.3	3.73	8.67	0
Ramp	Fc	6.14	38.0	0.1	61.40	380.00	0
Site	Fc	0.92	23.7	0.0	N.A.	N.A.	0
Walkway	Fc	1.08	11.2	0.0	N.A.	N.A.	0
Lower Parking	Fc	2.50	8.0	0.4	6.25	20.00	
Side Parking & Drive Lane	Fc	1.60	3.8	0.5	3.20	7.60	

Luminaire Schedule							
Qty	Label	Luminaire Watts	Total Watts	Arrangement	LLF	Description	Tag
2	SB	20.1883	40.377	Single	0.855	BK Lighting UO-42-LED-x139-2-x	
2	SL-4F_BC	55	110	SINGLE	0.900	Beacon VP-ST-1-36L-55-3K7-4F-UNV-xx-xx-BC-HSS-90-B	Mounted to 16ft Pole
1	SL-4W-Quad	56.8	227.2	4 @ 90 DEGREES	0.900	Beacon VP-ST-1-36L-55-3K7-4W-UNV-xx-xx-xx	Quad Mounted to 16ft Pole
2	SL-4W_BC	55	110	SINGLE	0.900	Beacon VP-ST-1-36L-55-3K7-4W-UNV-xx-xx-BC-HSS-90-B	Mounted to 16ft Pole
8	SP	27	216	SINGLE	0.900	Bega B77120-K3-x	Mounted on 8FT Pole
4	SR	6	24	SINGLE	0.900	Bega B33053-K3-x	Mounted @ 18IN AFG
15	SWE	29.228	438.42	Single	0.900	Eclipse LV2-A-FT-LED25-3K-80CRI-UNV-BK-CFP-xx-xx-xx-xx	

0 20 50 100

SCALE: 1" = 20'

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24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

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PHOTOMETRIC PLAN

DATE: 2026-0501
SCALE 1" = 20'
PROJ. #: 70905.00
DRAWN: RCD
CHECKED: RCD
4/27/2026 10:47:28 AM

SHEET NO.

L6.0

ABATEMENT NOTES:

AC = ASBESTOS-CONTAINING
1-001 = EAGLE ROOM DESIGNATION

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8. REMOVE AND DISPOSE OF ALL AC PIN ADHESIVE ON INTERIOR OF METAL DUCT WORK.
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18. DEMOLISH SECTIONAL BOILER TO ACCESS ALL AC INTERIOR FIRE BRICK, GASKETS AND INSULATION. DISPOSE OF ALL INTERIOR MATERIALS AS FRIABLE ASBESTOS WASTE.
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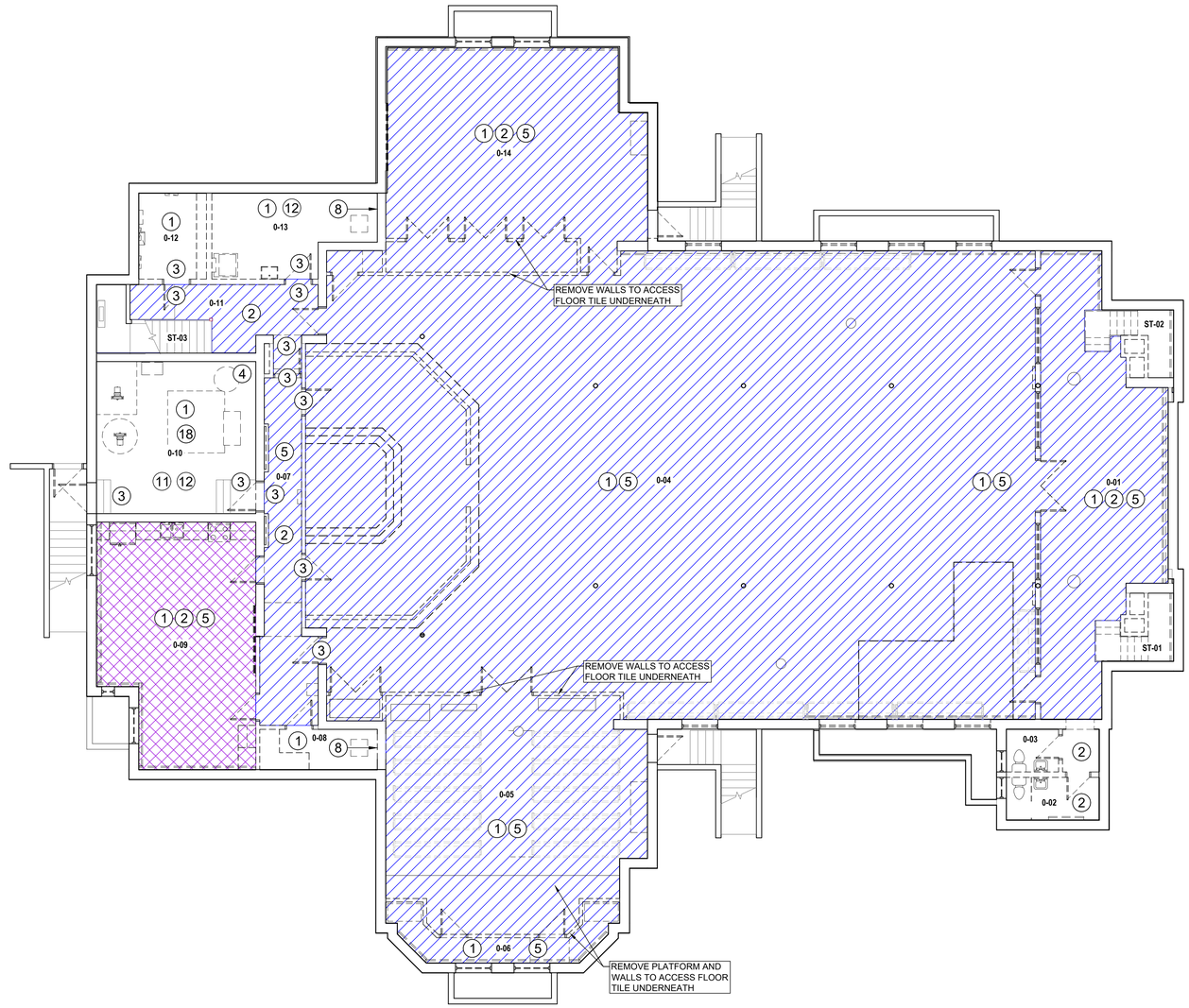

1 LOWER FLOOR - ABATEMENT PLAN
SCALE: 1/8" = 1'-0"

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CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

LOWER FLOOR ABATEMENT PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: BB
CHECKED: CL

SHEET NO.
HM-1

ABATEMENT NOTES:

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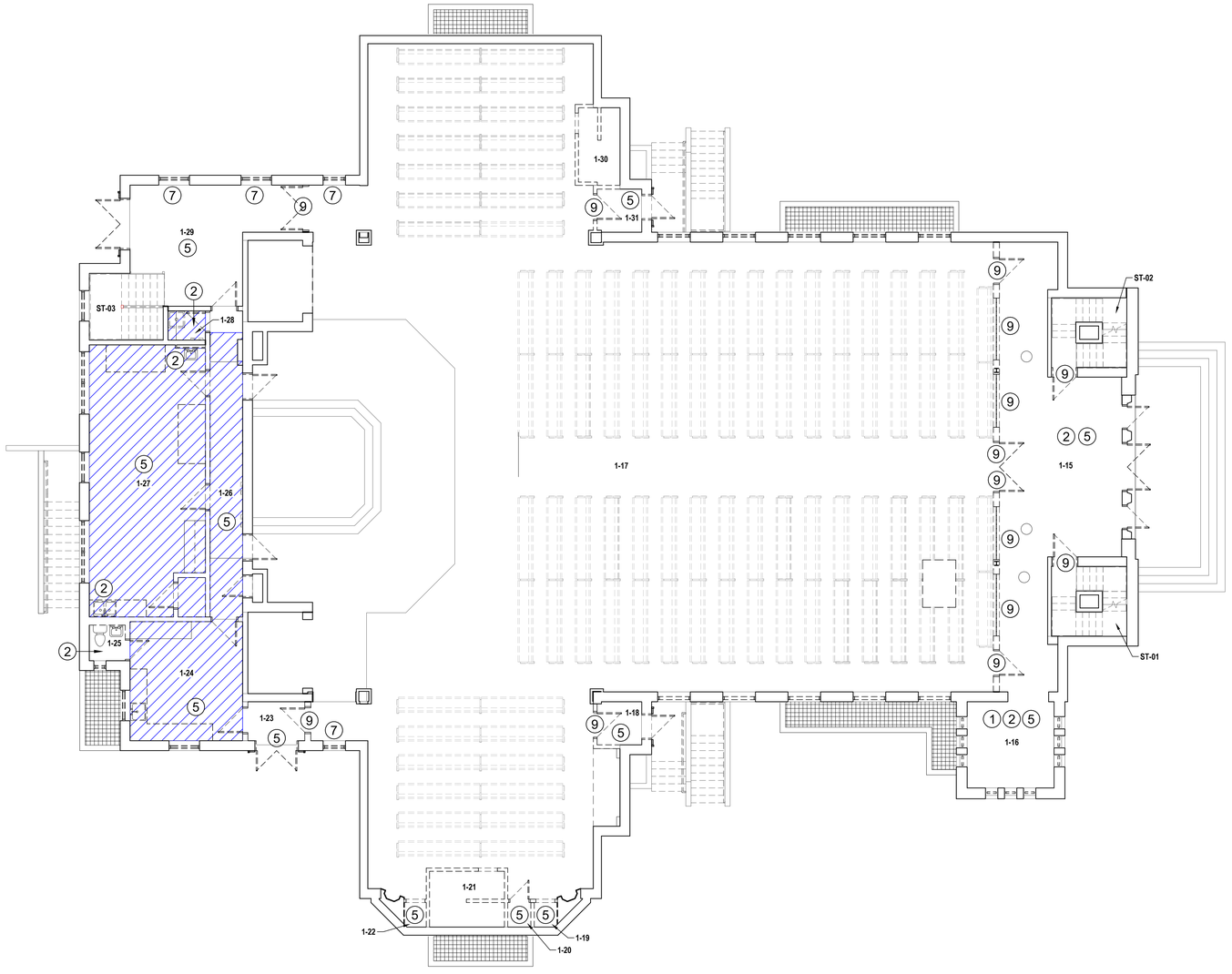

1 FIRST FLOOR - ABATEMENT PLAN
SCALE: 1/8" = 1'-0"

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SHEET NO.
HM-2

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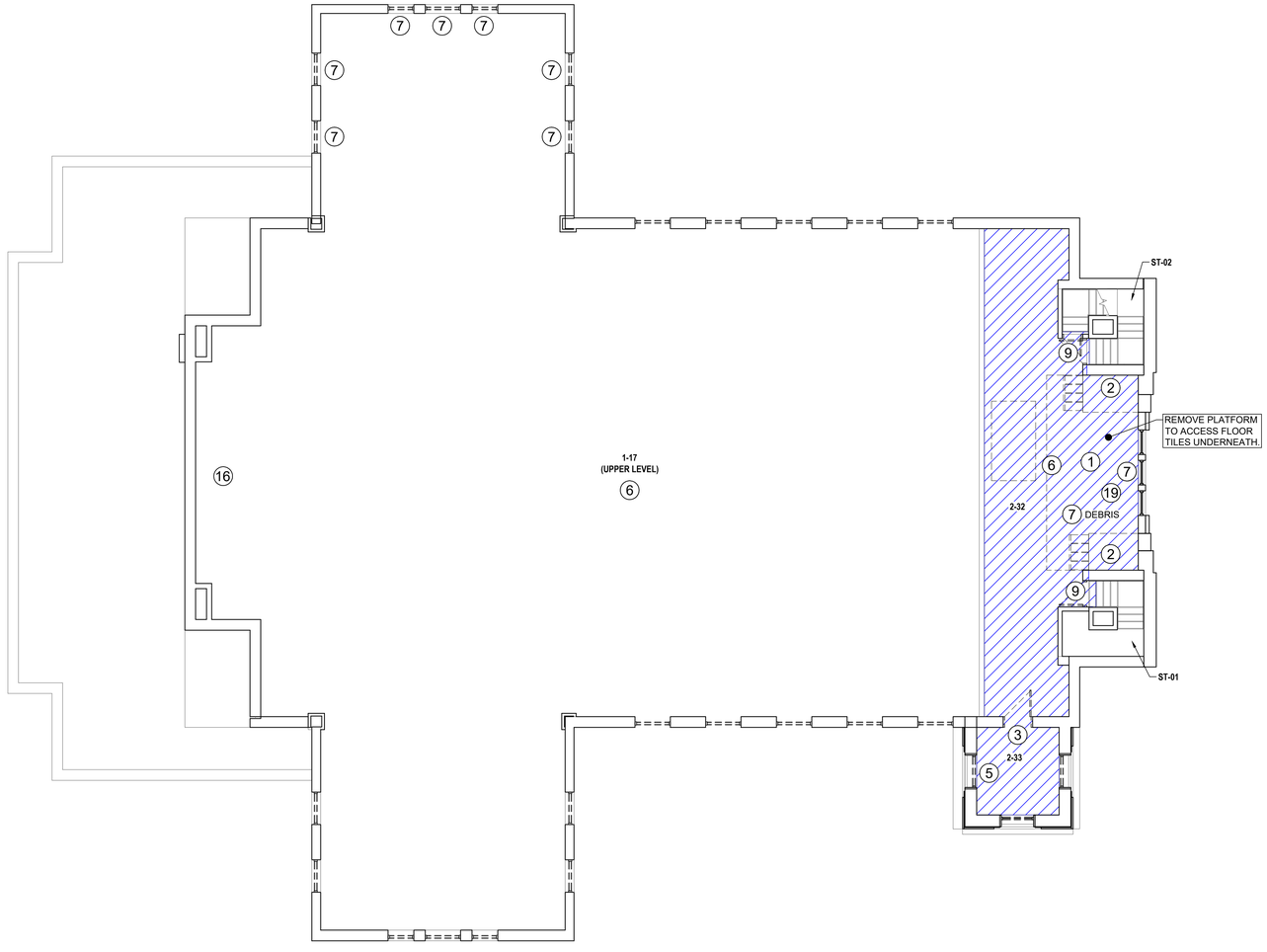

1 MEZZANINE FLOOR - ABATEMENT PLAN
SCALE: 1/8" = 1'-0"

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RFP NO. 8801

REVISIONS

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DATE: 2026-0501
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SHEET NO.
HM-3

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- (6) REMOVE AND DISPOSE OF ALL 1'X1' CEILING TILES AND ASSOCIATED AC GLUE DAUBS FROM VAULTED CEILING. SUSPENDED SHEETROCK BACKER TO REMAIN.
- (7) REMOVE AND DISPOSE OF ALL REMAINING INTERIOR RESIDUAL AC WINDOW GLAZING COMPOUND FROM WINDOW SYSTEM AND ASSOCIATED DEBRIS AT BASE OF WINDOW.
- (8) REMOVE AND DISPOSE OF ALL AC PIN ADHESIVE ON INTERIOR OF METAL DUCT WORK.
- (9) REMOVE AND DISPOSE OF WITH STAINED GLASS AC WINDOW GLAZING COMPOUND IN DOORS AND WINDOW WALL.
- (10) REMOVE AND DISPOSE OF ALL LAYERS OF EXTERIOR AC CAULK AT WINDOWS, DOORS, AND VENTS.
- (11) REMOVE AND DISPOSE OF ENTIRE ASSUMED AC GASKET.
- (12) REMOVE AND DISPOSE OF ENTIRE VALVE WITH ASSUMED AC PACKING.
- (13) REMOVE AND DISPOSE OF ALL LAYERS OF EXTERIOR AC CAULK AT METAL STEP FLASHING ON BRICK.
- (14) REMOVE AND DISPOSE OF BOTTOM LAYER AC FELTS UNDER TWO (2) LAYERS OF ASPHALT SHINGLES.
- (15) REMOVE AND DISPOSE OF ALL LAYERS OF AC FLASHING CEMENT AT PARAPET WALL AND ROOF WALL JUNCTIONS UNDER RUBBER MEMBRANE.
- (16) REMOVE AND DISPOSE OF MASONRY COATED WITH AC TAR BEHIND PLASTER AND MARBLE IN AREAS OF WALL PENETRATION.
- (17) REMOVE AND DISPOSE OF AC GUTTER LINER TAR IN AREAS OF PENETRATIONS AND CAPPING OF EXISTING DOWN SPOUTS.
- (18) DEMOLISH SECTIONAL BOILER TO ACCESS ALL AC INTERIOR FIRE BRICK, GASKETS AND INSULATION. DISPOSE OF ALL INTERIOR MATERIALS AS FRIABLE ASBESTOS WASTE.
- (19) REMOVE AND DISPOSE OF ALL INTERIOR WINDOW CAULK.

LEAD-BASED PAINT NOTE:

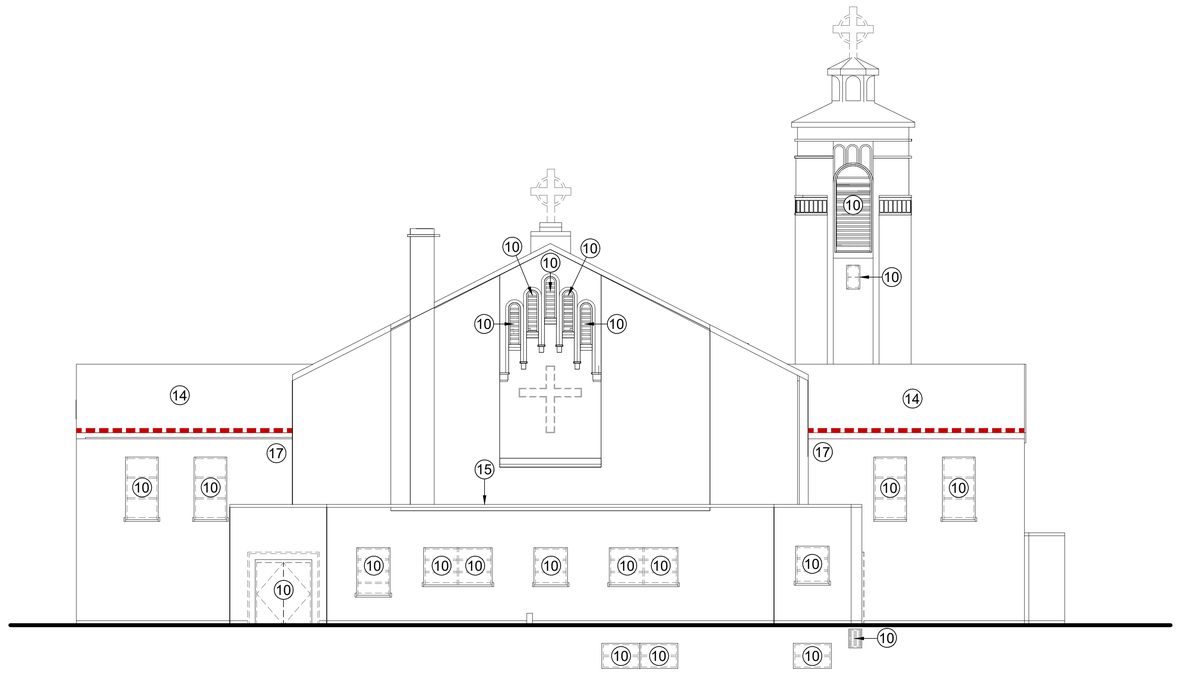
BOTH HIGH AND LOW LEVELS OF LEAD-BASED PAINT WERE FOUND ON VARIOUS COMPONENTS THROUGHOUT THE BUILDING. ALL WORK MUST BE PERFORMED BY LEAD-TRAINED WORKERS AND COMPLY WITH AND MEET THE REQUIREMENTS OF ALL ASPECTS OF 1926.62 OSHA LEAD IN CONSTRUCTION STANDARD. METAL BUILDING COMPONENTS MUST BE RECYCLED IN A FACILITY THAT ACCEPTS LEAD-BASED PAINT.

HIGH LEVELS OF LEAD (≥1.0 MG/CM^2) WERE IDENTIFIED ON THE FOLLOWING SURFACES THROUGHOUT THE BUILDING:

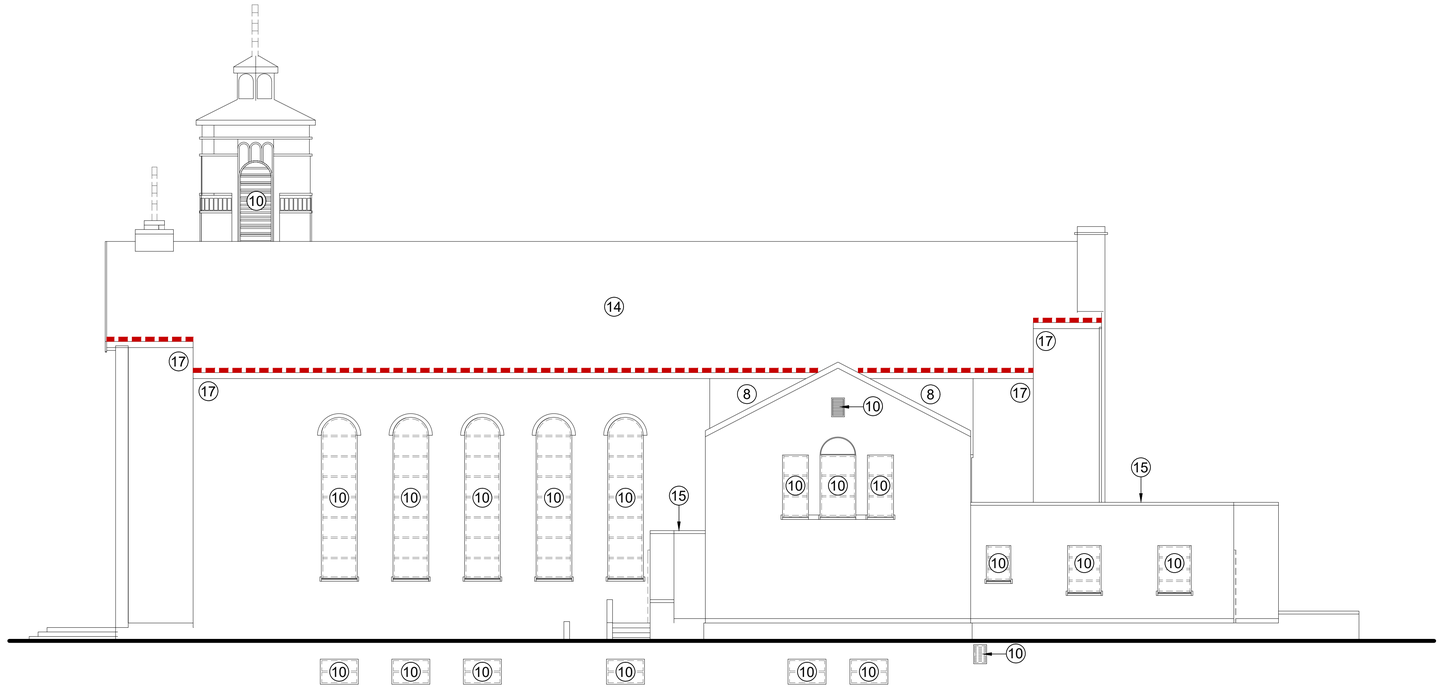
- METAL DOOR CASINGS
- LEAD FLASHING ON ROOFS

UNIVERSAL WASTE KEY:

CHLOROFLUOROCARBONS: (2 EA)
MERCURY THERMOSTATS: (3 EA)
LEAD ACID BATTERIES: (18 EA)



2 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



1 WEST ELEVATION
SCALE: 1/8" = 1'-0"

FRIAR
architecture
interior design
master planning
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PROFESSIONAL SEAL

EAGLE Environmental, Inc.
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CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

SOUTH & WEST EXTERIOR ABATEMENT ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: BB
CHECKED: CL

SHEET NO.
HM-4

ABATEMENT NOTES:

AC = ASBESTOS-CONTAINING
1-001 = EAGLE ROOM DESIGNATION

REMOVE AND DISPOSE OF ALL SINGLE LAYER AC FLOOR TILE AND ALL ASSOCIATED ADHESIVES TO BARE SUBSTRATE.

REMOVE AND DISPOSE OF ALL DOUBLE LAYER AC FLOORING AND ALL ASSOCIATED ADHESIVES TO BARE SUBSTRATE.

REMOVE AND DISPOSE OF ALL AC TAR ON BOTTOM LAYER ASPHALT SHINGLES ON GUTTER EDGE FLASHING.

1. REMOVE AND DISPOSE OF ALL AC MUDDED PIPE FITTING CEMENT ASSOCIATED WITH FIBERGLASS PIPE INSULATION EXPOSED WITHIN ROOM OR ABOVE SUSPENDED CEILINGS.
2. REMOVE AND DISPOSE OF ALL AC MUDDED PIPE FITTING CEMENT ASSOCIATED WITH FIBERGLASS PIPE INSULATION ASSUMED WITHIN PLUMBING WALLS OR ABOVE SOLID CEILINGS.
3. REMOVE AND DISPOSE OF ALL AC INTERIOR DOOR FRAME CAULK.
4. REMOVE AND DISPOSE OF ALL AC MUD INSULATION AT BLACK PIPE WALL PENETRATION.
5. REMOVE AND DISPOSE OF ALL AC GLUE DAUBS AND ASSOCIATED 1'X1' CEILING TILES ON SUSPENDED SHEETROCK BACKER BOARD.
6. REMOVE AND DISPOSE OF ALL 1'X1' CEILING TILES AND ASSOCIATED AC GLUE DAUBS FROM VAULTED CEILING. SUSPENDED SHEETROCK BACKER TO REMAIN.
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CHLOROFLUOROCARBONS: (2 EA)
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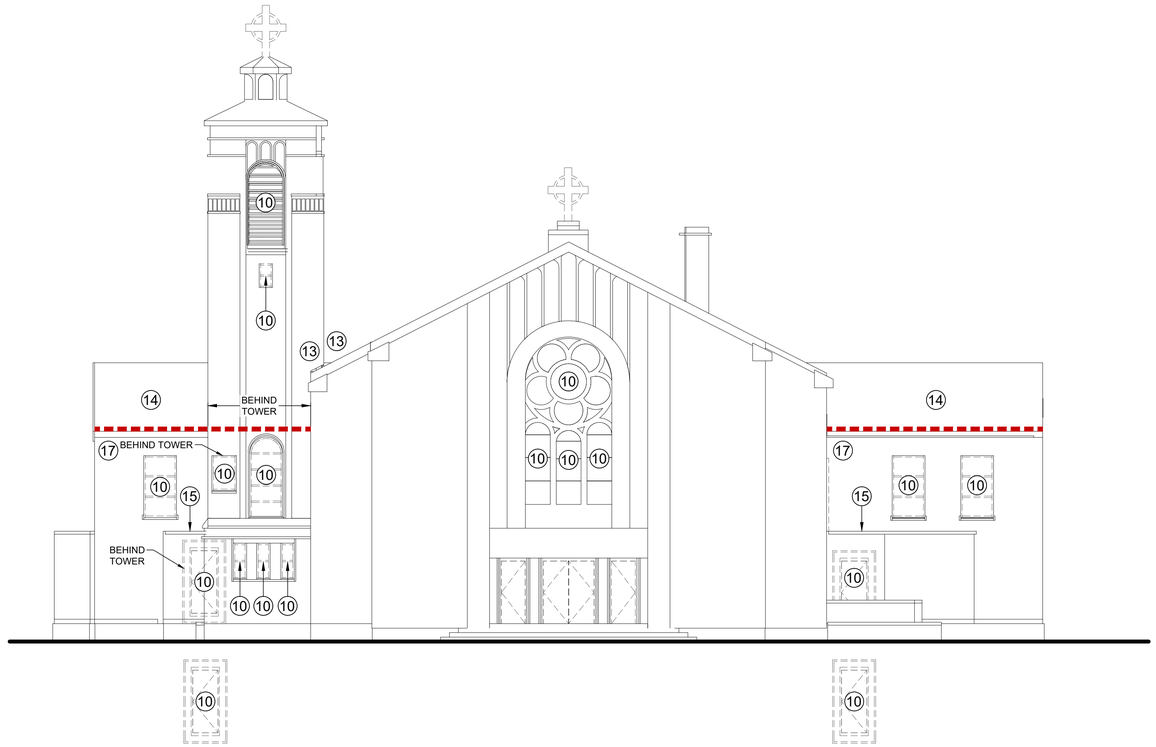
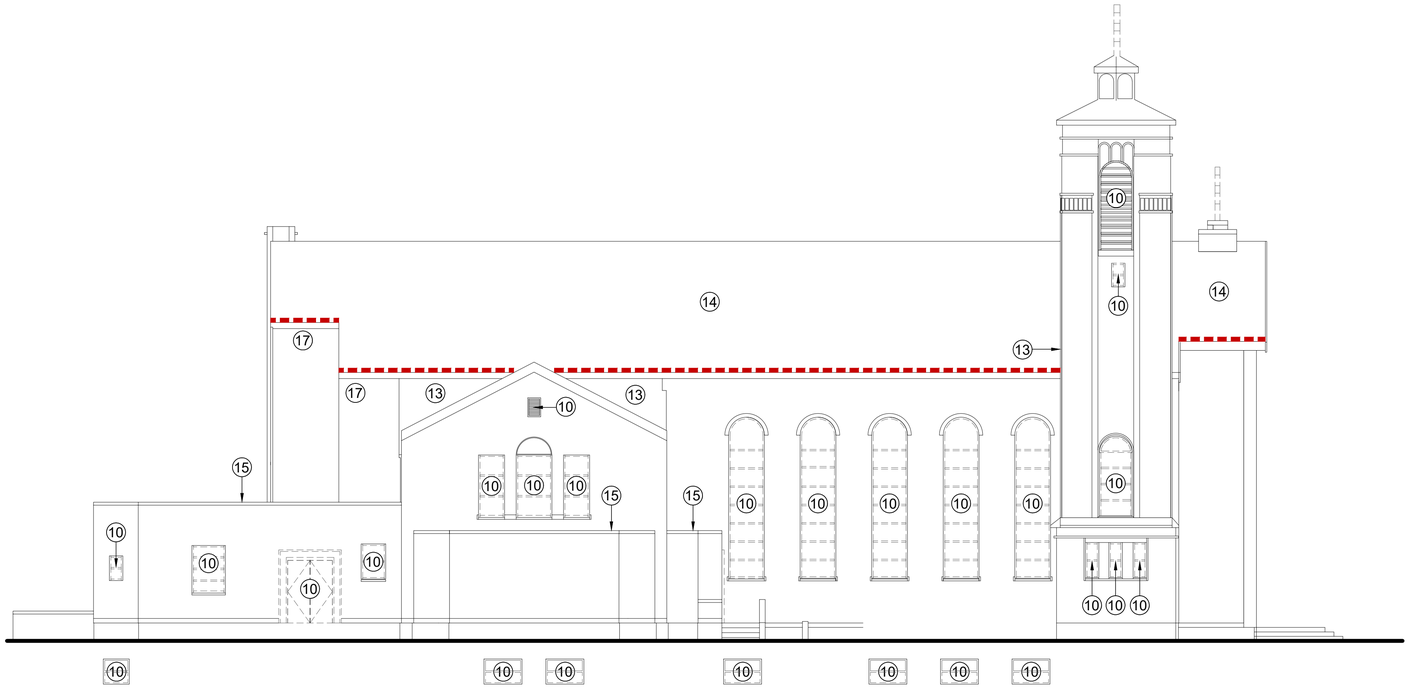


2 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



1 EAST ELEVATION
SCALE: 1/8" = 1'-0"

FRIAR
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CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

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WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

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NORTH & EAST EXTERIOR ABATEMENT ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: BB
CHECKED: CL

SHEET NO.
HM-5

GENERAL DEMOLITION NOTES

1. ANY DEMOLITION WORK ASSOCIATED WITH NEW WORK THAT IS NOT SPECIFICALLY NOTED ON THIS PLAN SHALL BE THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.
2. DEMOLISHED MATERIAL SHALL BE CONSIDERED TO BE THE PROPERTY OF THE CONTRACTOR AND SHALL BE COMPLETELY REMOVED FROM THE JOB SITE.
3. SHUT OFF, CAP AND OTHERWISE PROTECT EXISTING PUBLIC UTILITY LINES IN ACCORDANCE WITH THE REQUIREMENTS OF THE PUBLIC AGENCY HAVING JURISDICTION.
4. COMPLETELY REMOVE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVE, LEAVING SURFACES CLEAN, SOLID AND READY TO RECEIVE NEW MATERIALS AND SPECIFIED ELSEWHERE.
5. USE MEANS NECESSARY TO PREVENT DUST FROM BECOMING A NUISANCE TO THE NEIGHBORHOOD.
6. THIS DRAWING DOES NOT DEPICT THE FULL EXTENT OF DEMOLITION. ADDITIONAL ITEMS SCHEDULED FOR DEMOLITION MAY BE FOUND ON OTHER DRAWINGS. THE DEMOLITION PLANS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE GENERAL EXTENT OF THE WORK ONLY. CONSTRUCTION MANAGER IS RESPONSIBLE FOR THE COORDINATION OF THIS WORK WITH ALL PARTIES INVOLVED.
7. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE, LOCAL CODES & ORDINANCES.
8. ALL EXISTING (FREESTANDING) FURNITURE ITEMS IN ALL ROOMS UNDER SCOPE OF WORK TO BE REMOVED BY CONTRACTOR.
9. DEMOLITION CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.
10. REMOVE ALL INTERIOR WALLS SHOWN DOTTED, ALONG WITH ALL ASSOCIATED TACK BOARDS, CHALK BOARDS, MARKER BOARDS, ETC. EXERCISE CAUTION SO AS NOT TO DISTURB OR DAMAGE ADJACENT SURFACES SCHEDULED TO REMAIN.
11. REMOVE ALL PLUMBING FIXTURES INCLUDING SINKS, WATER CLOSETS, URINALS, SLOP SINKS AND DRINKING FOUNTAINS WITHIN DEMOLITION AREAS. REMOVE AND CAP ALL PLUMBING LINES BEHIND FINISHED WALL AND FLOOR SURFACES. REFER TO PLUMBING DEMOLITION DRAWINGS FOR RELATED INFORMATION.
12. REMOVE ALL DOORS AND DOOR FRAMES SHOWN IN FULLY DEMOLISHED PARTITIONS ONLY, UNLESS NOTED OTHERWISE.
13. REMOVE ALL RADIATION UNITS, H.V.A.C. RUNS, MECHANICAL UNITS AND ASSOCIATED ELEMENTS. REFERENCE MECH DEMOLITION DRAWINGS, TYP.
14. REMOVE ALL ELECTRICAL LIGHTING FIXTURES, ELECTRICAL RUNS, ASSOCIATED DEVICES. REFER TO ELECTRICAL DEMOLITION DRAWINGS FOR RELATED INFORMATION.
15. REFER TO SITE PLANS FOR SITE DEMOLITION NOTES.
16. REMOVE ALL EXISTING FLOOR SYSTEMS I.E. VINYL TILE, SHEET VINYL, CERAMIC TILE, MASTIC, MUD SET, ETC. AT ALL AREAS WHERE A NEW FLOOR IS SCHEDULED. REFER TO FINISH PLANS & SCHEDULE. PREP FLOORS TO RECEIVE NEW FINISHES.
17. EXISTING CEILINGS TO BE REMOVED BY THE CONTRACTOR WHERE NEW CEILINGS ARE SCHEDULED. REFER TO ASBESTOS ABATEMENT PLANS AND REFLECTED CEILING PLANS.
18. REMOVE ALL EXISTING BUILT-IN MILLWORK SHOWN DOTTED INCLUDING SINKS, ASSOCIATED PLUMBING & ELECTRICAL BACK TO SOURCE OR PANEL AS REQ'D.
19. ALL WINDOW SYSTEMS SCHEDULED FOR DEMOLITION TO BE REMOVED BY THE CONTRACTOR.
20. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK REQUIRED TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS.
21. ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM BUILDING / SITE UNLESS OTHERWISE NOTED. COORDINATE WITH OWNER FOR DELIVERY OF ITEMS NOTED TO REMAIN OWNERS PROPERTY. THE PROJECT SITE/ BUILDING SHALL BE CLEANED OF DEBRIS ON A DAILY BASIS. CONSTRUCTION MANAGER WILL COORDINATE AND INSTRUCT WHICH DEMO'D ITEMS SHALL BE DELIVERED.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING AND SUPPORT (TEMPORARY OR PERMANENT) FOR ALL PORTIONS OF CONSTRUCTION DURING DEMOLITION AND CONSTRUCTION.
23. ALL ABANDONED MECHANICAL / ELECTRICAL / PLUMBING LINES SHALL BE CAPPED OFF BEHIND FINISHES, UNLESS OTHERWISE NOTED. REFER TO MECHANICAL / ELECTRICAL / PLUMBING DRAWINGS FOR ADDITIONAL DEMO INFORMATION.
24. GENERAL TRADES CONTRACTOR SHALL SAWCUT ALL MASONRY OR CONCRETE OPENINGS INDICATED. MASONRY SHALL BE TOOTHED IN AND / OR RETURNED TO FINISHED OPENING ALL OPENINGS WHERE EXISTING CONSTRUCTION HAS BEEN REMOVED, AND WHICH ARE NOT NOTED TO REMAIN, SHALL BE FILLED AND / OR PATCHED TO MATCH THE ADJACENT EXISTING OR NEW FINISH, INCLUDING ANY FIRE RATINGS REQUIRED.
25. ALL AREAS OF FLOORS, WALLS AND CEILINGS DISTURBED BY DEMOLITION SHALL BE FILLED, PATCHED OR OTHERWISE REFINISHED TO MATCH EXISTING OR NEW FINISH AS DESIGNATED, INCLUDING ALL REQUIRED RATINGS.
26. COORDINATE DEMOLITION EFFORTS WITH ASBESTOS ABATEMENT WORK.
27. EXISTING CONDITIONS SHALL BE STUDIED PRIOR TO BIDDING TO FAMILIARIZE YOURSELF WITH THE BUILDING AND INTENTIONS OF THE FINAL WORK AND THE REQUIRED DEMOLITION, INCLUDING ALL MECH., ELECT., PLUMB., TECH., STRUCTURAL AND GENERAL CONSTRUCTION ITEMS REQUIRING REMOVAL.
28. REFER TO SPECS FOR CUTTING & PATCHING, FLOOR PREP AND SELECTIVE DEMOLITION.
29. RECLAIM MARBLE FOR INFILLING OF EXTERIOR WALL DETAILS.

DEMOLITION KEYNOTE

* ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1

- D.1 REMOVE DOOR, FRAMES, HARDWARE, TRIM / & SIDELIGHTS
- D.2 REMOVE CONCRETE MASONRY WALL
- D.3 REMOVE SINK. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
- D.4 REMOVE MILLWORK; (REF. GEN. DEMO NOTE 18)
- D.5 REMOVE EXISTING WINDOWS
- D.6 REMOVE FLOORING; REF TO HAZMAT DWGS.
- D.7 REMOVE MECHANICAL/ELECTRICAL EQUIPMENT
- D.8 DEMO FLOOR SLAB INCLUDING STRUCTURAL STEEL FRAMING, COORDINATE WITH STRUCTURAL DRAWINGS
- D.9 DEMO HANDRAIL /GUARDRAILS
- D.10 REMOVE CAST IN PLACE CONCRETE STAIR
- D.11 REMOVE EXISTING RELIGIOUS ITEMS
- D.12 REMOVE ASPHALT SHINGLE ROOF & ASSOCIATED ELEMENTS
- D.13 DEMO LOW SLOPE ROOF & ALL ASSOCIATED ELEMENTS
- D.14 REMOVE ATTIC LOUVER/MECHANICAL LOUVERS
- D.15 REMOVE ALL ELECTRICAL REMNANTS OF CRUCIFIX PATCH AND REPAIR HOLES IN THE BRICK
- D.16 PROVIDE ROOF PENETRATIONS AS REQUIRED FOR MEP EQUIPMENT INCLUDING VENT STACKS, AIR INTAKES, ROOF TOP UNITS, ETC. REFER TO MEP DRAWINGS.
- D.17 REMOVE CASEWORK. REFER TO GENERAL DEMOLITION NOTE 4 FOR PLUMBING INFORMATION.
- D.18 REMOVE MARKER BOARD & ALL ACCESSORIES
- D.19 REMOVE ALL KITCHEN APPLIANCES
- D.20 REMOVE AUDIO SYSTEM AND ALL ASSOCIATED ITEMS
- D.21 REMOVE PLYWOOD / WOOD STUD PARTITION
- D.22 REMOVE WOODEN RAILINGS AND SUPPORT POSTS
- D.23 REMOVE WATER CLOSET. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
- D.24 REMOVE TOILET PARTITIONS / DOOR
- D.25 DEMO WOOD SPEAKER ENCLOSURE
- D.26 REMOVE CERAMIC WALL TILE
- D.27 REMOVE TOILET ACCESSORIES
- D.28 DEMO STATUE ALCOVE
- D.29 DEMO CANDLE ALCOVE & ASSOCIATED MECHANICAL & ELECTRICAL COMPONENTS.
- D.30 DEMO CLOSET SHELVING
- D.31 REMOVE FLOORING BASE IN ALL ROOMS
- D.32 REMOVE DOOR, EXISTING FRAME TO REMAIN.
- D.33 REMOVE ORGAN, SPEAKERS, CHOIR PLATFORM, WOOD LATTICE SCREENING PANELS
- D.34 REMOVE WOOD STAIR CONSTRUCTION. REMOVE HANDRAILS & ALL ASSOCIATED ELEMENTS
- D.35 REMOVE PEW AND ASSOCIATED HARDWARE
- * D.36 REMOVE PLATFORM
- D.37 REMOVE INTERIOR WALL
- D.38 REMOVE NEWEL/POST CAPS. RETAIN CAPS FOR REINSTALLATION DURING CONSTRUCTION.
- D.39 REMOVE HANDRAIL\GUARDRAIL.
- D.40 REMOVE WALL MARBLE; REUSE MARBLE RECLAIMED AS NEEDED TO INFILL LOCATIONS NOTED TO BE INFILLED. REFER TO1 / A1.2
- * D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL

ITEMS TO BE SALVAGED

GENERAL NOTE: ALL WALL MARBLE AT SOUTH STAIR TO REMAIN

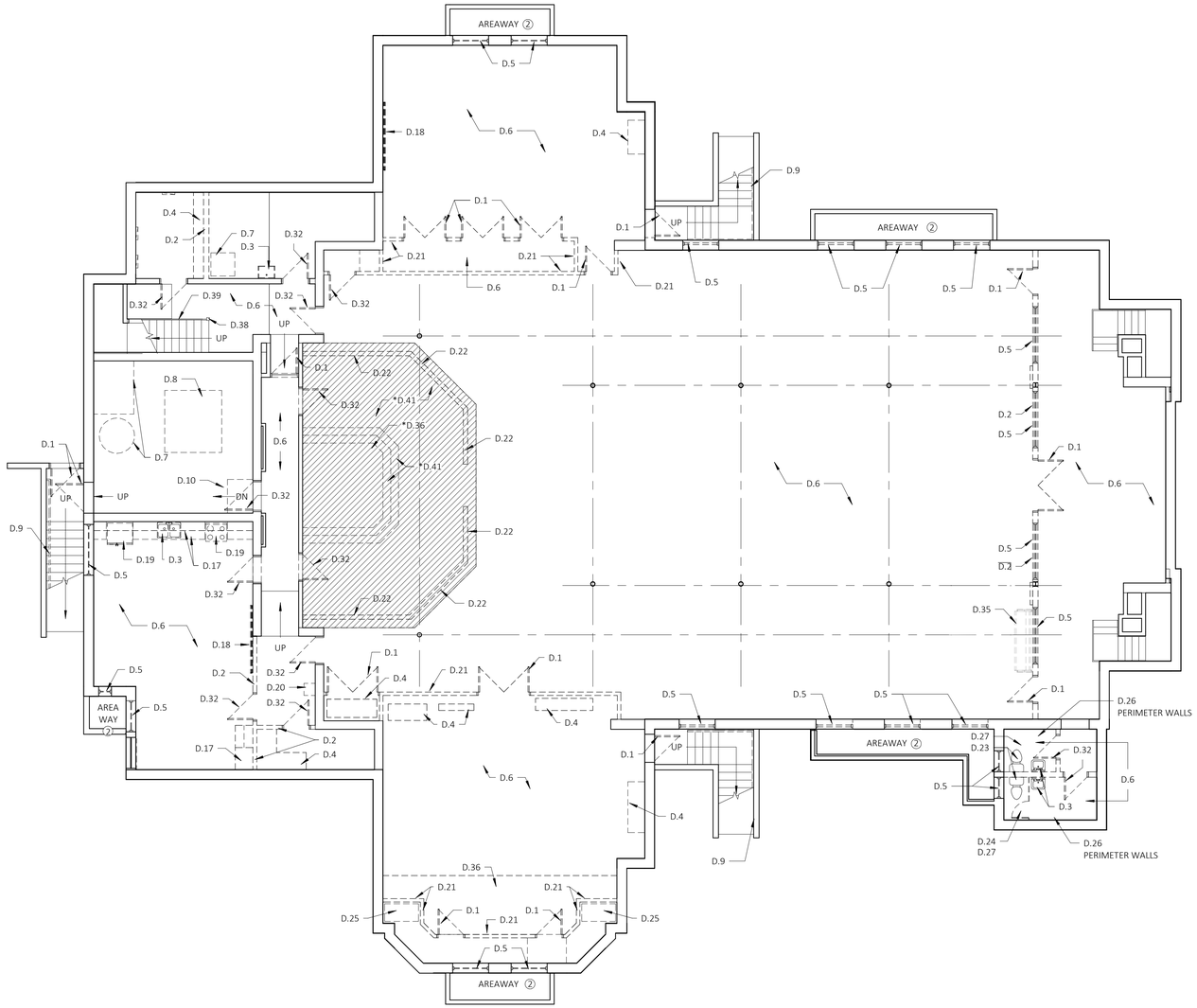
(1) AREAWAY GRATES

DEMOLITION LEGEND

REFER TO DEMOLITION KEYNOTE 42

ADD ALTERNATES LEGEND

ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1



1 LOWER FLOOR - DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

architecture
interior design
master planning
FRIAR
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PROFESSIONAL SEAL

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

LOWER FLOOR DEMOLITION PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:34 PM

SHEET NO.

D1.1

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6. THIS DRAWING DOES NOT DEPICT THE FULL EXTENT OF DEMOLITION. ADDITIONAL ITEMS SCHEDULED FOR DEMOLITION MAY BE FOUND ON OTHER DRAWINGS. THE DEMOLITION PLANS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE GENERAL EXTENT OF THE WORK ONLY. CONSTRUCTION MANAGER IS RESPONSIBLE FOR THE COORDINATION OF THIS WORK WITH ALL PARTIES INVOLVED.
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10. REMOVE ALL INTERIOR WALLS SHOWN DOTTED, ALONG WITH ALL ASSOCIATED TACK BOARDS, CHALK BOARDS, MARKER BOARDS, ETC. EXERCISE CAUTION SO AS NOT TO DISTURB OR DAMAGE ADJACENT SURFACES SCHEDULED TO REMAIN.
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29. RECLAIM MARBLE FOR INFILLING OF EXTERIOR WALL DETAILS.

DEMOLITION KEYNOTE

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- D.2 REMOVE CONCRETE MASONRY WALL
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- D.4 REMOVE MILLWORK; (REF. GEN. DEMO NOTE 18)
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- D.10 REMOVE CAST IN PLACE CONCRETE STAIR
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- D.12 REMOVE ASPHALT SHINGLE ROOF & ASSOCIATED ELEMENTS
- D.13 DEMO LOW SLOPE ROOF & ALL ASSOCIATED ELEMENTS
- D.14 REMOVE ATTIC LOUVER/MECHANICAL LOUVERS
- D.15 REMOVE ALL ELECTRICAL REMNANTS OF CRUCIFIX PATCH AND REPAIR HOLES IN THE BRICK
- D.16 PROVIDE ROOF PENETRATIONS AS REQUIRED FOR MEP EQUIPMENT INCLUDING VENT STACKS, AIR INTAKES, ROOF TOP UNITS, ETC. REFER TO MEP DRAWINGS.
- D.17 REMOVE CASEWORK. REFER TO GENERAL DEMOLITION NOTE 4 FOR PLUMBING INFORMATION.
- D.18 REMOVE MARKER BOARD & ALL ACCESSORIES
- D.19 REMOVE ALL KITCHEN APPLIANCES
- D.20 REMOVE AUDIO SYSTEM AND ALL ASSOCIATED ITEMS
- D.21 REMOVE PLYWOOD / WOOD STUD PARTITION
- D.22 REMOVE WOODEN RAILINGS AND SUPPORT POSTS
- D.23 REMOVE WATER CLOSET. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
- D.24 REMOVE TOILET PARTITIONS / DOOR
- D.25 DEMO WOOD SPEAKER ENCLOSURE
- D.26 REMOVE CERAMIC WALL TILE
- D.27 REMOVE TOILET ACCESSORIES
- D.28 DEMO STATUE ALCOVE
- D.29 DEMO CANDLE ALCOVE & ASSOCIATED MECHANICAL & ELECTRICAL COMPONENTS.
- D.30 DEMO CLOSET SHELVING
- D.31 REMOVE FLOORING BASE IN ALL ROOMS
- D.32 REMOVE DOOR, EXISTING FRAME TO REMAIN.
- D.33 REMOVE ORGAN, SPEAKERS, CHOIR PLATFORM, WOOD LATTICE SCREENING PANELS
- D.34 REMOVE WOOD STAIR CONSTRUCTION. REMOVE HANDRAILS & ALL ASSOCIATED ELEMENTS
- D.35 REMOVE PEW AND ASSOCIATED HARDWARE
- * D.36 REMOVE PLATFORM
- D.37 REMOVE INTERIOR WALL
- D.38 REMOVE NEWEL/POST CAPS. RETAIN CAPS FOR REINSTALLATION DURING CONSTRUCTION.
- D.39 REMOVE HANDRAIL\GUARDRAIL.
- D.40 REMOVE WALL MARBLE; REUSE MARBLE RECLAIMED AS NEEDED TO INFILL LOCATIONS NOTED TO BE INFILLED. REFER TO1 / A1.2
- * D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL

ITEMS TO BE SALVAGED

GENERAL NOTE: ALL WALL MARBLE AT SOUTH STAIR TO REMAIN

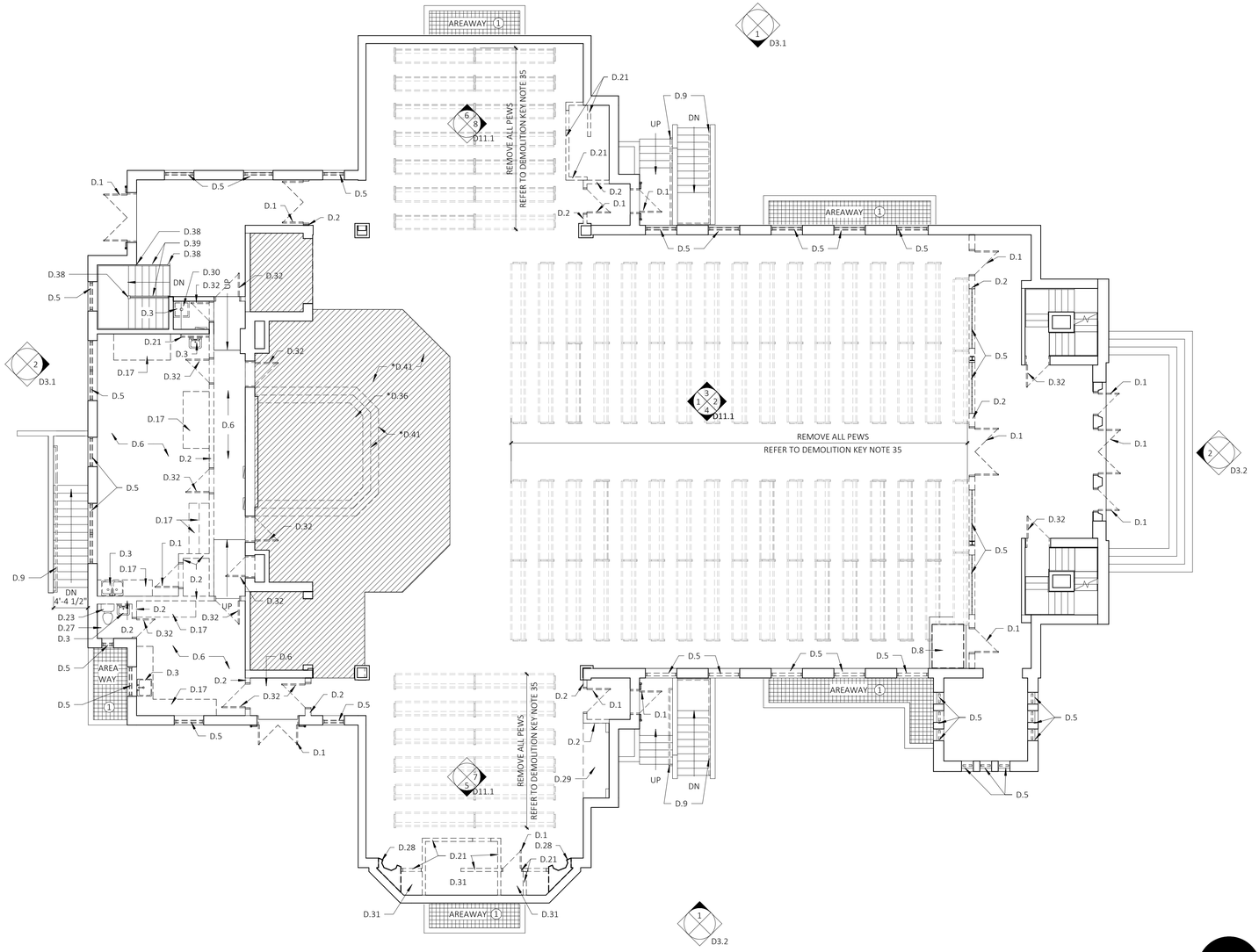
(1) AREAWAY GRATES

DEMOLITION LEGEND

REFER TO DEMOLITION KEYNOTE 42

ADD ALTERNATES LEGEND

ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1



1 FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

architecture
interior design
master planning
FRIAR
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

FIRST FLOOR DEMOLITION PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:35 PM

SHEET NO.

D1.2

GENERAL DEMOLITION NOTES

1. ANY DEMOLITION WORK ASSOCIATED WITH NEW WORK THAT IS NOT SPECIFICALLY NOTED ON THIS PLAN SHALL BE THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.
2. DEMOLISHED MATERIAL SHALL BE CONSIDERED TO BE THE PROPERTY OF THE CONTRACTOR AND SHALL BE COMPLETELY REMOVED FROM THE JOB SITE.
3. SHUT OFF, CAP AND OTHERWISE PROTECT EXISTING PUBLIC UTILITY LINES IN ACCORDANCE WITH THE REQUIREMENTS OF THE PUBLIC AGENCY HAVING JURISDICTION.
4. COMPLETELY REMOVE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVE, LEAVING SURFACES CLEAN, SOLID AND READY TO RECEIVE NEW MATERIALS AND SPECIFIED ELSEWHERE.
5. USE MEANS NECESSARY TO PREVENT DUST FROM BECOMING A NUISANCE TO THE NEIGHBORHOOD.
6. THIS DRAWING DOES NOT DEPICT THE FULL EXTENT OF DEMOLITION. ADDITIONAL ITEMS SCHEDULED FOR DEMOLITION MAY BE FOUND ON OTHER DRAWINGS. THE DEMOLITION PLANS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE GENERAL EXTENT OF THE WORK ONLY. CONSTRUCTION MANAGER IS RESPONSIBLE FOR THE COORDINATION OF THIS WORK WITH ALL PARTIES INVOLVED.
7. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE, LOCAL CODES & ORDINANCES.
8. ALL EXISTING (FREESTANDING) FURNITURE ITEMS IN ALL ROOMS UNDER SCOPE OF WORK TO BE REMOVED BY CONTRACTOR.
9. DEMOLITION CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.
10. REMOVE ALL INTERIOR WALLS SHOWN DOTTED, ALONG WITH ALL ASSOCIATED TACK BOARDS, CHALK BOARDS, MARKER BOARDS, ETC. EXERCISE CAUTION SO AS NOT TO DISTURB OR DAMAGE ADJACENT SURFACES SCHEDULED TO REMAIN.
11. REMOVE ALL PLUMBING FIXTURES INCLUDING SINKS, WATER CLOSETS, URINALS, SLOP SINKS AND DRINKING FOUNTAINS WITHIN DEMOLITION AREAS. REMOVE AND CAP ALL PLUMBING LINES BEHIND FINISHED WALL AND FLOOR SURFACES. REFER TO PLUMBING DEMOLITION DRAWINGS FOR RELATED INFORMATION.
12. REMOVE ALL DOORS AND DOOR FRAMES SHOWN IN FULLY DEMOLISHED PARTITIONS ONLY, UNLESS NOTED OTHERWISE.
13. REMOVE ALL RADIATION UNITS, H.V.A.C. RUNS, MECHANICAL UNITS AND ASSOCIATED ELEMENTS. REFERENCE MECH DEMOLITION DRAWINGS, TYP.
14. REMOVE ALL ELECTRICAL LIGHTING FIXTURES, ELECTRICAL RUNS, ASSOCIATED DEVICES. REFER TO ELECTRICAL DEMOLITION DRAWINGS FOR RELATED INFORMATION.
15. REFER TO SITE PLANS FOR SITE DEMOLITION NOTES.
16. REMOVE ALL EXISTING FLOOR SYSTEMS I.E. VINYL TILE, SHEET VINYL, CERAMIC TILE, MASTIC, MUD SET, ETC. AT ALL AREAS WHERE A NEW FLOOR IS SCHEDULED. REFER TO FINISH PLANS & SCHEDULE. PREP FLOORS TO RECEIVE NEW FINISHES.
17. EXISTING CEILINGS TO BE REMOVED BY THE CONTRACTOR WHERE NEW CEILINGS ARE SCHEDULED. REFER TO ASBESTOS ABATEMENT PLANS AND REFLECTED CEILING PLANS.
18. REMOVE ALL EXISTING BUILT-IN MILLWORK SHOWN DOTTED INCLUDING SINKS, ASSOCIATED PLUMBING & ELECTRICAL BACK TO SOURCE OR PANEL AS REQ'D.
19. ALL WINDOW SYSTEMS SCHEDULED FOR DEMOLITION TO BE REMOVED BY THE CONTRACTOR.
20. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK REQUIRED TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS.
21. ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM BUILDING / SITE UNLESS OTHERWISE NOTED. COORDINATE WITH OWNER FOR DELIVERY OF ITEMS NOTED TO REMAIN OWNERS PROPERTY. THE PROJECT SITE/ BUILDING SHALL BE CLEANED OF DEBRIS ON A DAILY BASIS. CONSTRUCTION MANAGER WILL COORDINATE AND INSTRUCT WHICH DEMO'D ITEMS SHALL BE DELIVERED.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING AND SUPPORT (TEMPORARY OR PERMANENT) FOR ALL PORTIONS OF CONSTRUCTION DURING DEMOLITION AND CONSTRUCTION.
23. ALL ABANDONED MECHANICAL / ELECTRICAL / PLUMBING LINES SHALL BE CAPPED OFF BEHIND FINISHES, UNLESS OTHERWISE NOTED. REFER TO MECHANICAL / ELECTRICAL / PLUMBING DRAWINGS FOR ADDITIONAL DEMO INFORMATION.
24. GENERAL TRADES CONTRACTOR SHALL SAWCUT ALL MASONRY OR CONCRETE OPENINGS INDICATED. MASONRY SHALL BE TOOTHED IN AND / OR RETURNED TO FINISHED OPENING ALL OPENINGS WHERE EXISTING CONSTRUCTION HAS BEEN REMOVED, AND WHICH ARE NOT NOTED TO REMAIN, SHALL BE FILLED AND / OR PATCHED TO MATCH THE ADJACENT EXISTING OR NEW FINISH, INCLUDING ANY FIRE RATINGS REQUIRED.
25. ALL AREAS OF FLOORS, WALLS AND CEILINGS DISTURBED BY DEMOLITION SHALL BE FILLED, PATCHED OR OTHERWISE REFINISHED TO MATCH EXISTING OR NEW FINISH AS DESIGNATED, INCLUDING ALL REQUIRED RATINGS.
26. COORDINATE DEMOLITION EFFORTS WITH ASBESTOS ABATEMENT WORK.
27. EXISTING CONDITIONS SHALL BE STUDIED PRIOR TO BIDDING TO FAMILIARIZE YOURSELF WITH THE BUILDING AND INTENTIONS OF THE FINAL WORK AND THE REQUIRED DEMOLITION, INCLUDING ALL MECH., ELECT., PLUMB., TECH., STRUCTURAL AND GENERAL CONSTRUCTION ITEMS REQUIRING REMOVAL.
28. REFER TO SPECS FOR CUTTING & PATCHING, FLOOR PREP AND SELECTIVE DEMOLITION.
29. RECLAIM MARBLE FOR INFILLING OF EXTERIOR WALL DETAILS.

DEMOLITION KEYNOTE

* ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1

- D.1 REMOVE DOOR, FRAMES, HARDWARE, TRIM / & SIDELIGHTS
- D.2 REMOVE CONCRETE MASONRY WALL
- D.3 REMOVE SINK. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
- D.4 REMOVE MILLWORK; (REF. GEN. DEMO NOTE 18)
- D.5 REMOVE EXISTING WINDOWS
- D.6 REMOVE FLOORING; REF TO HAZMAT DWGS.
- D.7 REMOVE MECHANICAL/ELECTRICAL EQUIPMENT
- D.8 DEMO FLOOR SLAB INCLUDING STRUCTURAL STEEL FRAMING, COORDINATE WITH STRUCTURAL DRAWINGS
- D.9 DEMO HANDRAIL /GUARDRAILS
- D.10 REMOVE CAST IN PLACE CONCRETE STAIR
- D.11 REMOVE EXISTING RELIGIOUS ITEMS
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- * D.36 REMOVE PLATFORM
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- D.39 REMOVE HANDRAIL\GUARDRAIL.
- D.40 REMOVE WALL MARBLE; REUSE MARBLE RECLAIMED AS NEEDED TO INFILL LOCATIONS NOTED TO BE INFILLED. REFER TO1 / A1.2
- * D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL

ITEMS TO BE SALVAGED

GENERAL NOTE: ALL WALL MARBLE AT SOUTH STAIR TO REMAIN

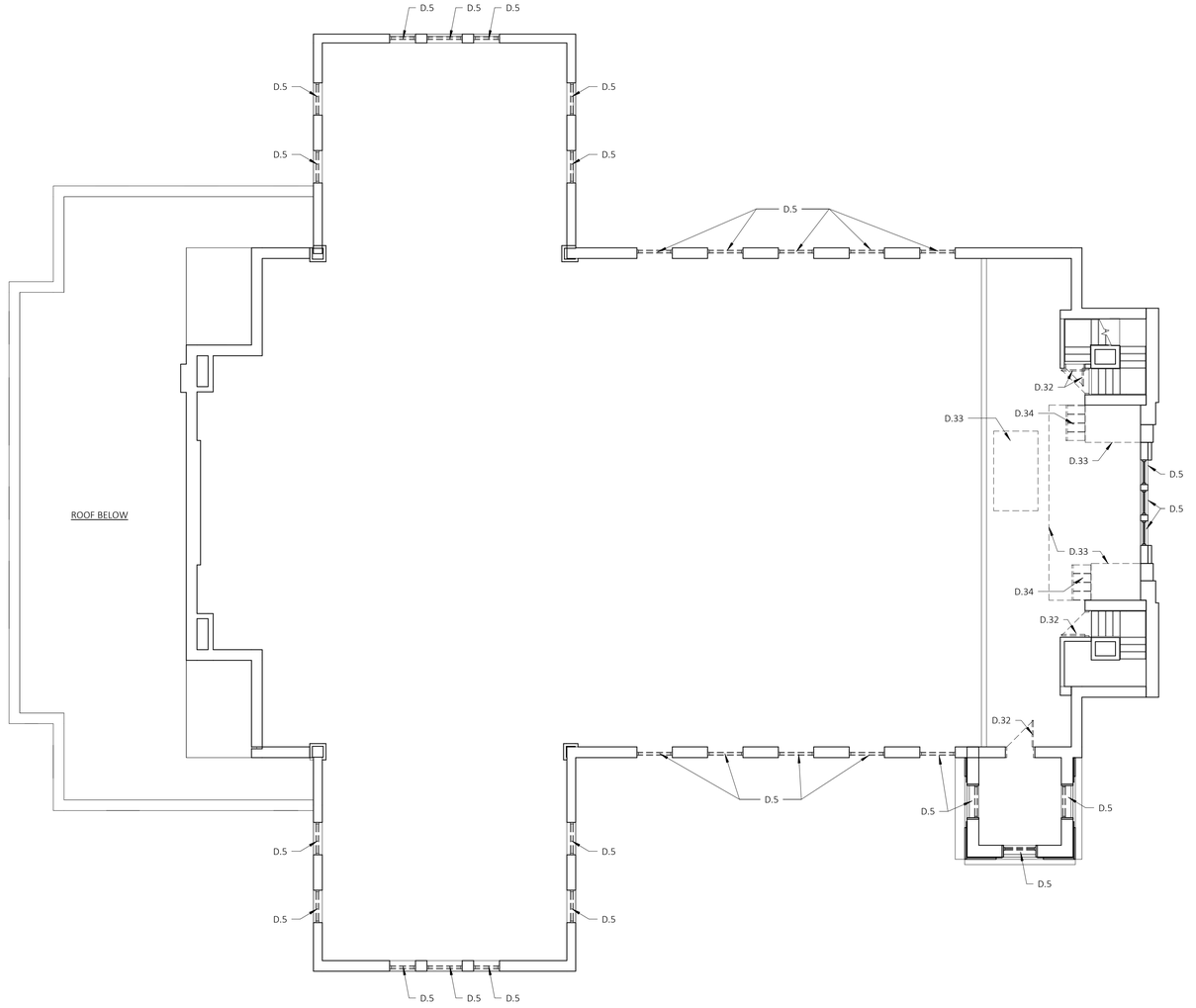
(1) AREAWAY GRATES

DEMOLITION LEGEND

REFER TO DEMOLITION KEYNOTE 42

ADD ALTERNATES LEGEND

ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1



1 MEZZANINE FLOOR PLAN DEMO

SCALE: 1/8" = 1'-0"

FRIAR
architecture
interior design
master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY
HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

MEZZANINE FLOOR DEMOLITION PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: MDC
CHECKED: DRD
5/1/2026 4:08:36 PM

SHEET NO.
D1.3

GENERAL DEMOLITION NOTES

1. ANY DEMOLITION WORK ASSOCIATED WITH NEW WORK THAT IS NOT SPECIFICALLY NOTED ON THIS PLAN SHALL BE THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.
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3. SHUT OFF, CAP AND OTHERWISE PROTECT EXISTING PUBLIC UTILITY LINES IN ACCORDANCE WITH THE REQUIREMENTS OF THE PUBLIC AGENCY HAVING JURISDICTION.
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11. REMOVE ALL PLUMBING FIXTURES INCLUDING SINKS, WATER CLOSETS, URINALS, SLOP SINKS AND DRINKING FOUNTAINS WITHIN DEMOLITION AREAS. REMOVE AND CAP ALL PLUMBING LINES BEHIND FINISHED WALL AND FLOOR SURFACES. REFER TO PLUMBING DEMOLITION DRAWINGS FOR RELATED INFORMATION.
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14. REMOVE ALL ELECTRICAL LIGHTING FIXTURES, ELECTRICAL RUNS, ASSOCIATED DEVICES. REFER TO ELECTRICAL DEMOLITION DRAWINGS FOR RELATED INFORMATION.
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17. EXISTING CEILINGS TO BE REMOVED BY THE CONTRACTOR WHERE NEW CEILINGS ARE SCHEDULED. REFER TO ASBESTOS ABATEMENT PLANS AND REFLECTED CEILING PLANS.
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29. RECLAIM MARBLE FOR INFILLING OF EXTERIOR WALL DETAILS.

DEMOLITION KEYNOTE

* ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1

- D.1 REMOVE DOOR, FRAMES, HARDWARE, TRIM / & SIDELIGHTS
- D.2 REMOVE CONCRETE MASONRY WALL
- D.3 REMOVE SINK. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
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- D.5 REMOVE EXISTING WINDOWS
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- D.11 REMOVE EXISTING RELIGIOUS ITEMS
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- D.21 REMOVE PLYWOOD / WOOD STUD PARTITION
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- D.23 REMOVE WATER CLOSET. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
- D.24 REMOVE TOILET PARTITIONS / DOOR
- D.25 DEMO WOOD SPEAKER ENCLOSURE
- D.26 REMOVE CERAMIC WALL TILE
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- D.37 REMOVE INTERIOR WALL
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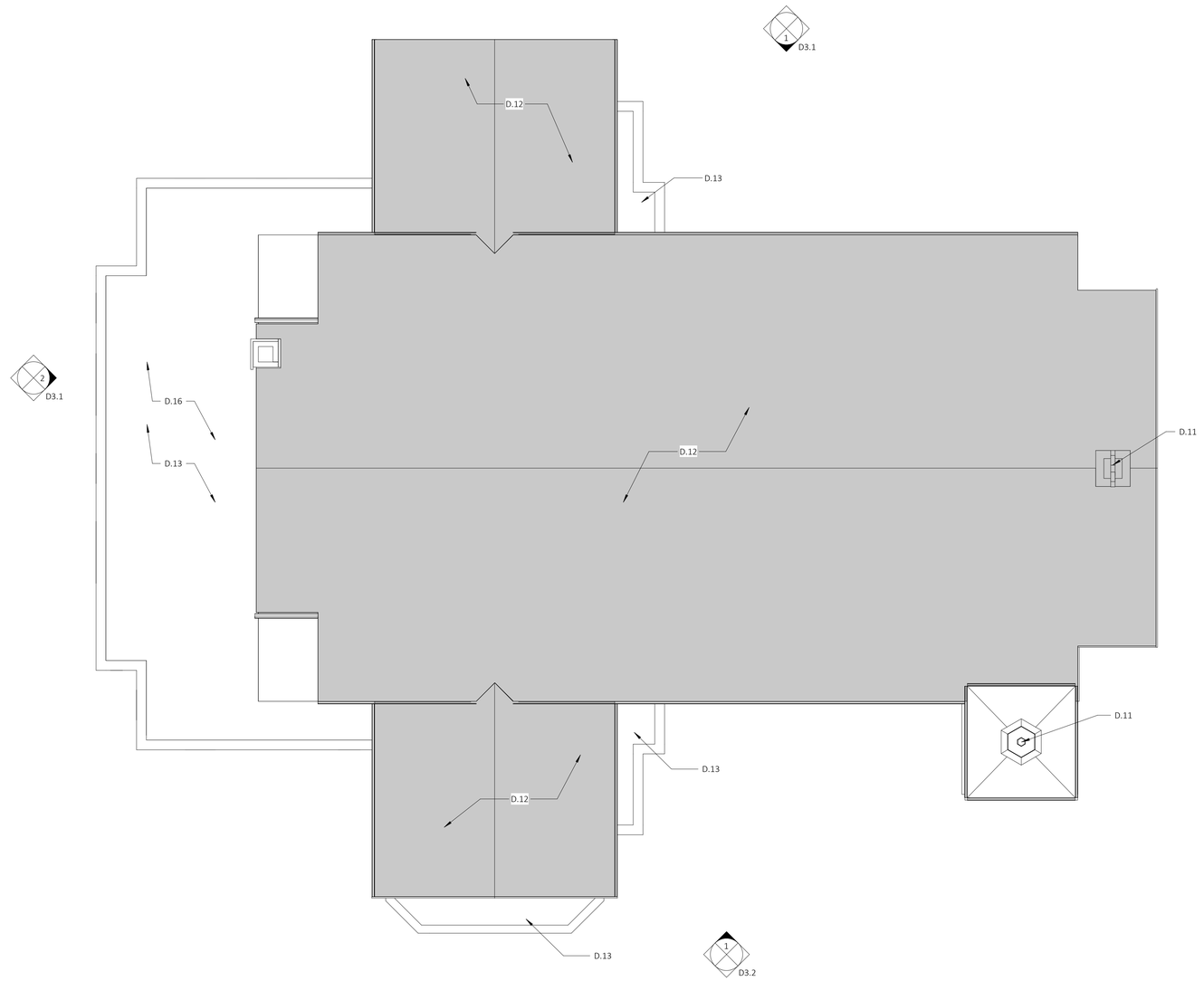
- * D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL



1 ROOF DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

architecture
interior design
master planning
FRIAR
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

CONSULTANT

SEAL OF THE CITY OF WATERBURY CONN.

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ROOF DEMOLITION PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:37 PM

SHEET NO.

D1.4

DEMOLITION KEYNOTE

* ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1

D.1 REMOVE DOOR, FRAMES, HARDWARE, TRIM / & SIDELIGHTS
D.2 REMOVE CONCRETE MASONRY WALL
D.3 REMOVE SINK. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
D.4 REMOVE MILLWORK; (REF. GEN. DEMO NOTE 18)
D.5 REMOVE EXISTING WINDOWS
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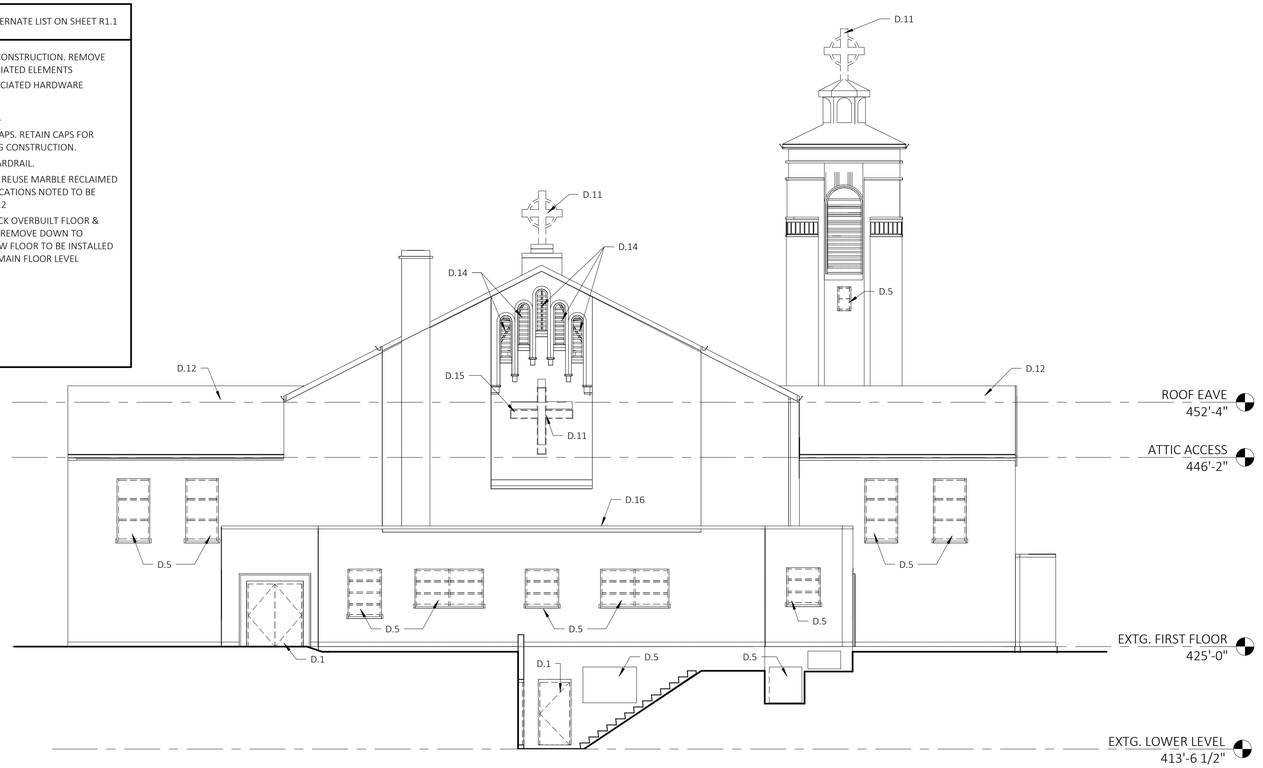
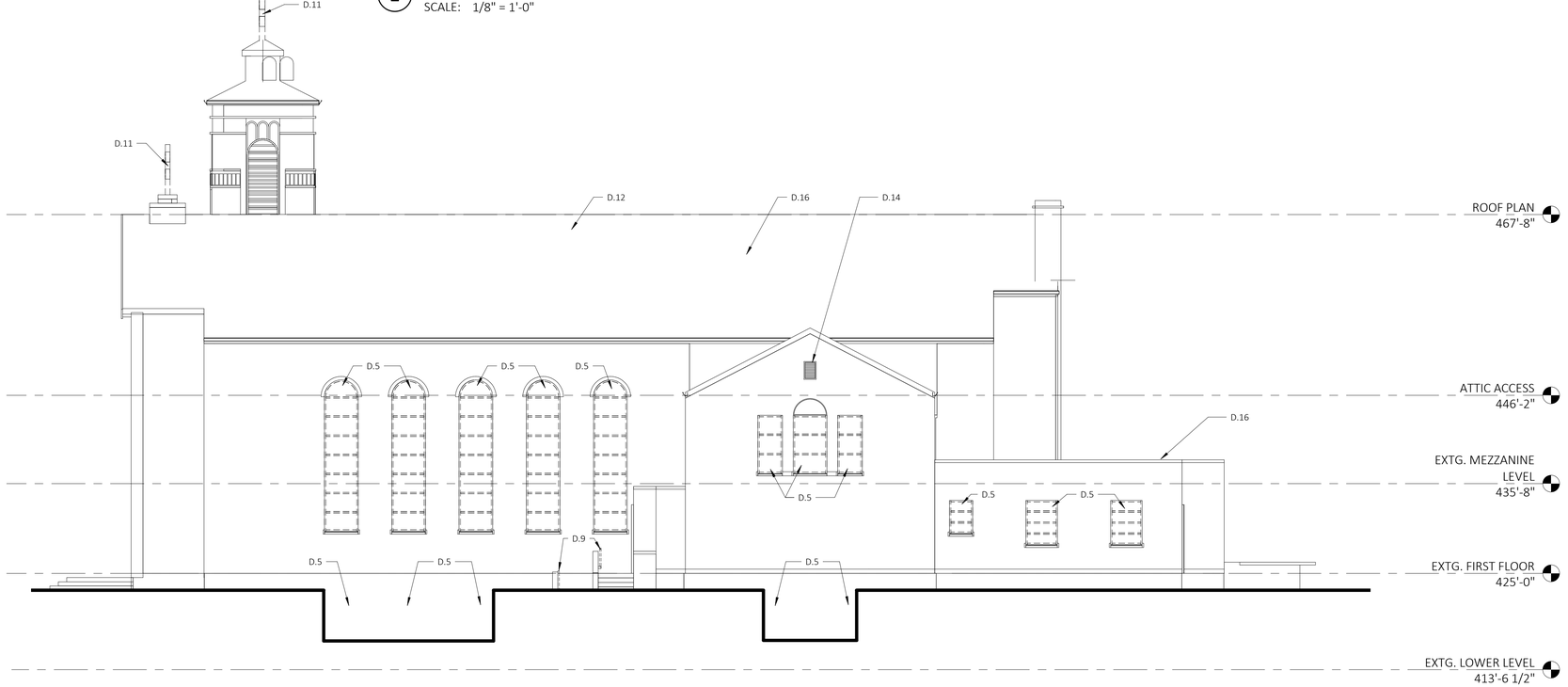
D.31 REMOVE FLOORING BASE IN ALL ROOMS
D.32 REMOVE DOOR, EXISTING FRAME TO REMAIN.
D.33 REMOVE ORGAN, SPEAKERS, CHOIR PLATFORM, WOOD LATTICE SCREENING PANELS
D.34 REMOVE WOOD STAIR CONSTRUCTION. REMOVE HANDRAILS & ALL ASSOCIATED ELEMENTS
D.35 REMOVE PEW AND ASSOCIATED HARDWARE
* D.36 REMOVE PLATFORM
D.37 REMOVE INTERIOR WALL
D.38 REMOVE NEWEL/POST CAPS. RETAIN CAPS FOR REINSTALLATION DURING CONSTRUCTION.
D.39 REMOVE HANDRAIL\GUARDRAIL.
D.40 REMOVE WALL MARBLE; REUSE MARBLE RECLAIMED AS NEEDED TO INFILL LOCATIONS NOTED TO BE INFILLED. REFER TO1 / A1.2
* D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL



2 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



1 WEST ELEVATION
SCALE: 1/8" = 1'-0"

architecture
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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

SOUTH & WEST EXTERIOR DEMO ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:39 PM

SHEET NO.
D3.1

DEMOLITION KEYNOTE

* ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1

D.1 REMOVE DOOR, FRAMES, HARDWARE, TRIM / & SIDELIGHTS
D.2 REMOVE CONCRETE MASONRY WALL
D.3 REMOVE SINK. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
D.4 REMOVE MILLWORK; (REF. GEN. DEMO NOTE 18)
D.5 REMOVE EXISTING WINDOWS
D.6 REMOVE FLOORING; REF TO HAZMAT DWGS.
D.7 REMOVE MECHANICAL/ELECTRICAL EQUIPMENT
D.8 DEMO FLOOR SLAB INCLUDING STRUCTURAL STEEL FRAMING, COORDINATE WITH STRUCTURAL DRAWINGS
D.9 DEMO HANDRAIL /GUARDRAILS
D.10 REMOVE CAST IN PLACE CONCRETE STAIR
D.11 REMOVE EXISTING RELIGIOUS ITEMS
D.12 REMOVE ASPHALT SHINGLE ROOF & ASSOCIATED ELEMENTS
D.13 DEMO LOW SLOPE ROOF & ALL ASSOCIATED ELEMENTS
D.14 REMOVE ATTIC LOUVER/MECHANICAL LOUVERS
D.15 REMOVE ALL ELECTRICAL REMNANTS OF CRUCIFIX PATCH AND REPAIR HOLES IN THE BRICK
D.16 PROVIDE ROOF PENETRATIONS AS REQUIRED FOR MEP EQUIPMENT INCLUDING VENT STACKS, AIR INTAKES, ROOF TOP UNITS, ETC. REFER TO MEP DRAWINGS.
D.17 REMOVE CASEWORK. REFER TO GENERAL DEMOLITION NOTE 4 FOR PLUMBING INFORMATION.
D.18 REMOVE MARKER BOARD & ALL ACCESSORIES
D.19 REMOVE ALL KITCHEN APPLIANCES
D.20 REMOVE AUDIO SYSTEM AND ALL ASSOCIATED ITEMS
D.21 REMOVE PLYWOOD / WOOD STUD PARTITION
D.22 REMOVE WOODEN RAILINGS AND SUPPORT POSTS
D.23 REMOVE WATER CLOSET. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
D.24 REMOVE TOILET PARTITIONS / DOOR
D.25 DEMO WOOD SPEAKER ENCLOSURE
D.26 REMOVE CERAMIC WALL TILE
D.27 REMOVE TOILET ACCESSORIES
D.28 DEMO STATUE ALCOVE
D.29 DEMO CANDLE ALCOVE & ASSOCIATED MECHANICAL & ELECTRICAL COMPONENTS.
D.30 DEMO CLOSET SHELVING
D.31 REMOVE FLOORING BASE IN ALL ROOMS
D.32 REMOVE DOOR, EXISTING FRAME TO REMAIN.
D.33 REMOVE ORGAN, SPEAKERS, CHOIR PLATFORM, WOOD LATTICE SCREENING PANELS
D.34 REMOVE WOOD STAIR CONSTRUCTION. REMOVE HANDRAILS & ALL ASSOCIATED ELEMENTS
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* D.36 REMOVE PLATFORM
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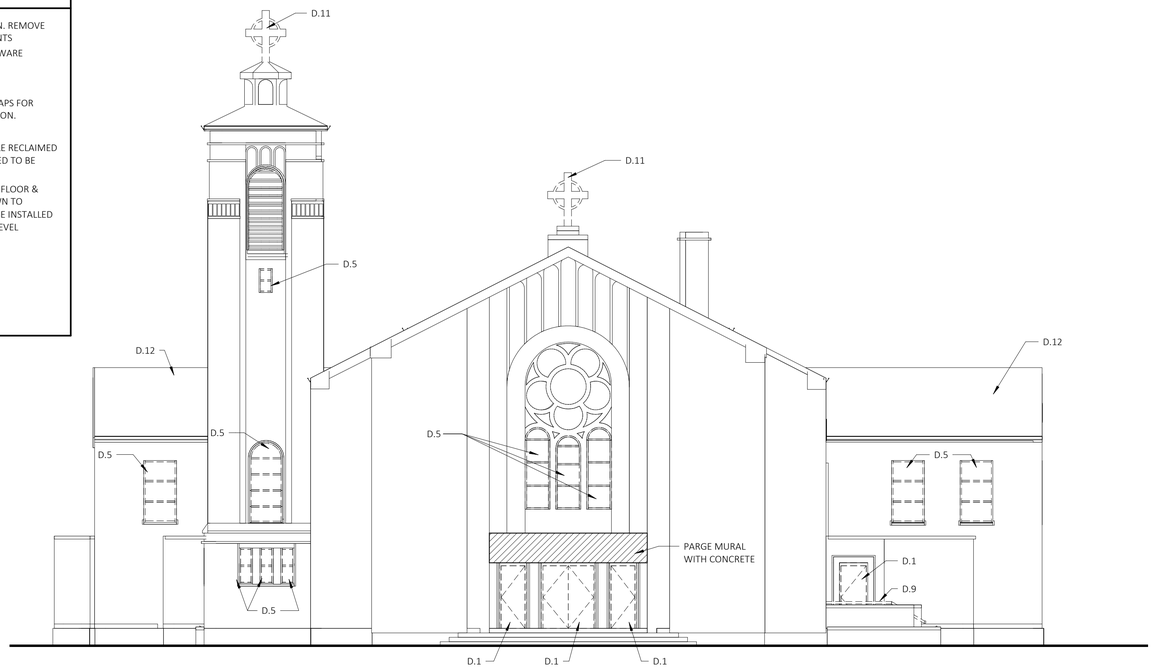
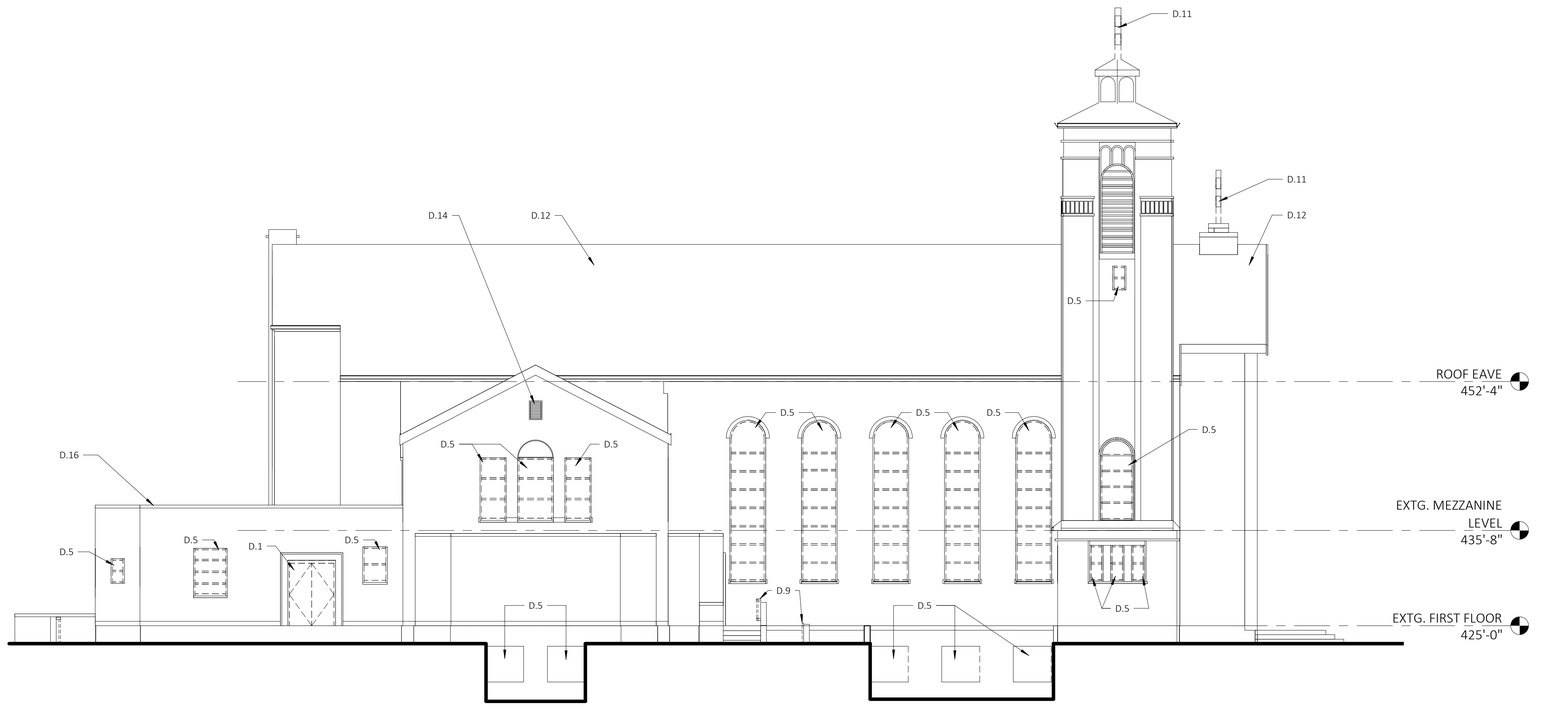
D.39 REMOVE HANDRAIL\GUARDRAIL.
D.40 REMOVE WALL MARBLE; REUSE MARBLE RECLAIMED AS NEEDED TO INFILL LOCATIONS NOTED TO BE INFILLED. REFER TO1 / A1.2
* D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL



2 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



1 EAST ELEVATION
SCALE: 1/8" = 1'-0"

architecture
interior design
master planning
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PROFESSIONAL SEAL

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

NORTH & EAST EXTERIOR DEMO ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:41 PM

SHEET NO.
D3.2

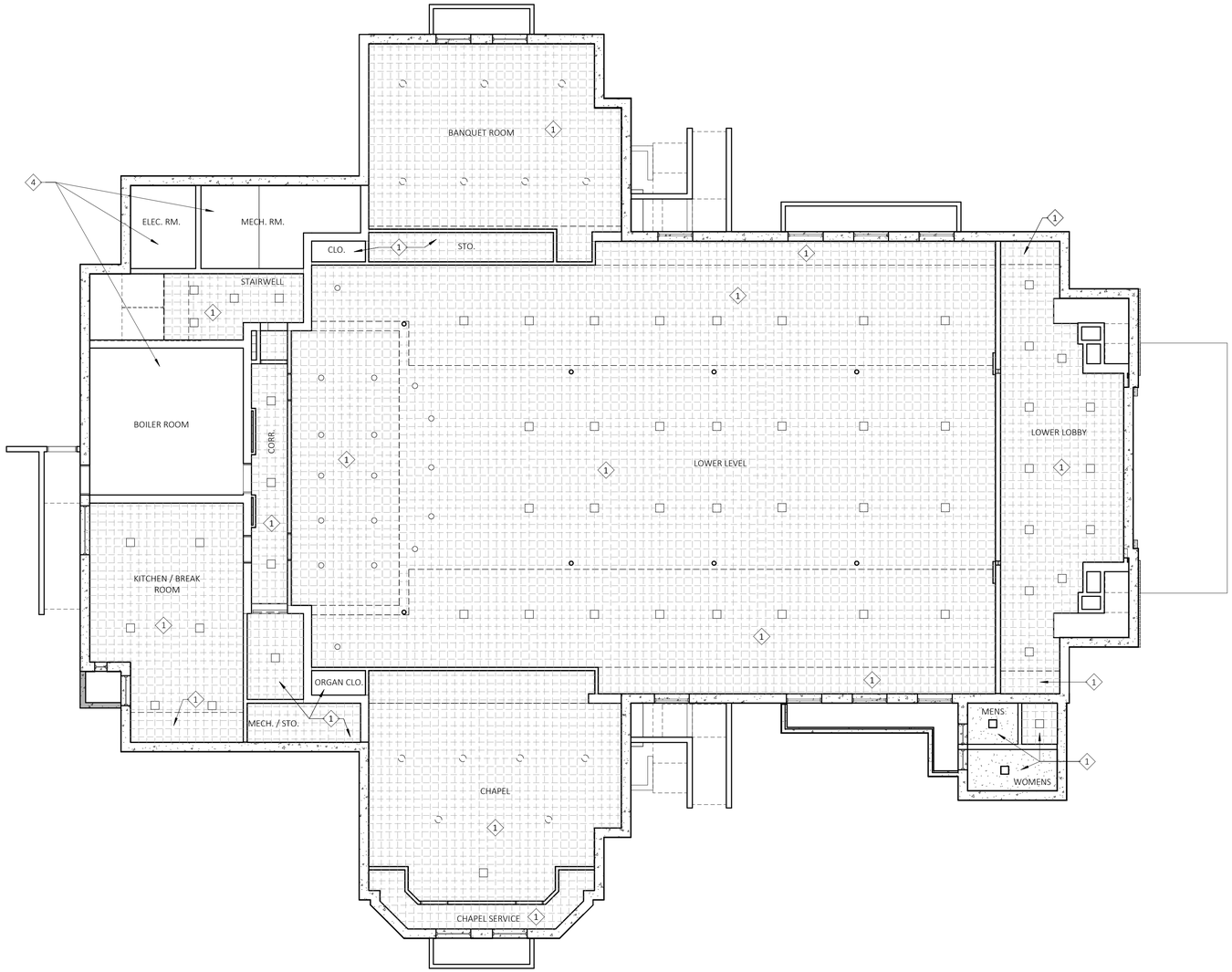
GENERAL DEMOLITION REFLECTED CEILING PLAN NOTES

1. ANY DEMOLITION WORK ASSOCIATED WITH NEW WORK THAT IS NOT SPECIFICALLY NOTED ON THIS PLAN SHALL BE THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.
2. THE DEMOLITION PLANS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE GENERAL EXTENT OF THE WORK ONLY.
3. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK REQUIRED TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS.
4. ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM BUILDING / SITE UNLESS OTHERWISE NOTED. COORDINATE CITY OF WATERBURY FOR DELIVERY OF ITEMS NOTED TO REMAIN OWNERS PROPERTY. THE PROJECT SITE/ BUILDING SHALL BE CLEANED OF DEBRIS ON A DAILY BASIS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING AND SUPPORT (TEMPORARY OR PERMANENT) FOR ALL PORTIONS OF CONSTRUCTION DURING DEMOLITION AND CONSTRUCTION.
6. SHUT OFF, CAP AND OTHERWISE PROTECT EXISTING PUBLIC UTILITY LINES IN ACCORDANCE WITH THE REQUIREMENTS OF THE PUBLIC AGENCY HAVING JURISDICTION.
7. COMPLETELY REMOVE ITEMS SCHEDULED AND INDICATED FOR DEMOLITION TO LEAVE SURFACES CLEAN, SOLID AND READY TO RECEIVE NEW MATERIALS AND SPECIFIED ELSEWHERE.
8. USE MEANS NECESSARY TO PREVENT DUST FROM BECOMING A NUISANCE TO THE USER AND THE PUBLIC.
9. THIS DRAWING DOES NOT DEPICT THE FULL EXTENT OF DEMOLITION. ADDITIONAL ITEMS SCHEDULED FOR DEMOLITION MAY BE FOUND ON OTHER DRAWINGS. CONSTRUCTION MANAGER IS RESPONSIBLE FOR THE COORDINATION OF THIS WORK WITH ALL PARTIES INVOLVED.
10. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE, LOCAL CODES & ORDINANCES.
11. DEMOLITION CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.
12. REMOVE ALL PLUMBING FIXTURES AS INDICATED WITHIN DEMOLITION AREAS AND CAP ALL PLUMBING LINES BEHIND FINISHED WALL AND FLOOR SURFACES. REFER TO PLUMBING DEMOLITION DRAWINGS FOR ADDITIONAL INFORMATION.
13. REMOVE MECHANICAL EQUIPMENT AND ASSOCIATED ELEMENTS AS INDICATED, REF. MECH. DWGS. FOR ADDITIONAL INFORMATION.
14. REMOVE ALL ELECTRICAL LIGHTING FIXTURES, ELECTRICAL RUNS, ASSOCIATED DEVICES AS INDICATED. REFER TO ELECTRICAL DEMOLITION DRAWINGS FOR RELATED INFORMATION.
15. REMOVE ALL EXISTING CEILING SYSTEMS AND ASSOCIATED ELEMENTS AS INDICATED. TEMPORARILY SUPPORT MECH., ELEC. AND FIRE PROTECTION ELEMENTS TO REMAIN AS REQ'D.
16. CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.
17. NO ELECTRICAL, TECHNOLOGY WIRING OR PNEUMATIC LINES ARE TO BE ABANDONED IN PLACE.
18. ROOMS THAT DO NOT INCLUDE CEILING DEMOLITION TAGS ARE INTENDED TO HAVE LIMITED TO NO DEMO SCOPE UNLESS NOTED OTHERWISE.
19. ALL MOUNTED CEILING FAN ARE TO BE REMOVED.

REFLECTED CEILING DEMOLITION KEYNOTES

KEYED INTO DOCUMENTS

1. FULLY REMOVE EXISTING CEILING GRID, LIGHT FIXTURES & ASSOCIATED ELEMENTS; REF/ COORD. W/ HAZMAT DWGS.
2. DEMO AND REMOVE EXISTING DOWN LIGHTS, LIGHT FIXTURES AND ASSOCIATED ELEMENTS.
3. REMOVE CEILING MOUNTED FAN & ASSOCIATED ELEMENTS.
4. REMOVE CEMENTITIOUS LAYER AND ASSOCIATED ELEMENTS TO FULLY DEMO MEP ITEMS.
5. DEMO AND REMOVE PROJECTOR PLATFORM



1 LOWER LEVEL REFLECTED CEILING PLAN - DEMOLITION

SCALE: 1/8" = 1'-0"

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21 Talcott Notch Road
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CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

LOWER LEVEL REFLECTED CEILING - DEMO

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: MDC
CHECKED: DRD
5/1/2026 4:08:42 PM

SHEET NO.

D9.1

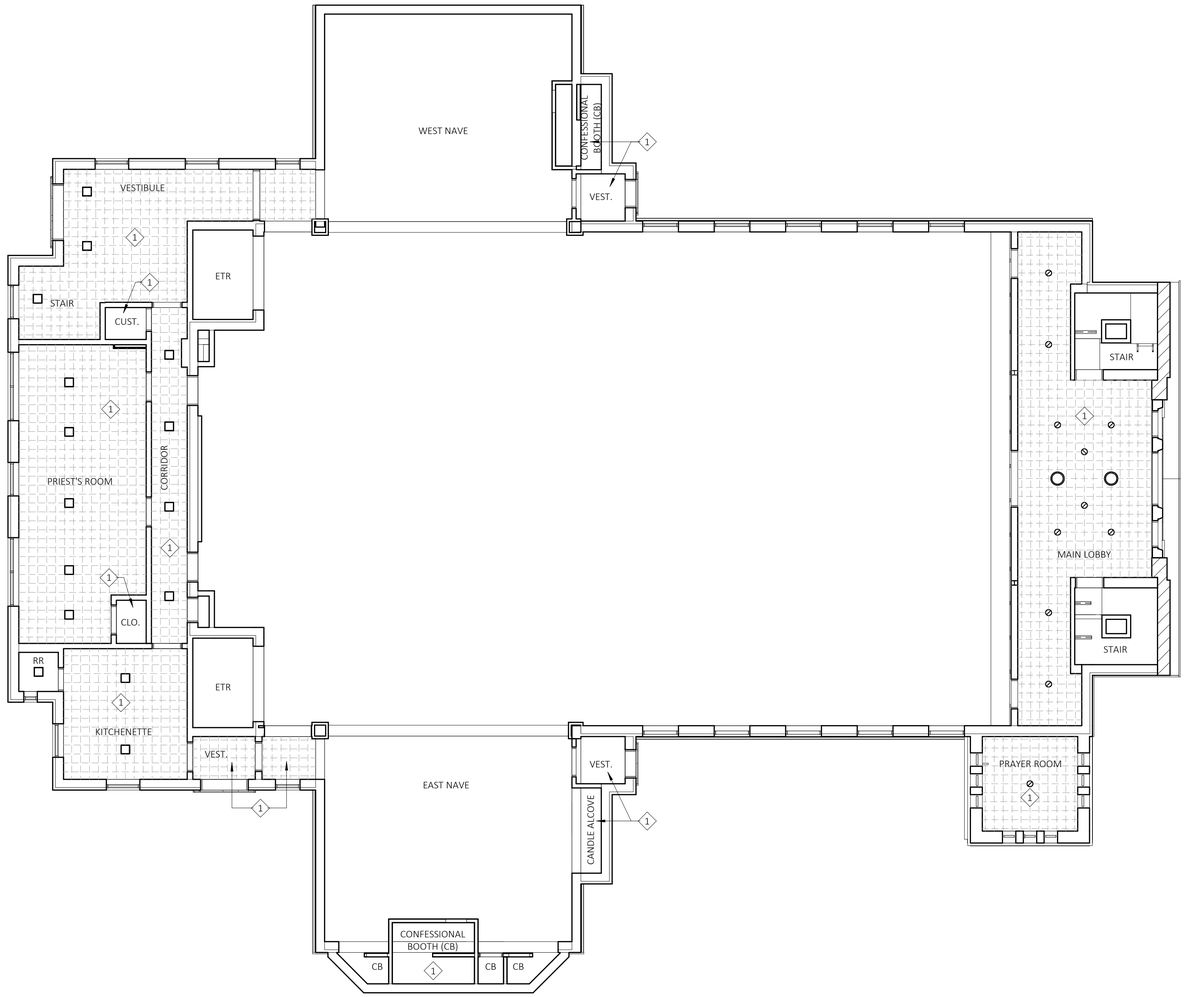
GENERAL DEMOLITION REFLECTED CEILING PLAN NOTES

1. ANY DEMOLITION WORK ASSOCIATED WITH NEW WORK THAT IS NOT SPECIFICALLY NOTED ON THIS PLAN SHALL BE THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.
2. THE DEMOLITION PLANS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE GENERAL EXTENT OF THE WORK ONLY.
3. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK REQUIRED TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS.
4. ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM BUILDING / SITE UNLESS OTHERWISE NOTED. COORDINATE CITY OF WATERBURY FOR DELIVERY OF ITEMS NOTED TO REMAIN OWNERS PROPERTY. THE PROJECT SITE/ BUILDING SHALL BE CLEANED OF DEBRIS ON A DAILY BASIS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING AND SUPPORT (TEMPORARY OR PERMANENT) FOR ALL PORTIONS OF CONSTRUCTION DURING DEMOLITION AND CONSTRUCTION.
6. SHUT OFF, CAP AND OTHERWISE PROTECT EXISTING PUBLIC UTILITY LINES IN ACCORDANCE WITH THE REQUIREMENTS OF THE PUBLIC AGENCY HAVING JURISDICTION.
7. COMPLETELY REMOVE ITEMS SCHEDULED AND INDICATED FOR DEMOLITION TO LEAVE SURFACES CLEAN, SOLID AND READY TO RECEIVE NEW MATERIALS AND SPECIFIED ELSEWHERE.
8. USE MEANS NECESSARY TO PREVENT DUST FROM BECOMING A NUISANCE TO THE USER AND THE PUBLIC.
9. THIS DRAWING DOES NOT DEPICT THE FULL EXTENT OF DEMOLITION. ADDITIONAL ITEMS SCHEDULED FOR DEMOLITION MAY BE FOUND ON OTHER DRAWINGS. CONSTRUCTION MANAGER IS RESPONSIBLE FOR THE COORDINATION OF THIS WORK WITH ALL PARTIES INVOLVED.
10. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE, LOCAL CODES & ORDINANCES.
11. DEMOLITION CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.
12. REMOVE ALL PLUMBING FIXTURES AS INDICATED WITHIN DEMOLITION AREAS AND CAP ALL PLUMBING LINES BEHIND FINISHED WALL AND FLOOR SURFACES. REFER TO PLUMBING DEMOLITION DRAWINGS FOR ADDITIONAL INFORMATION.
13. REMOVE MECHANICAL EQUIPMENT AND ASSOCIATED ELEMENTS AS INDICATED, REF. MECH. DWGS. FOR ADDITIONAL INFORMATION.
14. REMOVE ALL ELECTRICAL LIGHTING FIXTURES, ELECTRICAL RUNS, ASSOCIATED DEVICES AS INDICATED. REFER TO ELECTRICAL DEMOLITION DRAWINGS FOR RELATED INFORMATION.
15. REMOVE ALL EXISTING CEILING SYSTEMS AND ASSOCIATED ELEMENTS AS INDICATED. TEMPORARILY SUPPORT MECH., ELEC. AND FIRE PROTECTION ELEMENTS TO REMAIN AS REQ'D.
16. CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.
17. NO ELECTRICAL, TECHNOLOGY WIRING OR PNEUMATIC LINES ARE TO BE ABANDONED IN PLACE.
18. ROOMS THAT DO NOT INCLUDE CEILING DEMOLITION TAGS ARE INTENDED TO HAVE LIMITED TO NO DEMO SCOPE UNLESS NOTED OTHERWISE.
19. ALL MOUNTED CEILING FAN ARE TO BE REMOVED.

REFLECTED CEILING DEMOLITION KEYNOTES

KEYED INTO DOCUMENTS

1. FULLY REMOVE EXISTING CEILING GRID, LIGHT FIXTURES & ASSOCIATED ELEMENTS; REF/ COORD. W/ HAZMAT DWGS.
2. DEMO AND REMOVE EXISTING DOWN LIGHTS, LIGHT FIXTURES AND ASSOCIATED ELEMENTS.
3. REMOVE CEILING MOUNTED FAN & ASSOCIATED ELEMENTS.
4. REMOVE CEMENTITIOUS LAYER AND ASSOCIATED ELEMENTS TO FULLY DEMO MEP ITEMS.
5. DEMO AND REMOVE PROJECTOR PLATFORM



1 FIRST FLOOR REFLECTED CEILING PLAN - DEMOLITION

SCALE: 1/8" = 1'-0"

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WATERBURY COMMUNITY
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WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

FIRST FLOOR REFLECTED CEILING - DEMOLITION

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	MDC
CHECKED:	DRD
5/1/2026 4:08:43 PM	

SHEET NO.

D9.2

GENERAL DEMOLITION REFLECTED CEILING PLAN NOTES

1. ANY DEMOLITION WORK ASSOCIATED WITH NEW WORK THAT IS NOT SPECIFICALLY NOTED ON THIS PLAN SHALL BE THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.
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7. COMPLETELY REMOVE ITEMS SCHEDULED AND INDICATED FOR DEMOLITION TO LEAVE SURFACES CLEAN, SOLID AND READY TO RECEIVE NEW MATERIALS AND SPECIFIED ELSEWHERE.
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13. REMOVE MECHANICAL EQUIPMENT AND ASSOCIATED ELEMENTS AS INDICATED, REF. MECH. DWGS. FOR ADDITIONAL INFORMATION.
14. REMOVE ALL ELECTRICAL LIGHTING FIXTURES, ELECTRICAL RUNS, ASSOCIATED DEVICES AS INDICATED. REFER TO ELECTRICAL DEMOLITION DRAWINGS FOR RELATED INFORMATION.
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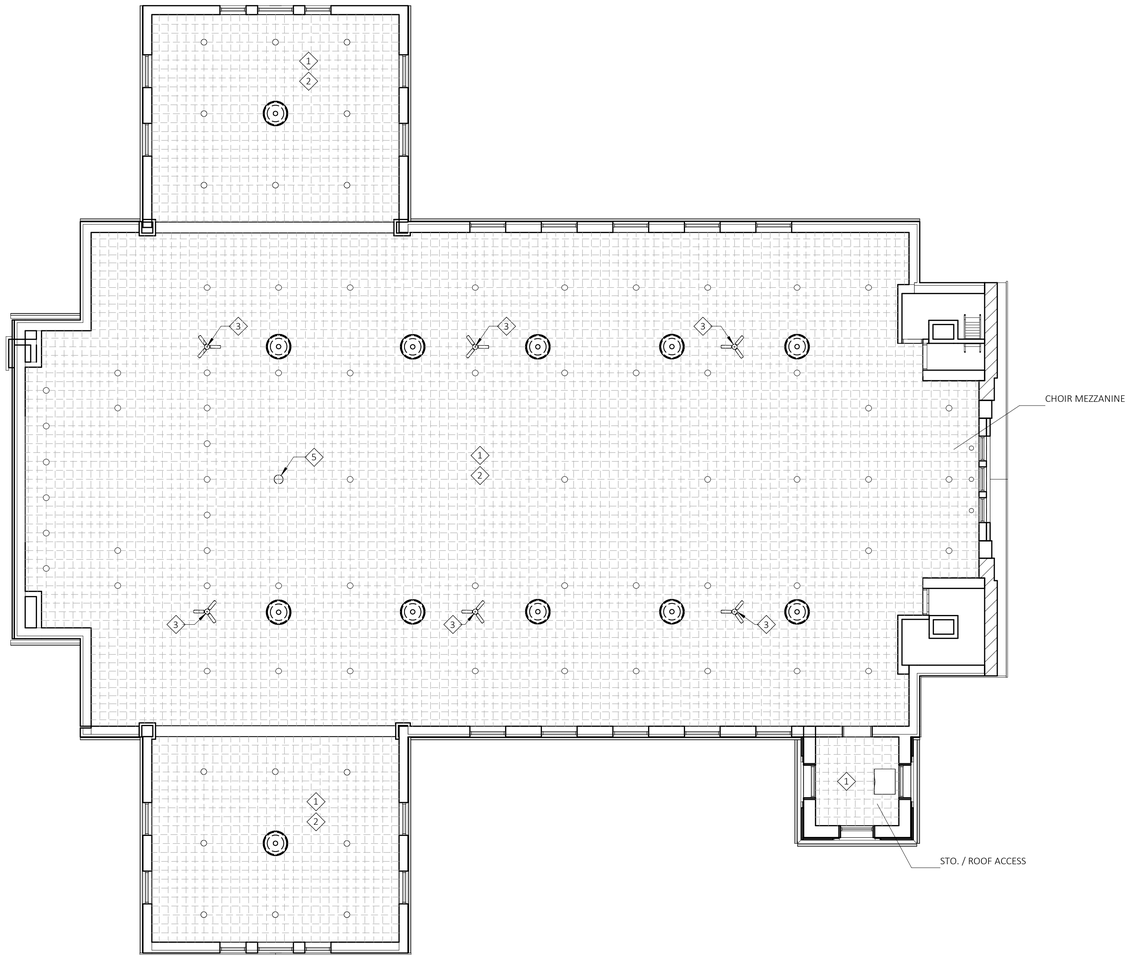
17. NO ELECTRICAL, TECHNOLOGY WIRING OR PNEUMATIC LINES ARE TO BE ABANDONED IN PLACE.
18. ROOMS THAT DO NOT INCLUDE CEILING DEMOLITION TAGS ARE INTENDED TO HAVE LIMITED TO NO DEMO SCOPE UNLESS NOTED OTHERWISE.
19. ALL MOUNTED CEILING FAN ARE TO BE REMOVED.

REFLECTED CEILING DEMOLITION KEYNOTES

KEYED INTO DOCUMENTS

1. FULLY REMOVE EXISTING CEILING GRID, LIGHT FIXTURES & ASSOCIATED ELEMENTS; REF/ COORD. W/ HAZMAT DWGS.
2. DEMO AND REMOVE EXISTING DOWN LIGHTS, LIGHT FIXTURES AND ASSOCIATED ELEMENTS.
3. REMOVE CEILING MOUNTED FAN & ASSOCIATED ELEMENTS.
4. REMOVE CEMENTITIOUS LAYER AND ASSOCIATED ELEMENTS TO FULLY DEMO MEP ITEMS.
5. DEMO AND REMOVE PROJECTOR PLATFORM



1 MEZZANINE FLOOR REFLECTED CEILING PLAN -DEMOLITION

SCALE: 1/8" = 1'-0"

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architecture
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RFP NO. 8801

REVISIONS

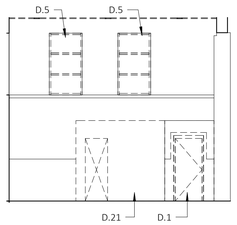
NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

MEZZANINE FLOOR REFLECTED CEILING - DEMOLITION

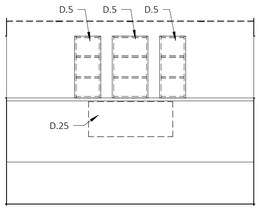
DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: MDC
CHECKED: DRD
5/1/2026 4:08:45 PM

SHEET NO.
D9.3



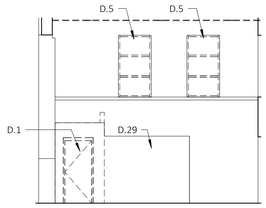
8 NORTH ELEVATION

SCALE: 1/8" = 1'-0"



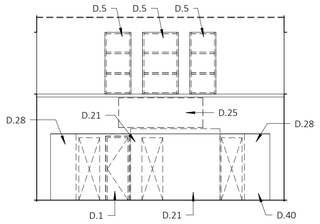
6 WEST ELEVATION

SCALE: 1/8" = 1'-0"



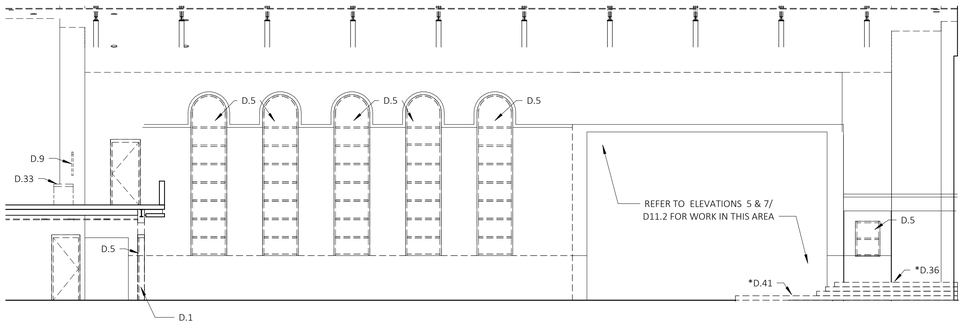
7 NORTH ELEVATION

SCALE: 1/8" = 1'-0"



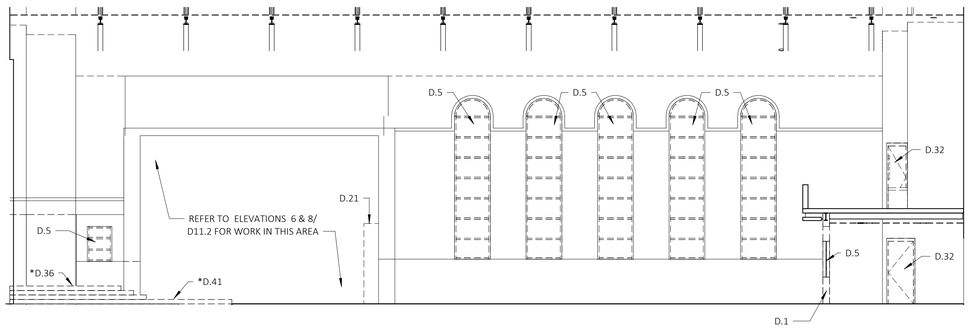
5 EAST ELEVATION

SCALE: 1/8" = 1'-0"



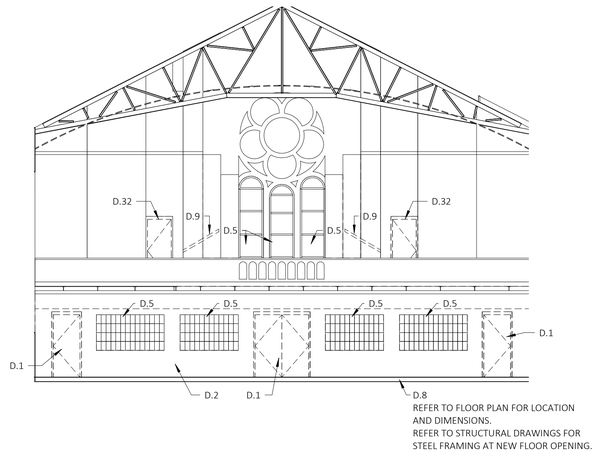
4 EAST ELEVATION

SCALE: 1/8" = 1'-0"



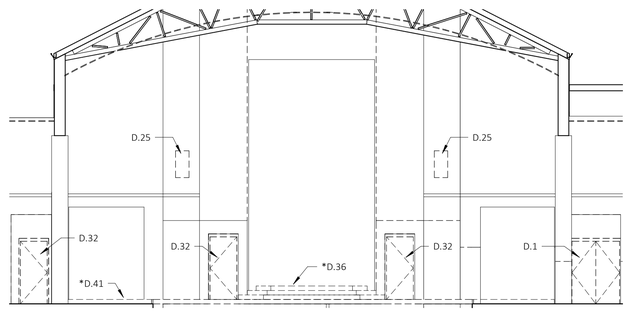
3 WEST ELEVATION

SCALE: 1/8" = 1'-0"



2 NORTH ELEVATION

SCALE: 1/8" = 1'-0"



1 SOUTH ELEVATION

SCALE: 1/8" = 1'-0"

DEMOLITION KEYNOTE

* ADD ALTERNATE NO. 01; REFER TO ADD ALTERNATE LIST ON SHEET R1.1

D.1 REMOVE DOOR, FRAMES, HARDWARE, TRIM / & SIDELIGHTS
D.2 REMOVE CONCRETE MASONRY WALL
D.3 REMOVE SINK. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
D.4 REMOVE MILLWORK; (REF. GEN. DEMO NOTE 18)
D.5 REMOVE EXISTING WINDOWS
D.6 REMOVE FLOORING; REF TO HAZMAT DWGS.
D.7 REMOVE MECHANICAL/ELECTRICAL EQUIPMENT
D.8 DEMO FLOOR SLAB INCLUDING STRUCTURAL STEEL FRAMING, COORDINATE WITH STRUCTURAL DRAWINGS
D.9 DEMO HANDRAIL /GUARDRAILS
D.10 REMOVE CAST IN PLACE CONCRETE STAIR
D.11 REMOVE EXISTING RELIGIOUS ITEMS
D.12 REMOVE ASPHALT SHINGLE ROOF & ASSOCIATED ELEMENTS
D.13 DEMO LOW SLOPE ROOF & ALL ASSOCIATED ELEMENTS
D.14 REMOVE ATTIC LOUVER/MECHANICAL LOUVERS
D.15 REMOVE ALL ELECTRICAL REMNANTS OF CRUCIFIX PATCH AND REPAIR HOLES IN THE BRICK
D.16 PROVIDE ROOF PENETRATIONS AS REQUIRED FOR MEP EQUIPMENT INCLUDING VENT STACKS, AIR INTAKES, ROOF TOP UNITS, ETC. REFER TO MEP DRAWINGS.
D.17 REMOVE CASEWORK. REFER TO GENERAL DEMOLITION NOTE 4 FOR PLUMBING INFORMATION.
D.18 REMOVE MARKER BOARD & ALL ACCESSORIES
D.19 REMOVE ALL KITCHEN APPLIANCES
D.20 REMOVE AUDIO SYSTEM AND ALL ASSOCIATED ITEMS
D.21 REMOVE PLYWOOD / WOOD STUD PARTITION
D.22 REMOVE WOODEN RAILINGS AND SUPPORT POSTS
D.23 REMOVE WATER CLOSET. REFER TO GENERAL DEMOLITION FOR PLUMBING INFORMATION.
D.24 REMOVE TOILET PARTITIONS / DOOR
D.25 DEMO WOOD SPEAKER ENCLOSURE
D.26 REMOVE CERAMIC WALL TILE
D.27 REMOVE TOILET ACCESSORIES
D.28 DEMO STATUE ALCOVE
D.29 DEMO CANDLE ALCOVE & ASSOCIATED MECHANICAL & ELECTRICAL COMPONENTS.
D.30 DEMO CLOSET SHELVING
D.31 REMOVE FLOORING BASE IN ALL ROOMS
D.32 REMOVE DOOR, EXISTING FRAME TO REMAIN.
D.33 REMOVE ORGAN, SPEAKERS, CHOIR PLATFORM, WOOD LATTICE SCREENING PANELS
D.34 REMOVE WOOD STAIR CONSTRUCTION. REMOVE HANDRAILS & ALL ASSOCIATED ELEMENTS
D.35 REMOVE PEW AND ASSOCIATED HARDWARE
* D.36 REMOVE PLATFORM
D.37 REMOVE INTERIOR WALL
D.38 REMOVE NEWEL/POST CAPS. RETAIN CAPS FOR REINSTALLATION DURING CONSTRUCTION.
D.39 REMOVE HANDRAIL\GUARDRAIL.
D.40 REMOVE WALL MARBLE; REUSE MARBLE RECLAIMED AS NEEDED TO INFILL LOCATIONS NOTED TO BE INFILLED. REFER TO1/A1.2
* D.41 REMOVE CONCRETE/BRICK OVERBUILT FLOOR & ASSOCIATED ELEMENTS. REMOVE DOWN TO SUITABLE LEVEL FOR NEW FLOOR TO BE INSTALLED ADJACENT TO EXISTING MAIN FLOOR LEVEL

NOTE:
REFER TO SHEET D1.2 FOR GENERAL DEMOLITION NOTES

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REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

INTERIOR DEMO ELEVATIONS

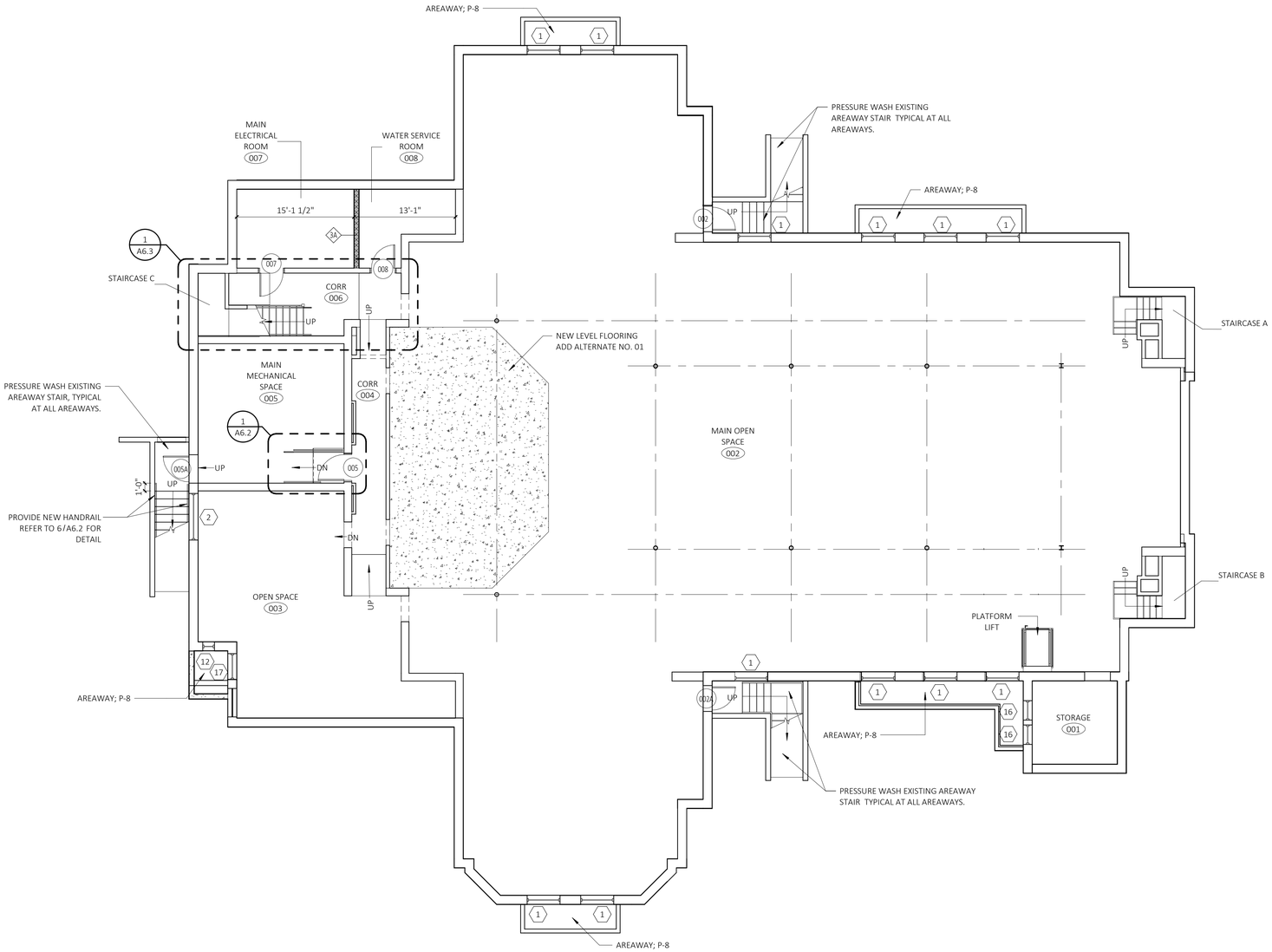
DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:48 PM

SHEET NO.

D11.1

FLOOR PLAN KEYNOTE

1 PATCH, REPAIR, AND PAINT WALLS WITH ANY DAMAGE.



1 LOWER FLOOR PLAN

SCALE: 1/8" = 1'-0"

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LOWER FLOOR PLAN

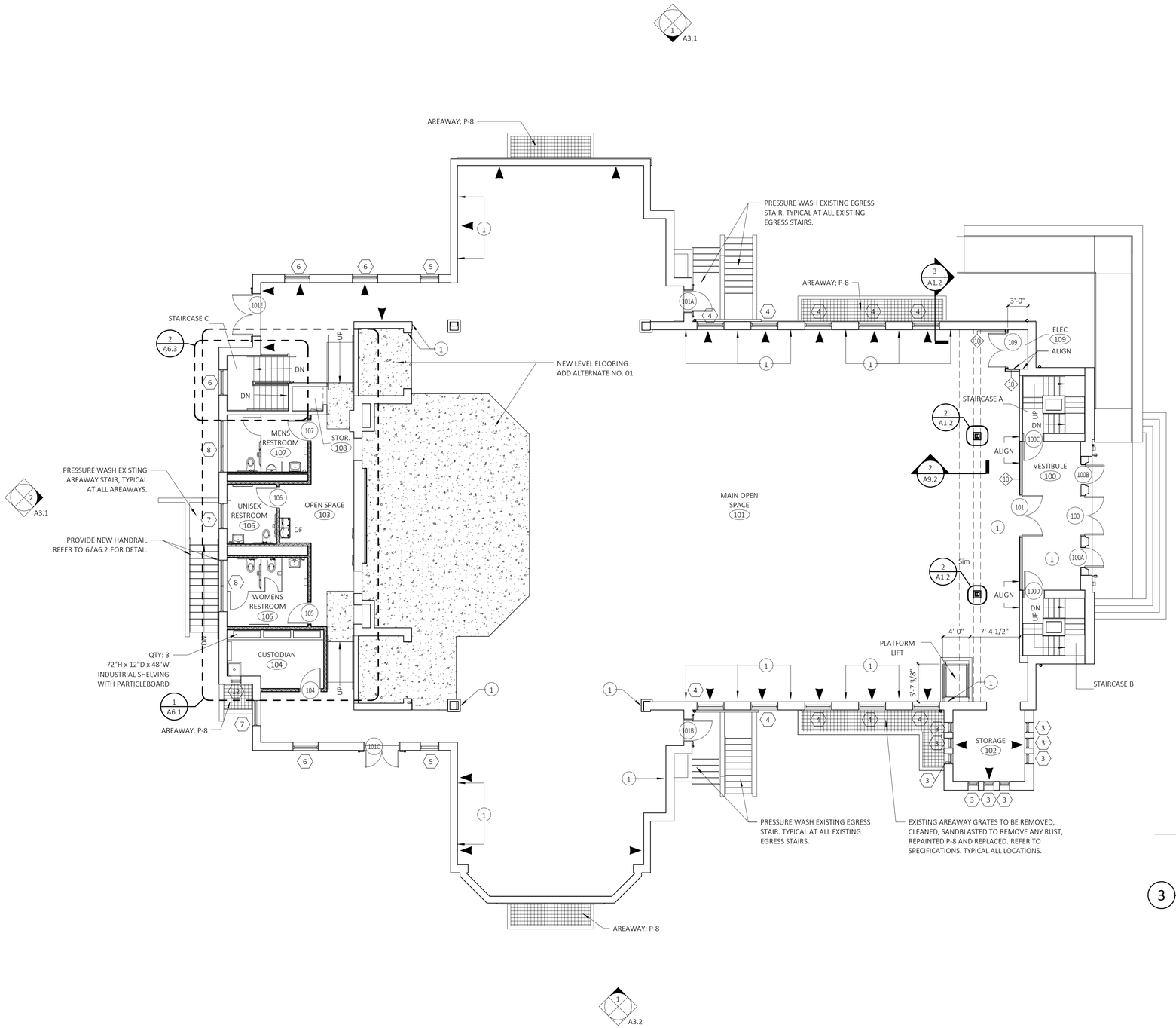
DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:07:52 PM

SHEET NO.

A1.1

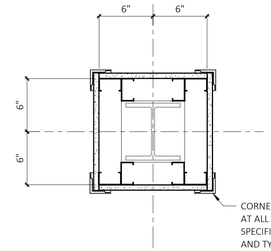
FLOOR PLAN KEYNOTE

1 PATCH, REPAIR, AND PAINT WALLS WITH ANY DAMAGE.



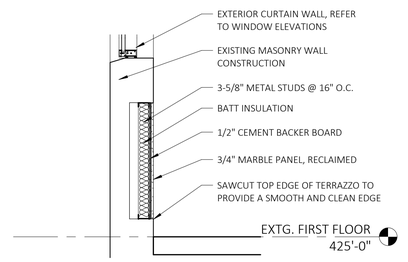
1 FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"



2 PLAN DETAIL

SCALE: 1 1/2" = 1'-0"



3 WALL SECTION

SCALE: 1/2" = 1'-0"

INFILL RADIATOR LOCATION/DAMAGED MARBLE SHOWN BY ▲ WITH RECLAIMED MARBLE. REFER TO 3/A1.2

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FIRST FLOOR PLAN

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	JNR, MDC
CHECKED:	DRD

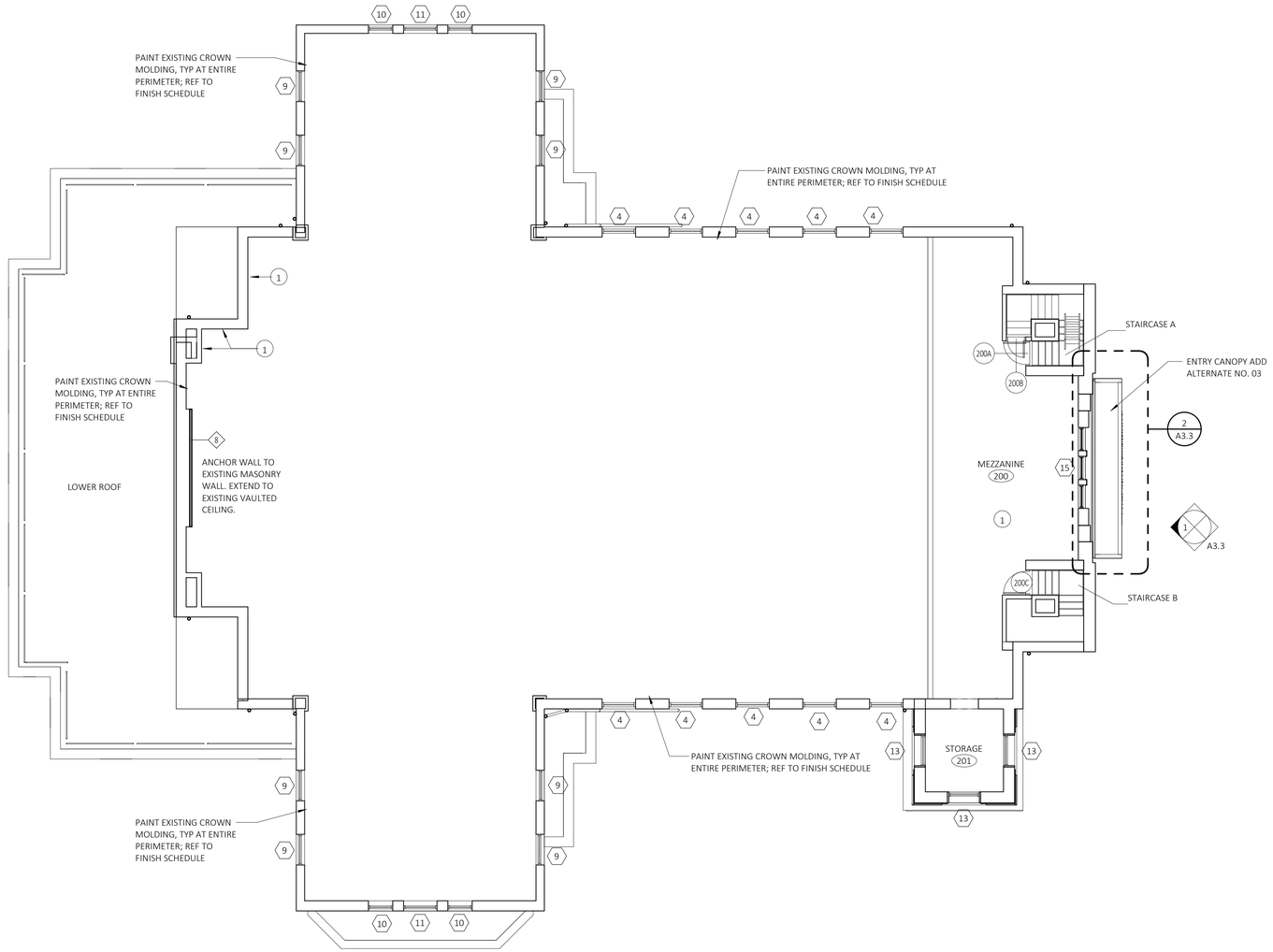
5/1/2026 4:07:55 PM

SHEET NO.

A1.2

FLOOR PLAN KEYNOTE

1 PATCH, REPAIR, AND PAINT WALLS WITH ANY DAMAGE.



1 MEZZANINE PLAN

SCALE: 1/8" = 1'-0"

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NO.	DATE	DESCRIPTION

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MEZZANINE PLAN

DATE: 2026-0501	SHEET NO.
SCALE As indicated	
PROJ. #: 2023-026B	A1.3
DRAWN: JNR, MDC	
CHECKED: DRD	
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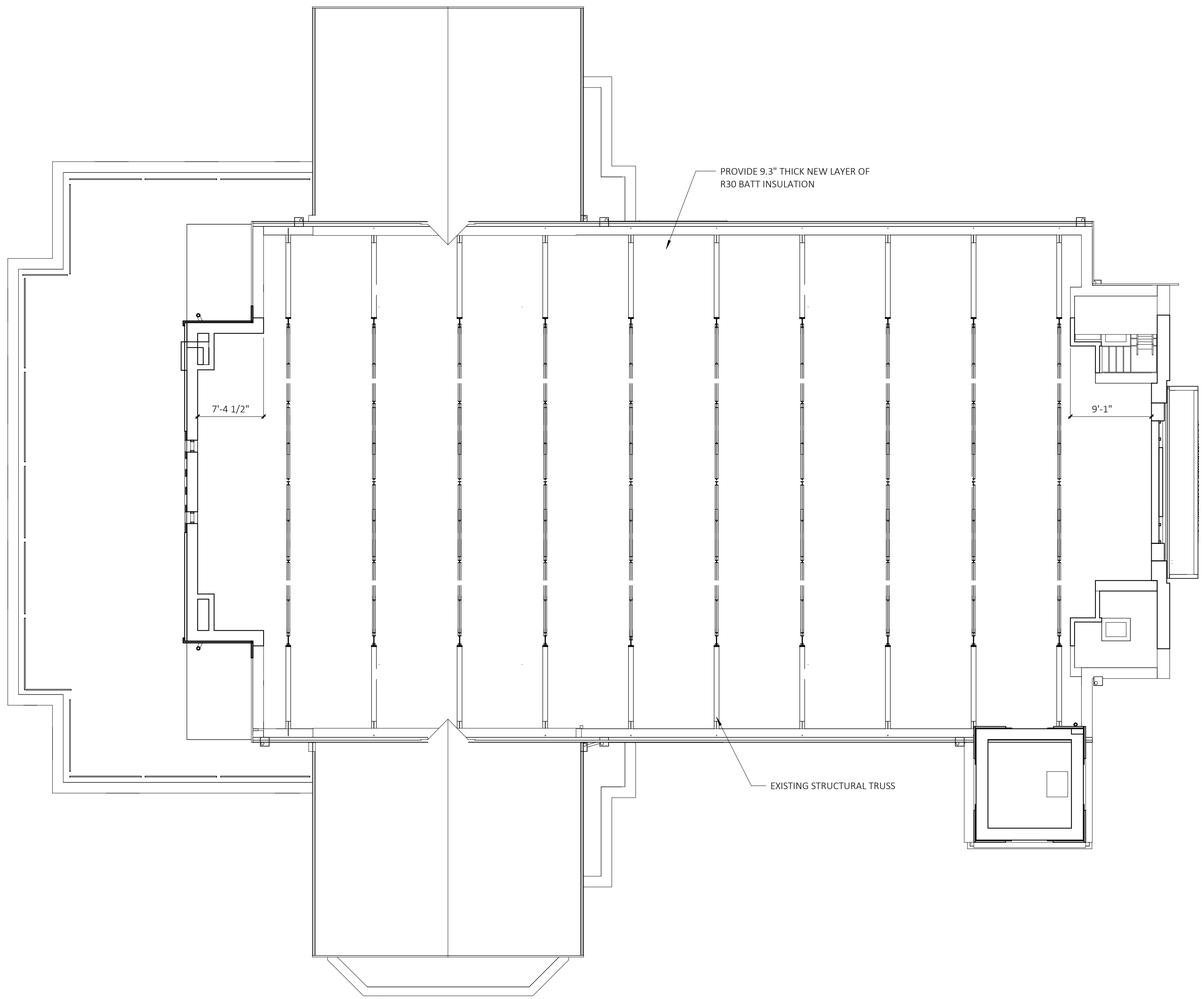

1 ATTIC PLAN
SCALE: 1/8" = 1'-0"

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REVISIONS

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DOCUMENTS

ATTIC PLAN

DATE:	2026-0501
SCALE	1/8" = 1'-0"
PROJ. #:	2023-026B
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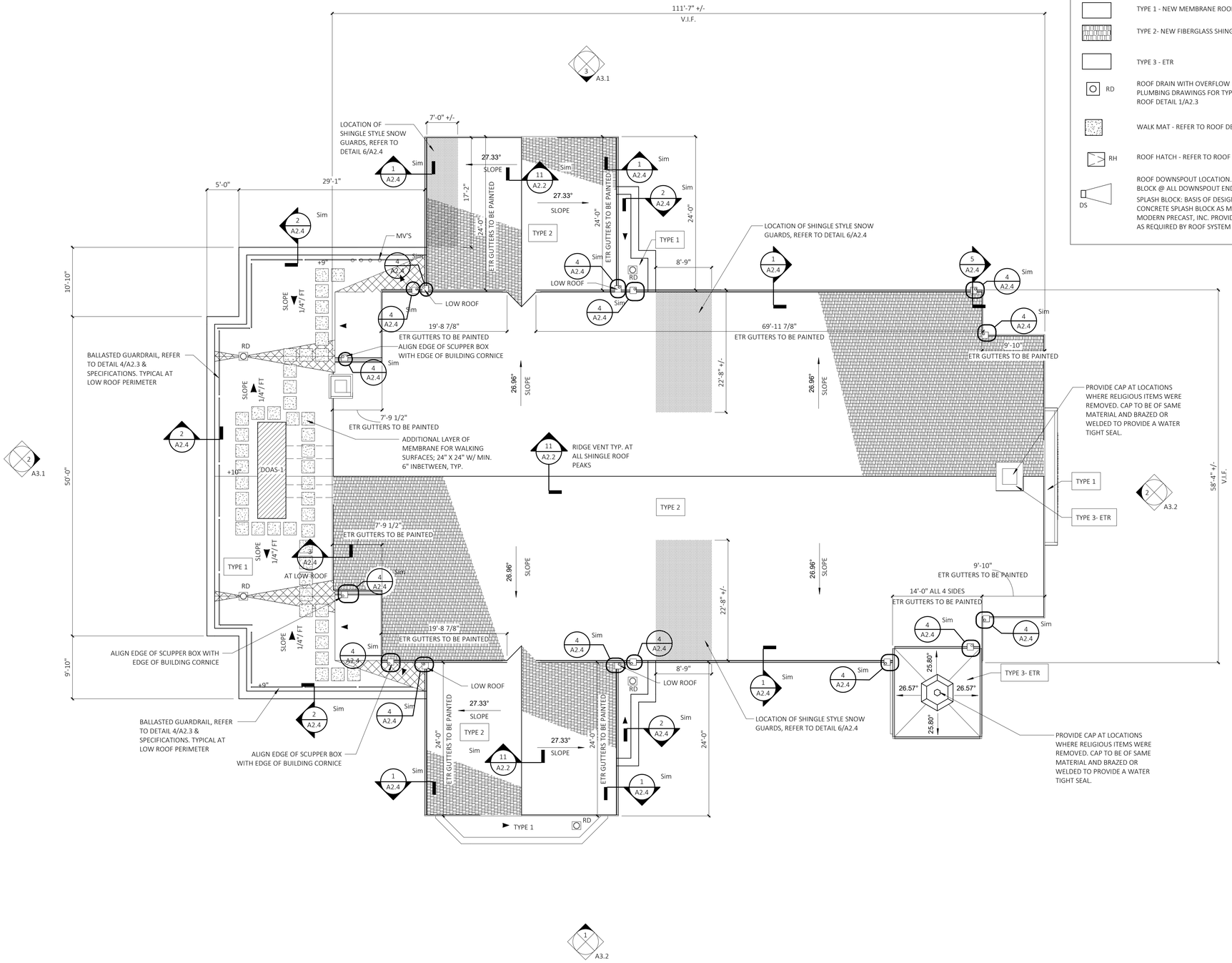
CHECKED:	DRD
5/1/2026 4:07:57 PM	

SHEET NO.
A1.4

ROOF PLAN LEGEND

REFER TO SHEETS A2.2 THRU A2.4 FOR ROOF DETAILS & TYPICAL ROOF DETAILS

- TAPERED RIGID INSULATION SLOPE = 1/4:12 TYPICAL
- CRICKET WITH PITCH TO DRAIN.
- TYPE 1 - NEW MEMBRANE ROOF SYSTEM
- TYPE 2- NEW FIBERGLASS SHINGLE ROOF
- TYPE 3 - ETR
- RD — ROOF DRAIN WITH OVERFLOW DRAIN SEE PLUMBING DRAWINGS FOR TYPE. REFER TO ROOF DETAIL 1/A2.3
- WALK MAT - REFER TO ROOF DETAIL 10/A2.2
- RH — ROOF HATCH - REFER TO ROOF DETAIL X/AX.X
- DS — ROOF DOWNSPOUT LOCATION. PROVIDE SPLASH BLOCK @ ALL DOWNSPOUT ENDS, TYPICAL
  SPLASH BLOCK: BASIS OF DESIGN - 30" PRECAST CONCRETE SPLASH BLOCK AS MANUFACTURED BY MODERN PRECAST, INC. PROVIDE ROOF PROTECTION AS REQUIRED BY ROOF SYSTEM MANUFACTURER.
- MV — MECHANICAL VENT, REFER TO ROOF DETAIL 2/A2.2 & 8/A2.4
- SC — ROOF SCUPPER (THROUGH THE WALL), REFER TO ROOF DETAIL X/AX.X
- PV — PLUMBING VENT, REFER TO ROOF DETAIL 3/A2.3
- MECHANICAL EQUIPMENT
- SHINGLE STYLE SNOW GUARDS, REFER TO DETAIL 6/A2.4
- X / A5.X — WALL SECTION LOCATION REFER TO SHEET NO. A5 SERIES DRAWINGS FOR WALL SECTIONS
- X / A2.X — ROOF DETAIL LOCATION REFER TO SHEET A2.2 THRU A2.4 FOR ROOF DETAILS



1 ROOF PLAN

SCALE: 1/8" = 1'-0"

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ROOF PLAN

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	JNR
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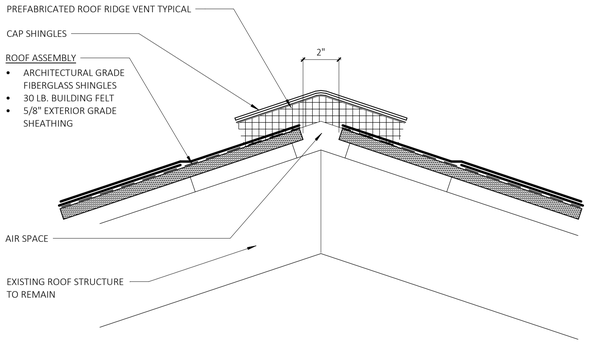
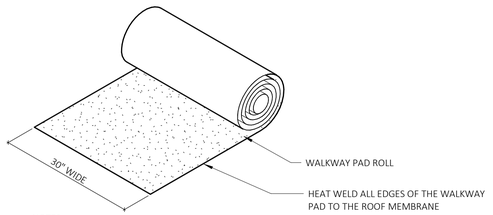
SHEET NO.

A2.1



11 RIDGE VENT DETAIL

SCALE: 3" = 1'-0"

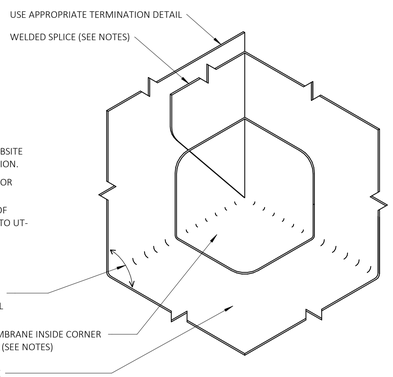


NOTES:

1. REFER TO ROOFING MANUFACTURER FOR MOST CURRENT INFORMATION.

10 30" WALKWAY PAD ROLL

SCALE: 1 1/2" = 1'-0"

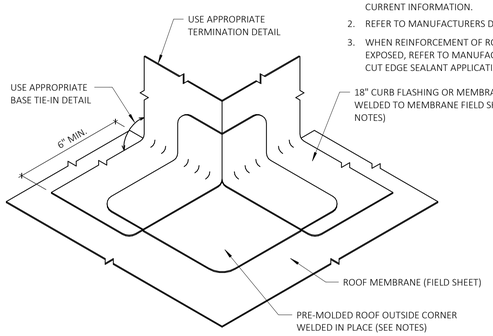


NOTES:

1. REFER TO MANUFACTURERS WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
3. WHEN REINFORCEMENT OF ROOF MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

9 MEMBRANE INSIDE CORNER DETAIL

SCALE: 1 1/2" = 1'-0"



NOTES:

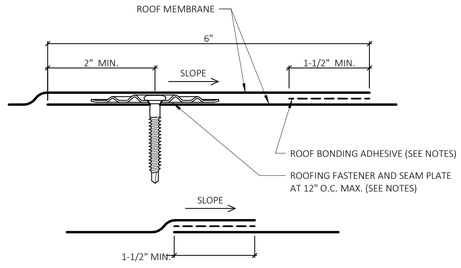
1. REFER TO ROOFING WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO MANUFACTURERS DETAIL FOR WELD WIDTH.
3. WHEN REINFORCEMENT OF ROOF MEMBRANE IS EXPOSED, REFER TO MANUFACTURERS DETAIL FOR CUT EDGE SEALANT APPLICATION.

8 MEMBRANE OUTSIDE CORNER DETAIL

SCALE: 1 1/2" = 1'-0"

NOTES:

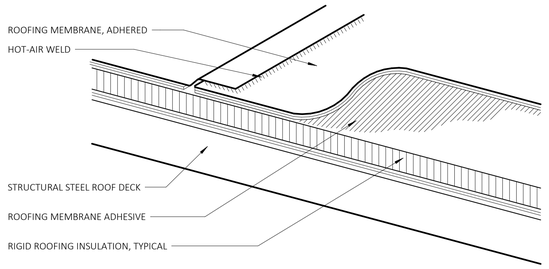
1. REFER TO MANUFACTURERS WEB SITE FOR MOST CURRENT INFORMATION.



WHEN REINFORCEMENT OF MEMBRANE IS EXPOSED, APPLY CUT EDGE TREATMENT TO ENTIRE EXPOSED EDGE.

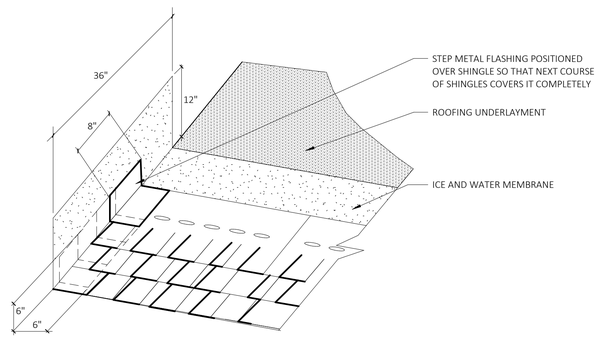
7 MEMBRANE SPLICE DETAIL-FASTENED

SCALE: 6" = 1'-0"



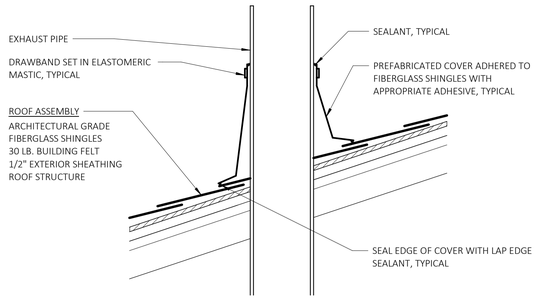
6 MEMBRANE SPLICE DETAIL

SCALE: 12" = 1'-0"



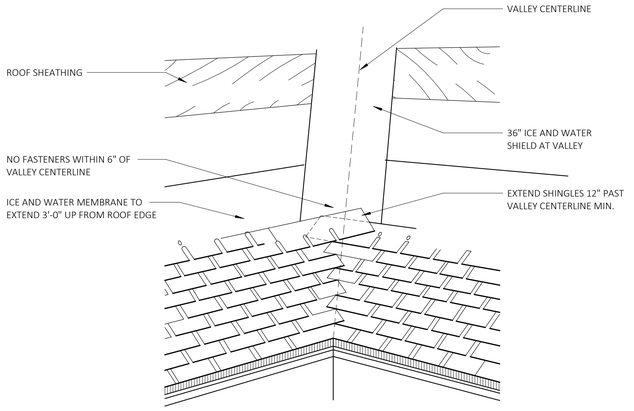
5 STEP FLASHING DETAIL

SCALE: 1" = 1'-0"



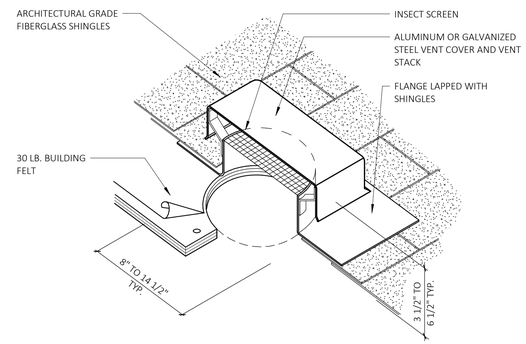
4 PIPE FLASHING DETAIL

SCALE: 1 1/2" = 1'-0"



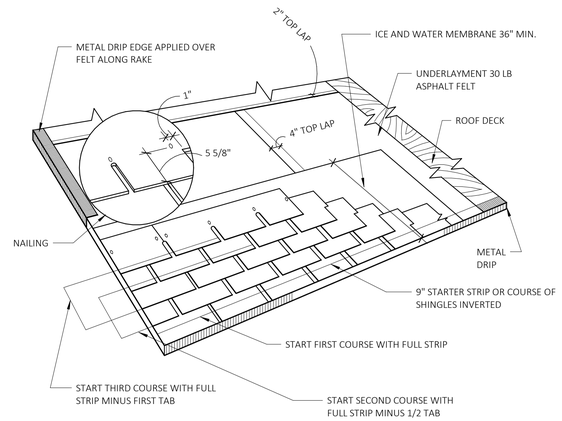
3 TYPICAL ROOF VALLEY DETAIL

SCALE: 1/2" = 1'-0"



2 EXHAUST VENT DETAIL

SCALE: 3" = 1'-0"



1 ROOF EAVE DETAIL

SCALE: 1/2" = 1'-0"

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TYPICAL ROOF DETAILS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR
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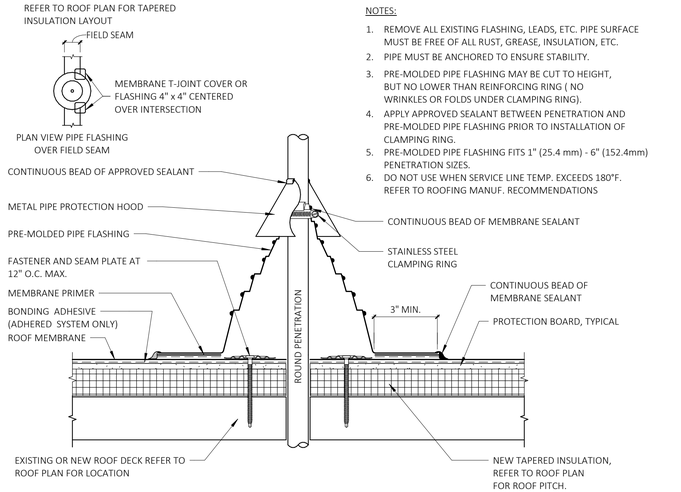
SHEET NO.

A2.2

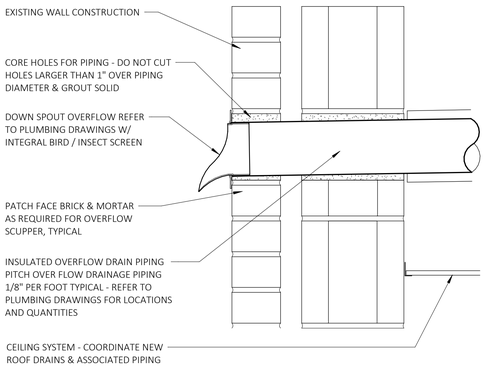


NOTES:

1. REMOVE ALL EXISTING FLASHING, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
2. PIPE MUST BE ANCHORED TO ENSURE STABILITY.
3. PRE-MOLDED PIPE FLASHING MAY BE CUT TO HEIGHT, BUT NO LOWER THAN REINFORCING RING (NO WRINKLES OR FOLDS UNDER CLAMPING RING).
4. APPLY APPROVED SEALANT BETWEEN PENETRATION AND PRE-MOLDED PIPE FLASHING PRIOR TO INSTALLATION OF CLAMPING RING.
5. PRE-MOLDED PIPE FLASHING FITS 1" (25.4 mm) - 6" (152.4mm) PENETRATION SIZES.
6. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F. REFER TO ROOFING MANUF. RECOMMENDATIONS

7 PIPE PENETRATION & VENT DETAIL

SCALE: 1 1/2" = 1'-0"

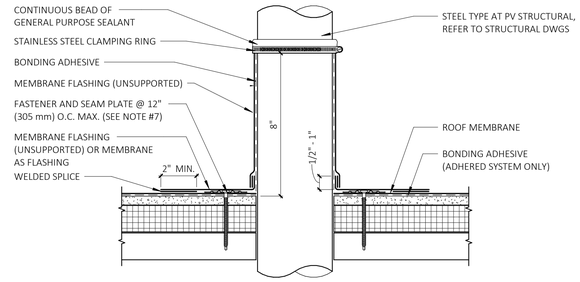


8 THRU WALL OVERFLOW SPOUT

SCALE: 1 1/2" = 1'-0"

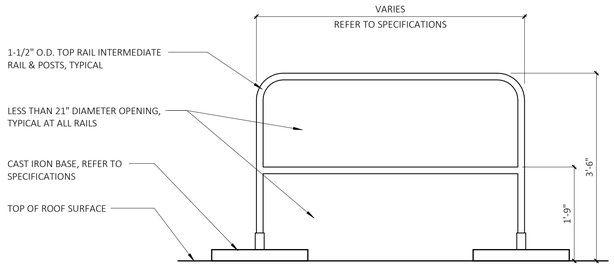
NOTES:

1. REFER TO ROOFING MANUFACTURER'S WEBSITE FOR THE MOST CURRENT INFORMATION.
2. REMOVE ALL EXISTING FLASHING, LEAD, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
3. PIPE MUST BE ANCHORED TO ENSURE STABILITY.
4. NO WRINKLES OR FOLDS UNDER CLAMPING RING.
5. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F.
6. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEMS
7. FASTENER AND SEAM PLATE REQUIRE FOR MAS ONLY.
8. WHEN REINFORCEMENT OF ROOF MEMBRANE IS EXPOSED, REFER TO DETAIL FOR CUT EDGE SEALANT APPLICATION.



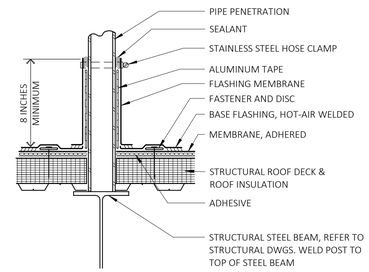
3 PIPE PENETRATION DETAIL

SCALE: 3" = 1'-0"



4 ROOF EQUIPMENT GUARDRAIL (BALLASTED)

SCALE: 3/4" = 1'-0"



2 GUARDRAIL POST DETAIL

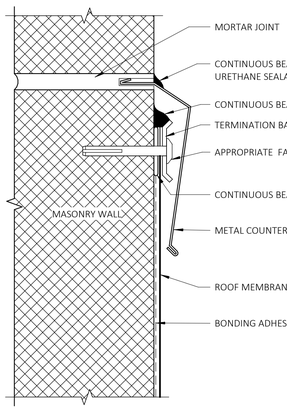
SCALE: 3" = 1'-0"

NOTES:

1. REFER TO ROOF MANUFACTURERS WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO ROOF MANUFACTURERS DETAIL FOR WELD WIDTH.
3. REFER TO ROOF MANUFACTURERS DETAIL FOR MEMBRANE SECUREMENT AT CORNERS.
4. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEMS.
5. WHEN REINFORCEMENT OF ROOF MEMBRANE IS EXPOSED, REFER TO ROOF MANUFACTURERS DETAIL FOR CUT EDGE SEALANT APPLICATION.
6. PROVIDE 6" WIDE 22GA. CONTINUOUS METAL STRAPPING BETWEEN STUDS.

6 BASE TIE IN DETAIL @ WALL

SCALE: 1 1/2" = 1'-0"

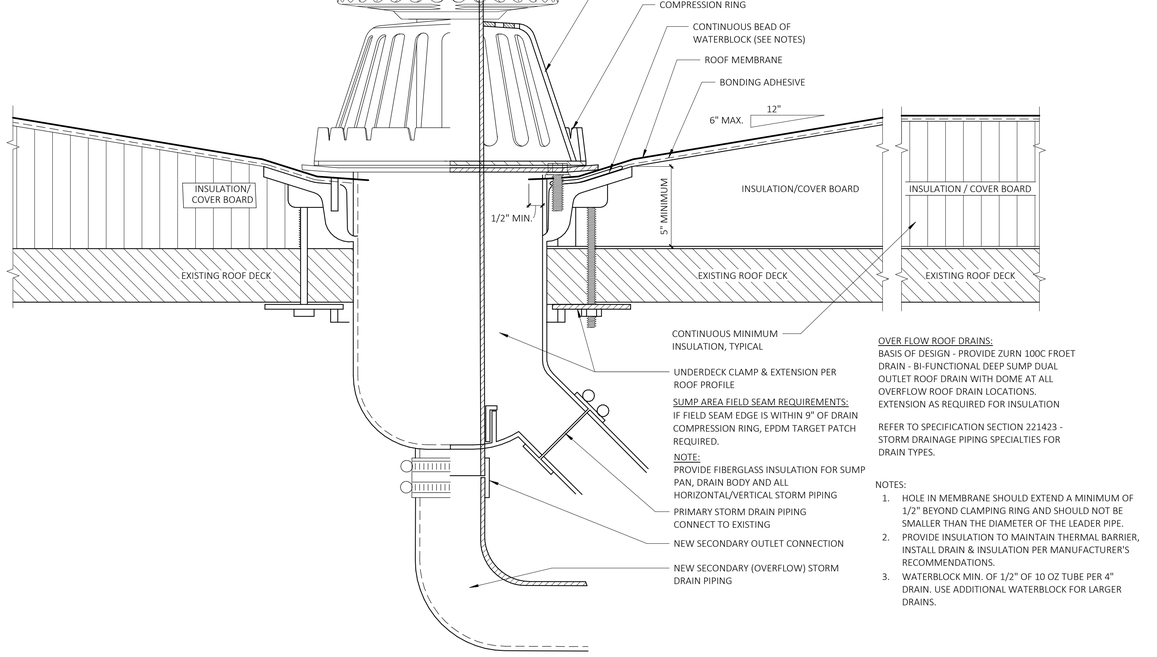


NOTES:

1. WATER BLOCK APPLIED AT THE RATE OF 10 LINEAR FEET PER TUBE.
2. METAL COUNTERFLASHING SHALL BE 24 GAUGE PRE-FINISHED STEEL OR .032" MIN. ALUMINUM FORMED WITH HEMMED LOWER EDGE.
3. INSTALL TERMINATION BAR WITH 1/4" (6.4 mm) GAP BETWEEN ADJOINING SECTIONS.
4. TERMINATION BAR MUST BE CUT AT INSIDE AND OUTSIDE CORNERS. DO NOT BEND AROUND CORNERS.
5. TERMINATION BAR MUST BE FASTENED WITHIN 1" MAX. OF ALL SECTION ENDS.

5 TERMINATION DETAIL @ MASONRY WALL

SCALE: NTS



NOTES:

1. HOLE IN MEMBRANE SHOULD EXTEND A MINIMUM OF 1/2" BEYOND CLAMPING RING AND SHOULD NOT BE SMALLER THAN THE DIAMETER OF THE LEADER PIPE.
2. PROVIDE INSULATION TO MAINTAIN THERMAL BARRIER, INSTALL DRAIN & INSULATION PER MANUFACTURER'S RECOMMENDATIONS.
3. WATERBLOCK MIN. OF 1/2" OF 10 OZ TUBE PER 4" DRAIN. USE ADDITIONAL WATERBLOCK FOR LARGER DRAINS.

1 SINGLE ROOF DRAIN W/ OVERFLOW

SCALE: 6" = 1'-0"

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

TYPICAL ROOF DETAILS

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	JNR
CHECKED:	DRD

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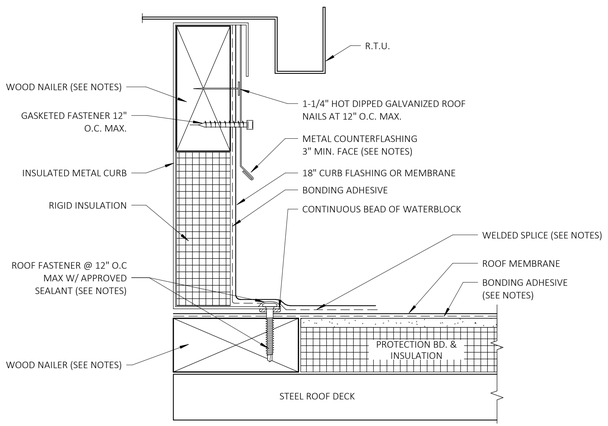
SHEET NO.

A2.3

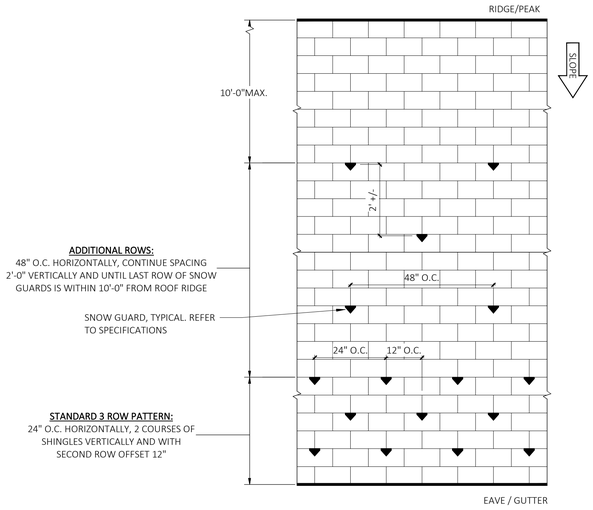


NOTES:

1. REFER TO ROOF MANUFACTURER FOR CURRENT INFORMATION.
2. REFER TO ROOF DETAILS FOR WELD WIDTH.
3. NAILING AND METAL COUNTERFLASHING ARE NOT REQUIRED IF MEMBRANE IS RUN UP AND OVER CURB WALLS PRIOR TO INSTALLATION OF R.T.U.
4. METAL COUNTERFLASHING SHALL BE 24 GAUGE PRE-FINISHED STEEL OR .032" MIN. ALUMINUM FORMED WITH HEMMED LOWER EDGE MOUNTED TIGHTLY TO UNDERSIDE OF MECHANICAL UNIT.
5. ROOFING FASTENER WITH SEALANT OVER FASTENER HEADS. SEALANT ALSO REQUIRED ALONG ENTIRE EDGE OF CURB FLANGE.
6. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.
7. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEMS.
8. WHEN REINFORCEMENT OF MEMBRANE IS EXPOSED, REFER TO ROOF MANUFACTURERS DETAIL FOR CUT EDGE SEALANT APPLICATION.
9. INSTALL METAL WORK IN ACCORDANCE WITH CURRENT SMACNA RECOMMENDATIONS.

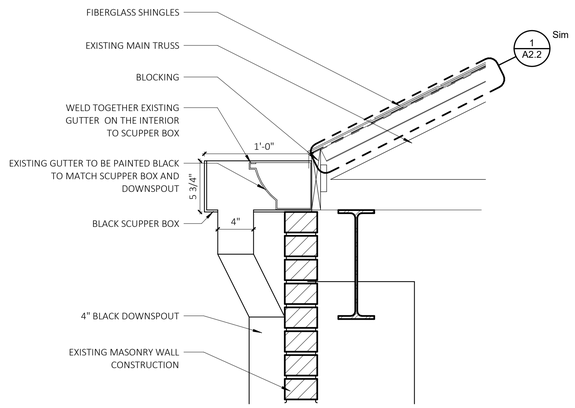
8 CURB FLASHING DETAIL

SCALE: 1 1/2" = 1'-0"



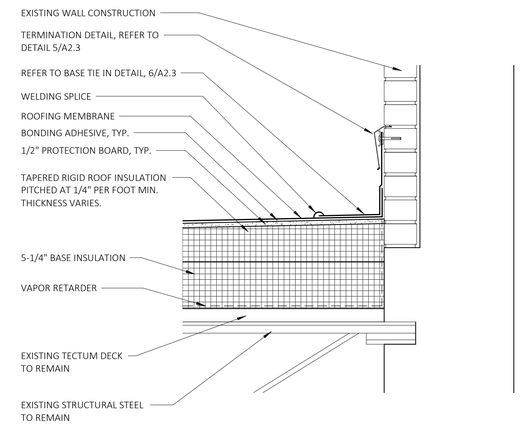
6 SHINGLE_ SNOW GUARD SPACING

SCALE: 1/2" = 1'-0"



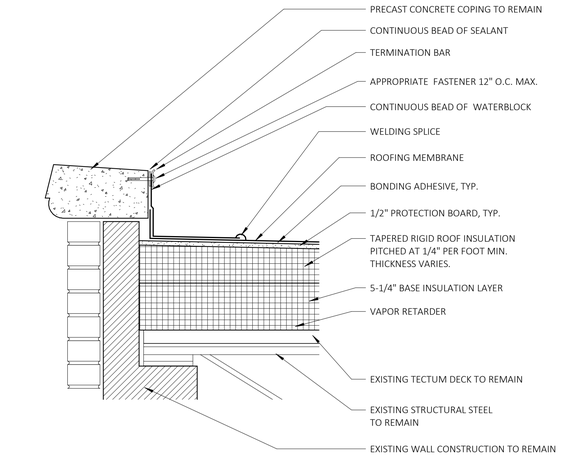
5 ROOF DETAIL

SCALE: 1 1/2" = 1'-0"



3 ROOF DETAIL

SCALE: 1 1/2" = 1'-0"

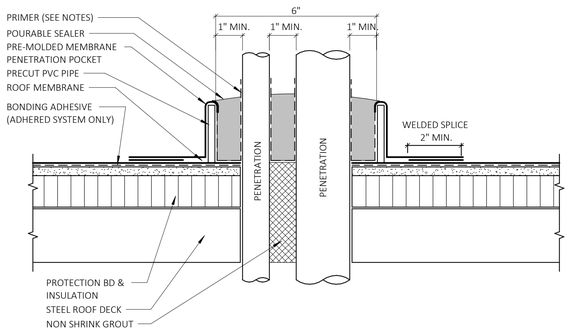


2 ROOF DETAIL

SCALE: 1 1/2" = 1'-0"

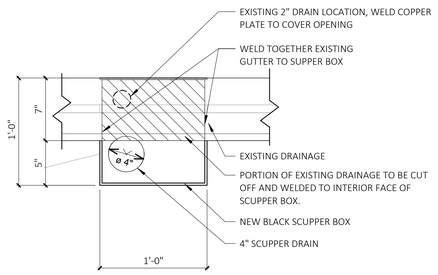
NOTES:

1. REFER TO ROOFING MANUFACTURER FOR CURRENT INFORMATION
2. REMOVE ALL EXISTING FLASHING, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE INSULATION, ETC
3. POURABLE SEALER MOUNDED TO SHED WATER MINIMUM DEPTH OF 2", REMAINDER OF POCKET MAY BE FILLED WITH A NON - SHRINKING GROUT.
4. DO NOT USE OVER EXISTING PENETRATION POCKETS
5. DO NOT USE WHEN SERVICE LINE TEMP EXCEEDS 180 D F.
6. IF FIELD MEMBRANE IS CUT FOR INSTALLATION, THE MEMBRANE MUST BE REPAIRED WITH ROOF MEMBRANE PRIOR TO INSTALLATION OF THE PENETRATION POCKET.
7. MEMBRANE MUST BE INSTALLED WITH 1/2" OF PENETRATION.
8. PRIMER REQUIRED ON PENETRATIONS AND MEMBRANE INSIDE OF PENETRATION POCKET.



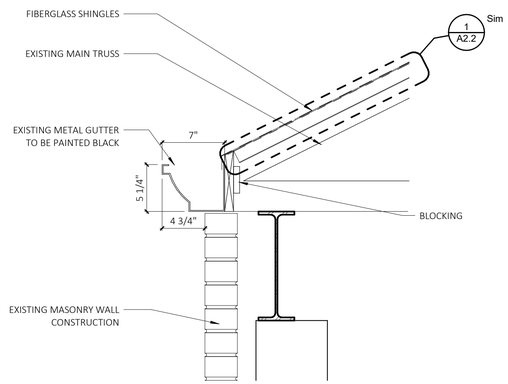
7 PITCH POCKET DETAIL

SCALE: 1 1/2" = 1'-0"



4 ROOF PLAN DETAIL AT GUTTER

SCALE: 1 1/2" = 1'-0"



1 EXISTING ROOF DETAIL

SCALE: 1 1/2" = 1'-0"

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ROOF DETAILS

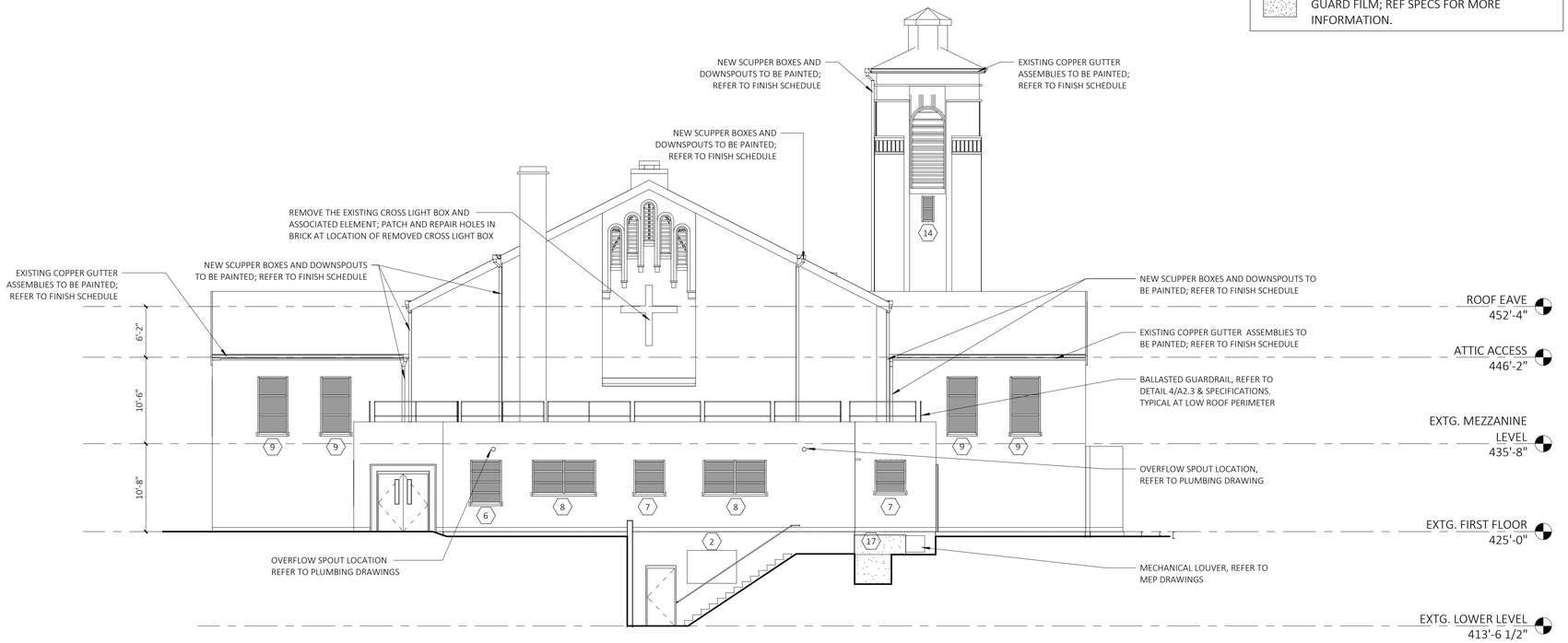
DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	JNR
CHECKED:	DRD

5/1/2026 4:08:02 PM

SHEET NO.

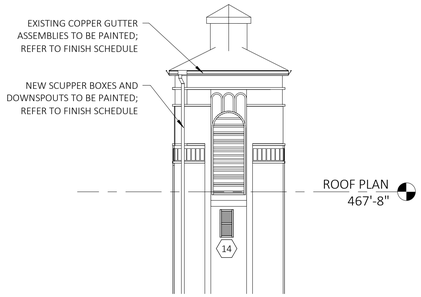
A2.4

INDICATES 1" INSULATED SECURITY SCHOOL GUARD FILM; REF SPECS FOR MORE INFORMATION.



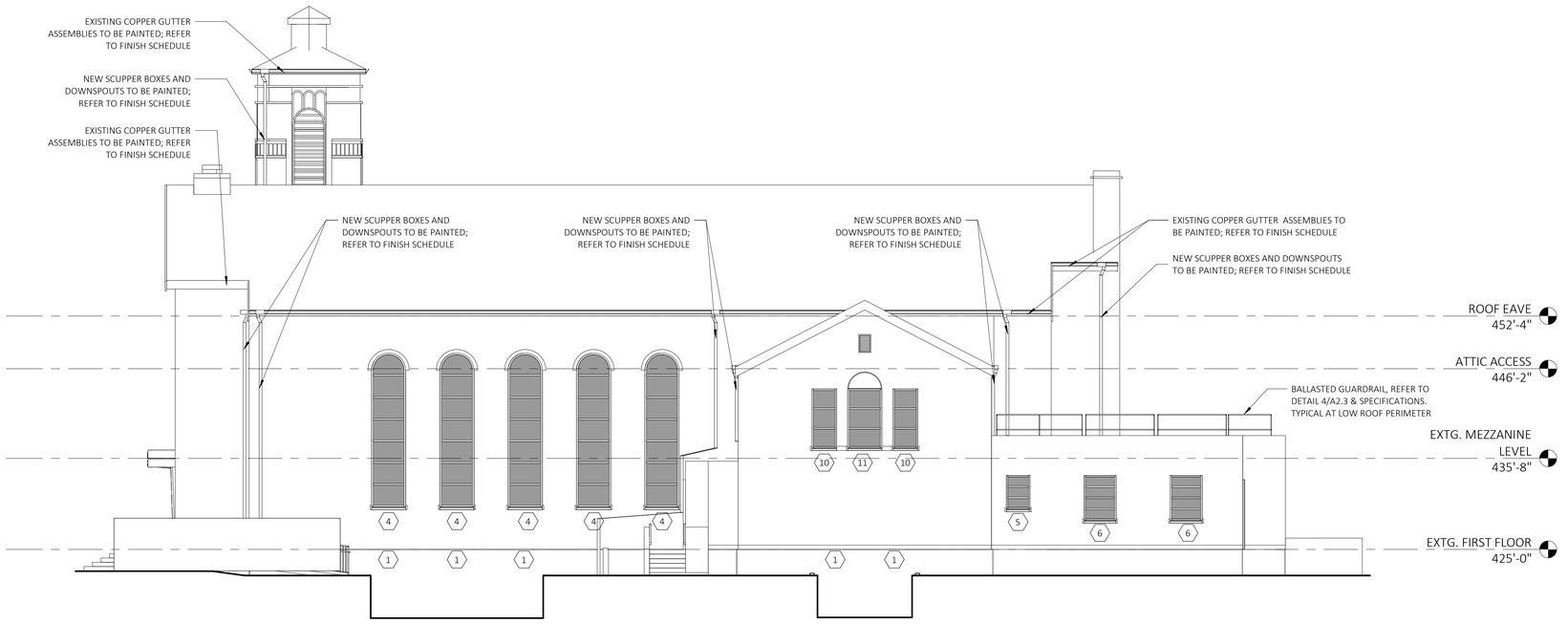
2 SOUTH ELEVATION

SCALE: 1/8" = 1'-0"



3 PARTIAL WEST ELEVATION

SCALE: 1/8" = 1'-0"



1 WEST ELEVATION

SCALE: 1/8" = 1'-0"

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RFP NO. 8801

REVISIONS		
NO.	DATE	DESCRIPTION

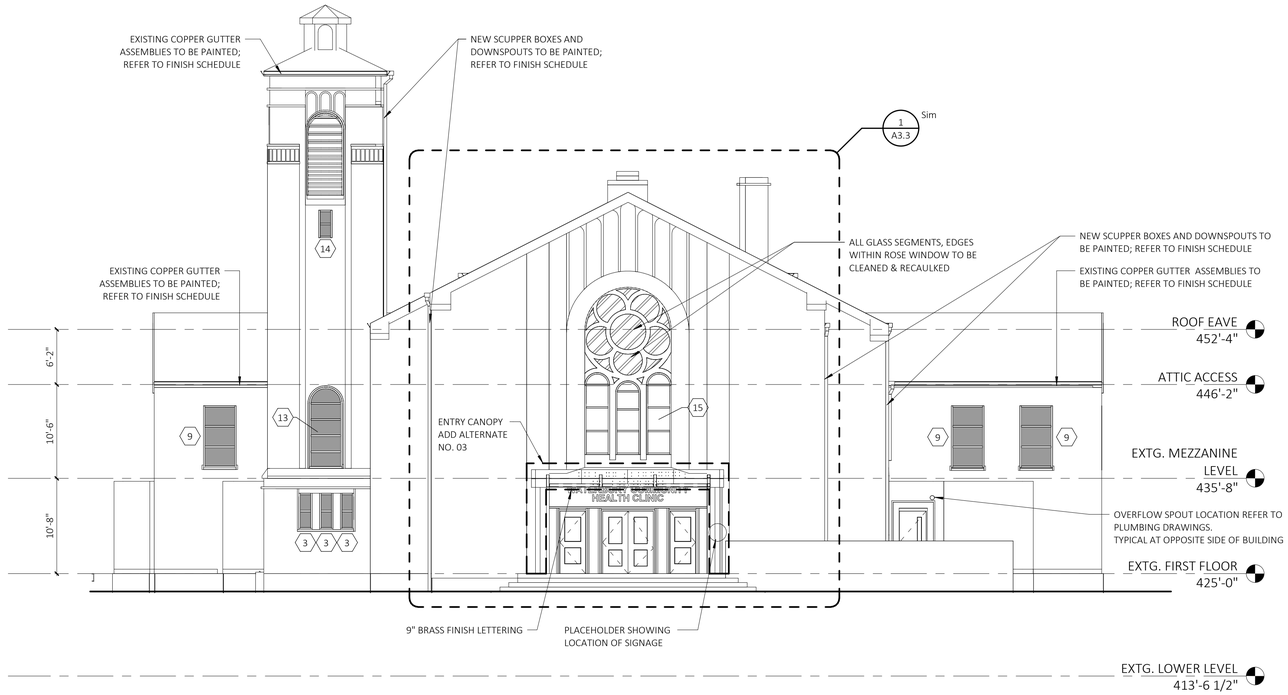
CONTRACT DOCUMENTS

BUILDING ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR
CHECKED: DRD
5/1/2026 4:08:05 PM

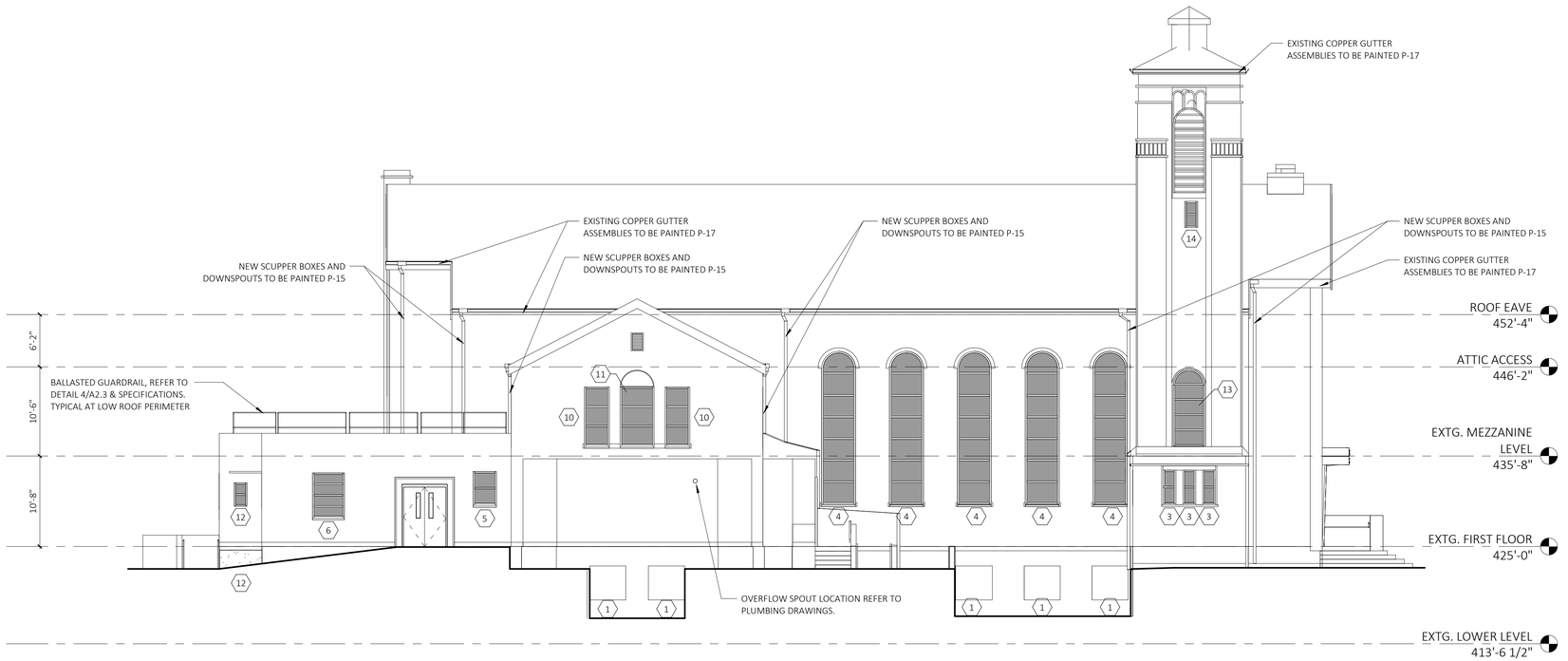
SHEET NO.
A3.1

INDICATES 1" INSULATED SECURITY SCHOOL GUARD FILM; REF SPECS FOR MORE INFORMATION.



2 NORTH ELEVATION

SCALE: 1/8" = 1'-0"



1 EAST ELEVATION

SCALE: 1/8" = 1'-0"

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

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BUILDING ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR
CHECKED: DRD
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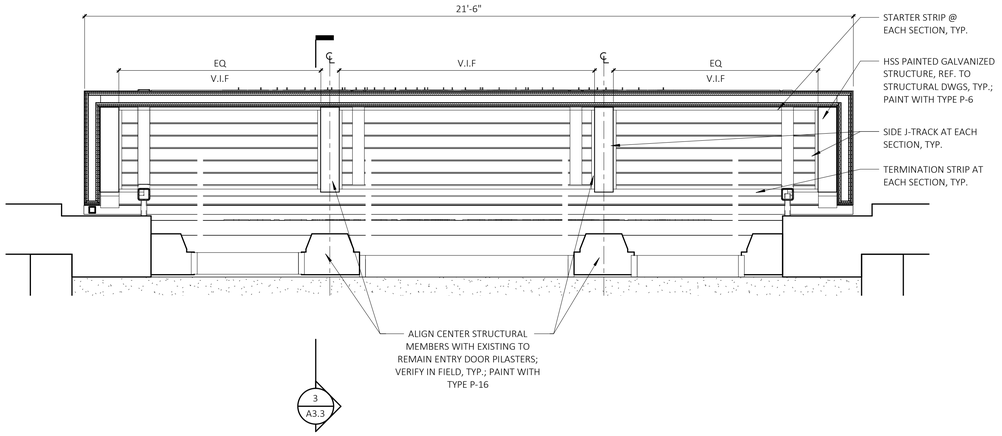
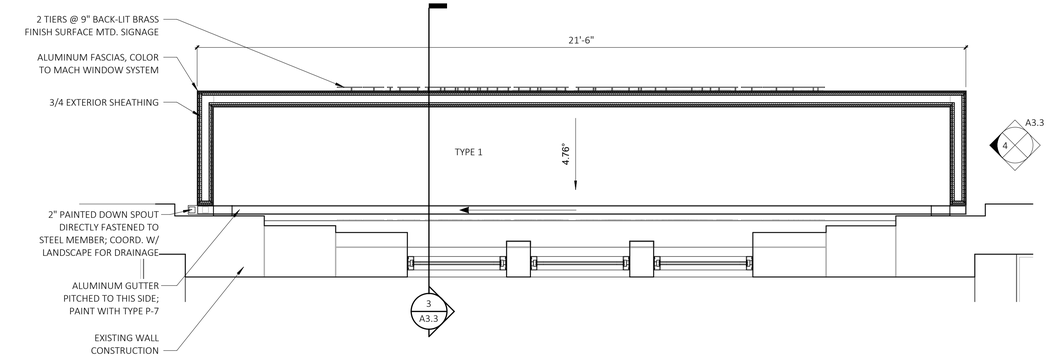
SHEET NO.

A3.2



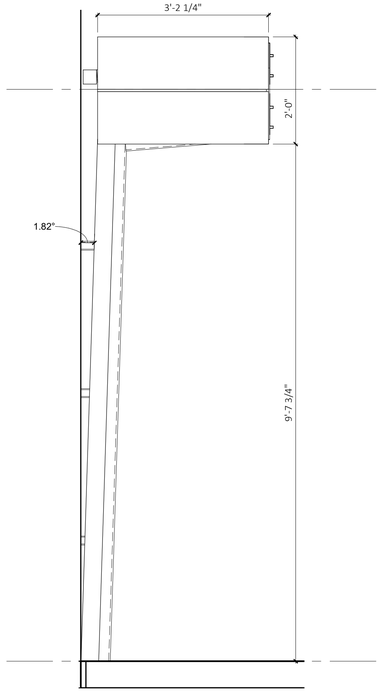
5 SIGNAGE RC PLAN

SCALE: 1/2" = 1'-0"



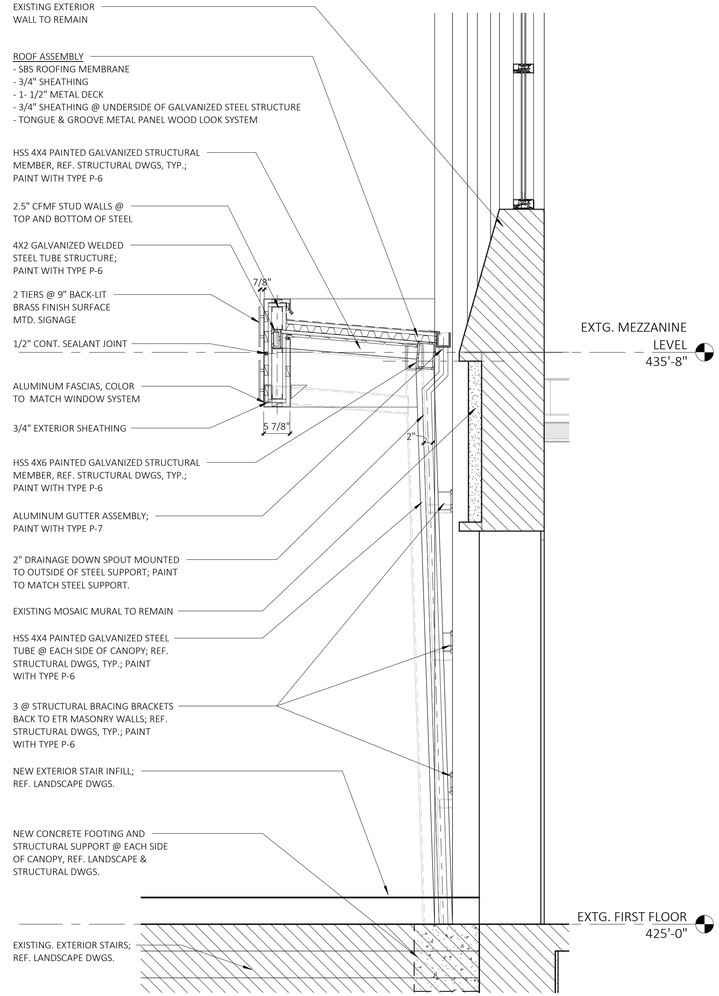
2 CANOPY ROOF PLAN

SCALE: 1/2" = 1'-0"



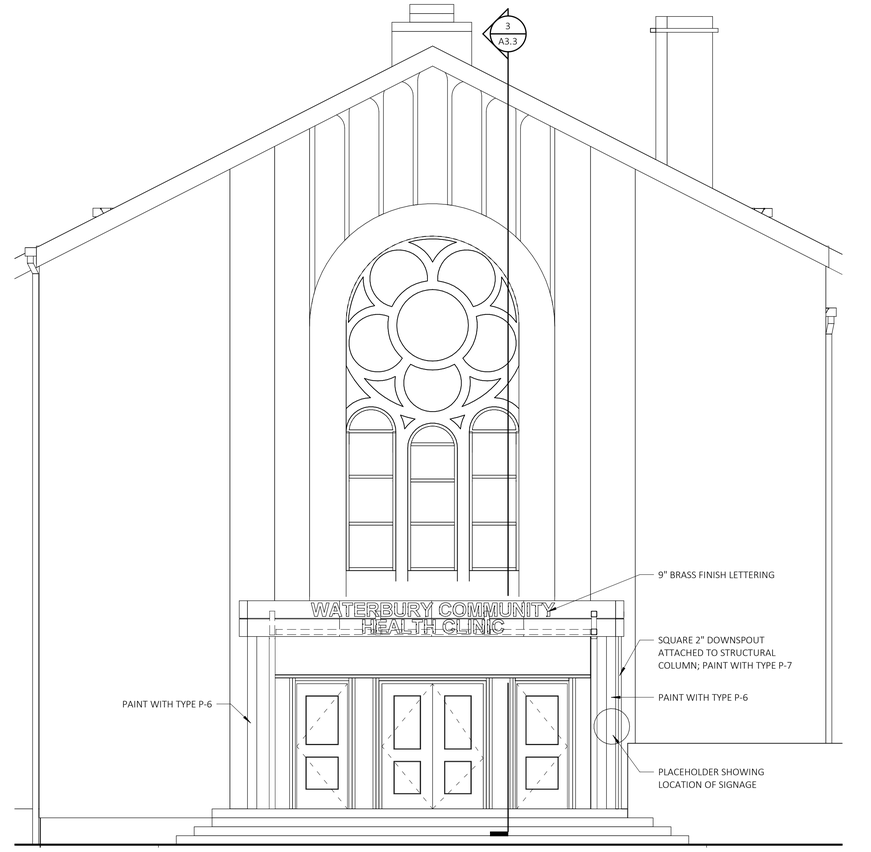
4 ENTRY SIGNAGE ELEVATION

SCALE: 3/4" = 1'-0"



3 SECTION - COLUMN LINE

SCALE: 3/4" = 1'-0"



1 NORTH ELEVATION

SCALE: 1/4" = 1'-0"

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT
DOCUMENTS

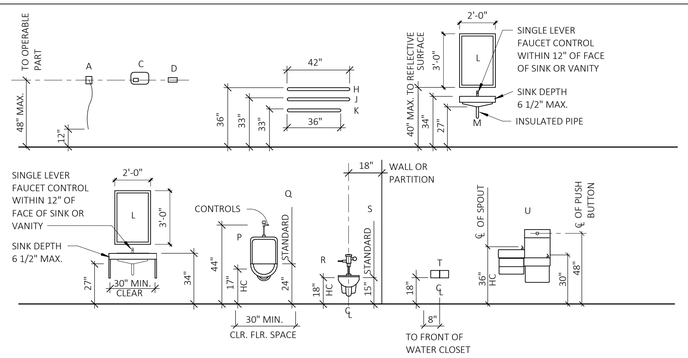
ENTRY CANOPY ADD
ALT. NO. 03

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:10 PM

SHEET NO.
A3.3

FIXTURE MOUNTING HEIGHT SCHEDULES

NOT TO SCALE

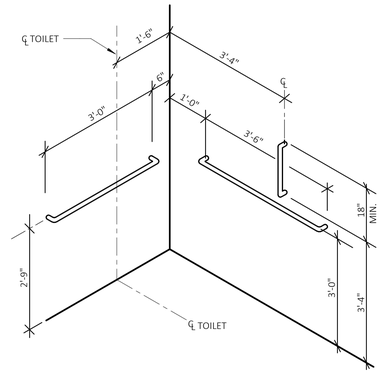


A. CALL FOR AID
C. ELECTRIC HAND DRYER
D. SOAP DISPENSER
J. GRAB BAR
K. GRAB BAR
L. MIRROR

M. SINK
P. URINAL (ACCESSIBLE HEIGHT)
Q. URINAL (STANDARD HEIGHT)
R. WATER CLOSET (ACCESSIBLE HEIGHT)
S. WATER CLOSET (STANDARD HEIGHT)
T. TOILET PAPER DISPENSER
U. DRINKING FOUNTAIN COMBINATION UNIT

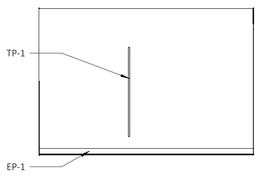
CC. DIAPER CHANGING STATION

HH. SANITARY NAPKIN DISPOSAL
LL. VERTICAL GRAB BAR
SS. SHELF WITH MOP AND BROOM HOLDER



ISOMETRIC

GRAB BAR MOUNTING DETAIL



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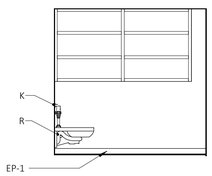

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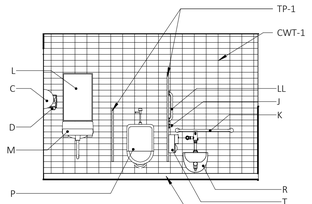

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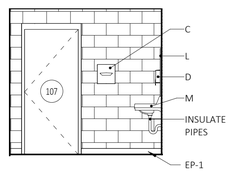

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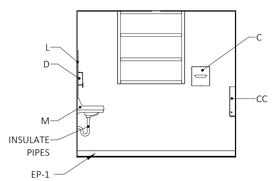

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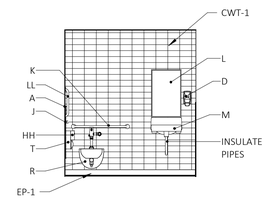

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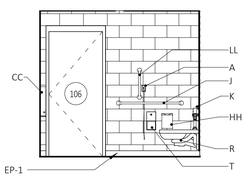

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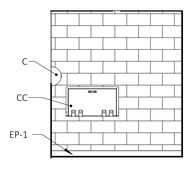

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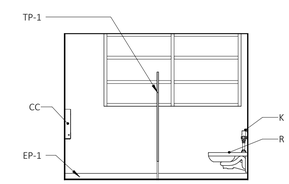

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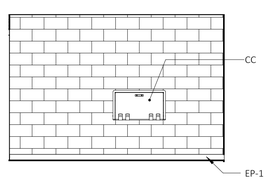

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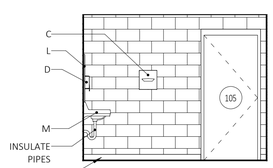

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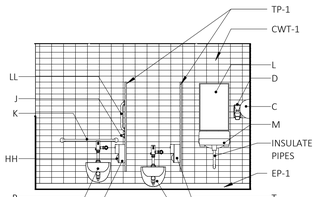

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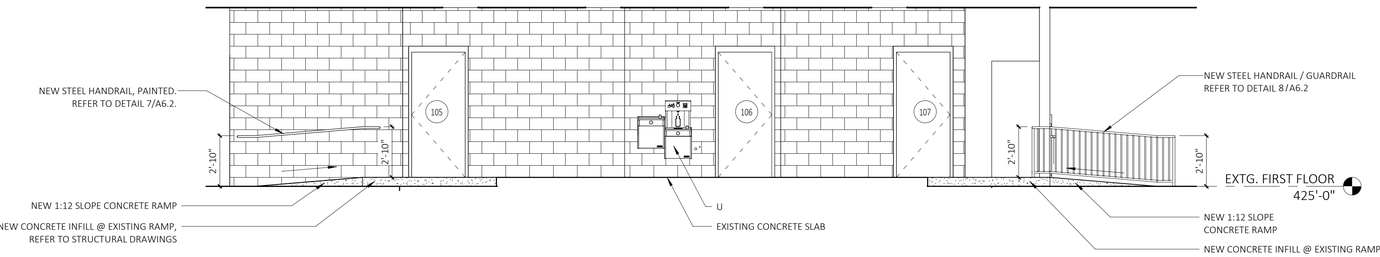
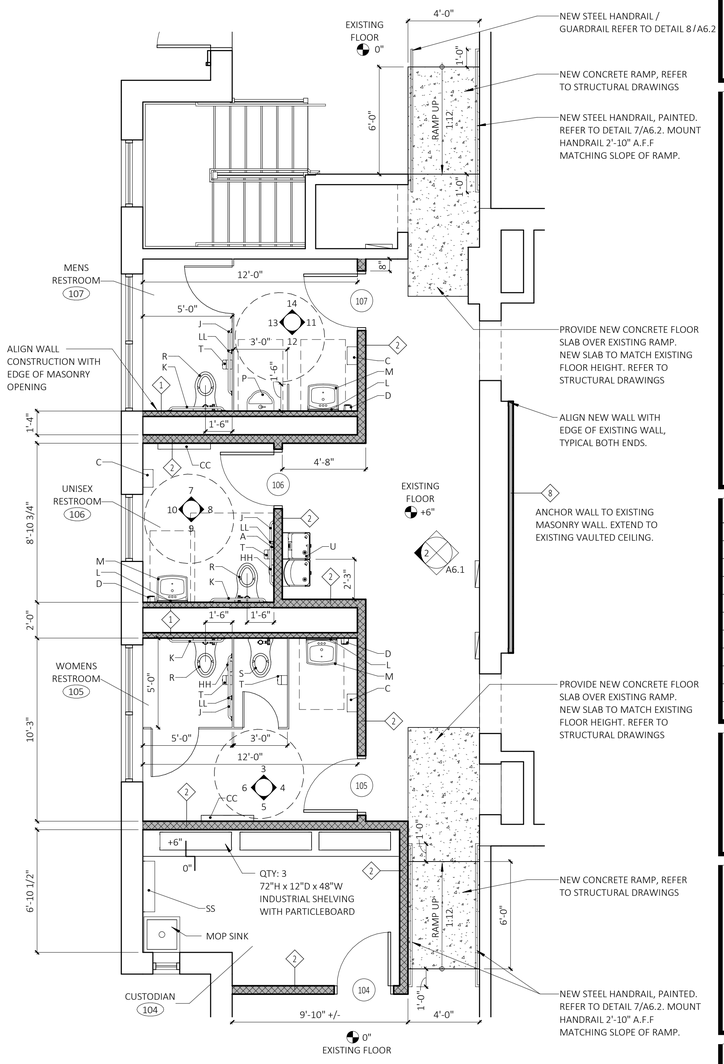


2 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0"



1 LARGE SCALE RESTROOMS

SCALE: 1/4" = 1'-0"

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WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

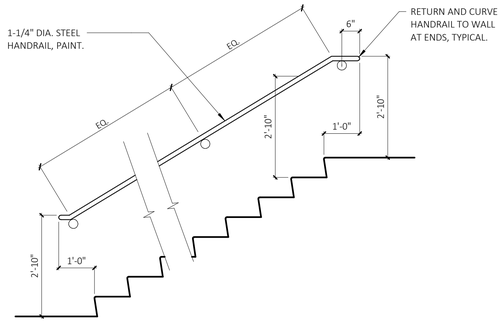
CONTRACT DOCUMENTS

LARGE SCALE TOILET INTERIOR ELEVATIONS & PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:14 PM

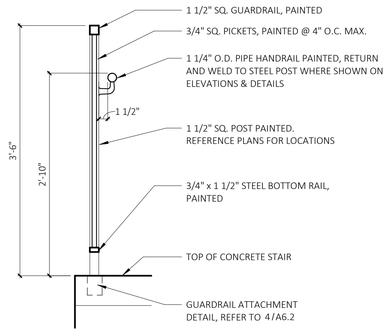
SHEET NO.

A6.1



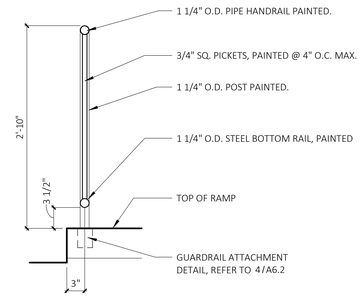
6 TYPICAL WALL HANDRAIL DETAIL

SCALE: 1/2" = 1'-0"



3 GUARDRAIL / HANDRAIL SECTION

SCALE: 1" = 1'-0"



8 GUARDRAIL / HANDRAIL SECTION

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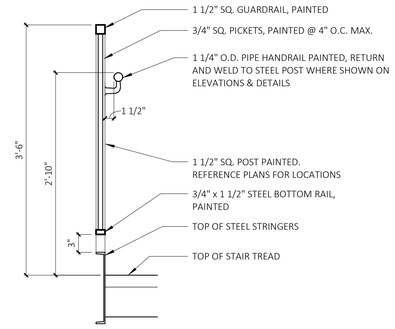

5 GUARDRAIL / HANDRAIL SECTION

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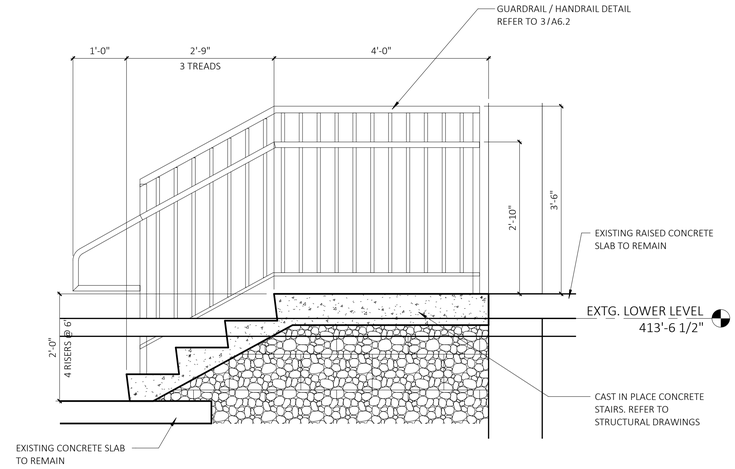
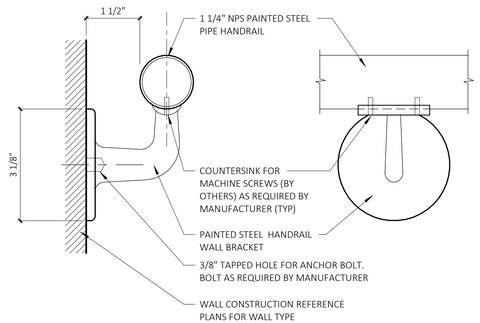


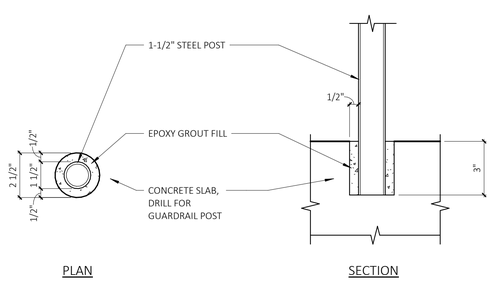
2 STAIR SECTION

SCALE: 3/4" = 1'-0"



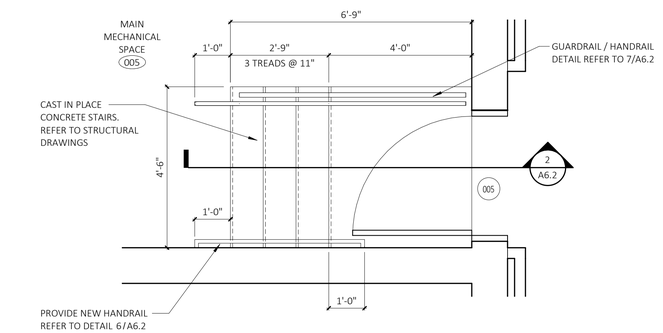
7 HANDRAIL BRACKET DETAIL

SCALE: 6" = 1'-0"



4 POST ATTACHMENT TO SLAB DETAIL

SCALE: 3" = 1'-0"



1 BOILER ROOM STAIR

SCALE: 1/2" = 1'-0"

FRIAR
architecture
interior design
master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY
HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

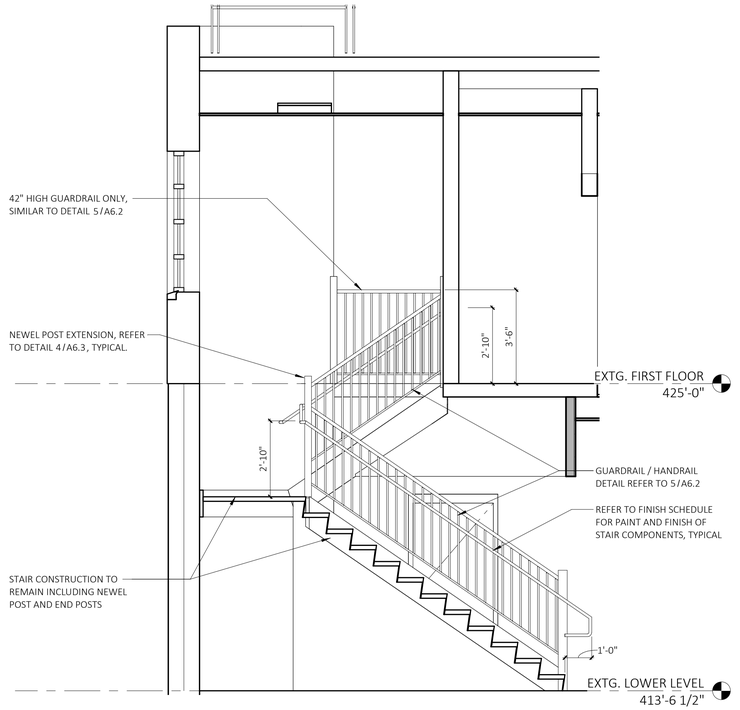
CONTRACT DOCUMENTS

LARGE SCALE BOILER ROOM STAIR, DETAILS & SECTION

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR
CHECKED: DRD
5/1/2026 4:08:15 PM

SHEET NO.

A6.2



3 SOUTH STAIR SECTION

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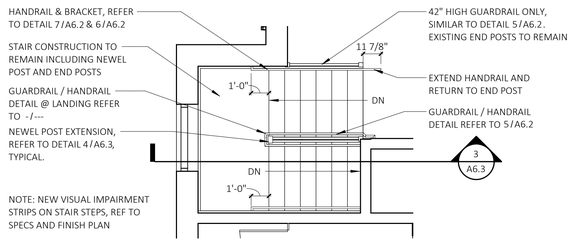
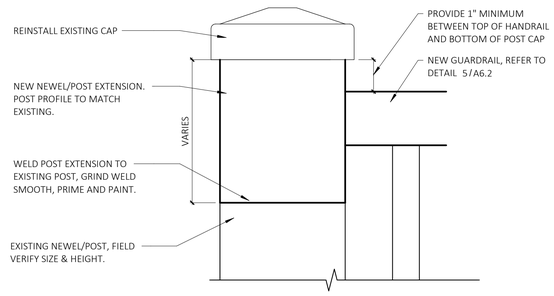


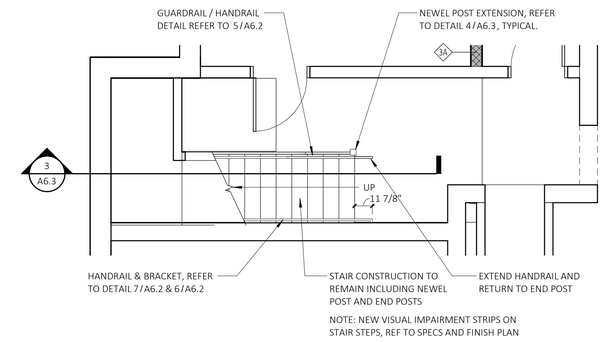
LARGE SCALE SOUTH STAIR FIRST FLOOR

2 SCALE: 1/4" = 1'-0"



NEWEL POST EXTENSION DETAIL

4 SCALE: 6" = 1'-0"



LARGE SCALE SOUTH STAIR LOWER LEVEL

1 SCALE: 1/4" = 1'-0"

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interior design
master planning
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Farmington, CT 06032
friar.com
860.678.1291

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CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

LARGE SCALE SOUTH STAIR, DETAILS & SECTION

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR
CHECKED: DRD
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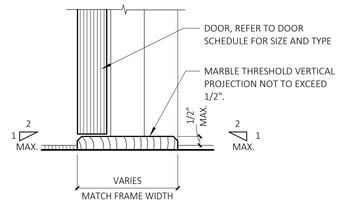
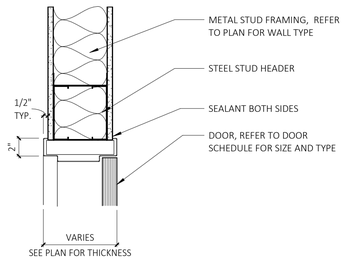


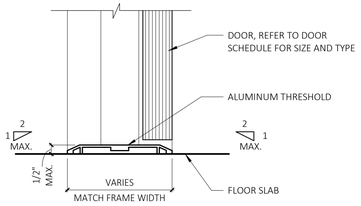
10 THRESHOLD-MARBLE

SCALE: 3" = 1'-0"



6 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



9 THRESHOLD-ALUMINUM

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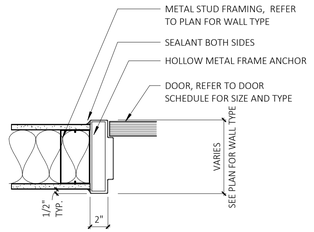
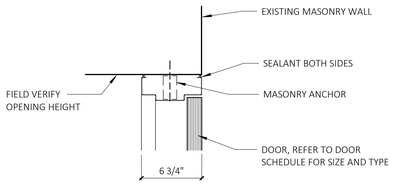


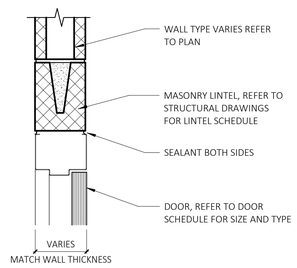
5 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



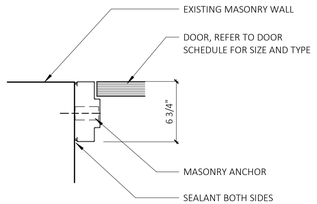
8 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



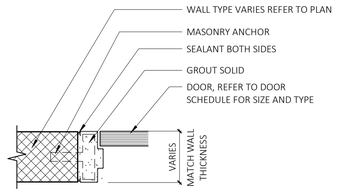
4 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



7 JAMB DETAIL

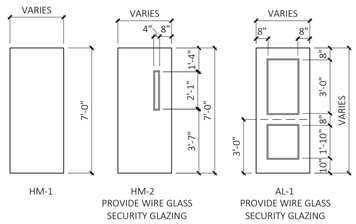
SCALE: 1 1/2" = 1'-0"



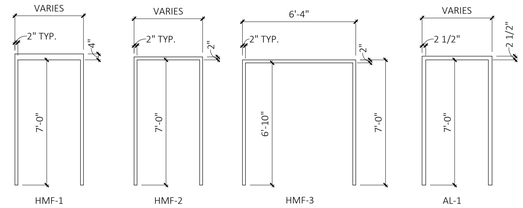
3 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"

DOOR TYPES



FRAME TYPES



GLAZING NOTES:

- SAFETY GLAZING SHALL BE PROVIDED IN HAZARDOUS LOCATIONS AND LABELED AS REQUIRED PER IBC SECTION 2406.
- ALL FIRE RATED DOORS, SIDELIGHTS AND BORROWED LIGHTS TO CONTAIN FIRE RATED / IMPACT SAFETY RATED CERAMIC COATED GLAZING REFER TO SPECIFICATION.
- ALL EXTERIOR DOORS / FRAMES TO CONTAIN INSULATING TEMPERED GLAZING TYP.
- ALL INTERIOR NON-RATED DOORS / FRAMES / SIDE LIGHTS AND BORROWED LIGHTS TO CONTAIN TEMPERED GLASS AS SPECIFIED TYP.

DOOR SCHEDULE

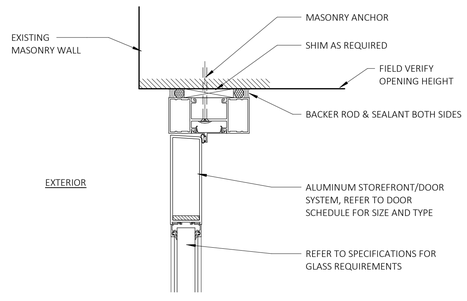
OPENING NUMBER	DOOR: SINGLE DOOR	DOOR: DOUBLE DOOR	DOOR: WIDTH	DOOR: HEIGHT	DOOR: THICKNESS	DOOR: DOOR MATERIAL	FRAME: SEE DWG: FRAME MATERIAL	FRAME: SEE DETAILS ON DWG: HEAD DETAIL	FRAME: SEE DETAILS ON DWG: JAMB DETAIL	FRAME: SEE DETAILS ON DWG: THRESHOLD DETAIL	SOUND DOOR & GASKETING	ACCESS CONTROLLED OPERATION	U.L. RATING (IN MINUTES)	GASKETS AND SMOKE SEALS	HARDWARE - SEE SPECIFICATIONS: FIRE CODE: PANIC RELEASE HARDWARE	FIRE CODE: POSITIVE LATCHING	FIRE CODE: AUTOMATIC CLOSING	FIRE CODE: ELECT. MAG. DOOR RELEASE	DISABLED REQUIREMENTS: PUSH/PULL	DISABLED REQUIREMENTS: U HANDLE / LEVER HANDLE	DISABLED REQUIREMENTS: MOP, KICK & ARMOR PLATES	DISABLED REQUIREMENTS: TACTILE WARNING	ACCESSIBLE THRESHOLD	ELECTRICAL / SECURITY	HARDWARE SET NUMBER	
002	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-2	8/A8.1	7/A8.1	9/A8.1					●	●	●			●	●	●	●	●	5	INSULATED HM DOOR
002A	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-2	8/A8.1	7/A8.1	9/A8.1					●	●	●			●	●	●	●	●	5	INSULATED HM DOOR
005	●		3'-4"	7'-0"	1 3/4"	HM-1	HMF-2	8/A8.1	7/A8.1				1 HR			●	●			●	●	●			9	
005A	●		3'-4"	7'-0"	1 3/4"	HM-1	HMF-2	8/A8.1	7/A8.1	9/A8.1					●	●	●			●	●	●	●	●	5	INSULATED HM DOOR
007	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-2	8/A8.1	7/A8.1						●		●			●	●	●			7	
008	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-2	8/A8.1	7/A8.1						●		●			●	●	●			8	
100		●	5'-8"	7'-0"	2"	AL-1	AL-1	2/A8.1	1/A8.1	9/A8.1					●		●			●	●		●	●	1	
100A	●		2'-10"	7'-0"	2"	AL-1	AL-1	2/A8.1	1/A8.1	9/A8.1					●		●			●	●		●	●	3	
100B	●		2'-10"	7'-0"	2"	AL-1	AL-1	2/A8.1	1/A8.1	9/A8.1					●		●			●	●		●	●	3	
100C	●		2'-10"	7'-2"	1 3/4"	AL-1	AL-1	2/A8.1	1/A8.1						●	●	●			●	●	●		●	6	
100D	●		2'-10"	7'-2"	1 3/4"	AL-1	AL-1	2/A8.1	1/A8.1						●	●	●			●	●	●		●	6	
101		●	6'-0"	7'-0"	1 3/4"	AL-1	AL-1	6/A8.1	5/A8.1						●		●		●						2	
101A	●		3'-0"	7'-0"	1 3/4"	HM-2	HMF-2	8/A8.1	7/A8.1	9/A8.1					●		●			●	●			●	5	INSULATED HM DOOR
101B	●		3'-0"	7'-0"	1 3/4"	HM-2	HMF-2	8/A8.1	7/A8.1	9/A8.1					●		●			●	●			●	5	INSULATED HM DOOR
101C		●	5'-0"	7'-0"	1 3/4"	HM-2	HMF-3	8/A8.1	7/A8.1	9/A8.1					●		●			●	●		●	●	4	INSULATED HM DOORS
101E		●	6'-0"	7'-0"	1 3/4"	HM-2	HMF-3	7/A8.1	6/A8.1	9/A8.1					●		●			●	●		●	●	4	INSULATED HM DOORS
104	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-1	4/A8.1	3/A8.1							●				●					12	
105	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-1	4/A8.1	3/A8.1											●					11	
106	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-1	4/A8.1	3/A8.1							●				●					10	
107	●		3'-0"	7'-0"	1 3/4"	HM-1	HMF-1	4/A8.1	3/A8.1											●					11	
109		●	5'-0"	7'-0"	1 3/4"	HM-1	HMF-3	6/A8.1	5/A8.1							●				●		●			12	
200A	●		2'-8"	7'-2"	1 3/4"	AL-1	AL-1	2/A8.1	1/A8.1							●	●			●	●				6	
200B	●		2'-0"	7'-2"	1 3/4"	AL-1	AL-1	2/A8.1	1/A8.1							●	●			●	●				6	
200C	●		2'-8"	7'-2"	1 3/4"	AL-1	AL-1	2/A8.1	1/A8.1							●	●			●	●				6	

* NEW WORK

AR ACOUSTIC RATED

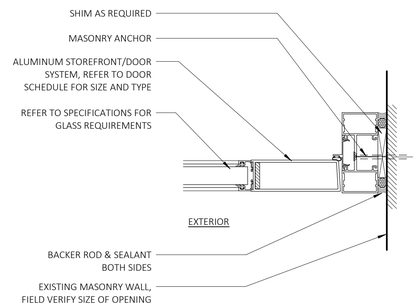
SCD SOUND CONTROL DOOR

SG SMOKE GASKETED



2 HEAD DETAIL

SCALE: 3" = 1'-0"



1 JAMB DETAIL

SCALE: 3" = 1'-0"

architecture
interior design
master planning
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Farmington, CT 06032
friar.com
860.678.1291

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DOOR ELEVATIONS, DOOR DETAILS & DOOR SCHEDULE

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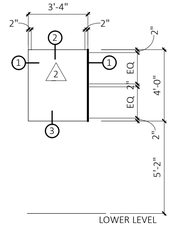
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:18 PM

SHEET NO.

A8.1



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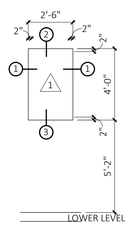

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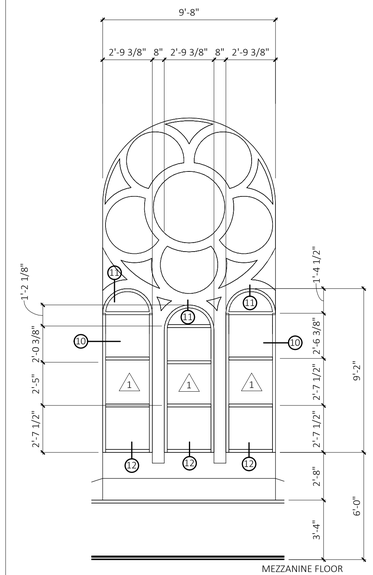

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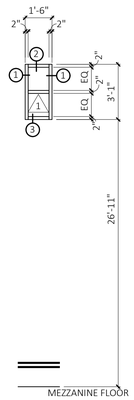

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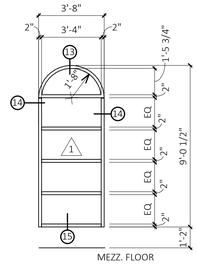

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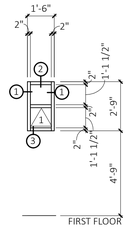

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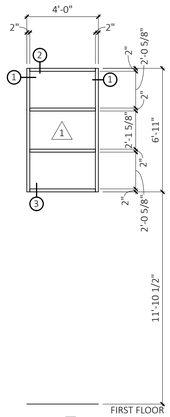

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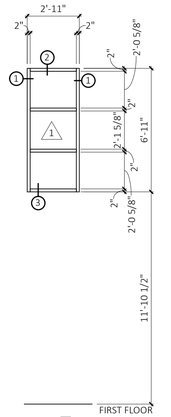

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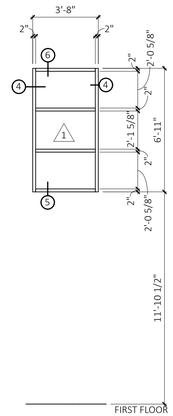

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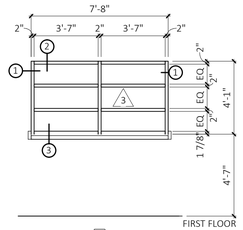

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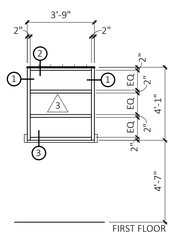

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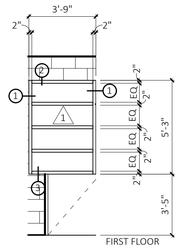

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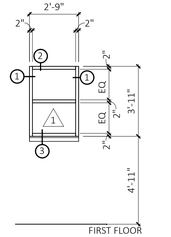

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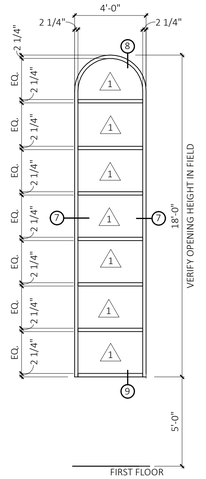

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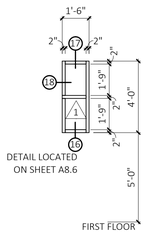

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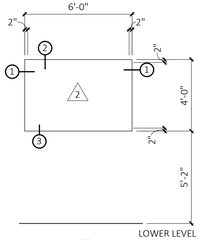

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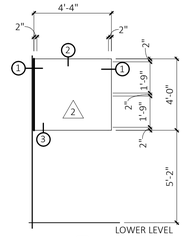

1

WINDOW TYPE SCHEDULE

Description	WINDOW ELEVATION	FRAME	HEAD	JAMB	SILL	GLASS TYPE
Window	1	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#2
Window	2	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#2
Window	3	TYPE 3	16/A8.5	17/A8.5	18/A8.5	#9
Window	3	TYPE 1	3/A8.6	4/A8.6	2/A8.6	#1
Window	4	TYPE 2	8/A8.5	7/A8.5	9/A8.5	#1
Window	5	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	6	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	7	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	8	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	9	TYPE 1	6/A8.5	4/A8.5	5/A8.5	#1
Window	10	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	11	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	12	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	13	TYPE 1	13/A8.5	14/A8.5	15/A8.5	#1
Window	13	TYPE 3	19/A8.5	20/A8.5	1/A8.6	#9
Window	14	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#1
Window	15	TYPE 1	11/A8.5	10/A8.5	12/A8.5	#1
Window	16	TYPE 1	2/A8.5	1/A8.5	3/A8.4	#8
Window	17	TYPE 1	2/A8.5	1/A8.5	3/A8.5	#2

GLASS TYPE SCHEDULE

7

TYPE 1	1" INSULATED
TYPE 2	1" INSULATED SECURITY SCHOOL GUARD FILM
TYPE 3	1" INSULATED, FROSTED
	INDICATES 1" INSULATED SECURITY SCHOOL GUARD FILM; REF SPECS FOR MORE INFORMATION.

FRAME TYPE SCHEDULE

TYPE 1	2" X 4-1/2" STOREFRONT
TYPE 2	2- 1/4" X 6" CURTAIN WALL
TYPE 3	2- 1/4" X 5-1/4" STOREFRONT

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WATERBURY COMMUNITY
HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

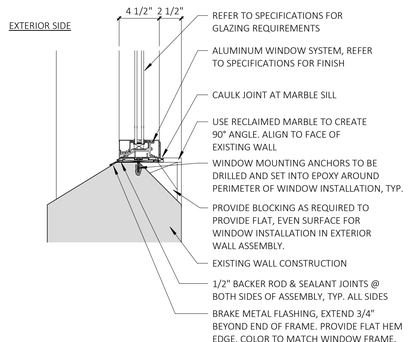
CONTRACT
DOCUMENTS

EXTERIOR WINDOW ELEVATIONS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: JNR, MDC
CHECKED: DRD
5/1/2026 4:08:22 PM

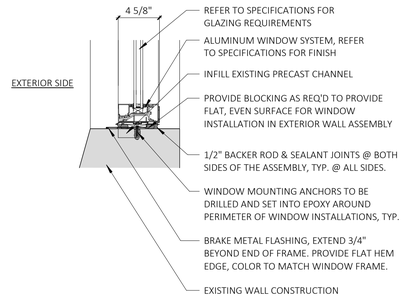
SHEET NO.

A8.2



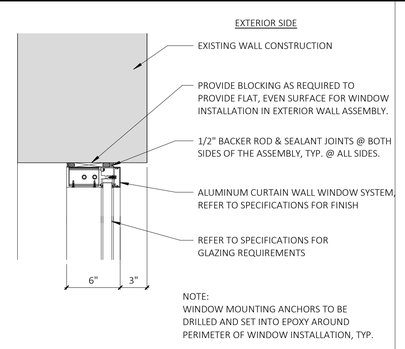
16 SILL DETAIL

SCALE: 1 1/2" = 1'-0"



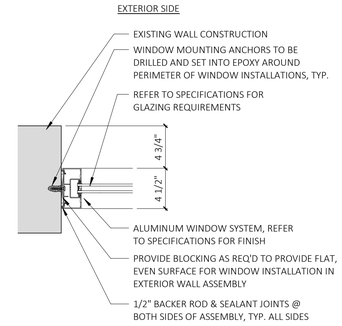
12 SILL DETAIL @ ROSE WINDOW

SCALE: 1 1/2" = 1'-0"



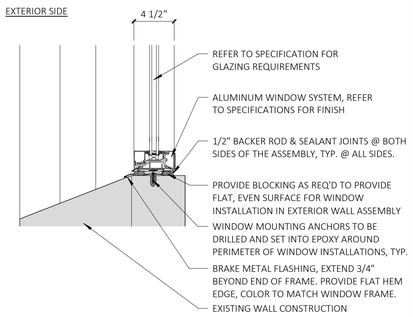
8 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



4 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



15 SILL DETAIL

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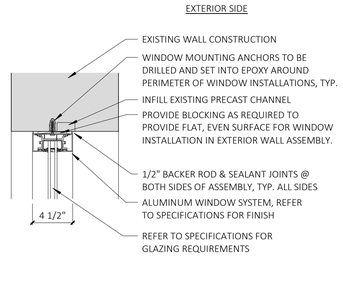
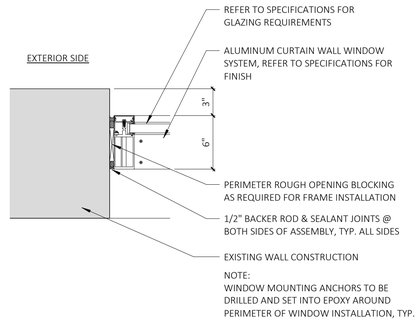


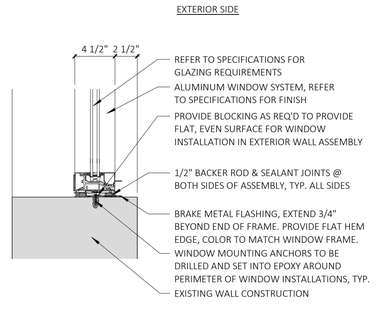
11 HEAD DETAIL @ ROSE WINDOW

SCALE: 1 1/2" = 1'-0"



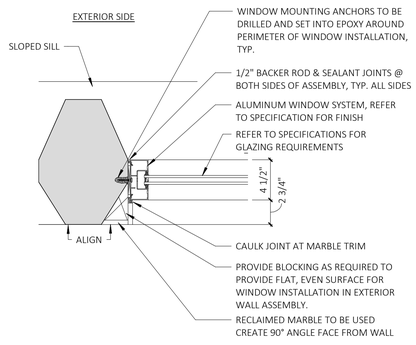
7 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



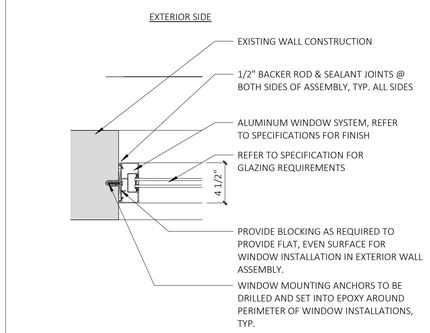
3 SILL DETAIL

SCALE: 1 1/2" = 1'-0"



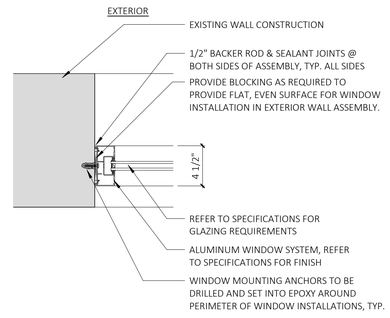
18 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



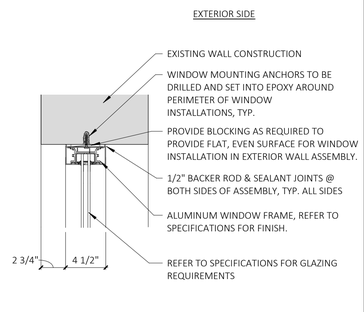
14 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



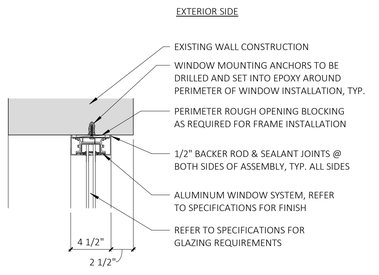
10 JAMB DETAIL @ ROSE WINDOW

SCALE: 1 1/2" = 1'-0"



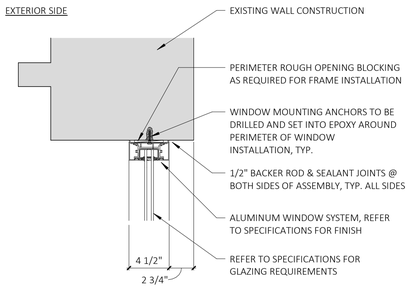
6 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



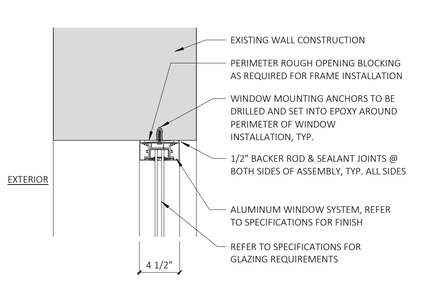
2 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



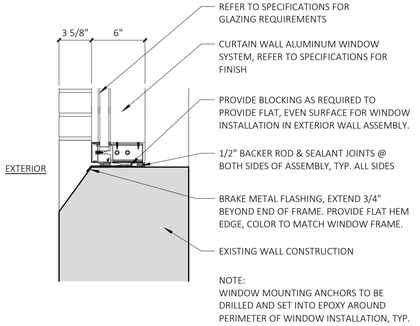
17 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



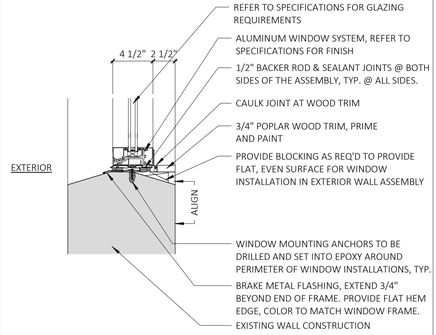
13 HEAD DETAIL

SCALE: 1 1/2" = 1'-0"



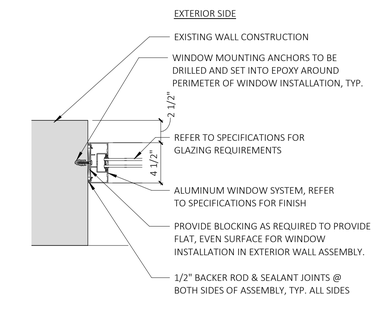
9 SILL DETAIL

SCALE: 1 1/2" = 1'-0"



5 SILL DETAIL

SCALE: 1 1/2" = 1'-0"



1 JAMB DETAIL

SCALE: 1 1/2" = 1'-0"

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PROFESSIONAL SEAL

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY
HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

EXTERIOR WINDOW DETAILS

DATE: 2026-0501
SCALE 1 1/2" = 1'-0"
PROJ. #: 2023-026B
DRAWN: JNR
CHECKED: DRD
5/1/2026 4:08:25 PM

SHEET NO.

A8.3

REFLECTED CEILING LEGEND

- C-X / X'-X" — CEILING TYPE AND HEIGHT SYMBOL (CEILING TYPE / CEILING HEIGHT)
- NEW, EXISTING OR RELOCATED LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED PENDANT SPECIALTY LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED CHAIN HUNG LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED WALL SCONCE LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW RECESSED DOWNLIGHT COVERS. REFER TO SPECS.
- ADD ALTERNATE NO. 01: 2x2 LIGHT FIXTURE. REFER TO ELEC. DWGS.

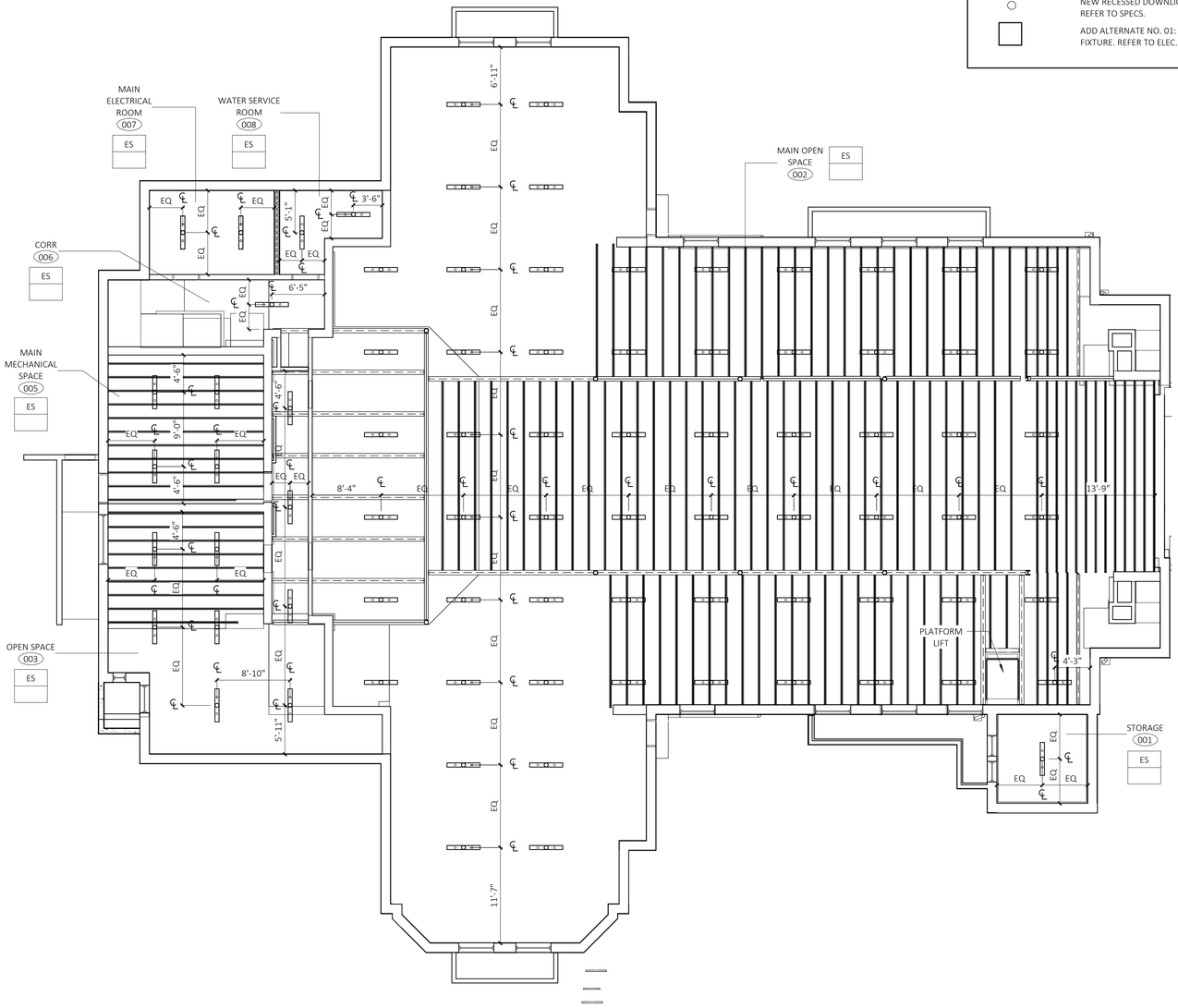
CEILING TYPE SCHEDULE

NOTE: NOT ALL CEILING TYPES ARE USED. SEE PLANS & SPECIFICATIONS.

C-1	2X2 SUSPENDED ACOUSTICAL PANEL IN 15/16" GRID
C-6	MOISTURE RESISTANT GYPSUM BOARD, PAINTED
C-8	ABUSE RESISTANT GYPSUM BOARD, PAINTED
C-11	FINISH POPCORN CEILING
ES	NO CEILING - EXPOSED STRUCTURE
EX-1	EXISTING CEILING TO REMAIN

GENERAL NOTES

A. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
B. REFER TO MECHANICAL DRAWINGS FOR DIFFUSER TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
C. NEW PENDANT LIGHT FIXTURES EXACT LOCATIONS TO BE COORD. AND V.I.F
D. REFER TO FINISH LEGEND FOR PAINT SELECTION.



1 LOWER LEVEL RC PLAN - BASE BID
SCALE: 1/8" = 1'-0"

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REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

LOWER LEVEL REFLECTED CEILING PLAN - BASE BID

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: MDC
CHECKED: DRD
5/1/2026 4:08:26 PM

SHEET NO.
A9.1

REFLECTED CEILING LEGEND

- C-X / X'-X" — CEILING TYPE AND HEIGHT SYMBOL; CEILING TYPE; CEILING HEIGHT
- NEW, EXISTING OR RELOCATED LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED PENDANT SPECIALTY LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED CHAIN HUNG LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED WALL SCONCE LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW RECESSED DOWNLIGHT COVERS. REFER TO SPECS.
- ADD ALTERNATE NO. 01: 2x2 LIGHT FIXTURE. REFER TO ELEC. DWGS.

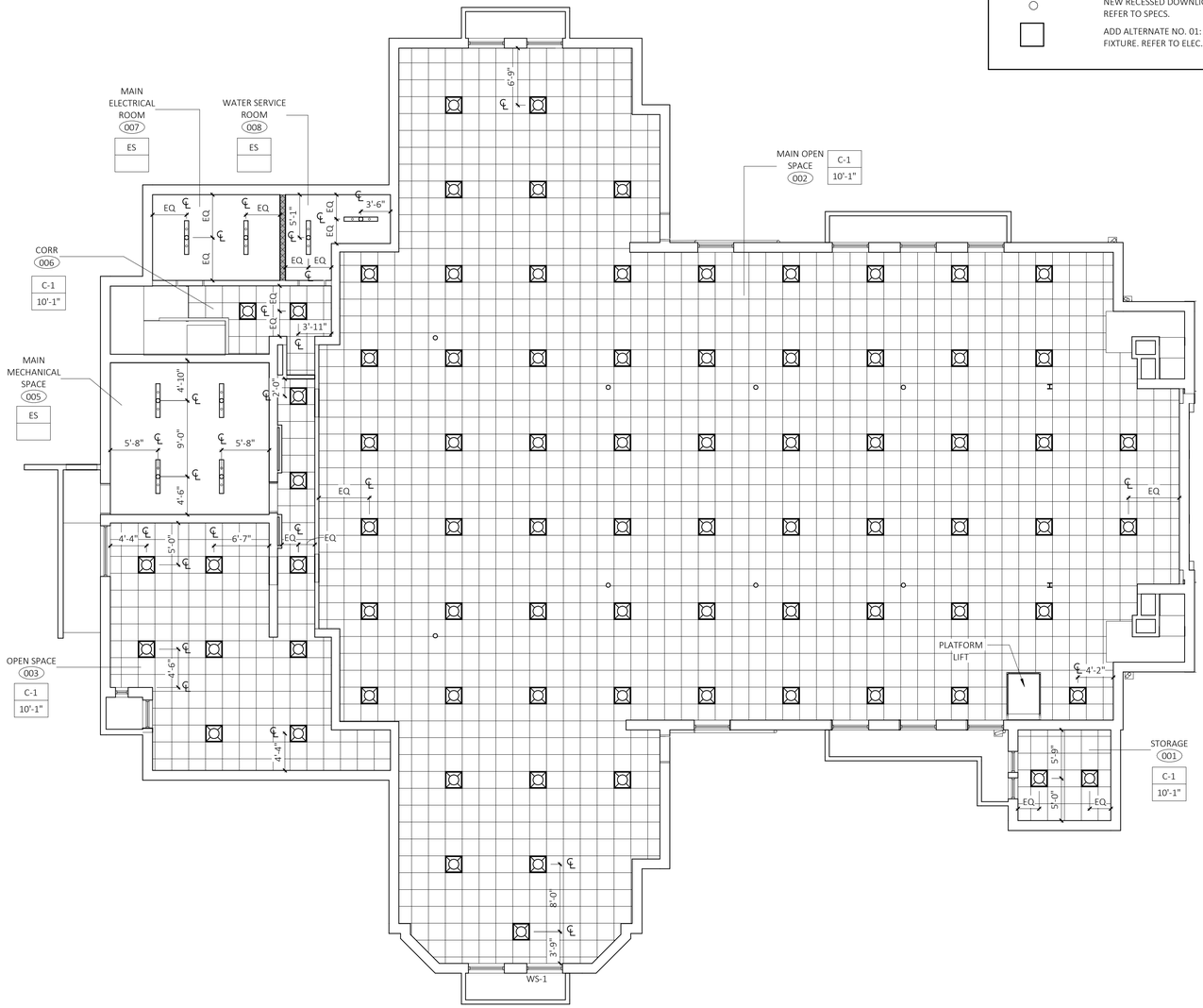
CEILING TYPE SCHEDULE

NOTE: NOT ALL CEILING TYPES ARE USED. SEE PLANS & SPECIFICATIONS.

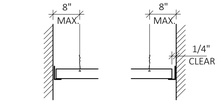
C-1	2X2 SUSPENDED ACOUSTICAL PANEL IN 15/16" GRID
C-6	MOISTURE RESISTANT GYPSUM BOARD, PAINTED
C-8	ABUSE RESISTANT GYPSUM BOARD, PAINTED
C-11	FINISH POPCORN CEILING
ES	NO CEILING - EXPOSED STRUCTURE
EX-1	EXISTING CEILING TO REMAIN

GENERAL NOTES

A. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
B. REFER TO MECHANICAL DRAWINGS FOR DIFFUSER TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
C. NEW PENDANT LIGHT FIXTURES EXACT LOCATIONS TO BE COORD. AND V.I.F
D. REFER TO FINISH LEGEND FOR PAINT SELECTION.



1 LOWER LEVEL RC PLAN ADD ALTERNATE NO. 02
SCALE: 1/8" = 1'-0"



ATTACHED AT STARTING AND ONE ADJACENT WALL

CLEARANCE AT OPPOSITE WALLS (NOT ATTACHED)

RUNNERS AT WALLS

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ADD ALT. LOWER LEVEL REFLECTED CEILING PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: MDC
CHECKED: DRD
5/1/2026 4:08:27 PM

SHEET NO.
A9.1A

REFLECTED CEILING LEGEND

- C-X / X'-X" — CEILING TYPE AND HEIGHT SYMBOL; CEILING TYPE; CEILING HEIGHT
- NEW, EXISTING OR RELOCATED LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED PENDANT SPECIALTY LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED CHAIN HUNG LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED WALL SCONCE LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW RECESSED DOWNLIGHT COVERS. REFER TO SPECS.
- ADD ALTERNATE NO. 01: 2x2 LIGHT FIXTURE. REFER TO ELEC. DWGS.

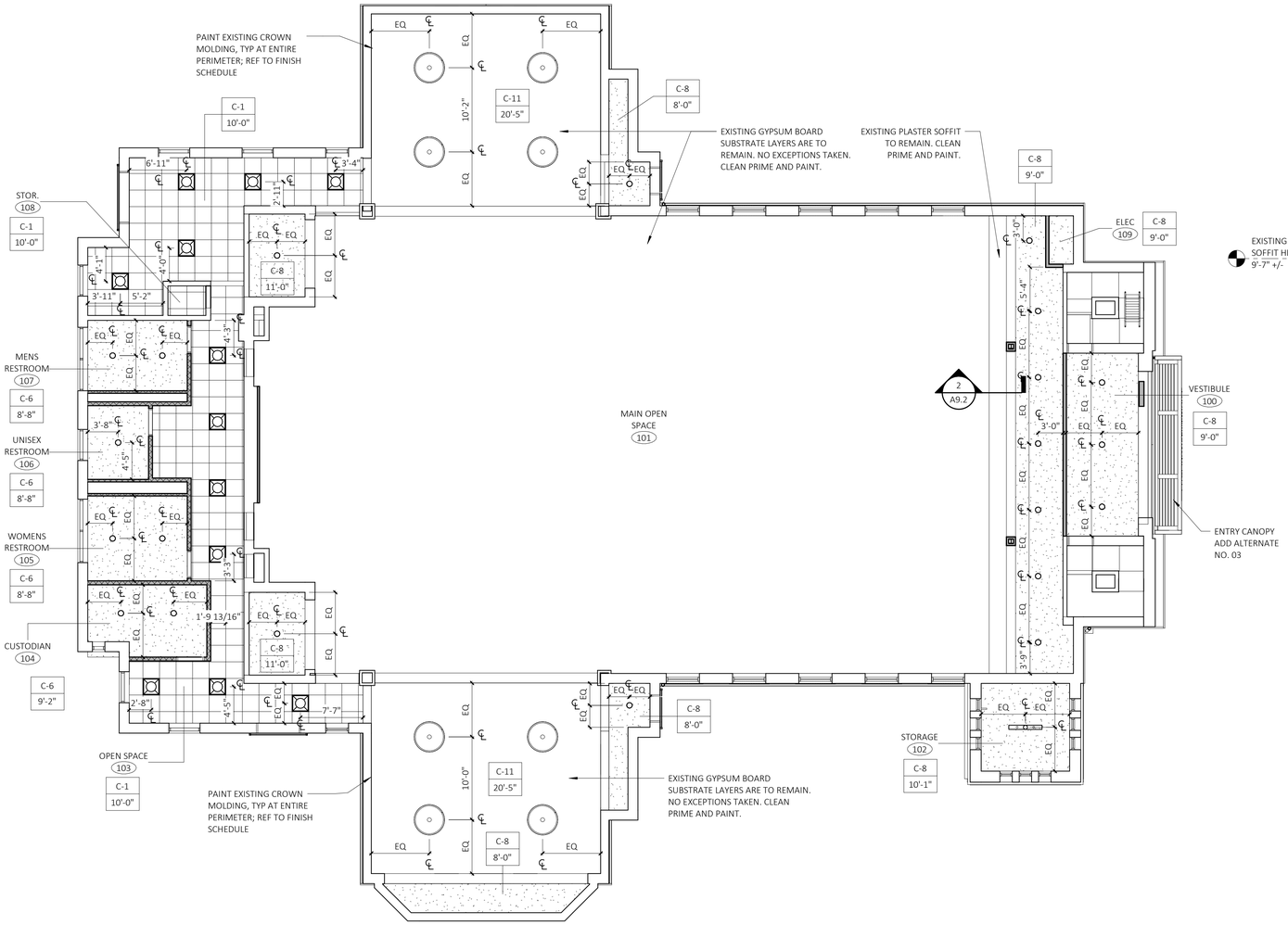
CEILING TYPE SCHEDULE

NOTE: NOT ALL CEILING TYPES ARE USED. SEE PLANS & SPECIFICATIONS.

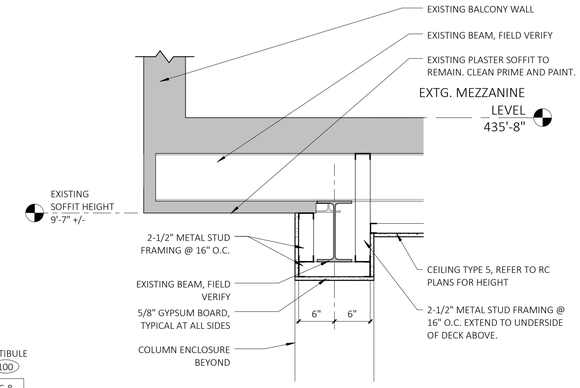
C-1	2X2 SUSPENDED ACOUSTICAL PANEL IN 15/16" GRID
C-6	MOISTURE RESISTANT GYPSUM BOARD, PAINTED
C-8	ABUSE RESISTANT GYPSUM BOARD, PAINTED
C-11	FINISH POPCORN CEILING
ES	NO CEILING - EXPOSED STRUCTURE
EX-1	EXISTING CEILING TO REMAIN

GENERAL NOTES

A. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
B. REFER TO MECHANICAL DRAWINGS FOR DIFFUSER TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
C. NEW PENDANT LIGHT FIXTURES EXACT LOCATIONS TO BE COORD. AND V.I.F
D. REFER TO FINISH LEGEND FOR PAINT SELECTION.



1 FIRST FLOOR RC PLAN
SCALE: 1/8" = 1'-0"



2 SOFFIT DETAIL
SCALE: 1" = 1'-0"

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RFP NO. 8801

REVISIONS

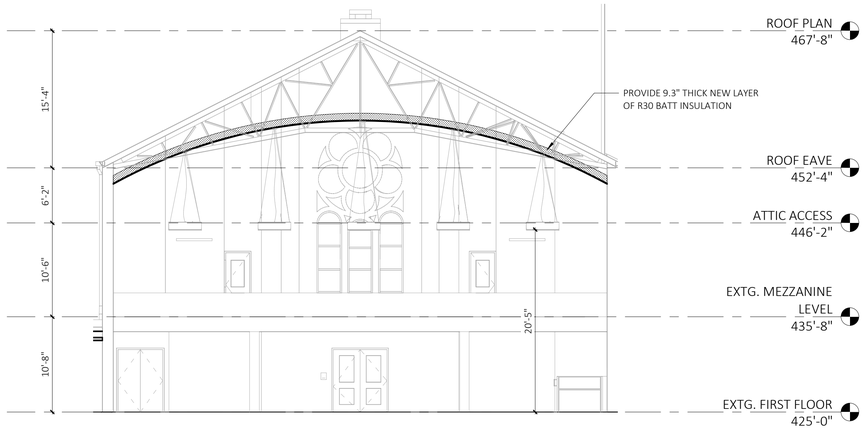
NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

FIRST FLOOR REFLECTED CEILING PLAN

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	JNR, MDC
CHECKED:	DRD
5/1/2026 4:08:28 PM	

SHEET NO.
A9.2



2 SECTION

SCALE: 1/8" = 1'-0"

REFLECTED CEILING LEGEND

- C-X / X'-X" — CEILING TYPE AND HEIGHT SYMBOL; CEILING TYPE; CEILING HEIGHT
- NEW, EXISTING OR RELOCATED LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED PENDANT SPECIALTY LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED CHAIN HUNG LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW, EXISTING OR RELOCATED WALL SCONCE LIGHT FIXTURE. REFER TO ELEC. DWGS.
- NEW RECESSED DOWNLIGHT COVERS. REFER TO SPECS.
- ADD ALTERNATE NO. 01: 2x2 LIGHT FIXTURE. REFER TO ELEC. DWGS.

CEILING TYPE SCHEDULE

NOTE: NOT ALL CEILING TYPES ARE USED. SEE PLANS & SPECIFICATIONS.

C-1	2X2 SUSPENDED ACOUSTICAL PANEL IN 15/16" GRID
C-6	MOISTURE RESISTANT GYPSUM BOARD, PAINTED
C-8	ABUSE RESISTANT GYPSUM BOARD, PAINTED
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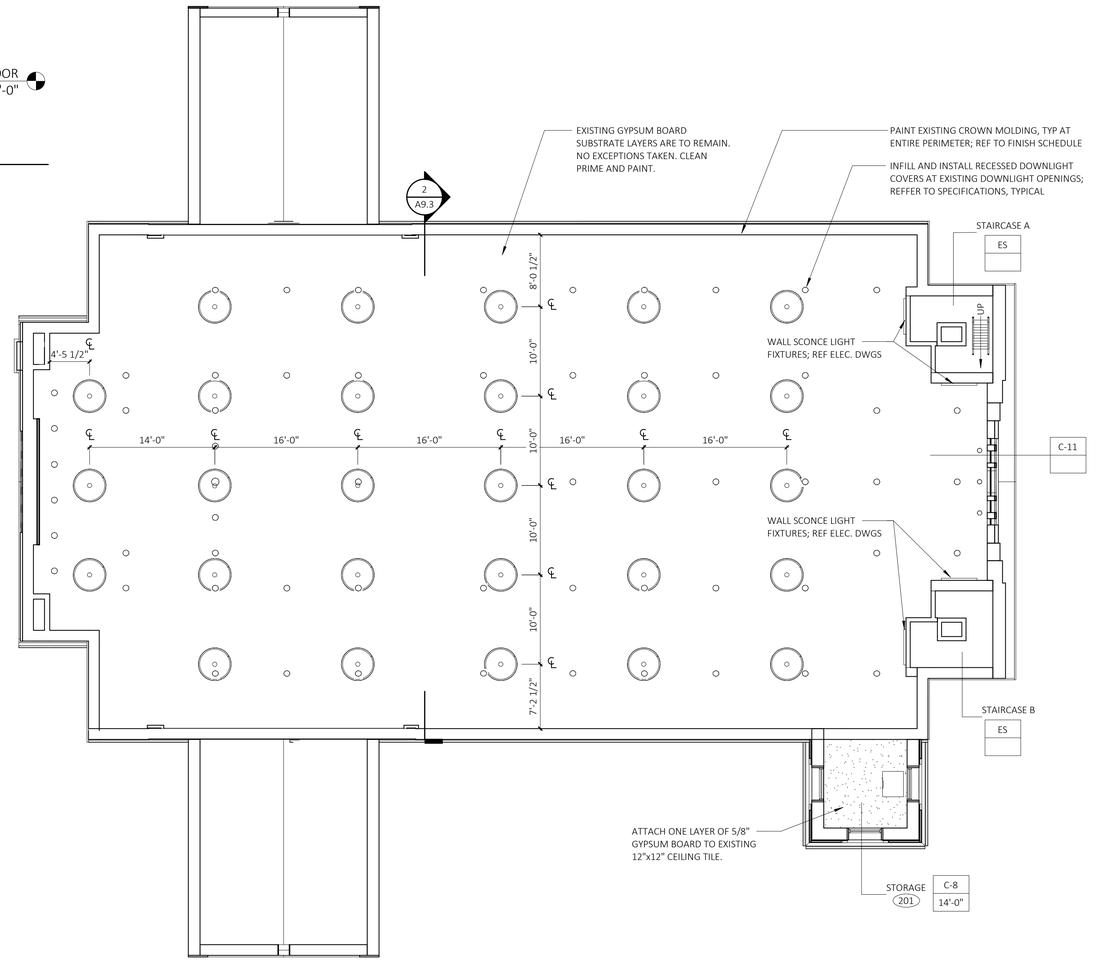
ES	NO CEILING - EXPOSED STRUCTURE
EX-1	EXISTING CEILING TO REMAIN

GENERAL NOTES

A. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
B. REFER TO MECHANICAL DRAWINGS FOR DIFFUSER TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
C. NEW PENDANT LIGHT FIXTURES EXACT LOCATIONS TO BE COORD. AND V.I.F
D. REFER TO FINISH LEGEND FOR PAINT SELECTION.



1 MEZZANINE LEVEL RC PLAN

SCALE: 1/8" = 1'-0"

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

MEZZANINE FLOOR REFLECTED CEILING PLAN

DATE:	2026-0501
SCALE	As indicated
PROJ. #:	2023-026B
DRAWN:	MDC
CHECKED:	DRD

5/1/2026 4:08:30 PM

SHEET NO.

A9.3

REFLECTED CEILING LEGEND

C-X
X'-X"

CEILING TYPE AND HEIGHT SYMBOL
CEILING TYPE
CEILING HEIGHT

NEW, EXISTING OR RELOCATED LIGHT FIXTURE. REFER TO ELEC. DWGS.

NEW, EXISTING OR RELOCATED PENDANT SPECIALTY LIGHT FIXTURE. REFER TO ELEC. DWGS.

NEW, EXISTING OR RELOCATED CHAIN HUNG LIGHT FIXTURE. REFER TO ELEC. DWGS.

NEW, EXISTING OR RELOCATED WALL SCONCE LIGHT FIXTURE. REFER TO ELEC. DWGS.

NEW RECESSED DOWNLIGHT COVERS. REFER TO SPECS.

ADD ALTERNATE NO. 01: 2x2 LIGHT FIXTURE. REFER TO ELEC. DWGS.

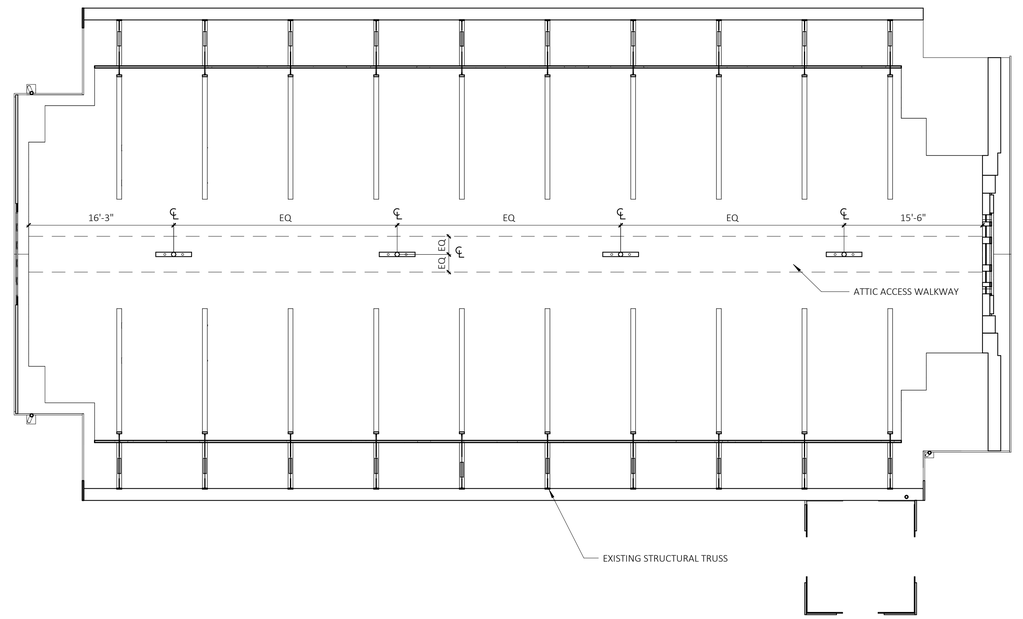
CEILING TYPE SCHEDULE

NOTE: NOT ALL CEILING TYPES ARE USED. SEE PLANS & SPECIFICATIONS.

C-1	2X2 SUSPENDED ACOUSTICAL PANEL IN 15/16" GRID
C-6	MOISTURE RESISTANT GYPSUM BOARD, PAINTED
C-8	ABUSE RESISTANT GYPSUM BOARD, PAINTED
C-11	FINISH POPCORN CEILING
ES	NO CEILING - EXPOSED STRUCTURE
EX-1	EXISTING CEILING TO REMAIN

GENERAL NOTES

A. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
B. REFER TO MECHANICAL DRAWINGS FOR DIFFUSER TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
C. NEW PENDANT LIGHT FIXTURES EXACT LOCATIONS TO BE COORD. AND V.I.F
D. REFER TO FINISH LEGEND FOR PAINT SELECTION.



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SCALE: 1/8" = 1'-0"

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ATTIC REFLECTED CEILING PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: MDC
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5/1/2026 4:08:31 PM

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INTERIOR ABBREVIATIONS

ACID CABINET	ACID	PRIVACY CURTAIN	PC
ACOUSTICAL WALL PANEL	AWP	PAINTED CONCRETE FLOOR	PCF
BUTCHER BLOCK COUNTERTOP	BB	PROJECTION SCREEN	PJS
BASE CABINET	BC	PLASTIC LAMINATE	PL
CARPET (TILE AND/OR BROADLOOM)	CPT	PHENOLIC RESIN COUNTERTOPS	PR
CUBICAL CURTAIN	CC	PORCELAIN TILE	PT
CORNER GUARDS	CG	PAPER TOWEL DISPENSER	PTD
CEMENTITIOUS TOPPING	CMT	QUARRY TILE	QT
CERAMIC TILE BASE	CTB	QUARRY TILE BASE	QTB
COUNTER	CTR	RUBBER BASE	RB
CERAMIC WALL TILE	CWT	REFRIGERATOR	REF
DECORATIVE WALL PANEL	DCPL	RUBBER TILE	RT
DISPLAY CASE	DC	RUBBER STAIR TREAD/RISERS	RST
DISTILLER	DST	SEALED CONCRETE	SC
DISHWASHER (GLASSWARE)	DW	STAINED CONCRETE	STC
ENTRY MAT	EM	STAGE CURTAIN	SCT
ENTRY GRILLE	EG	EMERGENCY SHOWER/EYEWASH	SF
EPOXY PAINT	EP	SPORTS FLOOR	SF
EXPLOSION PROOF REFRIGERATOR	EPR	SOLID SURFACE	SS
EPOXY RESIN FLOORING	ER	SAFETY SHEET GOOD	SSG
EPOXY RESIN COUNTERTOP	ERS	STAINLESS STEEL COUNTERTOP	STS
EPOXY TERRAZZO	ET	SHEET VINYL FLOORING	SV
EXISTING TO REMAIN	ETR	SOLID VINYL SHEET GOOD	SVS
EXISTING	EX	SOLD VINYL TILE	SVT
FIRE EXTINGUISHER/FIRE BLANKET CABINET	FEB	TACKBOARD	TBD
FIRE EXTINGUISHER CABINET	FEC	TERRAZZO FLOORING	TF
FIRE EXTINGUISHER & BRACKET	FE	TACK STRIP	TS
FOLIO CABINET	FC	UPPER WALL CABINET	UC
FLAMMABLE CABINET	FLAM	UNDER COUNTER REFRIGERATOR	UCR
GLAZED BLOCK BASE	GBB	VACCINE REFRIGERATOR	VR
GOGGLE CABINET	GC	VENEER CABINETRY	V
GROUT	GT	VINYL BASE	VB
HORIZONTAL BLINDS	HB	VINYL COMPOSITE TILE	VCT
HIGH PRESSURE WALL PANEL	HPWP	VERTICAL SLIDING WHITEBOARD	VS MBD
HANDRAILS, RAILINGS & STRINGERS	HR	VINYL TILE	VT
ICE MAKER	ICE	VINYL WALL COVERING	VWC
INTELLIGENT BOARD	INTBD	WALL BASE	WB
LINOLEUM	L	WALL COVERING	WC
LOCKER	LK	WOOD	WD
LUXURY RESILIENT FLOORING	LRF	WOOD CASEWORK	WDC
LINOLEUM SHEET FLOORING	LS	WOOD TALL CABINETS	WDT
LINOLEUM TILE	LT	WOOD UPPER CABINETS	WDU
LUXURY VINYL TILE	LVT	WALK-OFF MAT	WM
METAL CABINETRY	MC	WALL GUARDS	WG
MARKERBOARD	MBD	WALL PROTECTION/PADDING	WP
MULTI-COLORED INTERIOR COATING	MCIC	WINDOW SHADES	WS
METAL PANEL	MP		
MOTORIZED SHADE	MS		
MONITOR	MON		
MICROWAVE	MW		
PAINT	P		

VIEW FROM TABLE 803.9/ 2012 IBC
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY

GROUP	SPRINKLERED			NONSPRINKLERED		
	VERTICAL EXITS & EXIT PASSAGEWAYS	EXIT ACCESS CORRIDORS & OTHER TAXIWAYS	ROOMS AND ENCLOSED SPACES	VERTICAL EXITS & EXIT PASSAGEWAYS	EXIT ACCESS CORRIDORS & OTHER TAXIWAYS	ROOMS AND ENCLOSED SPACES
A-1 & A-2	B	B	C	A	A	B
A-3, A-4, A-5	B	B	C	A	A	C
B, E, M	B	C	C	A	B	C

INTERIOR WALLS AND CEILING FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH ATSM E 84.

FINISH SCHEDULE

ROOM NUMBER / AREA DESIGNATION	ROOM NAME OR AREA NAME	FLOOR	BASE	WALL				CABINETS						MISCELLANEOUS									REMARKS
				NORTH	SOUTH	EAST	WEST	COUNTER / BACKSPLASH	BASE / TALL CABINETS	UPPER CABINETS				DOOR FRAMES	TACKBOARDS	MARKERBOARDS	TOILET PARTITIONS	WINDOW TREATMENTS	LOCKERS				
EXTG. FIRST FLOOR																							
100	VESTIBULE	EM-1	RB-2	P-1	P-1	P-1	P-1	-	-	-				P-3	-	-	-	-	-				
101	MAIN OPEN SPACE	ETR	ETR	P-1	P-1	P-1	P-1	-	-	-				P-3	-	-	-	-	-				REFER TO GENERAL FINISH NOTES FOR ETR MARBLE WALL PANELS
102	STORAGE	ETR	ETR	P-1	P-1	P-1	P-1	-	-	-				P-3	-	-	-	-	-				REFER TO GENERAL FINISH NOTES FOR ETR MARBLE WALL PANELS
103	OPEN SPACE	LVT-1	RB-1	P-1	P-1	P-1	P-1	-	-	-				P-3	-	-	-	-	-				P-3 TO BE APPLIED TO RAMP RAILINGS
104	CUSTODIAN	EP-1	EP-1	P-2	P-2	P-2	P-2	-	-	-				P-3	-	-	-	-	-				4" INTEGRAL BASE
105	WOMENS RESTROOM	EP-1	EP-1	P-2	P-2	P-2	CWT-1	-	-	-				P-3	-	-		-	-				4" INTEGRAL BASE
106	UNISEX RESTROOM	EP-1	EP-1	P-2	P-2	CWT-1	P-2	-	-	-				P-3	-	-		-	-				4" INTEGRAL BASE
107	MENS RESTROOM	EP-1	EP-1	P-2	P-2	CWT-1	P-2	-	-	-				P-3	-	-		-	-				4" INTEGRAL BASE
108	STOR.	EP-1	EP-1	P-1	P-1	P-1	P-1	-	-	-				P-3	-	-	-	-	-				4" INTEGRAL BASE
109	ELEC	ETR	RB-1	P-1	P-1	P-1	P-1	-	-	-				P-3	-	-	-	-	-				
A	STAIRCASE A	ETR	ETR	P-2	P-2	P-2	P-2	-	-	-				P-3	-	-	-	-	-				P-3 TO BE APPLIED TO STAIR RAILINGS, STRINGERS, AND RISERS
B	STAIRCASE B	ETR	ETR	P-2	P-2	P-2	P-2	-	-	-				P-3	-	-	-	-	-				P-3 TO BE APPLIED TO STAIR RAILINGS, STRINGERS, AND RISERS
C	STAIRCASE C	ETR	ETR	ETR; P-1	ETR; P-1	ETR; P-1	ETR; P-1	-	-	-				P-3	-	-	-	-	-				REFER TO GENERAL FINISH NOTES FOR ETR MARBLE WALL PANELS AND ETR TERRAZZO FLOOR

FINISH LEGEND

PAINT

P-1: MANUFACTURER: SHERWIN WILLIAMS
FINISH: EGGSHELL
COLOR: SKYLINE STEEL SW-1015
LOCATION: TYPICAL FIELD (WALLS & MOLDING)

P-2: MANUFACTURER: SHERWIN WILLIAMS
FINISH: EPOXY EGGSHELL
COLOR: SKYLINE STEEL SW-1015
LOCATION: CUSTODIAL & STAIRS

P-3: MANUFACTURER: SHERWIN WILLIAMS
FINISH: SEMI GLOSS
COLOR: DORIAN GRAY SW-7017
LOCATION: TYPICAL DOORFRAME AT ALL NEW LOCATIONS, STAIR RAILINGS, STRINGERS, AND RISERS

P-4: MANUFACTURER: SHERWIN WILLIAMS
FINISH: FLAT
COLOR: PURE WHITE SW 7005
LOCATION: GYPSUM CEILINGS

P-5: MANUFACTURER: SHERWIN WILLIAMS
FINISH: FLAT
COLOR: SKYLINE STEEL SW-1015
LOCATION: BARREL VAULT POPCORN CEILING

P-6: MANUFACTURER: BENJAMIN MOORE
TYPE: URETHANE ALKYD GLOSS ENAMEL NO. M22
FINISH: GLOSS
COLOR: BLACK 2132-10
LOCATION: NEW SCUPPER BOXES, DOWNSPOUTS, & ASSOCIATED ACCESSORIES. EXTERIOR AREAWAY GRATES & ASSOCIATED ACCESSORIES

P-7: MANUFACTURER: BENJAMIN MOORE
TYPE: EXTERIOR ALKYD ENAMEL MPI EXT 5.3B
FINISH: GLOSS
COLOR: BLACK 2132-10
LOCATION: EXISTING TO REMAIN COPPER GUTTER ASSEMBLIES

P-8: MANUFACTURER: BENJAMIN MOORE
TYPE: ELEMENT GUARD 765 - 100% ACRYLIC RESIN
FINISH: SOFT GLOSS
COLOR: WHITE OC-151
LOCATION: INTERIOR SIDE ONLY OF EXTERIOR LOWER LEVEL CONCRETE AREAWAYS

**REFER TO BOTH THE INTERIOR AND EXTERIOR PAINT SPECIFICATIONS FOR ADDITIONAL INFORMATION, INCLUDING PRIMERS AND QUANTITIES OF REQUIRED COATS.

ENTRY MAT

EM-1: MANUFACTURER: TARKETT
STYLE: ABRASIVE ACTION II
COLOR: ASPHALT 19102
SIZE: 24X24
INSTALL: MONOLITHIC
LOCATION: VESTIBULE

LUXURY VINYL TILE

LVT-1: MANUFACTURER: TARKETT
STYLE: EVEN PLANE
COLOR: MINIMAL WOOD NATURAL
SIZE: 9.8X39.3
INSTALL: ASHLAR

EPOXY FLOORING

EP-1: MANUFACTURER: SHERWIN WILLIAMS HIGH PERFORMANCE FLOORING
STYLE: HYBRI-FLEX EQ W/ 4" INTEGRAL COVE BASE
FLOOR THICKNESS: 1/4" H
COLOR/FINISH: TBD
LOCATION: TOILETS & CUSTODIAL

RUBBER BASE

RB-1: MANUFACTURER: JOHNSONITE
STYLE: 4" COVE
COLOR: SILVER GREY
LOCATION: TYPICAL FIELD

RB-2: MANUFACTURER: JOHNSONITE
STYLE: 4" STRAIGHT
COLOR: SILVER GREY
LOCATION: TYPICAL FIELD

CERAMIC WALL TILE

CWT-1: MANUFACTURER: DALTILE
COLLECTION: COLOR WHEEL LINEAR
COLOR: ARCTIC WHITE 0190
FINISH: GLOSSY
SIZE: 4X8
INSTALL: ASHLAR
GROUT: MAPEI 104 TIMBERWOLF

TOILET PARTITION

TP-1: MANUFACTURER: BRADLEY
COLLECTION: PHENOLIC CORE W/ HPL
COLOR: WILSONART ASIAN NIGHT

TRANSITIONS

TR-1: SCHLUTER
EPOXY TO LVT

TR-2: SCHLUTER
LVT TO EXISTING TERRAZZO

TR-3: SCHLUTER
ENTRY MAT TO EXISTING TERRAZZO

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RFP NO. 8801

REVISIONS

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FINISH SCHEDULE, LEGEND AND NOTES

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: NTM
CHECKED: DRD
5/1/2026 4:08:32 PM

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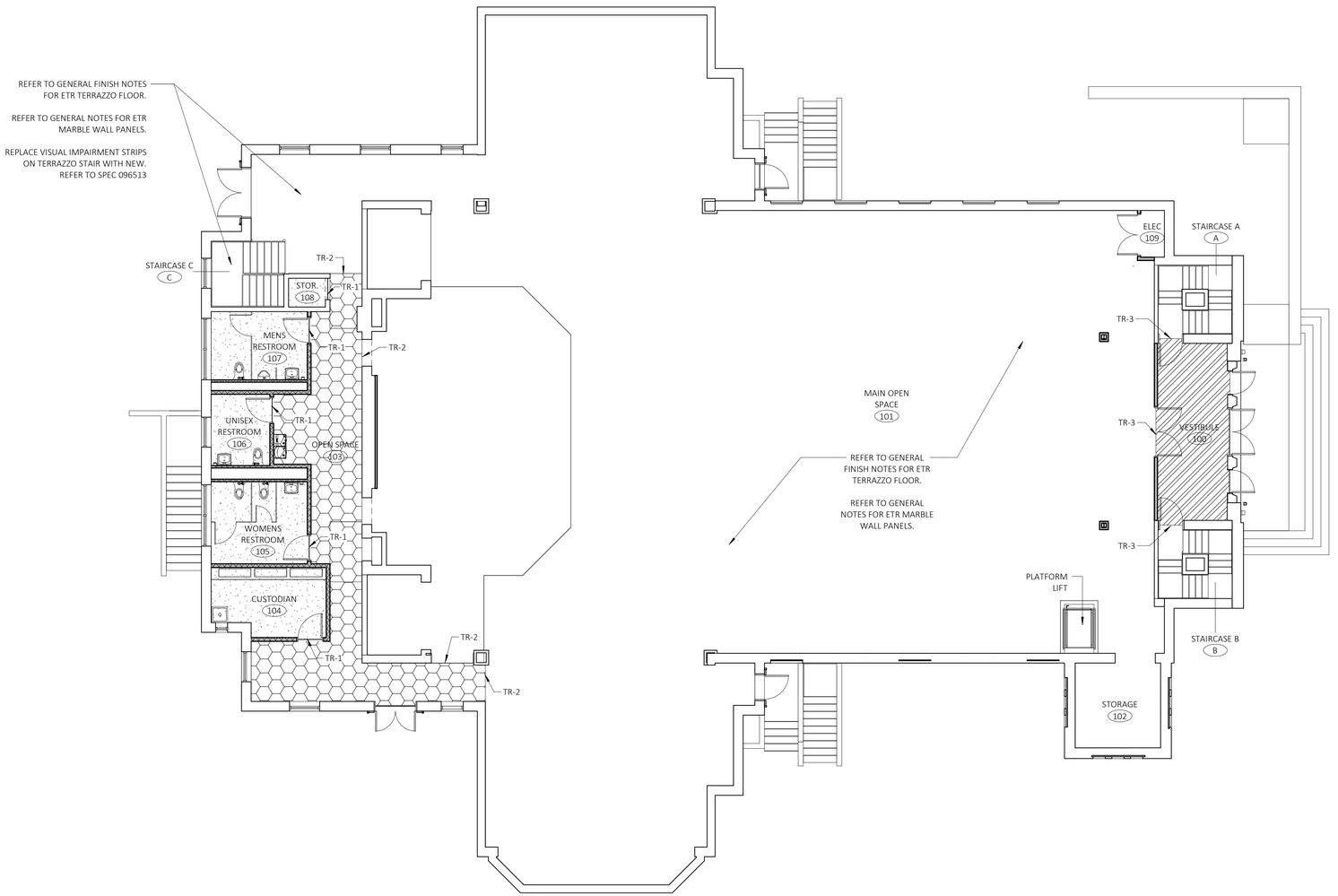
FINISH FLOOR LEGEND:

- ENTRY MAT — EM
- LUXURY VINYL TILE — LVT
- EXISTING TO REMAIN — ETR
- EPOXY — EP

GENERAL FINISH NOTES:

1. REFER TO FINISH SCHEDULE FOR COLOR DESIGNATIONS.
2. FINISH PLAN SHOULD BE USED IN CONJUNCTION WITH FINISH SCHEDULE. SHOULD THERE BE ANY DISCREPANCY BETWEEN OTHER DRAWINGS IN THE SET, THE HIGHER QUALITY FINISH SHALL BE PROVIDED.
3. REFER TO SPECS FOR FLOOR PREP AND TESTING BEFORE NEW FLOORS ARE INSTALLED.
4. WHERE TERRAZZO IS DAMAGED, INFILL, CLEAN, AND SEAL AREAS.
5. CLEAN EXISTING EXPOSED MARBLE WALL PANELS. DO NOT PAINT OVER MARBLE WALL PANELS OR TRIM.



FIRST FLOOR FINISH PLAN

SCALE: 1/8" = 1'-0"

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FIRST FLOOR FINISH PLAN

DATE:	2026-0501
SCALE	1/8" = 1'-0"
PROJ. #:	2023-026B
DRAWN:	NTM
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GENERAL NOTES

GENERAL

GOVERNING CODE: 2022 CONNECTICUT STATE BUILDING CODE, (2021 INTERNATIONAL BUILDING CODE).

DESIGN LOADS: CITY OF WATERBURY

CONSTRUCTION LIVE LOADS: 20 PSF
PRE-COMPOSITE LOAD FOR CONCRETE PLACEMENT BY HOSE AND FINISHING. CONTRACTOR IS RESPONSIBLE FOR ANY SHORING REQUIRED OF THE DECK FOR HEAVIER LOADS DURING CONCRETE PLACEMENT.

MINIMUM LIVE LOADS:

OFFICES:	50 PSF + 15 PSF PARTITION
CORRIDORS:	80 PSF
STAIRS:	100 PSF
PARTITIONS:	20 PSF
ASSEMBLY:	100 PSF

ROOF LOAD:

ROOF SNOW LOAD CRITERIA:
Pg = 35 PSF
Ce = 0.9
Is = 1.0
Ct= 1.0
Pf = 23.1 PSF

WITH INCREASES FOR SNOW DRIFTING, UNBALANCES AND SLIDING PER SECTION 1608 (2021 IBC).

MINIMUM ROOF LIVE LOAD = 30 PSF

ROOF DEAD LOAD = 20 PSF

WIND LOAD CRITERIA: SECTION 1609 (2021 IBC)
ULTIMATE WIND SPEED V_{ULT} = 120 MPH
NOMINAL DESIGN WIND V_{ASD} = 93 MPH
RISK CATEGORY II, Iw = 1.0
EXPOSURE CLASSIFICATION "B".

MINIMUM WIND LOAD ON PRIMARY STRUCTURE = 16 PSF

WIND LOADS ON SECONDARY ELEMENTS SHALL CONFORM WITH ASCE 7-16.

COMPONENT AND CLADDING DESIGN WIND PRESSURES:

ROOF ZONE 1:	POSITIVE: 16.00 PSF NEGATIVE: -24.89 PSF
ROOF ZONE 2:	POSITIVE: 16.00 PSF NEGATIVE: -43.37 PSF
ROOF ZONE 3:	POSITIVE: 16.00 PSF NEGATIVE: -64.05 PSF
WALL ZONE 4:	POSITIVE: 27.20 PSF NEGATIVE: -29.51 PSF
WALL ZONE 5:	POSITIVE: 27.20 PSF NEGATIVE: -36.44 PSF
ROOF OVERHANG ZONE 2:	-59.54 PSF
ROOF OVERHANG ZONE 3:	-100.07 PSF

DESIGN WIND PRESSURE IS COMPUTED BASED ON ULTIMATE WIND SPEED USING 10 SQUARE FOOT OF AREA.

SEISMIC LOAD CRITERIA: AS PER SECTION 1613 (2021 IBC) WITH:
RISK CATEGORY = II
SEISMIC IMPORTANCE FACTOR, Ie = 1.0
Ss = 0.193g, S1 = 0.054g
SOIL SITE CLASS = D
SPECTRAL RESPONSE COEFFICIENTS, Sds = 0.206g, Sd1 = 0.086g
SEISMIC DESIGN CATEGORY, B
BASIC SEISMIC-FORCE-RESISTING SYSTEM: BEARING WALL, ORDINARY PLAIN MASONRY SHEAR WALLS
SEISMIC-RESPONSE COEFFICIENT, Cs = 0.1029
DESIGN BASE SHEAR, V = Cs x W
RESPONSE MODIFICATION FACTOR, R = 2
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE PROCEDURE

ASSUMED BEARING PRESSURE ON UNDISTURBED SOIL: 3000 PSF
ASSUMED BEARING PRESSURE ON COMPACTED FILL: 4000 PSF

1. SHOULD ANY OF THE DETAILED INSTRUCTIONS SHOWN ON THE PLANS CONFLICT WITH THE GENERAL STRUCTURAL NOTES, THE SPECIFICATIONS, OR WITH EACH OTHER, THE STRICTEST PROVISION SHALL GOVERN.

2. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIEDOWNS WHICH MIGHT BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER COMPLETION OF THE PROJECT.

   THE CONTRACTOR SHALL PROVIDE SHORING CALCULATIONS AND SHORING DRAWINGS, INDICATING THE WORK TO BE PROVIDED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT.

3. THE STRUCTURE UTILIZES SHEAR WALLS TO PROVIDE LATERAL STABILITY. THEREFORE, TEMPORARY BRACING, GUYS, ETC. MUST BE MAINTAINED UNTIL ALL MASONRY SHEAR WALLS HAVE BEEN ERECTED AND ATTACHED TO STEEL FRAMING.

4. LOADS, OPENINGS AND STRUCTURE IN ANY WAY RELATED TO REQUIREMENTS OF OTHER (NON-STRUCTURAL) DISCIPLINES ARE SHOWN FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL OBTAIN FROM THE HEATING AND VENTILATING, ELECTRICAL, PLUMBING AND OTHER SUBCONTRACTORS THE FINAL APPROVED SIZE AND LOCATION OF ALL OPENINGS AND WORK TO BE PROVIDED FOR THEIR TRADE IN ROOFS, FLOORS AND WALLS, WHETHER SHOWN OR NOT SHOWN ON STRUCTURAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSMISSION OF REQUIREMENTS, LOCATIONS AND DETAILS TO STRUCTURAL SUBCONTRACTORS. EXCESS COST RELATED TO VARIATION IN MECHANICAL REQUIREMENTS ARE NOT TO BE BORNE BY THE OWNER.

5. MECHANICAL EQUIPMENT WEIGHTS USED IN DESIGN OF SUPPORTING ELEMENTS HAVE BEEN INDICATED ON THE DRAWINGS. CONTRACTOR SHALL NOTIFY THE ARCHITECT PRIOR TO INSTALLATION IF ACTUAL WEIGHT EXCEEDS WEIGHT SHOWN ON DRAWINGS.

6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.

7. SHOP DRAWINGS ARE TO BE CHECKED BY THE CONTRACTOR AND SUBCONTRACTOR AND BEAR CHECKER'S INITIALS BEFORE BEING SUBMITTED TO THE ARCHITECT FOR APPROVAL.

8. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS BEFORE PROCEEDING WITH ANY WORK.

9. ALL SECTIONS AND DETAILS SHALL BE CONSIDERED TYPICAL AND APPLY FOR THE SAME AND SIMILAR SITUATIONS THROUGHOUT THE BUILDING, UNLESS OTHERWISE SPECIFICALLY NOTED.

10. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO SUBMITTING THEIR BID FOR REFERENCE TO ALL NOTES ON ARCHITECTURAL DRAWINGS REFERRING TO ASEE STRUCTURAL DRAWINGS@. IF THE SIZE OF ELEMENTS AND DETAILING OF MEMBERS IS NOT INDICATED, THE CONTRACTOR SHALL CONTACT THE ARCHITECT TO REQUEST THE MISSING INFORMATION IN PREPARATION OF THEIR BID. THESE REFERENCED ITEMS SHALL BE PART OF THE BASE BID.

11. IN CASES OF DISCREPANCIES BETWEEN CONTRACT DOCUMENTS AND SUBMITTED SHOP DRAWINGS, THE CONTRACT DOCUMENTS SHALL GOVERN INSTALLATION OF MATERIALS.

SPECIAL INSPECTIONS:

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION. REFER TO SPECIFICATION SECTIONS, AND THE STATEMENT OF SPECIAL INSPECTIONS FOR ADDITIONAL INFORMATION.

PROVIDE A MINIMUM 24 HOUR NOTICE TO THE SPECIAL INSPECTOR, INSPECTION AGENCY AND TESTING AGENCY PRIOR TO CONSTRUCTION WHICH COULD RESTRICT INSPECTION OF THE ITEM.

A. CAST-IN-PLACE CONCRETE
B. REINFORCING PLACEMENT FOR CONCRETE FOOTINGS (WITH REINFORCING IN TWO DIRECTIONS), WALLS, STRUCTURAL SLABS, COLUMNS AND BEAMS
C. CONCRETE PLACEMENT AND MATERIAL TESTING

B. STRUCTURAL STEEL
a. WELDING
   1. FIELD WELDED CONNECTIONS
   2. WELDED SHEAR CONNECTORS/HEADED STUDS
   3. STEEL ROOF DECK WELDING
b. HIGH STRENGTH BOLTING
   1. BOLTED CONNECTIONS FOLLOWING INSTALLATION
c. STRUCTURAL STEEL DETAIL COMPLIANCE

C. POST-INSTALLED ANCHORS
THE INSTALLATION OF POST-INSTALLED ANCHORS IN CONCRETE ARE SUBJECT TO SPECIAL INSPECTIONS BY AN INDEPENDENT TESTING AGENCY. PROVIDE A MINIMUM 24 HOURS NOTICE TO THE SPECIAL INSPECTOR PRIOR TO ANCHOR INSTALLATION.

ADHESIVE ANCHORS INSTALLED OVERHEAD, UPWARDLY INCLINED, OR SUBJECT TO SUSTAINED TENSION LOADS REQUIRE CONTINUOUS SPECIAL INSPECTION. INSPECTOR SHALL OBSERVE ALL ASPECTS OF ANCHOR INSTALLATION FOR ALL ANCHORS.

EXPANSION, SCREW AND ADHESIVE ANCHORS INSTALLED IN HORIZOTAL AND DOWNHAND POSITIONS NOT SUBJECT TO SUSTAINED TENSION LOADS REQUIRE PERIODIC INSPECTION. INSPECTOR SHALL VERIFY INITIAL INSTALLATIONS OF EACH TYPE AND SIZE OF ANCHOR BY CONSTRUCTION PERSONNEL. SUBSEQUENT INSTALLATIONS MAY BE PERFORMED WITHOUT INSPECTION. ANY CHANGES TO THE PRODUCT BEING INSTALLED OR PERSONNEL PERFORMING INSTALLATION SHALL REQUIRE AN INITIAL INSPECTION. ADDITIONAL PERIODIC INSPECTIONS SHALL BE PERFORMED AT THE DISCRETION OF THE INSPECTOR AND/OR STRUCTURAL ENGINEER OF RECORD AND/OR OWNER.

HOLE DRILLING MAY BE PERFORMED IN THE ABSENCE OF THE SPECIAL INSPECTOR PROVIDED THAT THE INSPECTOR EXAMINES THE DRILL BITS AND EQUIPMENT USED

CONTRACTOR'S DELEGATED DESIGN

1. CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CONNECTICUT TO PERFORM THE DESIGN OF THE FOLLOWING:

A. STRUCTURAL STEEL CONNECTIONS, INCLUDING BRACING AND MOMENT FRAMES
B. COLD-FORMED METAL EXTERIOR WALL FRAMING AND JOISTS
C. TEMPORARY SHORING OF EXISTING STRUCTURAL MEMBERS.
D. MECHANICAL EQUIPMENT CURB ATTACHMENT TO STEEL FRAMING.

ALL CALCULATIONS SHALL BE SIGNED AND SEALED BY THE ENGINEER AND SUBMITTED FOR REVIEW.

FOUNDATIONS

1. BACKFILLING SHALL BE ACCOMPLISHED TO EQUAL HEIGHTS ON BOTH SIDES OF FOUNDATION WALLS TO PREVENT MOVEMENTS DUE TO UNBALANCED EARTH PRESSURE. WHERE EARTH IS ON ONE SIDE ONLY, BACKFILLING AND COMPACTION SHALL NOT START UNTIL FLOOR SLAB OR ADEQUATE BRACING IS PROVIDED FOR WALL SUPPORT (EXCEPT AT RETAINING WALLS).

2. ALL FOOTINGS ARE TO REST ON UNDISTURBED NATURAL SOIL, AS DEFINED IN THE SPECIFICATIONS, OR CONTROLLED COMPACTED FILL, REGARDLESS OF ELEVATIONS SHOWN ON DRAWINGS. FOOTING BOTTOM ELEVATIONS SHALL NOT BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, NOR LESS THAN 3'-6" BELOW FINISH GRADES.

3. IF FILL MATERIALS ARE ENCOUNTERED AT FOOTING BEARING ELEVATIONS, ALL FILL MATERIAL SHALL BE EXCAVATED AND DISPOSED OF LEGALLY OFF-SITE. THE OVER EXCAVATION SHALL BE BACKFILLED WITH CONTROLLED COMPACTED FILL TO THE BOTTOM OF FOOTING ELEVATION AS REQUIRED.

4. ALL CONTROLLED COMPACTED BACKFILL UNDER FOOTINGS AND WITHIN THE FOOTPRINT OF THE STRUCTURE SHALL BE COMPACTED TO 95% OF THE MODIFIED OPTIMUM DENSITY.

5. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE AT LEAST 3'-6" BELOW FINISHED GRADE. PRIOR TO PROCEEDING WITH FOOTING EXCAVATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF FINISH GRADES AND BOTTOM OF EXTERIOR FOOTING ELEVATIONS TO MAINTAIN THE 3'-6" FROST PROTECTION.

6. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.

7. FOOTING BOTTOMS SHALL STEP AT THE RATE OF 1 UNIT VERTICAL TO 2 UNITS HORIZONTAL WITH A MAXIMUM VERTICAL STEP OF 2'-0".

8. WHERE SUBSURFACE PIPING PASSES THROUGH FOUNDATION WALLS, THE TOP OF THE FOOTINGS SHALL BE AT LEAST 8' BELOW THE INVERT ELEVATION OF THE PIPING AND CONDUITS. COORDINATE ALL INVERTS WITH MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL, SITE AND SITE UTILITY DRAWINGS.

9. WHERE FOOTINGS ARE IN CLOSE PROXIMITY OF SUBSURFACE PIPING OR CONDUIT, BOTTOM OF FOOTINGS SHALL BE AT LEAST 8' BELOW INVERT ELEVATION OF PIPING OR CONDUITS.

10. KEEP FOUNDATION EXCAVATIONS FREE OF WATER AT ALL TIMES.

11. USE LEAN CONCRETE (f'c=1500) OR CONTROLLED COMPACTED FILL FOR OVER-EXCAVATION OF FOOTINGS.

12. PLACEMENT OF ALL COMPACTED FILL MATERIALS MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY (SEE SPECIFICATIONS). CONCRETE FOUNDATIONS SHALL NOT BE PLACED UNTIL SUBGRADE HAS BEEN CHECKED IN PLACE AND APPROVED BY TESTING LABORATORY.

13. EXISTING ON-SITE EXCAVATED MATERIALS SHALL NOT BE ACCEPTABLE BACKFILL MATERIAL BELOW BUILDING FOUNDATIONS, SLABS ON GRADE, OR FOR BACKFILLING OF FOUNDATION WALLS, OR WITHIN 2 FEET OF PAVEMENT GRADES UNLESS APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD.

14. CONTROL JOINT SPACING EXPOSED FOUNDATION RETAINING WALLS SHALL NOT EXCEED 30 FEET. 50% OF HORIZONTAL REINFORCEMENT SHALL EXTEND THROUGH JOINT AND HAVE A CLASS "B" SPLICE (PER ACI 318). CONTROL JOINTS ARE NOT REQUIRED AT FROST WALLS UNLESS NOTED ON PLAN.

15. WHERE REQUIRED, CONSTRUCTION JOINTS SHALL BE KEYED AND OCCUR AT CONTROL JOINT INTERVALS. PROVIDE BENTONITE WATERSTOP FULL HEIGHT IN ALL WALL CONSTRUCTION JOINTS WHERE THERE IS A DIFFENCE IN GRADE.

16. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF BRICK OR CONCRETE MASONRY BLOCK SHELF ELEVATIONS IN THE FOUNDATION WALLS.

17. THE LOCATION AND ELEVATION OF EXISTING FOOTINGS INDICATED ARE BASED ON DRAWINGS BY _____, DATED _____, WHICH HAVE BEEN PROVIDED TO THE DESIGNERS BY THE OWNER. THIS INFORMATION IS PROVIDED FOR BIDDING PURPOSES ONLY. ACTUAL EXISTING FOUNDATIONS MAY VARY FROM WHAT IS INDICATED, AND MUST BE VERIFIED IN FIELD PRIOR TO PREPARATION OF SHOP DRAWINGS. NOTIFY ARCHITECT IF EXISTING CONDITIONS PRECLUDE USE OF DETAILS AS SHOWN.

18. THE FOUNDATION DESIGN OF THE STRUCTURE HAS BEEN PREPARED BASED ON THE SITE GRADING PLAN PREPARED BY BENESCH, DATED 02/23/2024. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE DRAWING PRIOR TO PREPARING HIS BID TO ASSURE HE UNDERSTANDS THE SITE CONDITIONS AND THE REQUIREMENTS OF THE SITE ENGINEER.

20. FOUNDATION DESIGN SITE PREPARATION: THE FOUNDATION DESIGN AS INDICATED ON THE STRUCTURAL DRAWINGS HAS BEEN BASED ON THE FOLLOWING SITE PREPARATION. THE SITE HAS BEEN PREPARED BY THE EXCAVATION AND REMOVAL FROM THE SITE OF ALL EXISTING FILL AND CONTAMINATED SOILS. THE FOUNDATION DESIGN IS BASED ON THE CONTROLLED BACKFILLING OF THE SITE EXCAVATION WITH CONTROLLED FILL COMPACTED TO AT LEAST 95% OF THE MODIFIED OPTIMUM DENSITY IN ACCORDANCE WITH ASTM D1557.

PROVIDE CONTINUOUS BENTONITE WATERSTOPS BETWEEN THE TOP OF FOOTING AND BOTTOM OF ALL WALLS WHERE THE SLAB ON GRADE IS BELOW THE FINISH GRADE. PLACE THE WATERSTOP WITH A MINIMUM OF 2" CLEAR FROM THE FACE OF WALL, OR PER THE MANUFACTURER=S WRITTEN INSTALLATION INSTRUCTIONS. ATTACH WATERSTOP TO THE CONCRETE PER THE MANUFACTURER=S WRITTEN INSTALLATION INSTRUCTIONS.

SLAB ON GRADE

1. ALL SLABS ON GRADE SHALL BEAR ON A 15 MIL, CLASS A, VAPOR RETARDER OVER A MINIMUM OF 4 INCHES OF 3/4" COMPACTED PROCESSED AGGREGATE FILL, OVER A MINIMUM OF 6 INCHES OF COMPACTED GRAVEL FILL.

   ALL JOINTS OF THE VAPOR RETARDER SHALL BE SEALED WITH TAPE. TURN THE VAPOR BARRIER UP AT ALL TERMINATIONS AGAINST FOUNDATION WALLS AND SEAL JOINT BY CONTINUOUSLY TAPING.

2. IF FILL MATERIALS ARE ENCOUNTERED SLAB SUBGRADE ELEVATIONS, ALL FILL MATERIAL SHALL BE EXCAVATED AND DISPOSED OF LEGALLY OFF-SITE. THE OVER EXCAVATION SHALL BE BACKFILLED WITH CONTROLLED COMPACTED FILL TO THE BOTTOM OF THE SLAB SUBGRADE AS REQUIRED. ALL CONTROLLED COMPACTED BACKFILL UNDER SLABS WITHIN THE FOOTPRINT OF THE STRUCTURE SHALL BE COMPACTED TO 95% OF THE MODIFIED OPTIMUM DENSITY.

3. EXISTING ON-SITE EXCAVATED MATERIALS SHALL NOT BE ACCEPTABLE BACKFILL MATERIAL BELOW BUILDING SLABS ON GRADE UNLESS APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD.

4. CONTROL JOINTS ARE TO BE CREATED IN SLABS ON GRADE. JOINTS SHALL BE SAW CUT 1/8" WIDE AND TO A DEPTH EQUAL TO 1/4 OF THE SLAB THICKNESS. LOCATE JOINTS A MAXIMUM OF 12'-0" ON CENTER IN EACH DIRECTION, IN ADDITION TO THOSE LOCATIONS INDICATED ON PLAN.

5. CONSTRUCTION JOINTS AS REQUIRED SHALL BE KEYED AND DOWELED AND LOCATED AT INTERVALS OF A MAXIMUM OF 75 FEET ON CENTER.

6. SEE ARCHITECTURAL DRAWINGS FOR LOCATION AND SIZE OF DEPRESSED AREAS IN CONCRETE SLABS AND FOR CONCRETE PADS. MAINTAIN FULL SLAB THICKNESS IN DEPRESSED AREAS, UNLESS OTHERWISE SHOWN.

7. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF ALL MASONRY WALLS FOR WHICH NO FOOTING IS SHOWN. SEE DETAILS FOR SLAB REINFORCING REQUIREMENTS AT ALL WALL LOCATIONS.

8. CONTRACTOR SHALL CONSOLIDATE ALL SLAB CONCRETE USING VIBRATIONAL METHODS IN CONFORMANCE WITH ACI 309, AGUIDE FOR CONSOLIDATION OF CONCRETE.

9. ALL CONDUIT AND PIPING ARE TO BE PLACED BELOW THE SLAB VAPOR BARRIER. ANY STUB-UPS SHOULD BE TAPED WITH APPROVED TAPE.

CONCRETE

MATERIALS:

CONCRETE SHALL MEET THE REQUIREMENTS OF THE EXPOSURE CATEGORY LISTED BELOW PER ACI 318 CHAPTER 19, AND SHALL HAVE THE MAXIMUM WATER TO CEMENT RATIO, TARGET AIR CONTENT AND DEVELOP STRENGTH IN 28 DAYS AS FOLLOWS:

LOCATION	EXPOSURE CATEGORY	STRENGTH (PSI)	MAXIMUM WATER TO CEMENT RATIO	TARGET AIR CONTENT
FOUNDATIONS	F2	4500	0.45	6%
SLABS ON GRADE	F0	3500	N/A	N/A
SLABS ON METAL DECK	F0	3500	N/A	N/A

* INCLUDES ANY EXTERIOR CONCRETE PADS, SLABS, ETC. NOTED ON THE STRUCTURAL DRAWINGS. REFER TO SITE CONCRETE SPECIFICATIONS FOR ALL OTHER EXTERIOR CONCRETE REQUIREMENTS.

1. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS MUST FOLLOW ACI 318-14.

2. CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ACI GUIDELINES FOR HOT AND COLD WEATHER CONCRETE AND SHALL SUBMIT PROCEDURES FOR RECORD PRIOR TO COMMENCING WORK.

3. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.

4. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.

5. UNLESS NOTED OTHERWISE, ALL LAP SPLICES SHALL BE CLASS B, IN ACCORDANCE WITH ACI 318-14.

6. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185.

7. WIRE MESH REINFORCEMENT MUST LAP ONE MESH SIZE AT SIDES AND ENDS AND BE WIRED TOGETHER.

8. WELDED WIRE FABRIC SIDE LAPS SHALL BE STAGGERED TO AVOID FOUR MESH THICKNESS AT COINCIDING END LAP AND SIDE LAP LOCATION.

9. NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 0.1% CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.

10. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE AT LEAST 3'-6" BELOW FINISHED GRADE. PRIOR TO PROCEEDING WITH FOOTING FORMWORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF BOTTOM OF EXTERIOR FOOTING ELEVATIONS WITH THE FINISH GRADES AND MAINTAINING THE 3'-6" FROST PROTECTION. WHERE SUBSURFACE PIPING PASSES THROUGH FOUNDATION WALLS, THE TOP OF FOOTINGS SHALL BE AT LEAST 8' BELOW THE INVERT ELEVATION OF THE PIPING AND CONDUITS. COORDINATE ALL INVERTS WITH MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL, SITE AND SITE UTILITY DRAWINGS. PIPING OR CONDUITS SHALL NOT PASS THROUGH COLUMNS OR PIERS.

11. CONTRACTOR SHALL ANTICIPATE DEFLECTION OF STEEL MEMBERS AT SUPPORTED ELEVATED SLABS OF 1 INCH MAXIMUM, AND PROVIDE ADDITIONAL CONCRETE AS REQUIRED.

12. ALL HORIZONTAL STEEL SHOWN IN SECTIONS AND DETAILS SHALL BE CONTINUOUS, UNLESS OTHERWISE NOTED. ALL LAPS SHALL BE CLASS AB@ SPLICES IN ACCORDANCE WITH ACI 318.

13. AT INTERSECTIONS OF REINFORCED CONCRETE WALLS, PROVIDE CORNER DOWELS OF SAME SIZE AND AT THE SAME SPACING AS THE SMALLER HORIZONTAL REINFORCING. DOWELS SHALL HAVE A CLASS B LAP WITH HORIZONTAL REINFORCING IN EACH DIRECTION.

14. PROVIDE DRILLED AND EPOXIED DOWELS OF SAME SIZE TO MATCH NEW REINFORCING WHERE NEW CONSTRUCTION ABUTS EXISTING CONCRETE CONSTRUCTION. LENGTH SHALL BE THE REQUIRED EMBEDMENT DEPTH PER THE ANCHOR BOLT/EPOXY MANUFACTURER PLUS A CLASS B LAP SPLICE FOR THE SIZE OF BAR.

15. PROVIDE CORROSION RESISTANT ACCESSORIES IN ALL EXPOSED CONSTRUCTION.

16. ALL KEYS IN CONCRETE WALLS SHALL BE 2 X 4 UNLESS NOTED OTHERWISE.

17. CONCRETE PIERS: PLACE CONCRETE PIERS AND WALLS TOGETHER. SET PIER REINFORCING AND SET WALL REINFORCING THROUGH PIER VERTICAL BARS. PROVIDE DOWELS WITH STANDARD HOOK FROM FOOTING AT ALL PIERS. SIZE AND QUANTITY OF DOWELS TO MATCH VERTICAL PIER REINFORCING, PROVIDE CLASS "B" SPLICE.

18. SEE ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL, SITE, SITE UTILITY AND EQUIPMENT DRAWINGS FOR CONCRETE PADS, SLEEVES, OPENINGS, RECESSES, AND BUILT-IN WORK IN CONCRETE ELEMENTS.

19. THE CONTRACTOR SHALL FURNISH, LOCATE AND INSTALL ALL ACCESSORIES FOR PROPER ANCHORAGE OF WOOD AND METAL FRAMING, WOOD BLOCKING, BRICK WORK AND MASONRY UNITS. HE SHALL BE SOLELY RESPONSIBLE FOR FURNISHING, LOCATING AND ENSURING PROPER QUANTITY OF ALL FASTENING DEVICES.

20. ALL CONCRETE TO REMAIN EXPOSED TO VIEW SHALL RECEIVE A SMOOTH RUBBED FINISH (SEE SPECIFICATIONS).

21. ALL CONCRETE CORNERS WITH BOTH SIDES EXPOSED TO VIEW SHALL BE SQUARE UNLESS OTHERWISE SHOWN OR NOTED. THE EDGE SHALL BE RUBBED, PRODUCING A SMOOTH, DENSE SURFACE WITHOUT PITS OR IRREGULARITIES.

22. PROVIDE CONTINUOUS VERTICAL DOVETAIL SLOTS AT 16 INCH CENTERS HORIZONTALLY FOR ALL CONCRETE WALLS ABUTTING A MASONRY WALL OR MASONRY VENEER, UNLESS OTHERWISE NOTED.

23. PROVIDE CLEARANCE FROM EDGE OF REINFORCING TO EDGE OF CONCRETE AS FOLLOWS:

FOOTINGS (AGAINST EARTH)	3"
BEAMS (LONGITUDINAL REINFORCING)	2"
COLUMNS AND PIERS (VERTICAL REINFORCING)	2"
WALLS, EXTERIOR FACE (#5 AND SMALLER)	1 1/2"
WALLS, EXTERIOR FACE (#6 AND LARGER)	2"
SLABS (INTERIOR)	3/4"
SLABS (EXTERIOR)	1 1/2"
SLABS ON GRADE (W.W.F.)	1/3 X THK. FROM TOP SURFACE

24. PROVIDE 2-#4 BARS IN TOP OF ALL CONCRETE BEAMS WITH STIRRUPS THAT DO NOT HAVE ANY OTHER TOP STEEL SPECIFIED.

25. NO SLEEVES, HOLES OR INSERTS SHALL BE PLACED IN SLABS WITHIN 2'-0" OF THE EDGE OF COLUMNS, OR ANYWHERE IN BEAMS, COLUMNS OR JOISTS WITHOUT APPROVAL OF THE ARCHITECT.

26. PROVIDE LENGTH OF BEARING ON MASONRY WALLS AS FOLLOWS, UNLESS NOTED OTHERWISE:

REINFORCED CONCRETE BEAMS:	8 INCHES
SOLID CONCRETE SLABS:	4 INCHES

27. CONCRETE COLUMNS SHALL BE PLACED AT LEAST TWO HOURS IN ADVANCE OF BEAMS, JOISTS AND SLABS.

28. JOINTS NOT INDICATED ON THE DRAWINGS SHALL BE MADE SO AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE. THERE SHALL BE NO HORIZONTAL JOINTS IN BEAMS OR SUSPENDED SLABS.

29. PROVIDE THE FOLLOWING AT OPENINGS IN ALL CONCRETE WALLS AND FRAMED SLABS, UNLESS OTHERWISE INDICATED:

   1-#5 AT EACH FACE ON EACH SIDE OF OPENING, EXTENDING 2'-0" BEYOND OPENING.

   1-#5 X 4'-0" LONG AT EACH FACE DIAGONALLY AT EACH CORNER.

30. REINFORCING STEEL SHOP DRAWINGS SHALL INDICATE THE SEQUENCE IN WHICH LAYERS OF CROSSING REINFORCING SHOULD BE PLACED, IN ORDER TO PRODUCE THE CORRECT OUTERMOST LAYER AS INDICATED ON THE DRAWINGS.

31. SHOP DRAWINGS SHALL INDICATE LOCATIONS OF ALL WALL CONTROL AND CONSTRUCTION JOINTS.

32. ALL REINFORCING, THREADED RODS OR BOLTS INDICATED TO BE DRILLED AND EPOXIED SHALL UTILIZE HILTI HIT-HY200 ADHESIVE OR APPROVED EQUAL.

STRUCTURAL STEEL

MATERIALS:

STRUCTURAL STEEL ALL W SHAPES	ASTM A 36 ASTM A 992, GR.50
STRUCTURAL STEEL TUBING	ASTM A500, GRADE C
STRUCTURAL STEEL PIPE	ASTM A53, GRADE B
BOLTS	ASTM A325
ANCHOR BOLTS	ASTM F1554, GRADE 36
WELDING ELECTRODE	ASTM E 70
WELDABLE REBAR	ASTM A706, GRADE 60

1. DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION, AISC 360-10. ALL REACTIONS SHOWN ON PLAN HAVE BEEN DEVELOPED USING ALLOWABLE STRESS DESIGN.

2. WELDING SHALL CONFORM TO THE CODE FOR "ARC AND GAS WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER.

3. ALL LOOSE BEAM LINTELS SHALL HAVE 8" MINIMUM BEARING. SEE ARCHITECTURAL JAMB DETAILS FOR LENGTHS.

4. FOR MISCELLANEOUS STEEL NOT SPECIFICALLY DETAILED ON STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL DRAWINGS.

5. PROVIDE LEVELING NUTS FOR ALL COLUMN BASE PLATES WITH FOUR (4) ANCHOR BOLTS AND PROVIDE 1 1/2" MINIMUM, 5000 PSI NON-SHRINK GROUT. PROVIDE TACK WELDED NUT AT THE BOTTOM OF THE ANCHOR BOLT EMBEDDED IN CONCRETE.

6. CONNECTIONS:

   CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH AISC 360-10. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF SIMPLE CONNECTIONS UNLESS OTHERWISE DETAILED.

   CONNECTIONS SHALL BE DESIGNED TO ACCOMMODATE THE REACTIONS SHOWN ON THE CONTRACT DOCUMENTS. IF NO REACTIONS ARE GIVEN THEN PROVIDE CONNECTION FOR ONE HALF THE ALLOWABLE UNIFORM LOAD BEAM TABLES, PER THE AISC MANUAL, FOR THE SPAN INDICATED ON THE DRAWINGS. MINIMUM CONNECTION DESIGN LOAD IS 6 KIPS.

   MINIMUM CONNECTION ANGLE THICKNESS SHALL BE 5/16". MINIMUM SHEAR PLATE IS 3/8".

   IN ADDITION TO PROVIDING ADEQUATE BOLTS TO ACCOMMODATE REACTIONS, THE FOLLOWING MINIMUM NUMBER OF BOLT ROWS SHALL BE USED:

MEMBER DEPTH	MINIMUM BOLT ROWS
10" or Less	2
12" to 14"	3
16" to 18"	4
21" to 24"	5
27" to 30"	6
Over 30"	7

   CONNECTIONS SHALL BE MADE USING 3/4" DIAMETER ASTM A325 BOLTS (SNUG TIGHT OR SLIP CRITICAL) OR WELDS, UNLESS NOTED OTHERWISE. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES USING CLASS A FAYING SURFACE.

   USE LARGER OF 1/4" FILLET WELDS OR MINIMUM SIZE PER AISC REQUIREMENTS WHERE NO WELD SIZE IS SHOWN ON DRAWINGS.

   WELDS IN EXCESS OF 24" IN LENGTH SHALL BE 3" STITCH WELDS AT 8" ON CENTERS, UNLESS SPECIFICALLY SHOWN ON DRAWINGS TO BE CONTINUOUS.

   MOMENT CONNECTIONS SHALL BE DESIGNED TO DEVELOP FULL MOMENT CAPACITY OF THE ELEMENTS CONNECTED, UNLESS SPECIFIC MOMENT IS INDICATED ON THE DRAWINGS.

7. NO WELDING OR FINAL BOLTING SHALL BE DONE UNTIL AS MUCH OF THE STRUCTURE THAT WILL BE STIFFENED THEREBY HAS BEEN PROPERLY ALIGNED.

8. SEQUENCE OF PLACING WELDS SHALL BE SUCH AS TO AVOID DISTORTION O

CONCRETE MASONRY

MATERIALS:

HOLLOW LOAD BEARING UNITS: ASTM C 90
(NET AREA COMPRESSIVE STRENGTH OF CMU UNIT = 2000PSI)
MORTAR: (TYPE S) ASTM C 270
(COMPRESSIVE STRENGTH OF MASONRY ASSEMBLY, f'm = 2000 PSI)
GROUT FOR REINFORCED MASONRY: ASTM C 476
(COMPRESSIVE STRENGTH AT 28 DAYS = 2500 PSI)
GROUT FOR REINFORCED MASONRY: ASTM C 476
SOLID LOAD BEARING UNITS: (GRADE N-I) ASTM C 145
CONCRETE BRICK: (GRADE N-I) ASTM C 55

1. WALLS INDICATED ON STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY. SEE ARCHITECTURAL DRAWINGS FOR LOCATION, THICKNESS AND COMPOSITION OF MASONRY WALLS.

2. ALL EXTERIOR MASONRY WALLS SHALL CONTAIN THE FOLLOWING REINFORCING:

   1-#5 VERTICAL BAR AT 32" ON CENTER.

   2-#6 VERTICAL BARS AT BOTH SIDES OF DOOR, WINDOW AND MECHANICAL OPENINGS.

   2-#5 HORIZONTAL BAR MINIMUM ABOVE AND BELOW ALL WINDOW AND MECHANICAL OPENINGS AND ABOVE ALL DOOR OPENINGS. PROVIDE ADDITIONAL BARS ABOVE DOORS, WINDOWS AND MECHANICAL OPENINGS AS REQUIRED IN ACCORDANCE WITH LINTEL SCHEDULE ON ARCHITECTURAL DRAWINGS.

   2-#5 HORIZONTAL AT TOP OF ALL WALLS, AND AT BOND BEAMS CONNECTED TO FLOORS AND ROOFS, UNLESS OTHERWISE INDICATED.

   2-#6 VERTICAL BARS AT ENDS OF ALL WALLS, AND EACH SIDE OF CONTROL JOINTS.

   STANDARD LADUR TYPE DESIGN DUR-O-WAL HORIZONTAL REINFORCING @ 16" O.C. VERTICAL. SIDE WIRE SIZE SHALL BE #9 GAGE WIRE.

3. INTERIOR SHEAR WALLS, WHERE INDICATED, SHALL HAVE SAME REINFORCING AS EXTERIOR WALLS.

4. ALL OTHER INTERIOR MASONRY WALLS SHALL CONTAIN THE FOLLOWING MINIMUM REINFORCING:

   1-#4 VERTICAL BAR AT 48" ON CENTER.

   1-#4 VERTICAL AND HORIZONTAL AT ALL SIDES OF DOORS, WINDOW AND MECHANICAL OPENINGS.

   1-#4 HORIZONTAL BAR MINIMUM ABOVE AND BELOW ALL WINDOW AND MECHANICAL OPENINGS AND ABOVE ALL DOOR OPENINGS. PROVIDE ADDITIONAL BARS ABOVE DOORS, WINDOWS AND MECHANICAL OPENINGS AS REQUIRED IN ACCORDANCE WITH LINTEL SCHEDULE ON ARCHITECTURAL DRAWINGS.

   1-#4 VERTICAL AT ENDS OF ALL WALLS, AND EACH SIDE OF CONTROL JOINTS.

   1-#4 HORIZONTAL AT TOP OF ALL WALLS.

   1-#4 HORIZONTAL IN BOND BEAMS CONNECTED TO FLOORS AND ROOFS .

   STANDARD LADUR TYPE DESIGN DUR-O-WAL HORIZONTAL REINFORCING @ 16" O.C. VERTICAL. SIDE WIRE SIZE SHALL BE #9 GAGE WIRE.

5. PROVIDE VERTICAL DOWELS FROM CONCRETE WALLS INTO ALL CMU WALLS. SIZE AND SPACING OF THE DOWELS SHALL MATCH THE VERTICAL REINFORCING AS SPECIFIED IN THESE GENERAL NOTES, UNLESS OTHERWISE NOTED ON THE DRAWINGS. DOWEL LENGTHS SHALL BE THE REQUIRED CONCRETE DEVELOPMENT LENGTH PLUS THE REQUIRED BAR LAP SPLICE LENGTH FOR MASONRY AS SPECIFIED IN THESE GENERAL NOTES.

6. ALL VERTICAL WALL REINFORCING SHALL BE CONTINUOUS FOR THE FULL HEIGHT OF MASONRY WALLS, INCLUDING THROUGH CONTINUOUS MASONRY BOND BEAMS UNLESS OTHERWISE INDICATED.

7. ALL GROUTING OF MASONRY WALLS SHALL BE ASSUMED TO BE COMPLETED BY LOW LIFT GROUTING METHODS. IF THE CONTRACTOR PROPOSES TO UTILIZE HIGH LIFT GROUTING METHODS THEY SHALL SUBMIT THEIR PROPOSED HIGH LIFT GROUTING PROCEDURE FOR REVIEW PRIOR TO STARTING ANY GROUTING ON THE PROJECT SITE.

8. PROVIDE BOND BEAM OR STEEL LOOSE LINTEL ABOVE WINDOWS, DOORS AND MECHANICAL OPENINGS. IN EXISTING HOLLOW CMU WALLS, PROVIDE MINIMUM L5X3 ½ X 3/8 FOR EACH 4 INCHES OF CMU WITH A MINIMUM 8 INCHES OF BEARING.

9. BOND BEAM LINTELS SHALL BE CONSTRUCTED USING SOLID BOTTOM "U" BLOCK MASONRY UNITS.

10. CELLS CONTAINING REINFORCING BARS AND ALL CELLS BELOW GRADE SHALL BE GROUTED SOLID. ALL OTHER CELLS SHALL REMAIN HOLLOW EXCEPT WHERE NOTED. THE CONTRACTOR SHALL NOT RUN CONDUIT OR PIPE IN CELLS CONTAINING REINFORCING.

11. ALL BOLTS OR ANCHORS SHALL BE SOLIDLY EMBEDDED IN MORTAR OR GROUT. IF BOND BEAM IS NOT LOCATED AT BOLT OR ANCHOR ELEVATION, PROVIDE LATH AND FILL CELL LOCALLY TO PROVIDE SUBSTRATE FOR BOLT OR ANCHOR. GROUT CELL ABOVE ALL MASONRY ANCHORS.

12. ALL COLUMNS WITHIN SHEAR WALLS AND EXTERIOR WALLS SHALL BE SOLIDLY EMBEDDED IN GROUT.

13. GROUT SOLID MASONRY FOR FULL HEIGHT OF WALL BELOW EACH LOOSE LINTEL AND PROVIDE #4 VERTICAL IN NEW OR EXISTING CORE.

14. GROUT SOLID MASONRY FOR TWO COURSES BELOW EACH BEAM BEARING EXCEPT AS NOTED.

15. USE 1 COURSE (8") OF SOLID MASONRY OR GROUTED SOLID MASONRY BELOW EACH STEEL JOIST BEARING EXCEPT AS NOTED.

16. PROVIDE CONTINUOUS GROUTED BOND BEAM WHERE MASONRY ANCHORS CONNECT CONCRETE MASONRY TO STEEL FRAMING. GROUT CELL ABOVE ANCHOR.

17. HOLLOW UNITS SHALL BE LAID WITH FULL MORTAR COVERAGE ON HORIZONTAL AND VERTICAL FACE SHELLS, EXCEPT THAT WEBS SHALL ALSO BE BEDDED IN ALL COURSES OF BEARING AND SHEAR WALLS, PIERS, COLUMNS AND PILASTERS, AND IN THE STARTING COURSE ON FOOTINGS AND SOLID FOUNDATION WALLS, AND WHERE ADJACENT TO CELLS OR CAVITIES WHICH ARE TO BE REINFORCED AND/OR FILLED WITH GROUT.

18. MORTAR PROTRUSIONS EXTENDING INTO CELLS OR CAVITIES TO BE REINFORCED AND/OR GROUTED SHALL BE REMOVED.

19. ALL MASONRY WALLS SHALL BE BRACED AT THE TOP WHERE MASONRY ENDS AT THE UNDERSIDE OF FLOOR OR ROOF CONSTRUCTION. REFER TO TYPICAL DETAILS.

20. ALL INTERIOR NON-LOADBEARING MASONRY WALLS SHALL BE BRACED AT THE TOP, UNLESS BRACED HORIZONTALLY BY COLUMNS OR INTERSECTING WALLS AT A MAXIMUM SPACING OF: 17 FEET FOR 6" WALLS, 23 FEET FOR 8" WALLS, AND 33 FEET FOR 12" WALLS. THE ENDS OF THE WALLS MUST BE ANCHORED TO INTERSECTING WALLS BY EITHER TOOTHING OR MECHANICAL ANCHORS. THERE SHALL BE NO VERTICAL CONTROL JOINTS WITHIN THE HORIZONTAL SPAN OF THE WALL BETWEEN THE INTERSECTING WALLS. THIS NOTE DOES NOT APPLY TO MASONRY SHEARWALLS.

21. IN MASONRY WALLS, NO CHASES, RISERS, CONDUITS, OR TOOTHING OF MASONRY SHALL OCCUR WITHIN 17" OF CENTERLINE OF BEAM BEARING OR LOAD CONCENTRATION.

22. PIERS:

   1. IF NOT SPECIFICALLY INDICATED, CONSTRUCT PIERS USING SAME MASONRY AS THAT IN WALL.

   2. BOND PIERS INTO ADJACENT WALLS USING PIER MASONRY MATERIAL FOR TOOTHING.

23. SOLID UNITS SHALL BE LAID WITH FULL HEAD AND BED JOINTS.

24. COLLAR (VERTICAL LONGITUDINAL) JOINTS BETWEEN THE FACING AND BACKING WYTHES IN WALLS SHALL BE COMPLETELY FILLED WITH MORTAR OR GROUT AND WORKED IN WITH A TROWEL.

25. ALL INTERSECTING LOAD BEARING WALLS SHALL BE TIED TOGETHER IN MASONRY BOND UNLESS NOTED OTHERWISE.

26. MINIMUM DEVELOPMENT LENGTH AND SPLICE LENGTH OF MASONRY REINFORCING SHALL BE AS FOLLOWS:

BAR SIZE	DEVELOPMENT LENGTH	SPLICE LENGTH
JOINT REINFORCING	9"	12"
#4	18"	24"
#5	25"	30"
#6	27"	36"
#7	32"	42"

27. IF EPOXY COATED REINFORCING IS SPECIFIED IN THE MASONRY SPECIFICATIONS, THEN ALL SPLICE LENGTHS SHALL BE INCREASED BY 50% PER THE ACI 530 MASONRY CODE.

28. SUBMIT SHOP DRAWINGS INDICATING THE PLACEMENT OF ALL REINFORCING REQUIRED IN MASONRY WALLS. REFER TO SPECIFICATIONS FOR SUBMITTAL REQUIREMENTS. SHOP DRAWINGS SHALL INDICATE THE LOCATION OF ALL CONTROL JOINTS, AND THE REQUIRED LAP SPLICES FOR ALL REINFORCING.

29. SUBMIT SHOP DRAWINGS INDICATING THE PLACEMENT OF TOP OF WALL PARTITION ANCHORS AT ALL INTERIOR CMU WALLS. COORDINATE LOCATIONS WITH ARCHITECTURAL DRAWINGS.

30. PROVIDE MASONRY CONTROL JOINTS AT A MAXIMUM SPACING OF 30 FEET ON CENTER. PROVIDE CONTROL JOINTS BETWEEN MAIN AND INTERSECTING WALLS, AT CHANGES IN WALL HEIGHT, CHANGES IN WALL THICKNESS AND NO GREATER THAN 4'-0" FROM CORNERS.

31. ALL REINFORCING, THREADED RODS OR BOLTS INDICATED TO BE DRILLED AND EPOXIED INTO HOLLOW CMU OR BRICK SHALL UTILIZE HILTI HIT-HY270 ADHESIVE OR APPROVED EQUAL.

32. ALL REINFORCING, THREADED RODS OR BOLTS INDICATED TO BE DRILLED AND EPOXIED INTO SOLID GROUTED CMU SHALL UTILIZE HILTI HIT-HY200 ADHESIVE OR APPROVED EQUAL.

COLD FORMED LIGHT GAGE METAL FRAMING

1. LIGHT GAGE COLD FORMED METAL FRAMING SHOP DRAWINGS SHALL BEAR THE PROFESSIONAL SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN CONNECTICUT, AND SHALL BE ACCOMPANIED BY STRUCTURAL CALCULATIONS AND ASSUMPTIONS. LOADING SHALL CONFORM TO THE TABULATED UNIFORM LOADING.

   CALCULATIONS: PROVIDE PROFESSIONALLY PREPARED CALCULATIONS AND CERTIFICATION OF THE PERFORMANCE OF THIS WORK. INDICATE HOW DESIGN REQUIREMENTS FOR LOADING AND OTHER PERFORMANCE CRITERIA HAVE BEEN SATISFIED. PROVIDE CALCULATIONS SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF CONNECTICUT.

2. SYSTEM COMPONENTS: MANUFACTURER'S STANDARD LOAD BEARING STUDS AND JOISTS OF TYPE SIZE AND GAGE INDICATED, AND AS REQUIRED TO SATISFY THE DESIGN LOADS. THE DESIGN OF THE COLD FORMED LIGHT GAGE METAL FRAMING COMPONENTS INDICATED ON THESE DRAWINGS HAVE BEEN BASED ON COMPONENTS MANUFACTURED BY MARINO \WARE.

3. MATERIALS AND FINISHES: FOR 16 GAGE AND HEAVIER UNITS, FABRICATE METAL FRAMING COMPONENTS OF STRUCTURAL QUALITY STEEL SHEET WITH A MINIMUM YIELD OF 50,000 PSI; ASTM A653.

4. PROVIDE GALVANIZED FINISH TO METAL FRAMING COMPONENTS COMPLYING WITH ASTM A924 FOR MINIMUM G60 COATING.

   1. FINISH OF INSTALLATION ACCESSORIES TO MATCH THAT OF FRAMING COMPONENTS.

5. FASTENERS: PROVIDE NUTS, BOLTS, WASHERS, SCREWS AND OTHER FASTENERS WITH CORROSION-RESISTANT PLATED FINISH.

6. ELECTRODES FOR WELDING: COMPLY WITH AWS CODE AND AS RECOMMENDED BY STUD MANUFACTURER.

7. GALVANIZING REPAIR: WHERE GALVANIZED SURFACES ARE DAMAGED BY WELDING OR CONSTRUCTION ACTIVITIES, PREPARE SURFACES AND REPAIR IN ACCORDANCE WITH PROCEDURES SPECIFIED IN ASTM A780.

8. COLD FORMED LIGHT GAGE METAL FRAMING COMPONENTS INDICATED ON THE DRAWINGS SHALL HAVE THE MINIMUM FLANGE WIDTH BASED ON THE DESIGNATION INDICATED ON THE DRAWINGS AS FOLLOWS:

DESIGNATION	FLANGE WIDTH
SW	1 5/8"
J	2"
JE	2 1/2"
JX	3"
JXW	3 1/2"

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GENERAL NOTES

DATE: 2026-0501
SCALE 1/8" = 1'-0"
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CHECKED: Checker
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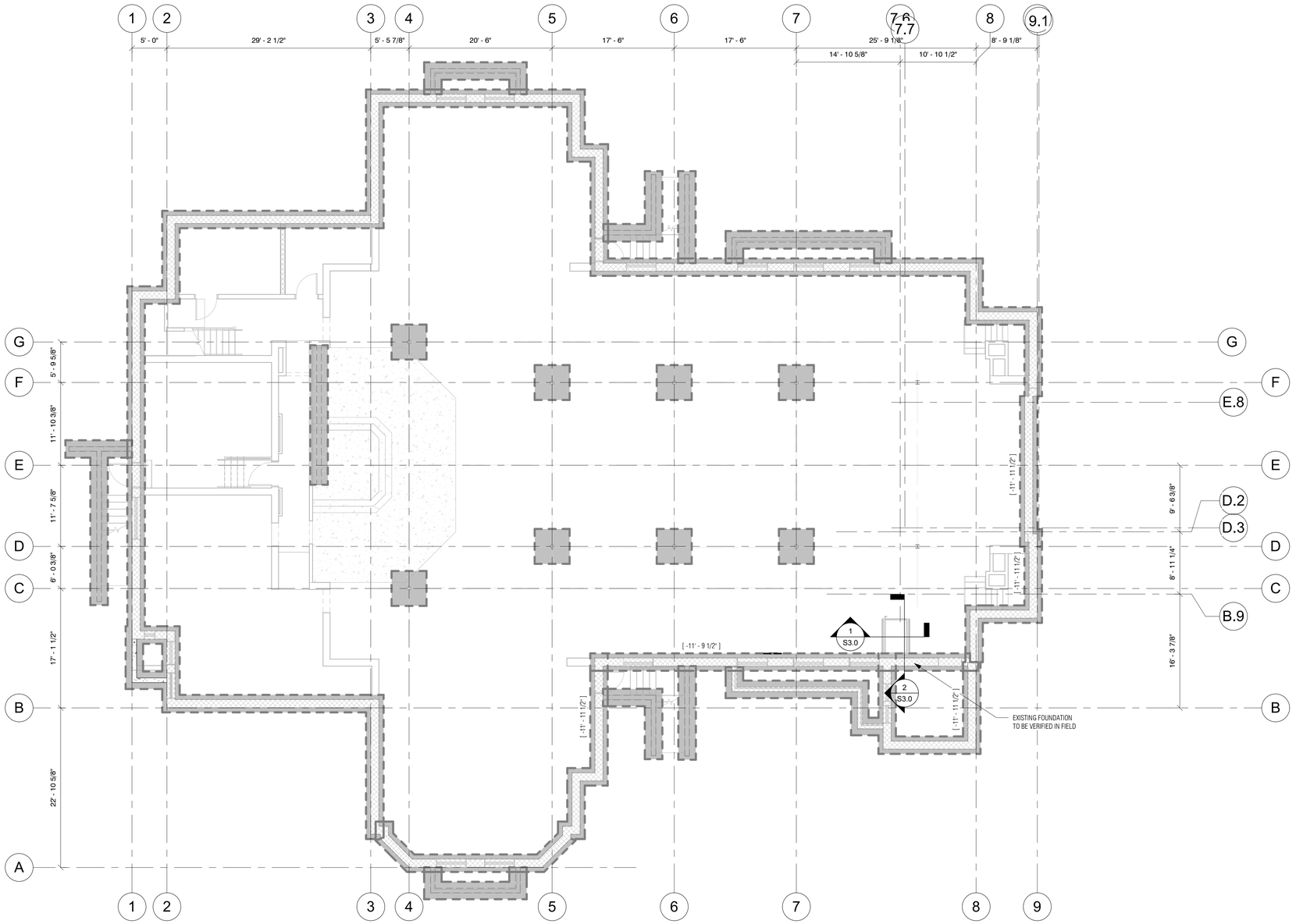
SHEET NO.

S0.1



1 FOUNDATION PLAN & LOWER FLOOR

SCALE: 1/8" = 1'-0"

FOUNDATION NOTES:

1. TOP OF CONCRETE SLAB ELEVATION= REFER TO PLAN
2. FLOOR CONSTRUCTION: 6" NORMAL WEIGHT CONCRETE SLAB REINF. WITH 6X6-W2.9XW2.9 W.W.F. (CHAIRED). REFER TO GENERAL NOTES FOR SUBGRADE REQUIREMENTS.
3. PROVIDE SAWCUT JOINTS IN SLAB ON GRADE PER NOTE #4 ON DRAWINGS S0.0 , AND "TYPICAL SLAB ON GRADE DETAILS" ON SHEET S6.0
4. TOP OF FOOTING ELEVATION (X'-X") GIVEN FROM MAIN LEVEL ELEVATION (0'-0").
5. COORDINATE ALL SLAB ON GRADE DEPRESSIONS WITH ARCH'L DRAWINGS.
6. COORDINATE ALL PLUMBING INVERTS AND LOCATIONS WITH PLUMBING & SITE DRAWINGS REFER TO TYPICAL DETAIL ON DRAWING S6.0 FOR SUB SURFACE PIPING THROUGH FOUNDATION WALLS.
7. "C.J." INDICATES FOUNDATION WALL CONTROL JOINT. REFER TO TYPICAL DETAIL ON DRAWING S6.0

ZERO DATUM FOR ALL ELEVATIONS GIVEN ON STRUCTURAL DRAWINGS IS T/FIRST FLOOR
ACTUAL ELEVATION 0'-0"= 0'-0"

FOOTING SCHEDULE 2.0 TONS/SF

Mark	Footing Size			Reinf Each Way		Remarks
	Length	Width	Thickness	No.	Size	
F30X35	3' - 0"	3' - 6"	1' - 3"	4	#5	REINF. TOP AND BOTTOM EACH WAY

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FOUNDATION PLAN & LOWER FLOOR

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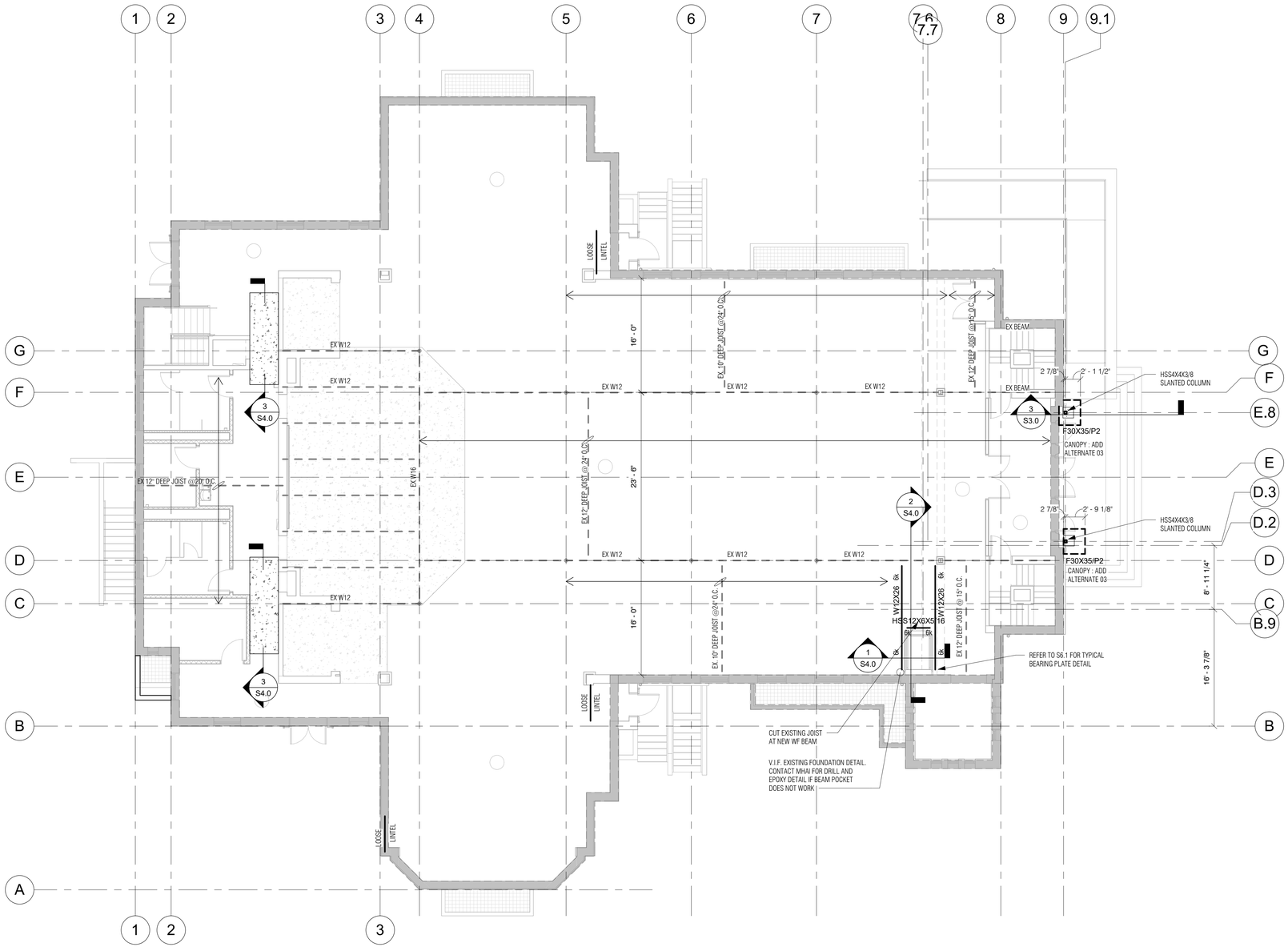
S1.0



1 FIRST FLOOR FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING NOTES

1. S1 — FLOOR CONSTRUCTION: 3" NORMAL WEIGHT CONCRETE ON 2"-20ga LOK GALV. COMPOSITE FLOOR DECK (5" TOTAL THICKNESS)REINFORCED WITH 6x6-W2.9xW2.9 WELDED WIRE FABRIC (CHAIRED).
2. TOP OF SLAB ELEVATION:
3. TOP OF STEEL ELEVATION (-5") FROM TOP OF SLAB, UNLESS NOTED OTHERWISE
4. (XX) INDICATES NUMBER OF 3/4"Ø x4" SHEAR STUDS WELDED TO THE TOP FLANGE OF STEEL BEAMS.
5. PROVIDE POURSTOP AT ALL EDGE OF SLAB CONDITIONS UNLESS OTHERWISE SHOWN ON DRAWINGS.
6. * —◀ * INDICATES MOMENT CONNECTION, REFER TO TYPICAL DETAILS ON DRAWING SXX
7. ALL BEAM FRAMING SHALL HAVE EQUAL SPACING BETWEEN COLUMNS, UNLESS NOTED OTHERWISE.
8. INDICATES COLD-FORM BEARING WALL: 600 S162-33 STUDS AT 16" O.C. WITH 600 T125-33 TOP AND BOTTOM TRACKS
9. INDICATES BEARING WALL BELOW
   INDICATES WOOD DECKING
10. PROVIDE BUILT UP BOXED COLD-FORM POST WITHIN BEARING WALLS AT EACH COLD-FORM ROOF BEAM MIN. BUILT UP POST OF (2)-600 S162-33 BOXED

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FIRST FLOOR FRAMING PLAN

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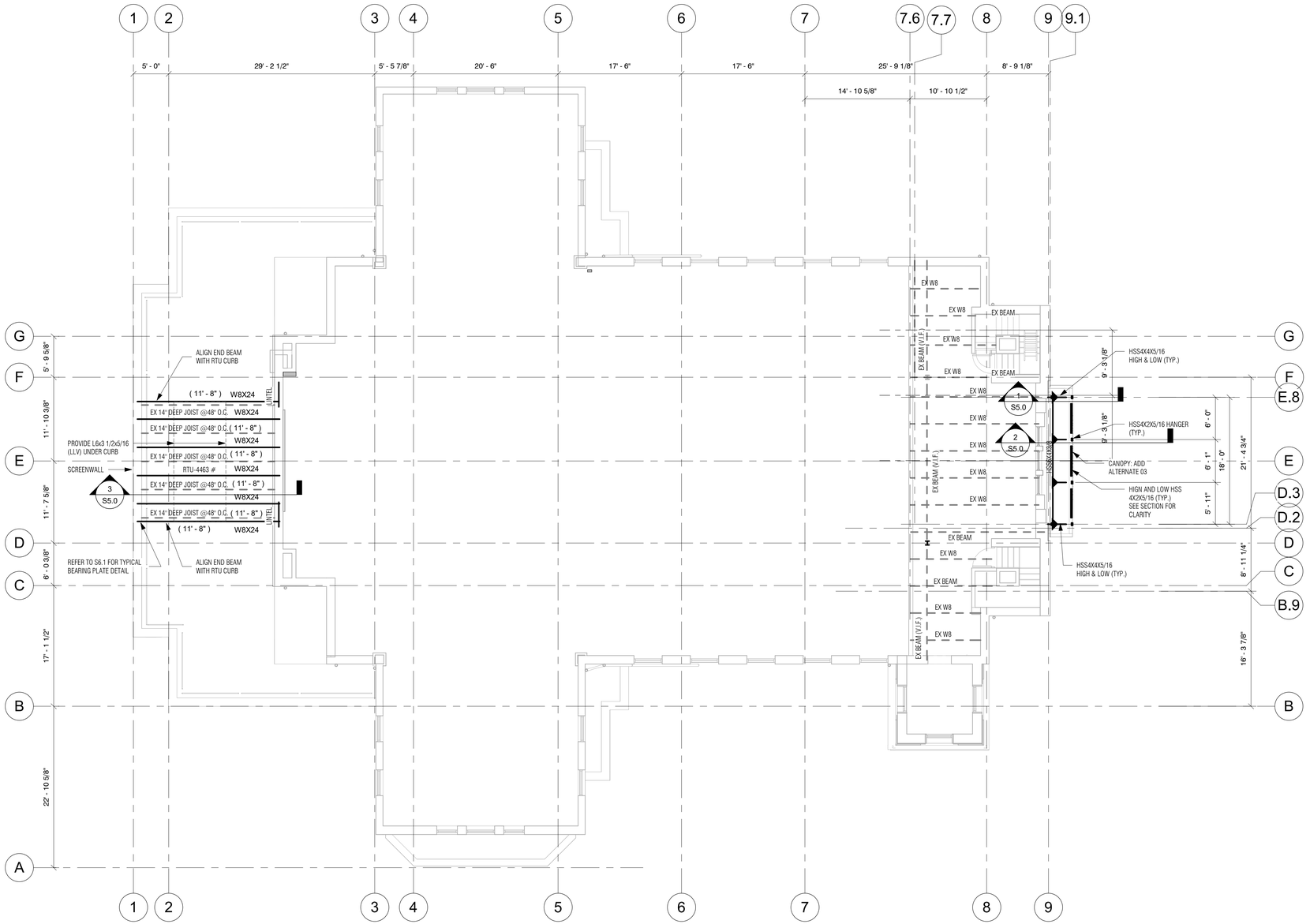

1 MEZZANINE FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING NOTES

1. S1 — FLOOR CONSTRUCTION: 3" NORMAL WEIGHT CONCRETE ON 2"-.20pi LOK GALV. COMPOSITE FLOOR DECK (5" TOTAL THICKNESS)REINFORCED WITH 6x6-W2.9xW2.9 WELDED WIRE FABRIC (CHAIRED).
2. TOP OF SLAB ELEVATION:
3. TOP OF STEEL ELEVATION (-5") FROM TOP OF SLAB, UNLESS NOTED OTHERWISE
4. (XX) INDICATES NUMBER OF 3/4"Ø x4" SHEAR STUDS WELDED TO THE TOP FLANGE OF STEEL BEAMS.
5. PROVIDE POURSTOP AT ALL EDGE OF SLAB CONDITIONS UNLESS OTHERWISE SHOWN ON DRAWINGS.
6. * ◄— * INDICATES MOMENT CONNECTION, REFER TO TYPICAL DETAILS ON DRAWING SXX
7. ALL BEAM FRAMING SHALL HAVE EQUAL SPACING BETWEEN COLUMNS, UNLESS NOTED OTHERWISE.
8. INDICATES COLD-FORM BEARING WALL: 600 S162-33 STUDS AT 16" O.C. WITH 600 T125-33 TOP AND BOTTOM TRACKS
9. INDICATES BEARING WALL BELOW
   INDICATES WOOD DECKING
10. PROVIDE BUILT UP BOXED COLD-FORM POST WITHIN BEARING WALLS AT EACH COLD-FORM ROOF BEAM MIN. BUILT UP POST OF (2)-600 S162-33 BOXED

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MEZZANINE FLOOR FRAMING PLAN

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SHEET NO.
S1.2

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DETAILS

DATE: 2026-0501
SCALE As indicated
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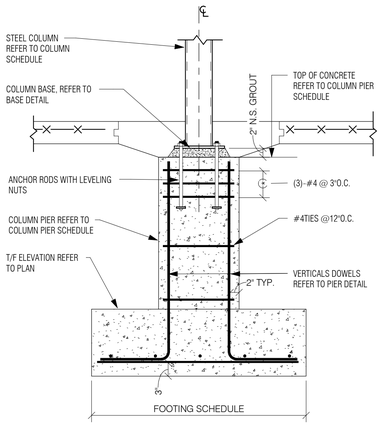
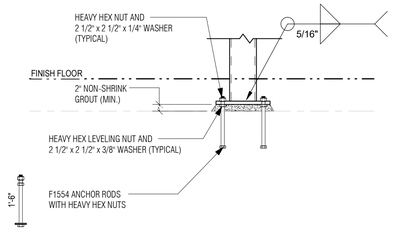


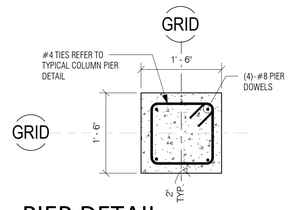
1 TYPICAL COLUMN PIER DETAIL
SCALE: 3/4" = 1'-0"

COLUMN NOTES:

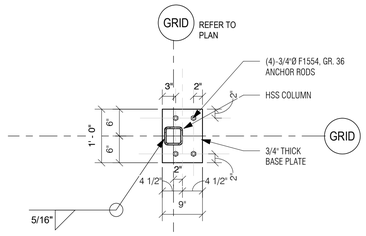
1. LINE AT BOTTOM OF COLUMN INDICATES BOTTOM OF STEEL BASE PLATE. ADD 2" FOR GROUT AND LEVELING NUTS FOR TOP OF CONCRETE ELEVATION SEE COLUMN PIER SCHEDULE. IF NO PIER DETAIL IS GIVEN. COLUMN SITS DIRECTLY ON FOOTING OR STEEL BEAM.
2. APPROXIMATE TOP OF COLUMN ELEVATION. FOR ACTUAL ELEVATION SEE PLANS AND SECTIONS.
3. PROVIDE 1/4" CAP PLATE AT ALL HSS COLUMNS UNLESS OTHERWISE NOTED.



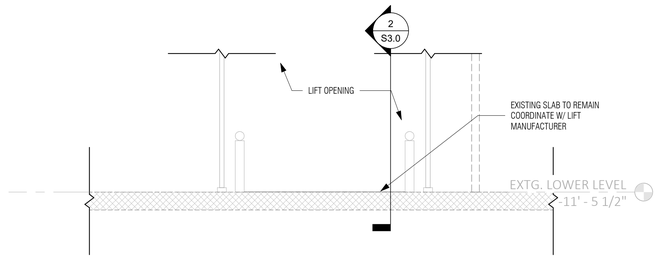
3 TYPICAL COLUMN BASE PLATE DETAIL
SCALE: 3/4" = 1'-0"



P1 PIER DETAIL
SCALE: 3/4" = 1'-0"



BASE PLATE BP-1



1 SECTION
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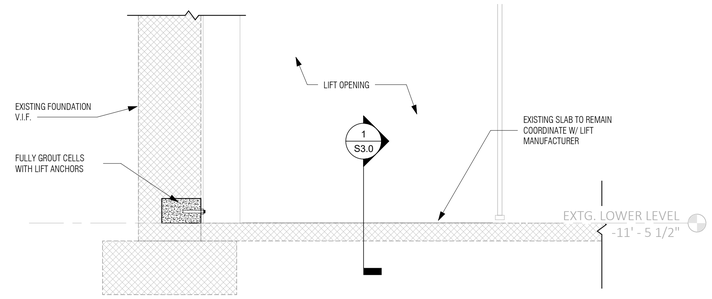

2 SECTION
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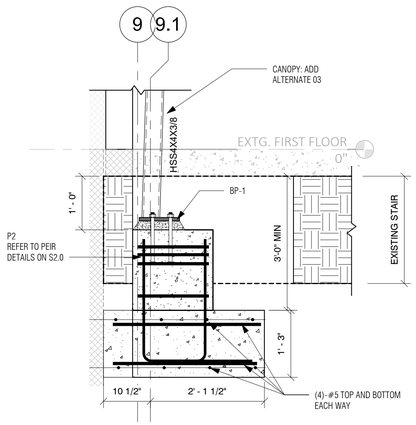

3 SECTION
SCALE: 3/4" = 1'-0"

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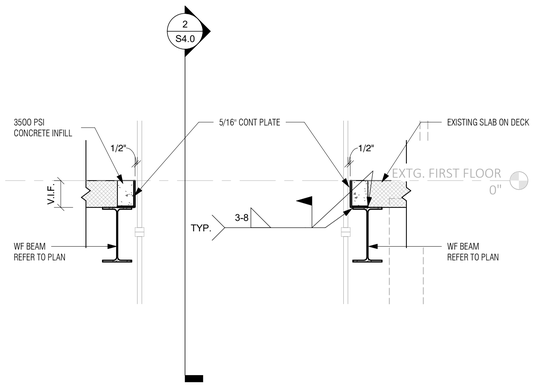

1 SECTION
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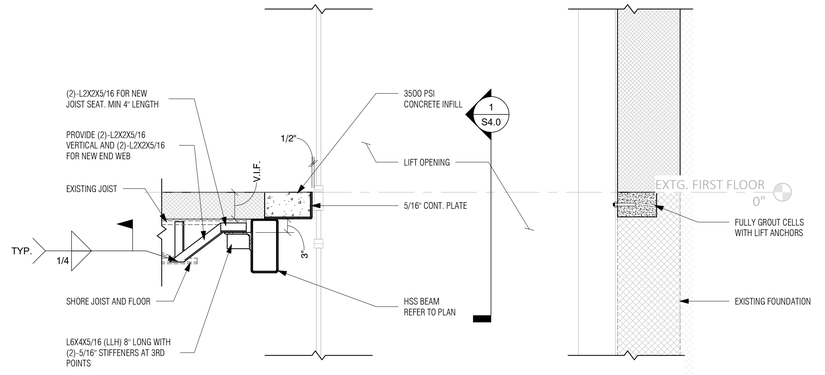

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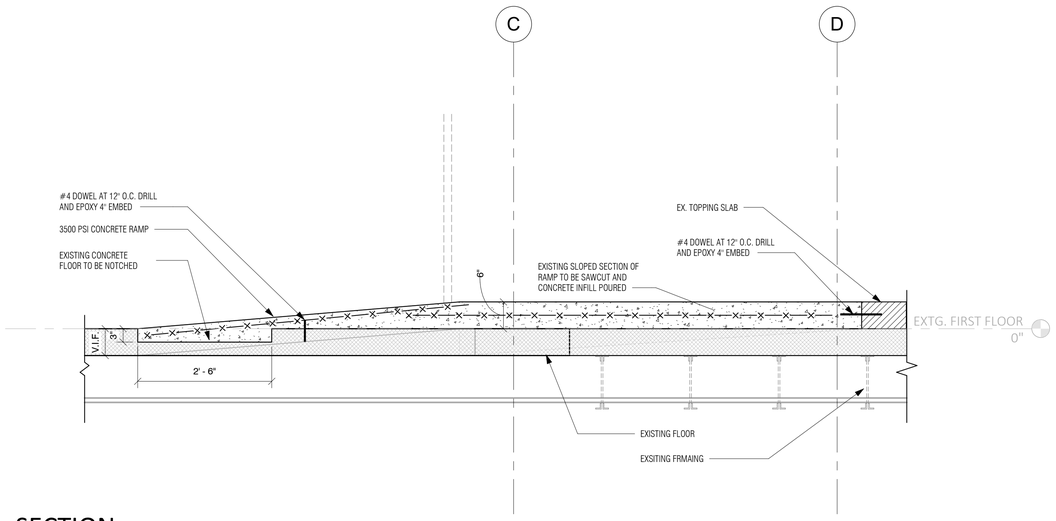

3 SECTION
SCALE: 3/4" = 1'-0"

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FLOOR SECTIONS

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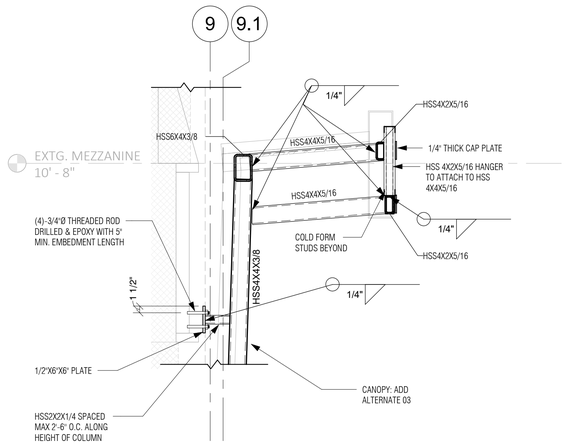

1 SECTION
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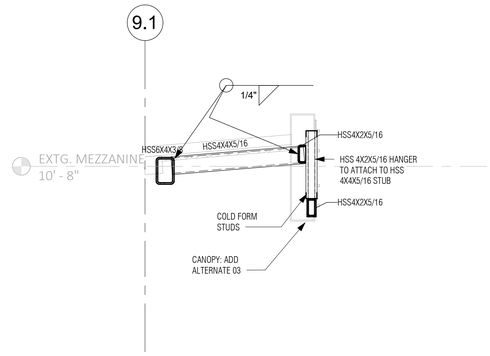

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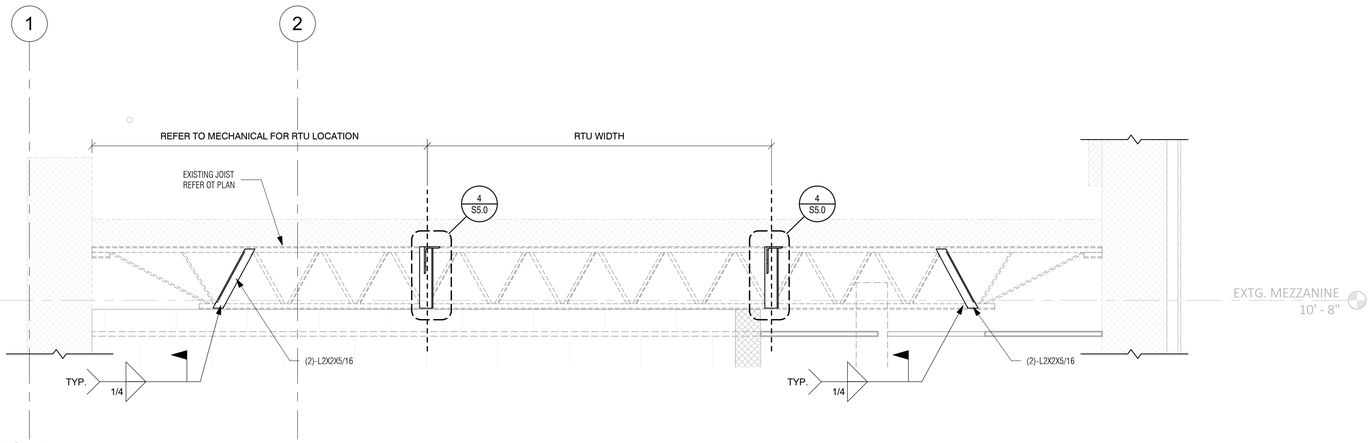

3 SECTION
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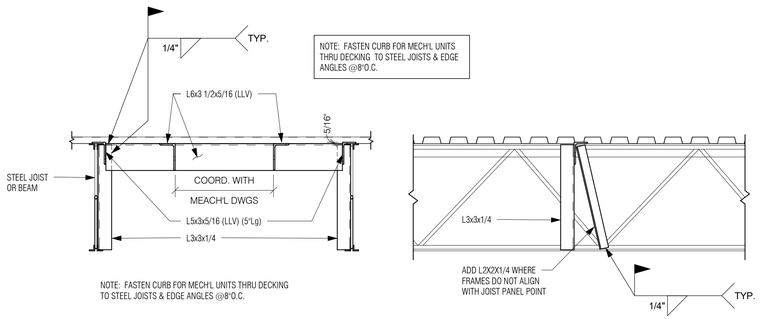

TYPICAL ROOF OPENING DETAIL WITH JOISTS &
TYPICAL JOIST REINF. DETAIL

1. TYPICAL FOR ALL OPENINGS 4'-0"X4'-0" OR LESS. FOR LARGER OPENINGS SEE SPECIFIC DETAILS.
2. SIMILAR FRAMES FOR ROOF DRAIN OPENINGS.
3. FRAMES TO BE SHOP WELDED ASSEMBLY.
4. FOR LOCATION, SIZE AND QUANTITY REQUIRED SEE ARCH'L. AND MECH'L. DRAWINGS.
5. FOR FRAMES ON JOISTS, PROVIDE JOIST REINFORCING AT BEARING LOCATIONS.

4 TYPICAL NEW ROOF OPENING DETAIL WITH JOISTS & TYPICAL JOIST REINF. DETAIL
SCALE: 3/4" = 1'-0"

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ROOF SECTIONS

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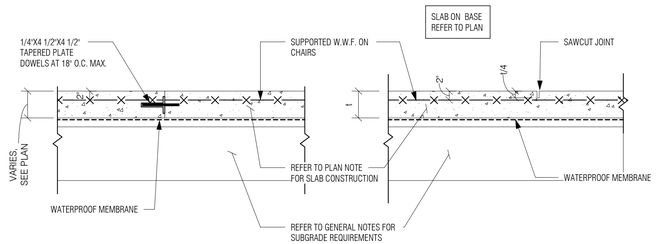
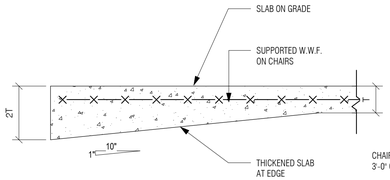
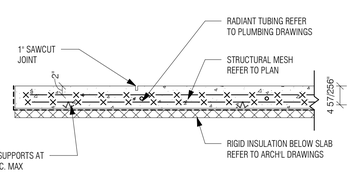


CONSTRUCTION JOINT SAWCUT SLAB JOINT



TYPICAL THICKENED EDGE

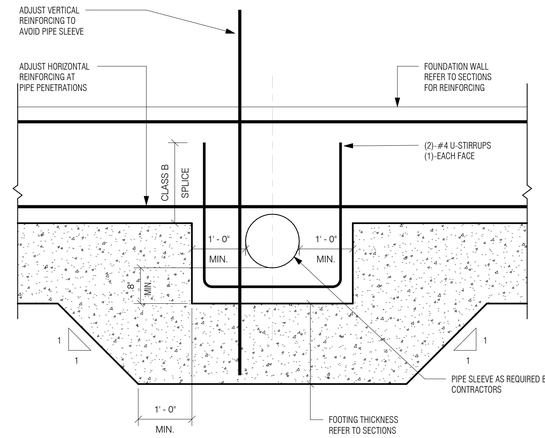


TYPICAL SLAB AT RADIANT HEAT

NOTE:
CONTRACTOR SHALL SUBMIT A PLAN INDICATING THE PROPOSED LOCATION OF CONTROL AND CONSTRUCTION JOINTS PRIOR TO PLACING CONCRETE FOR SLAB.
REFER TO GENERAL NOTES FOR SUBGRADE PREPERATION. REMOVE ALL FILL MATERIALS BELOW SLAB ON GRADE

1 TYPICAL SLAB ON GRADE DETAIL -RADIANT

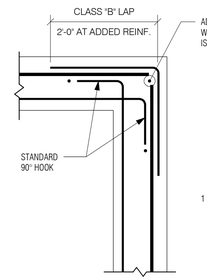
SCALE: 3/4" = 1'-0"



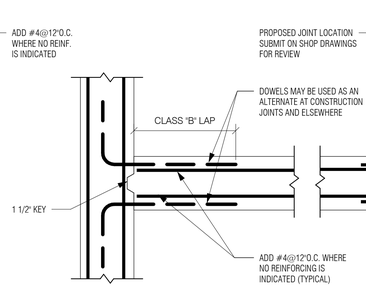
NOTE: DO NOT PLACE PENETRATIONS THROUGH COLUMNS PIERS OR FOOTINGS.
REFER TO PLAN FOR LOCATIONS AND COORDINATE WITH SITE, MECHANICAL, PLUMBING, ELECTRICAL, AND FIRE PROTECTION DRAWINGS.

2 TYPICAL DETAIL OF PIPE PENETRATIONS THRU FOUNDATION WALLS

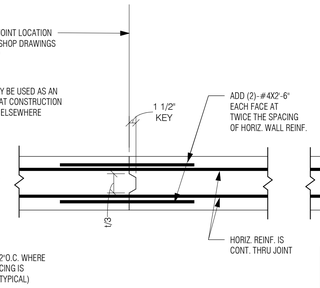
SCALE: 3/4" = 1'-0"



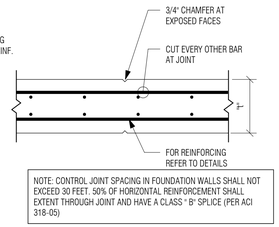
CORNER



INTERSECTION



CONSTRUCTION JOINT

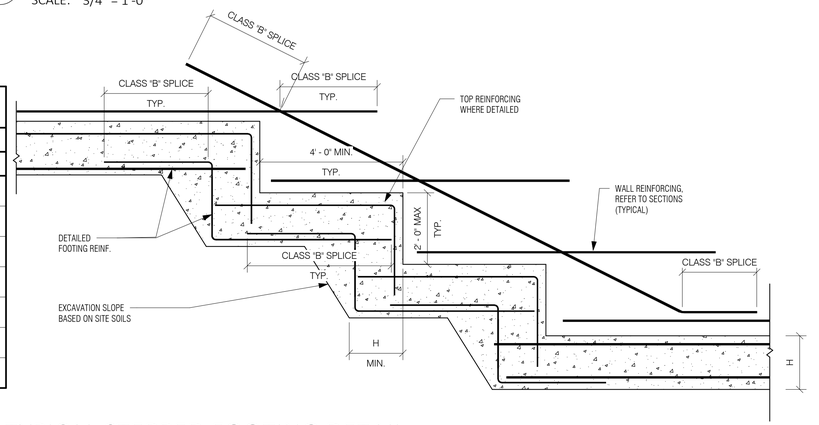


CONTROL JOINT

NOTED "CJ" ON PLAN

NOTE: CONTROL JOINT SPACING IN FOUNDATION WALLS SHALL NOT EXCEED 30 FEET. 50% OF HORIZONTAL REINFORCEMENT SHALL EXTENT THROUGH JOINT AND HAVE A CLASS ' B' SPLICE (PER ACI 318-05)

LAP SCHEDULE		
SIZE	4500 PSI	
	TOP	OTHERS
#3	24"	19"
#4	32"	25"
#5	40"	31"
#6	48"	37"
#7	70"	54"
#8	80"	62"
#9	91"	70"

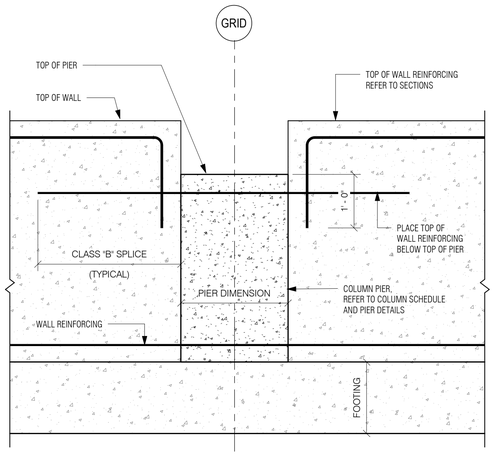


3 TYPICAL WALL REINFORCING DETAIL

SCALE: 3/4" = 1'-0"

4 TYPICAL STEPPED FOOTING DETAIL

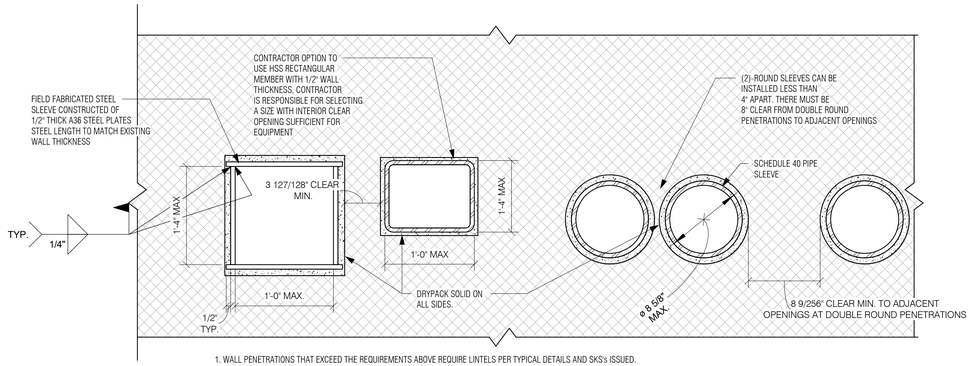
SCALE: 1/2" = 1'-0"



NOTE: REFER TO SECTIONS FOR REINFORCING.

5 TYPICAL WALL REINFORCING DETAIL

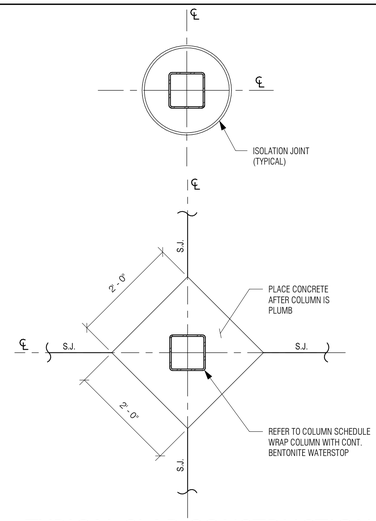
SCALE: 3/4" = 1'-0"



1. WALL PENETRATIONS THAT EXCEED THE REQUIREMENTS ABOVE REQUIRE LINTELS PER TYPICAL DETAILS AND SKS's ISSUED.
2. SLEEVES MUST NOT BE LOCATED BELOW EXISTING OR NEW BEAM BEARING LOCATIONS. AT LOCATIONS WHERE A NEW LINTEL BEARS ABOVE A SLEEVE LOCATION, THE LINTEL ABOVE MUST BE EXTENDED 8" BEYOND THE EDGE OF THE SLEEVE.

6 STEEL SLEEVE AT NEW OPENING IN EX. MASONRY WALLS

SCALE: 1 1/2" = 1'-0"



7 TYPICAL SLAB CONSTRUCTION JOINTS AT COLUMNS

SCALE: 3/4" = 1'-0"

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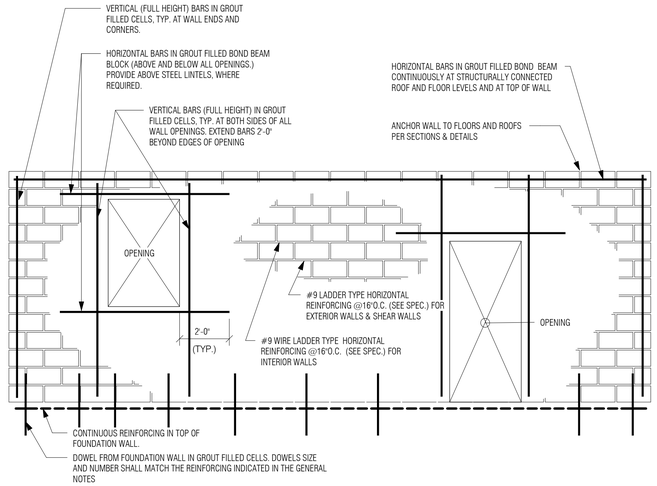
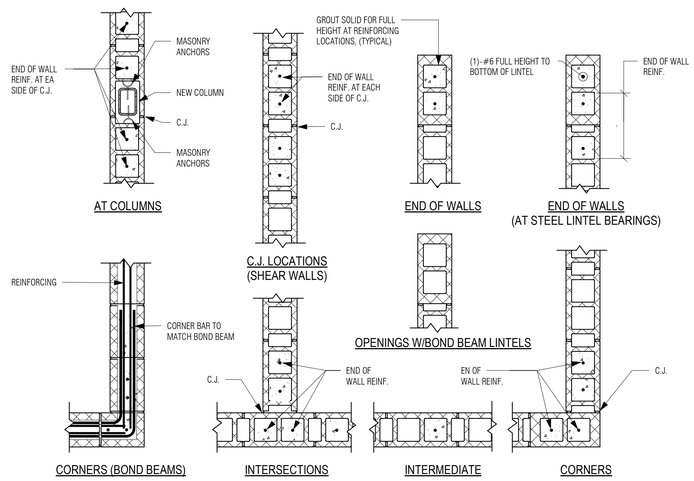


NOTE: REFER TO CONCRETE MASONRY GENERAL NOTES ON DRAWING FOR WALL REINFORCING REQUIREMENTS.

1 TYPICAL CMU WALL REINFORCEMENT DETAIL

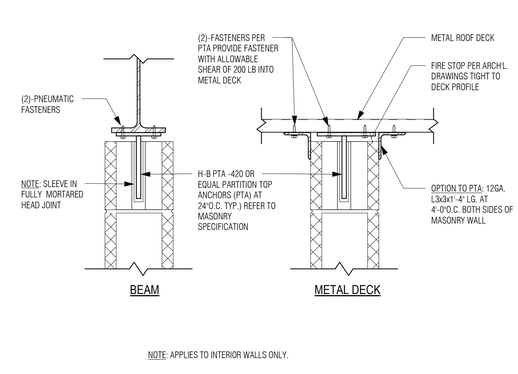
SCALE: 3/4" = 1'-0"



NOTES:
1. REINFORCING DETAILS APPLY TO ALL CMU WALLS. FOR ACTUAL REINFORCING REQUIREMENTS, REFER TO GENERAL NOTES ON DRAWINGS
2. PROVIDE DOWELS FROM CONCRETE FOUNDATIONS TO CMU WALL ABOVE. SIZE AND NUMBER TO MATCH WALL REINFORCING.

2 TYPICAL CMU REINFORCING PLAN DETAILS

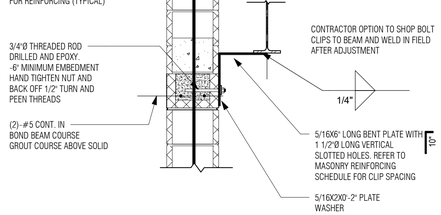
SCALE: 3/4" = 1'-0"

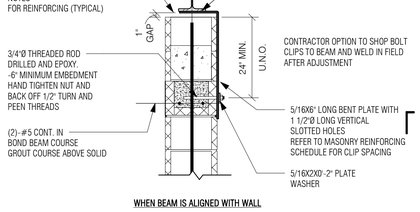


NOTE: APPLIES TO INTERIOR WALLS ONLY.

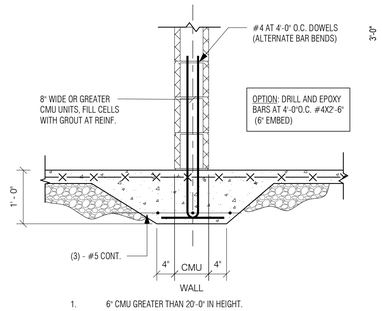
3 TYPICAL TOP OF WALL MASONRY ANCHORAGE TO STEEL

SCALE: 1 1/2" = 1'-0"

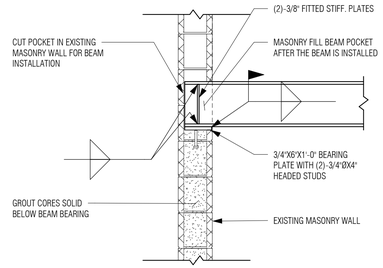




WHEN BEAM IS ALIGNED WITH WALL



1. 6" CMU GREATER THAN 20'-0" IN HEIGHT.
2. 8" CMU GREATER THAN 15'-0" IN HEIGHT.



4 TYPICAL BEAM TO MASONRY CONNECITON

SCALE: 3/4" = 1'-0"

MASONRY LINTEL SCHEDULE

MARK	CMU	OPENING WIDTH	LINTEL
	10" & 12" BLOCK	6'-1" TO 12'-0"	(2)-#6 CONT. TOP AND BOTTOM — 1'-4"
	10" & 12" BLOCK	UP TO 6'-0"	(2)-#5 CONT. — 8"
	8" BLOCK	UP TO 5'-0"	(2)-#5 CONT. — 8"
	8" BLOCK	5'-1" TO 10'-0"	(2)-#6 CONT. TOP AND BOTTOM — 1'-4"
	6" BLOCK	UP TO 6'-0"	(1)-#5 CONT. — 8"
	INTERIOR 4" MASONRY	UP TO 6'-0"	L5X3 1/2X5/16 (4" MIN. BEARING)
	INTERIOR 4" MASONRY	6'-0" TO 10'-0"	L7X4X3/8 (4" MIN. BEARING)

NOTE:
1. PROVIDE LINTELS WHERE NEEDED. NOT SHOWN ON THE DRAWINGS
2. ALL EXTERIOR STEEL SHALL BE HOT DIPPED GALVANIZED
3. COORDINATE ALL OPENINGS WITH ARCHT & MECH DRAWINGS.
4. GROUT ALL JAMBS SOLID PER TYPICAL CMU WALL REINF. DETAILS.

5 TYPICAL THICKENED SLAB DETAIL

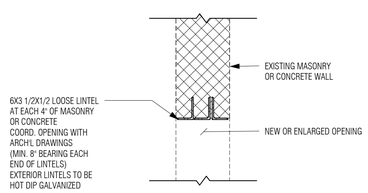
SCALE: 3/4" = 1'-0"

CMU REINFORCING SCHEDULE

DESCRIPTION	NOMINAL WALL THICKNESS	VERTICAL REINFORCING	VERTICAL ENDWALL CHORD REINFORCEMENT (IF APPLICABLE)	HORIZONTAL REINFORCING	SUPPLEMENTAL HORIZONTAL REINFORCEMENT (IF APPLICABLE)	NOTES
8" STAIR WALLS	8"	#5 AT 24" O.C.	(2)-#7	NO. 19 GAGE LADUR TYPE @ 16" O.C.	16" BOND BEAM WITH (2)-#5 CONT. @8'-0" O.C.	--

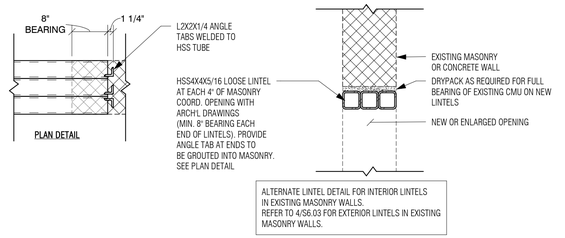
6 TYPICAL BEAM BEARING PLATE AT EXISTING CMU

SCALE: 3/4" = 1'-0"



7 NEW LOOSE LINTEL AT EXISTING

SCALE: 3/4" = 1'-0"



8 NEW LOOSE LINTEL AT EXISTING INTERIOR MASONRY-ALTERNATE

SCALE: 3/4" = 1'-0"

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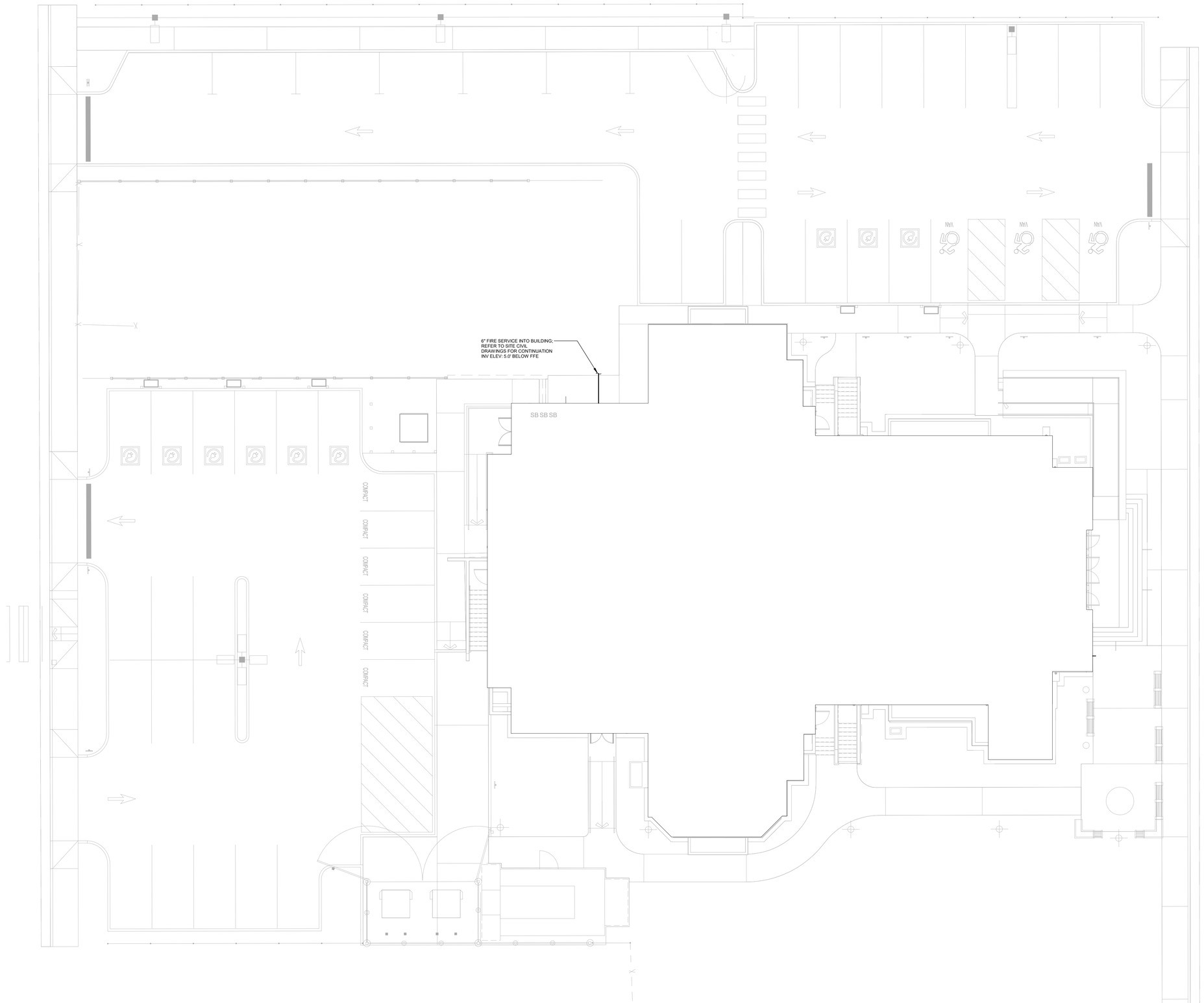

1 FIRE PROTECTION SITE UTILITY PLAN Pre-Fitout
1" = 10'-0"

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FIRE PROTECTION SITE UTILITY PLAN

DATE: 2026-0501
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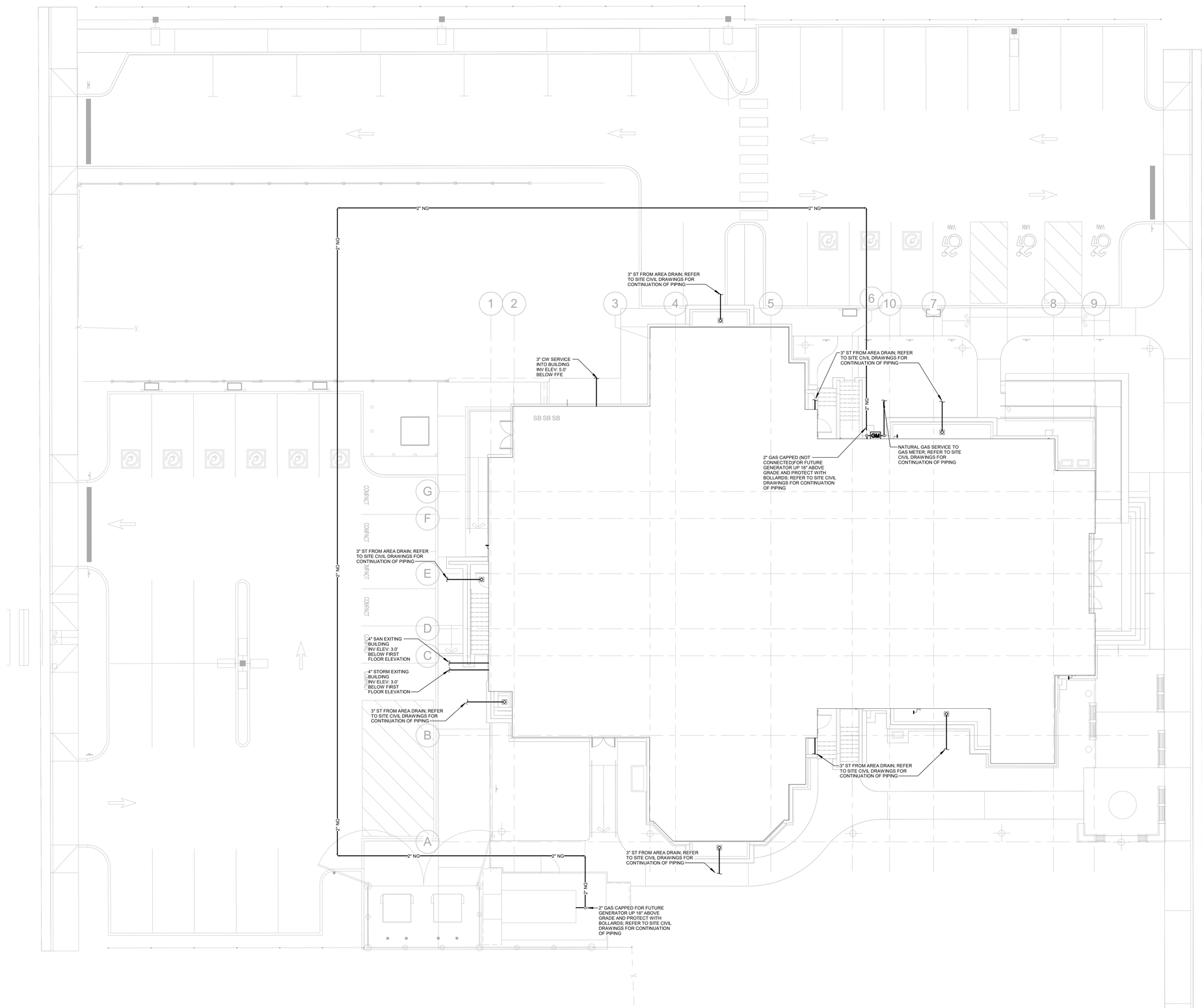

1 PLUMBING SITE UTILITY PLAN Pre-Fitout
1" = 10'-0"

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PLUMBING SITE UTILITY PLAN

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SCALE 1" = 10'-0"
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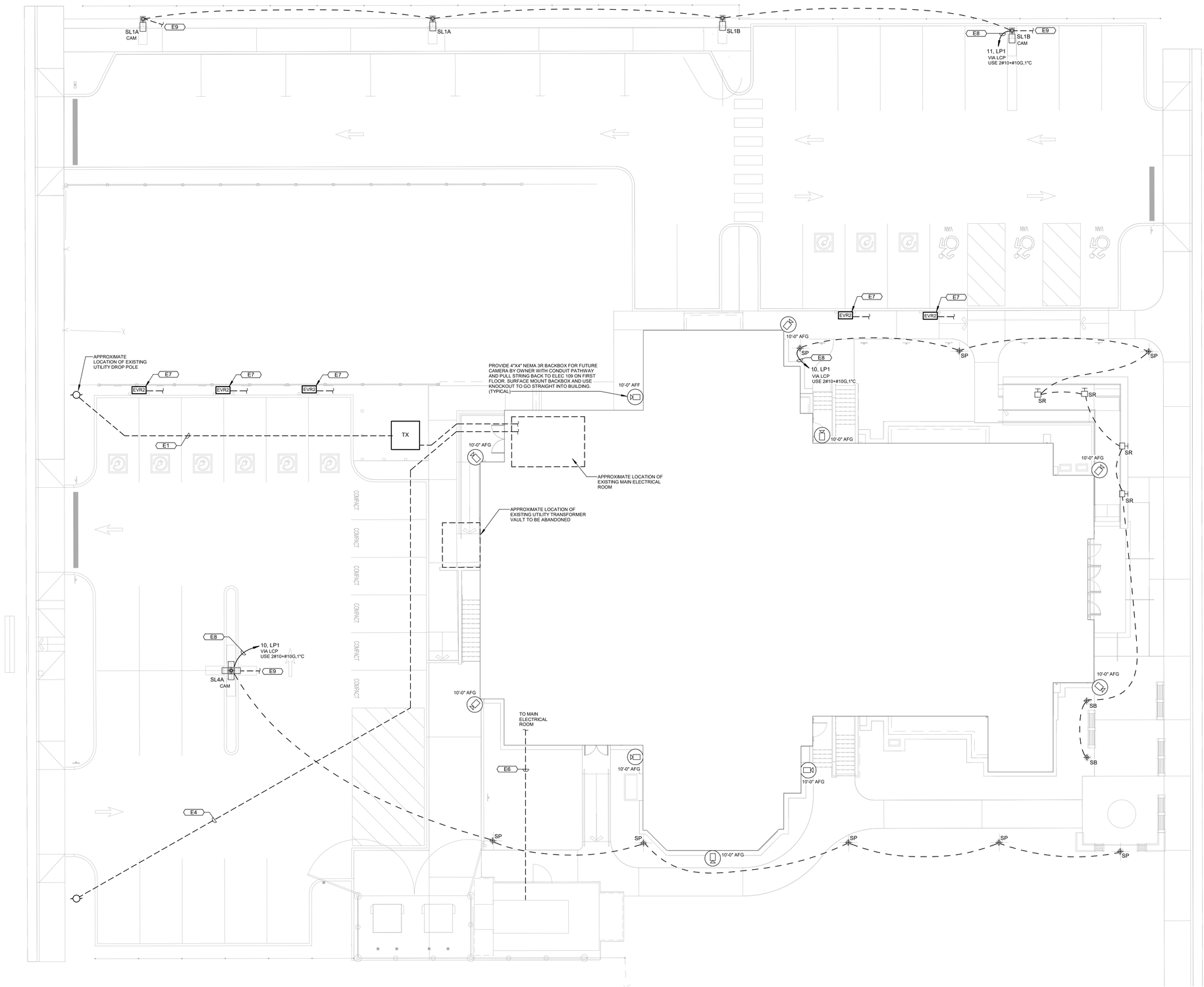

1 ELECTRICAL SITE UTILITY PLAN Pre-Fitout
1" = 10'-0"

KEYNOTES - ELECTRICAL SITE

Key Value	Keynote Text
E1	PRIMARY ELECTRICAL SERVICE: PROVIDE (2)5"C SCHEDULE 40 PVC UNDERGROUND IN CONCRETE DUCTBANK. PRIMARY CONDUCTORS SHALL BE PROVIDED BY EVERSOURCE.
E4	MAIN TELECOMMUNICATIONS SERVICE: PROVIDE SCHEDULE 40 PVC CONDUITS AS FOLLOWS - (1) 4"C FOR POTS/TELEPHONE SERVICE, (1) 4"C FOR CATV SERVICE, (1) 4"C FOR BROADBAND FIBER SERVICE, (1) 4"C SPARE. REFER TO XXX FOR TRENCHING DETAIL. REFER TO TECHNOLOGY DRAWINGS FOR ADDITIONAL INFORMATION.
E6	PROVIDE FEEDERS FROM FUTURE GENERATOR LOCATION TO MAIN ELECTRICAL ROOM. REFER TO GENERATOR TRENCHING DETAIL FOR ADDITIONAL INFORMATON.
E7	FUTURE LOCATION OF ELECTRICAL VEHICLE CHARGER. PROVIDE HANDHOLE AND CONDUITS PER DETAIL ON SITE DETAIL DRAWINGS AND PROVIDE (1) 2" SCHEDULE 40 PVC CONDUIT FROM ELEC 109 FOR HARDWIRED PAYMENT OPTIONS.
E8	BRANCH CIRCUIT FEEDERS BACK TO PANEL INDICATED. REFER TO BRANCH CIRCUIT TRENCHING DETAIL IN SITE DETAILS.
E9	PROVIDE CONDUIT AND PULL STRING FOR FUTURE POLE MOUNTED SECURITY CAMERA PER SITE LIGHTING POLE DETAILS. RUN CONDUIT BACK TO ELEC 109 ON FIRST FLOOR.

GENERAL SITE ELECTRICAL NOTES

1. REFER TO DRAWING E0.0 FOR SYMBOLS LIST.
2. COORDINATE SITE LIGHTING LOCATIONS WITH SITE LANDSCAPING PLANS.
3. REFER TO DRAWING ESU5.0 AND ESU5.1 FOR SITE ELECTRICAL DETAILS.
4. REFER TO E6.0 FOR LIGHT FIXTURE AND SITE POLE SCHEDULES.
5. WHERE UNDERGROUND UTILITIES ARE LIKELY TO BE ENCOUNTERED THE CONTRACTOR SHALL EXCAVATE BY HAND.
6. REFER TO LANDSCAPE & CIVIL SITE PLANS FOR FINAL LOCATIONS OF LIGHTING FIXTURES, FLAGPOLES AND OTHER SITE UTILITIES.
7. WHERE 277V & 120V CIRCUITS OCCUPY THE SAME HANDHOLE/RACEWAY, IDENTIFY NEUTRAL CONDUCTORS PER NEC.
8. PROVIDE CONDUIT PLUGS WITH 1/4" NYLON DRAG LINE ATTACHED IN ALL EMPTY CONDUITS.
9. EXISTING OVERHEAD UTILITIES NOT SHOWN. COORDINATE WITH UTILITY COMPANY AS REQUIRED.

UNDERGROUND UTILITY NOTE

THE CONTRACTOR IS TO BE FULLY RESPONSIBLE FOR CONTACTING THE LOCAL CABLE TELEVISION COMPANY, POWER COMPANY, TELEPHONE COMPANY, GAS COMPANY, WATER AND SEWER COMPANY AND ANY OTHER UTILITY COMPANY WITHIN THE AREA PRIOR TO PROCEEDING WITH ANY EXCAVATION. BY LAW, THE CONTRACTOR IS REQUIRED TO CALL BEFORE DOING ANY EXCAVATION, DIGGING HOLES OR DRIVING POSTS REGARDLESS OF WHETHER IT IS WITHIN THE STREET LINE OR ON PRIVATE PROPERTY, OBTAIN INFORMATION REGARDING THE EXISTENCE AND LOCATION OF ANY UNDERGROUND FACILITIES BY CALLING 811.

WATER PREVENTION MEASURES

1. PITCH ALL UNDERGROUND CONDUITS SUCH THAT THEY ARE ANGLED DOWNWARDS AWAY FROM THE BUILDING. CONDUITS SHALL NOT BE PITCHED DOWNWARDS TOWARD THE BUILDING, ALLOWING GROUND WATER TO ENTER BUILDING.
2. PROVIDE FOAM SEALANT FOR ALL ACTIVE ELECTRIC CONDUITS CONTAINING CONDUCTORS, EQUAL TO POLYWATER FST. LOCATE AT INTERIOR END OF EACH ACTIVE CONDUIT (AT EXTERIOR ENCLOSURE AND WHERE CONDUIT TERMINATES IN BUILDING). FOR SPARE CONDUITS WITHOUT CONDUCTORS, PROVIDE CAP AT EACH END.
3. ALL CONDUITS (ACTIVE AND SPARE) SHALL SWEEP UPWARD A MINIMUM OF 12" ABOVE THE BASE OF HANDHOLES OR OTHER EXTERIOR STRUCTURES.
4. COORDINATE SWEEP AT TRANSFORMER PADS WITH UTILITY COMPANY DETAILS AND STANDARDS.

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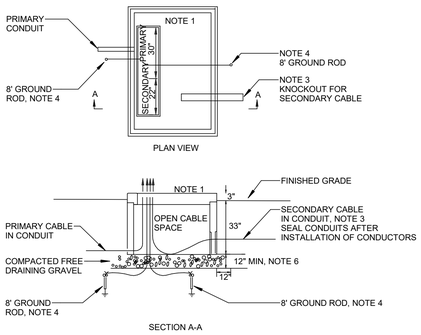
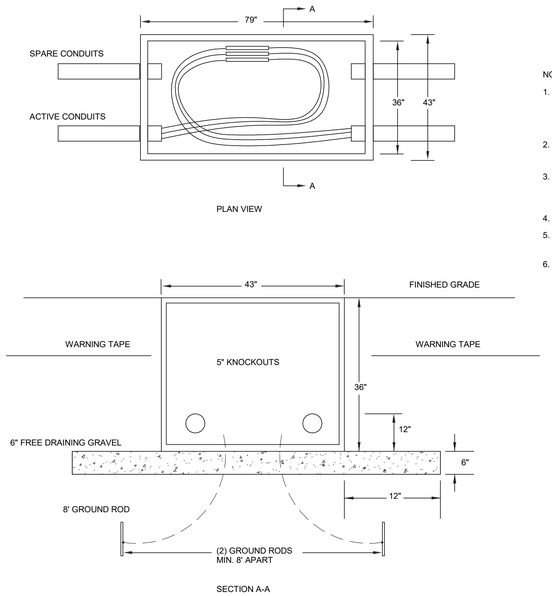


NOTES

1. 75-300 KVA - INSTALL 76"X 54" X 36" PAD AS PER UTILITY Co. SPC P-013 AND P-014
   500-2500 KVA - INSTALL 76"X 70" X 36" PAD AS PER UTILITY Co. SPC P-015 AND P-016
2. PRIMARY CABLE
   A. INSTALL DIRECT BURIED CABLES A MINIMUM OF 30" BELOW GRADE.
   B. INSTALL CABLES IN CONDUIT A MINIMUM OF 24" BELOW GRADE.
   C. LOOP CABLES IN CABLE PIT BEFORE MAKING CONNECTIONS.
3. SECONDARY CABLE - LEAVE SLACK FOR FUTURE RECONNECTING TO TRANSFORMERS WITH HIGHER SECONDARY TERMINALS.
4. 3/4" COPPER GROUND ROD - INSTALL IN TRENCH AND CONNECT A #2 COPPER CONDUCTOR FROM ROD THROUGH PAD OPENING AND EXTENDING 5' ABOVE PAD.
5. THE FOLLOWING UTILITY Co. DTR'S SHOULD ALSO BE USED:
   A. DTR 42.061 - LOCATION AND MECHANICAL PROTECTION REQUIREMENTS.
   B. DTR 56.509 - PRIMARY, SECONDARY AND TRANSFORMER GROUNDING.
   C. DTR 17.083 - THREE PHASE TRANSFORMER CONNECTIONS.
6. THE EXCAVATION FOR THE PAD SHALL BE CARRIED TO A DEPTH OF 12" BELOW THE BOTTOM OF THE PAD WALLS. THE BACKFILL UNDER THE PAD WALLS SHALL BE A CLEAN GRAVEL, FREE OF FOREIGN MATTER AND CONSTRUCTION DEBRIS, AND IN ACCORDANCE WITH CONNECTICUT DOT SPEC M.02.06 GRADING "A"; OR MASSACHUSETTS DPW SPEC M1.03.0 TYPE B. BACKFILL SHALL BE PLACED IN 6" LAYERS AND COMPACTED WITH MECHANICAL TAMPERS TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY STANDARD COMPACTION TESTS, AASHTO T180 OR ASTM D698.

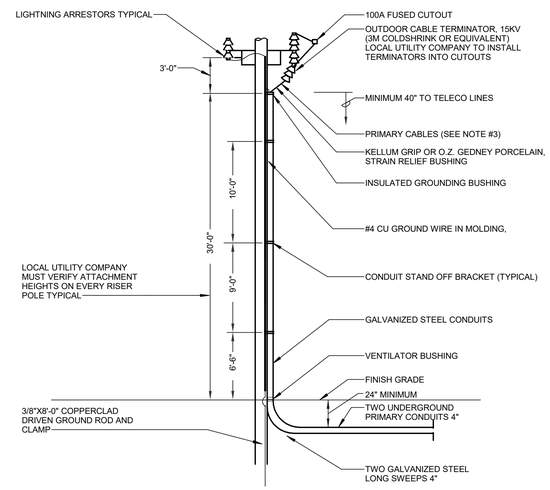
3 EVERSOURCE CT/WMA - TRANSFORMER PAD DETAIL Pre-Fitout
NTS



NOTES:

1. INSTALL POLYMER CONCRETE VAULT. VAULT IS RATED FOR OCCASIONAL VEHICULAR TRAFFIC, HOWEVER, DO NOT INSTALL IN ROADWAY APPLICATIONS. VAULT SHALL BE USED TO SPLICE ONE THREE-PHASE CABLE, MAXIMUM #4/0.
2. THE EXCAVATION SHALL BE CARRIED TO A MINIMUM DEPTH OF 6" BELOW THE BOTTOM AND 12" BEYOND THE EDGE.
3. INSTALL TWO(2) 8' GALVANIZED STEEL GROUND RODS ADJACENT TO THE VAULT AND GROUND PER DTR 78.151. PROVIDE #6 CU BOND FOR COMMUNICATIONS COMPANIES.
4. ALL SPLICES BY EVERSOURCE.
5. INSTALL WARNING TAPE 12" ABOVE TOP OF CONDUIT. TAPE SHALL READ "DANGER: BURIED HIGH VOLTAGE FEEDER"
6. INSTALL CONDUITS AS INDICATED ON SITE PLAN. INSTALL CONDUIT PLUGS IN SPARE CONDUITS.

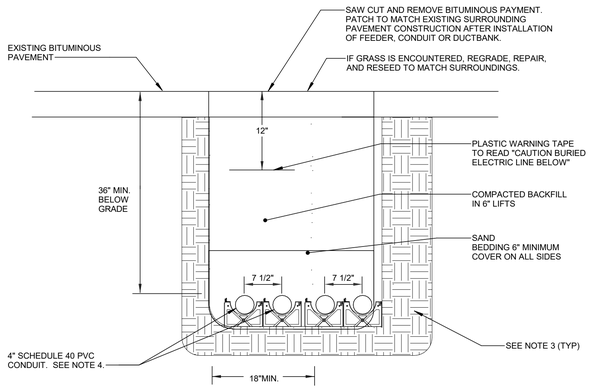
2 EVERSOURCE CT/WMA - PRIMARY HANDHOLE DETAIL Pre-Fitout
NTS



NOTES:

1. PROVIDE TWO CONTINUOUS SCHEDULE 40 PVC, CONDUIT, (ONE PRIMARY, ONE SPARE) FROM THE RISER POLE TO THE PADMOUNT TRANSFORMER. CONDUITS MUST BE CONCRETE ENCASED UNDER ANY SURFACES WITH VEHICULAR TRAVEL. GALVANIZED STEEL CONDUIT MAY BE SUBSTITUTED FOR CONCRETE ENCASED PVC CONDUITS.
2. COORDINATE ALL REQUIREMENTS WITH LOCAL POWER COMPANY.
3. PRIMARY CABLE SHALL BE 15KV, #2 COPPER, 7-STRAND, EPR INSULATION (220 MIL), FULL CONCENTRIC NEUTRAL CONSISTING OF 16-#14 AWG SOLID ANNEALED COPPER WIRES AND A POLETHYLENE JACKET.
4. LOCAL UTILITY COMPANY TO FRAME POLE ABOVE TERMINATORS.

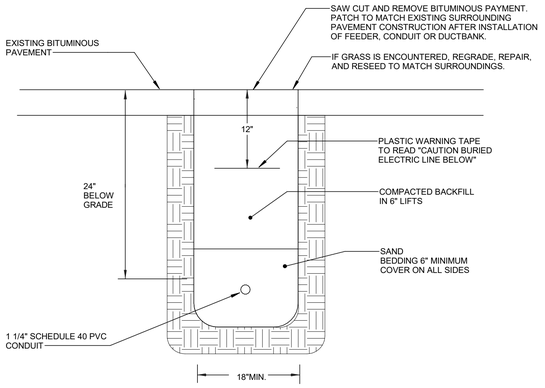
1 TERMINAL POLE INSTALLATION Pre-Fitout
NTS



NOTES:

1. TYPICAL CONDUITS AND QUANTITIES SHOWN, REFER TO DRAWINGS FOR QUANTITIES AND SIZES.
2. COORDINATE AND GROUP CONDUITS IN COMMON TRENCH. SINGLE ROW SHOWN, MULTIPLE ROW DUCT BANKS ARE ACCEPTABLE, MAINTAINING SEPARATION DISTANCE REQUIREMENTS.
3. PROVIDE SUITABLE SEPARATORS AND CHAIRS 4 FT. MAX. ON CENTER, SET TO COMPACTED TRENCH BOTTOM AND BAND CONDUITS TOGETHER PRIOR TO BACKFILL OR PLACING CONCRETE.
4. REFER TO CONCRETE ENCASEMENT DETAIL WHERE CONCRETE ENCASEMENT IS REQUIRED. USE 'TYPE EB' SCHEDULE 40 PVC CONDUIT.

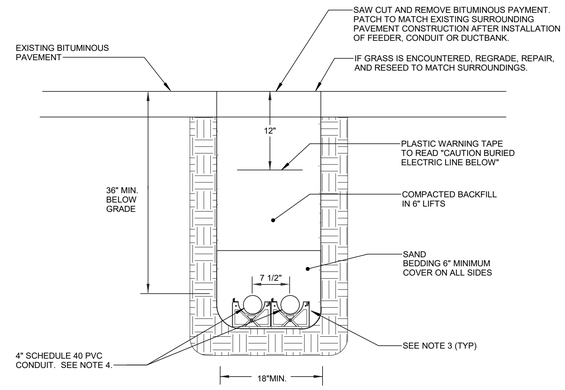
6 TELECOMMUNICATIONS SERVICE TRENCHING DETAIL
NTS



NOTES:

1. TYPICAL CONDUITS AND QUANTITIES SHOWN, REFER TO DRAWINGS FOR QUANTITIES AND SIZES.

5 TYPICAL SITE BRANCH CIRCUIT TRENCHING DETAIL
NTS



NOTES:

1. TYPICAL CONDUITS AND QUANTITIES SHOWN, REFER TO DRAWINGS FOR QUANTITIES AND SIZES.
2. COORDINATE AND GROUP CONDUITS IN COMMON TRENCH. SINGLE ROW SHOWN, MULTIPLE ROW DUCT BANKS ARE ACCEPTABLE, MAINTAINING SEPARATION DISTANCE REQUIREMENTS.
3. PROVIDE SUITABLE SEPARATORS AND CHAIRS 4 FT. MAX. ON CENTER, SET TO COMPACTED TRENCH BOTTOM AND BAND CONDUITS TOGETHER PRIOR TO BACKFILL OR PLACING CONCRETE.
4. REFER TO CONCRETE ENCASEMENT DETAIL WHERE CONCRETE ENCASEMENT IS REQUIRED. USE 'TYPE EB' SCHEDULE 40 PVC CONDUIT.

4 ELECTRICAL PRIMARY TRENCHING DETAIL
NTS

FRIAR
architecture
interior design
master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
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PROFESSIONAL SEAL

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Middletown CT 06457
860.632.1682
ceseng.com
CES #2023340.00

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ELECTRICAL SITE DETAILS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
DRAWN: AJG
CHECKED: SAS
5/1/2026 1:53:02 PM

SHEET NO.
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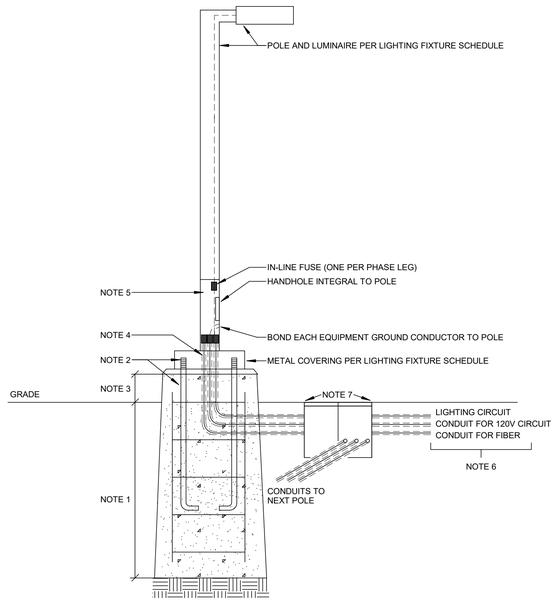
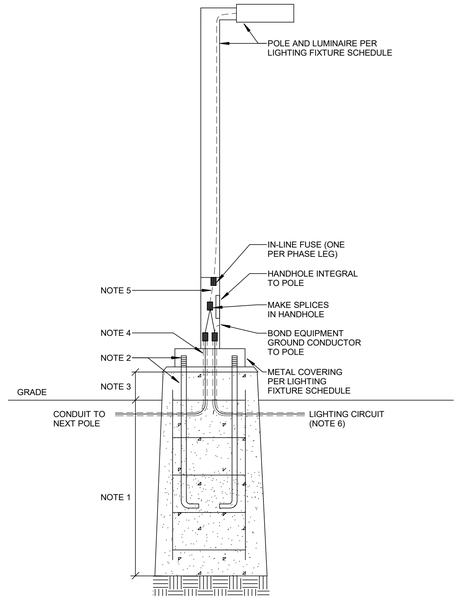


NOTES:
1. CONCRETE POLE BASE SHALL BE PROVIDED BY SITE CONTRACTOR. REFER TO STRUCTURAL POLE BASE DETAILS FOR REQUIRED DEPTH AND CONCRETE SPECIFICATIONS. POLE BASE SHALL BE SET ON UNDISTURBED SOIL. DIAMETER OF POLE BASE SHALL BE COORDINATED WITH BASE PLATE COVER DIMENSIONS, AS SPECIFIED. CONCRETE BASE SHALL BE LARGE ENOUGH TO ACCOMMODATE BASE PLATE WITH NO OVERHANG.
2. ANCHOR BOLTS SHALL BE PROVIDED IN POLE BASE BY SITE CONTRACTOR, ADHERING TO STRUCTURAL POLE BASE DETAILS AND SPECIFICATIONS. COORDINATE EXACT BOLT PATTERN WITH ELECTRICAL CONTRACTOR AND APPROVED POLE MANUFACTURER PRIOR TO INSTALLATION.
3. IN GRASSY AREAS IN PARKING AREAS, SIDEWALKS OR OTHER AREAS WITHOUT VEHICLE PARKING, **3 INCHES** OF CONCRETE SHALL BE EXPOSED ABOVE GRADE. IN PARKING AREAS, **36 INCHES** OF CONCRETE SHALL BE EXPOSED ABOVE GRADE. PROVIDE 1 INCH CHAMFER AROUND TOP OF CONCRETE BASE.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE SCHEDULE 40 PVC CONDUIT SWEEPS WITHIN CONCRETE POLE BASE. COORDINATE EXACT STUB-UP LOCATION OF ALL CONDUITS WITH APPROVED POLE MANUFACTURER BOLT PATTERN PRIOR TO INSTALLATION.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE FLEXIBLE METAL CONDUIT WITHIN POLE TO LIGHT FIXTURE AND CAMERA ENCLOSURE.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE UNDERGROUND CONDUITS TO THE LIGHT POLE AS SPECIFIED ON SITE PLAN. REFER TO TRENCHING DETAILS FOR MINIMUM BURIAL DEPTH AND ADDITIONAL INFORMATION. MINIMUM SIZE/QUANTITY SHALL BE:
   - LIGHTING CIRCUIT: PROVIDE 2#10+1#10G, 1-1/4"C. SCH.40 PVC.
   - RECEPTACLE CIRCUIT: 1-1/4"C WITH PULL STRING. SCH.40 PVC.
   - FIBER: PROVIDE IN 2"C WITH PULL STRING. SCH.40 PVC.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE 24"L x 24"W x 36"D PRECAST POLYMER CONCRETE ENCLOSURE WITH ANSI 77 TIER 15 OR 22 COVER RATED FOR TRAFFIC APPLICATIONS. PROVIDE WITH DIVIDED INTERIOR TO SEPARATE POWER AND FIBER WIRING. REFER TO SITE HANDHOLE DETAIL FOR ADDITIONAL INFORMATION.

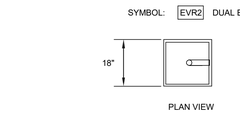
6 SITE LIGHTING POLE WITH FUTURE SECURITY CAMERA DETAIL
NTS

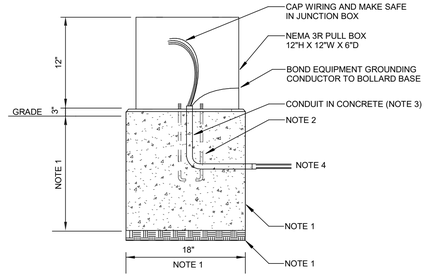


NOTES:
1. CONCRETE POLE BASE SHALL BE PROVIDED BY SITE CONTRACTOR. REFER TO STRUCTURAL POLE BASE DETAILS FOR REQUIRED DEPTH AND CONCRETE SPECIFICATIONS. POLE BASE SHALL BE SET ON UNDISTURBED SOIL. DIAMETER OF POLE BASE SHALL BE COORDINATED WITH BASE PLATE COVER DIMENSIONS, AS SPECIFIED. CONCRETE BASE SHALL BE LARGE ENOUGH TO ACCOMMODATE BASE PLATE WITH NO OVERHANG.
2. ANCHOR BOLTS SHALL BE PROVIDED IN POLE BASE BY SITE CONTRACTOR, ADHERING TO STRUCTURAL POLE BASE DETAILS AND SPECIFICATIONS. COORDINATE EXACT BOLT PATTERN WITH ELECTRICAL CONTRACTOR AND APPROVED POLE MANUFACTURER PRIOR TO INSTALLATION.
3. IN GRASSY AREAS NOT WITHIN PARKING AREAS, SIDEWALKS OR OTHER AREAS WITHOUT VEHICLE PARKING, **3 INCHES** OF CONCRETE SHALL BE EXPOSED ABOVE GRADE. IN PARKING AREAS, **36 INCHES** OF CONCRETE SHALL BE EXPOSED ABOVE GRADE. PROVIDE 1 INCH CHAMFER AROUND TOP OF CONCRETE BASE.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE SCHEDULE 40 PVC CONDUIT SWEEPS WITHIN CONCRETE POLE BASE. COORDINATE EXACT STUB-UP LOCATION OF ALL CONDUITS WITH APPROVED POLE MANUFACTURER BOLT PATTERN PRIOR TO INSTALLATION.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE FLEXIBLE METAL CONDUIT WITHIN POLE TO LIGHT FIXTURE.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE UNDERGROUND CONDUITS TO THE LIGHT POLE AS SPECIFIED ON SITE PLAN. REFER TO TRENCHING DETAILS FOR MINIMUM BURIAL DEPTH AND ADDITIONAL INFORMATION. MINIMUM SIZE/QUANTITY SHALL BE:
   - LIGHTING CIRCUIT: PROVIDE 2#10+1#10G, 1-1/4"C. SCH.40 PVC.

5 SITE LIGHTING POLE DETAIL Pre-Fitout
NTS

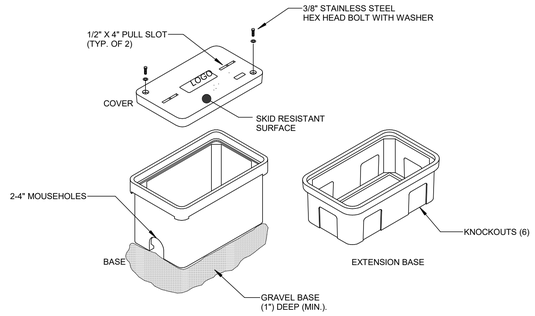
DUAL SPACE EV-READY DETAIL





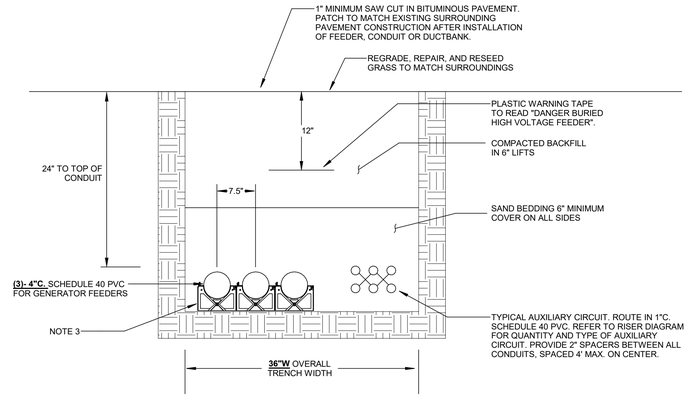
NOTES:
1. CONCRETE BASE SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. SET ON UNDISTURBED SOIL. PROVIDE 18" SQUARE, 48" DEEP, 4000 PSI CONCRETE BASE. PROVIDE 1" CHAMFER ALL AROUND. EXCAVATION AND BACKFILL BY SITE/CIVIL.
2. ANCHOR BOLTS NOT REQUIRED FOR EV-READY INSTALLATION. UPON FUTURE REPLACEMENT WITH EVSE EQUIPMENT, ANCHOR BOLTS WILL BE DRILLED INTO CONCRETE BASE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE SCHEDULE 40 PVC CONDUIT SWEEPS WITHIN EV READY CONCRETE BASE. CENTER IN BASE.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE UNDERGROUND CONDUITS TO THE EV READY SPACES AS SPECIFIED ON SITE ELECTRICAL PLAN. PROVIDE MINIMUM WIRING AS FOLLOWS:
   A. DUAL EV-READY SPACE W/ JUNCTION BOX: 4#6+1#8G, 1-1/4"C.
5. REFER TO DRAWINGS FOR EXACT QUANTITIES AND LOCATIONS OF ALL EV-READY PARKING SPACES.
6. ALL EQUIPMENT SHALL BE RATED FOR OUTDOOR LOCATIONS.

2 DUAL SPACE EV-READY DETAIL
NTS



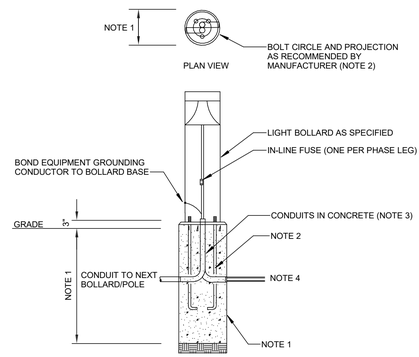
NOTES:
1. PROVIDE STANDARD HANDHOLE. COVER COLOR SHALL BE AS COORDINATED WITH THE OWNER
2. COVER, RING AND BOX SHALL BE MADE OF SAME MATERIAL.
3. PROVIDE IMPRINTED LOGO WITH 'ELECTRIC' OR 'COMMUNICATIONS' LOGO AS INDICATED ON DRAWINGS.
4. PROVIDE EXTENSION BASES AND GRADE ADJUSTABLE EXTENSIONS TO SET FLUSH WITH GRADE AND TO SET AT DEPTH TO ALLOW CONDUITS TO ENTER THE BASE HORIZONTALLY.
5. PITCH CONDUITS AWAY FROM HANDHOLE.
6. REFER TO DRAWINGS FOR SIZES.
7. PROVIDE TIER 22 DESIGN FOR ALL HANDHOLES LOCATED IN PAVED AREAS OR WHERE SUBJECT TO VEHICULAR TRAFFIC. TIER 15 DESIGN ELSEWHERE.
8. PROVIDE HANDHOLE WITH DIVIDED INTERIOR OPTION TO SEPARATE POWER AND COMMUNICATIONS CABLING, WHERE MULTIPLE SERVICES ARE SHOWN ON SITE PLAN.

1 HANDHOLE DETAIL Pre-Fitout
NTS



NOTES:
1. TYPICAL CONDUITS AND QUANTITIES SHOWN, REFER TO DRAWINGS FOR QUANTITIES AND SIZES.
2. COORDINATE AND GROUP CONDUITS IN COMMON TRENCH. SINGLE ROW SHOWN, MULTIPLE ROW DUCT BANKS ARE ACCEPTABLE, MAINTAINING SEPARATION DISTANCE REQUIREMENTS.
3. PROVIDE SUITABLE SEPARATORS AND CHAIRS 4 FT. MAX. ON CENTER, SET TO COMPACTED TRENCH BOTTOM AND BAND CONDUITS TOGETHER PRIOR TO BACKFILL OR PLACING CONCRETE.

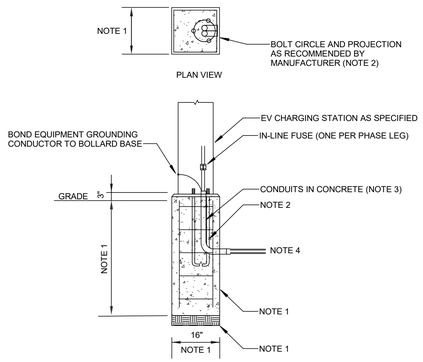
7 FUTURE GENERATOR FEEDERS TRENCHING DETAIL
NTS



NOTES:
1. CONCRETE BOLLARD BASE SHALL BE PROVIDED BY SITE CONTRACTOR. REFER TO STRUCTURAL BOLLARD BASE DETAILS FOR REQUIRED DEPTH, REINFORCEMENT AND CONCRETE SPECIFICATIONS. BOLLARD BASE SHALL BE SET ON UNDISTURBED SOIL.
2. ANCHOR BOLTS SHALL BE PROVIDED IN BOLLARD BASE BY SITE CONTRACTOR, ADHERING TO STRUCTURAL BOLLARD BASE DETAILS AND SPECIFICATIONS. COORDINATE EXACT BOLT HOLE PATTERN WITH ELECTRICAL CONTRACTOR AND APPROVED BOLLARD MANUFACTURER PRIOR TO INSTALLATION.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE SCHEDULE 40 PVC CONDUIT SWEEPS WITHIN BOLLARD BASE. COORDINATE EXACT STUB-UP LOCATION OF ALL CONDUITS WITH APPROVED BOLLARD MANUFACTURER BOLT HOLE PATTERN PRIOR TO INSTALLATION.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE UNDERGROUND CONDUITS TO THE BOLLARD AS SPECIFIED ON SITE ELECTRICAL PLAN. REFER TO TRENCHING DETAILS FOR MINIMUM BURIAL DEPTH AND ADDITIONAL INFORMATION. MINIMUM SIZE/QUANTITY SHALL BE:

   * LIGHTING CIRCUIT: PROVIDE 2#10+1#10G, 1-1 / 4" SCHEDULE 40 PVC CONDUIT.

4 EXTERIOR BOLLARD BASE DETAIL Pre-Fitout
NTS



NOTES:
1. CONCRETE EV CHARGING STATION BASE SHALL BE PROVIDED BY SITE CONTRACTOR. REFER TO STRUCTURAL BASE DETAILS FOR REQUIRED DEPTH, REINFORCEMENT AND CONCRETE SPECIFICATIONS. EV CHARGING STATION BASE SHALL BE SET ON UNDISTURBED SOIL.
2. ANCHOR BOLTS SHALL BE PROVIDED IN EV CHARGING STATION BASE BY SITE CONTRACTOR, ADHERING TO STRUCTURAL BASE DETAILS AND SPECIFICATIONS. COORDINATE EXACT BOLT HOLE PATTERN WITH ELECTRICAL CONTRACTOR AND APPROVED EV CHARGING STATION MANUFACTURER PRIOR TO INSTALLATION.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE SCHEDULE 40 PVC CONDUIT SWEEPS WITHIN EV CHARGING STATION BASE. COORDINATE EXACT STUB-UP LOCATION OF ALL CONDUITS WITH APPROVED EV CHARGING STATION MANUFACTURER BOLT HOLE PATTERN PRIOR TO INSTALLATION.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE UNDERGROUND CONDUITS TO THE EV CHARGING STATION AS SPECIFIED ON SITE ELECTRICAL PLAN. REFER TO TRENCHING DETAILS FOR MINIMUM BURIAL DEPTH AND ADDITIONAL INFORMATION. MINIMUM SIZE/QUANTITY SHALL BE:

   * SINGLE PORT EV CHARGING STATION CIRCUIT: 2#4+1#6G, 1-1/4" SCHEDULE 40 PVC CONDUIT
   * DUAL PORT EV CHARGING STATION CIRCUIT: 4#4+1#6G, 1-1/2" SCHEDULE 40 PVC CONDUIT

3 EXTERIOR EV BASE DETAIL Pre-Fitout
NTS

FRIAR
architecture interior design master planning
21 Talcott Notch Road
Farmington, CT 06032
friar.com
860.678.1291

PROFESSIONAL SEAL

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ceseng.com
CES #2023340.00

CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ELECTRICAL SITE DETAILS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
DRAWN: AJG
CHECKED: SAS
5/1/2026 1:53:03 PM

SHEET NO.
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COMMERCIAL SPRINKLER HEAD SCHEDULE

SYMBOL	K-FACTOR	STANDARD (SR) OR QUICK RESPONSE (QR)	UPRIGHT	PENDENT	RECESSED	CONCEALED PENDENT	HORIZONTAL SIDEWALL	WITH GUARD	ABOVE CEILING	DRY	INSTITUTIONAL	EXTENDED COVERAGE	UL-LISTED	FM-APPROVED	MANUFACTURER & MODEL	MAXIMUM LISTED COVERAGE AREA L x W (FT)	MINIMUM REQUIRED PRESSURE (PSI)	GENERAL LOCATION OF SPRINKLER HEADS (REFER TO DRAWINGS FOR ACTUAL LOCATIONS)	NOTE: *ALL FINISHES ARE SUBJECT TO APPROVAL BY ARCHITECT. FINISH*	CLASSIFICATION
◉	5.6	QR				○							○	○	VIKING MODEL# VK462	15 x 15	7 PSI	SPACES & CORRIDORS WITH HUNG CEILINGS	COVER PLATE FACTORY-PAINTED WHITE.	LIGHT & ORDINARY HAZARD
◉$_D$	5.6	QR				○				○			○		VIKING MODEL# VK194	15 x 15	7 PSI	-	SPRINKLER HEAD COVER PLATE FACTORY-PAINTED WHITE.	LIGHT & ORDINARY HAZARD
○	5.6	QR	○										○	○	VIKING MODEL# VK300	15 x 15	7 PSI	SPACES & CORRIDORS WITHOUT HUNG CEILINGS	BRASS	LIGHT & ORDINARY HAZARD
⊠	5.6	QR	○					○					○	○	VIKING MODEL# VK300	15 x 15	7 PSI	SPACES & CORRIDORS WITHOUT HUNG CEILINGS	BRASS	LIGHT & ORDINARY HAZARD
⊠$_{ITC}$	5.6	QR	○					○					○	○	VIKING MODEL# VK310 INTERMEDIATE TEMPERATURE RATING	15 x 15	7 PSI	SKYLIGHT	BRASS	LIGHT & ORDINARY HAZARD
▽	5.6	QR					○						○	○	VIKING MODEL# VK305	14 x 14	7 PSI	ELECTRICAL, MDF & IDF CLOSETS	BRASS	LIGHT & ORDINARY HAZARD
○$_D$	5.6	QR	○					○		○			○		VIKING MODEL# VK184	15 x 15	7 PSI	ATTIC SPACES	BRASS	LIGHT & ORDINARY HAZARD

NOTES:
1. ALL TYPES OF SPRINKLER HEADS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDED SPRINKLER GUARDS IN MECHANICAL ROOMS, ELECTRICAL & TELECOM (I.T.) CLOSETS, UPS ROOMS AND ALL ROOMS WHERE SPRINKLERS MAY BE SUBJECT TO ACCIDENTAL DAMAGE.
3. ALL SPRINKLER HEADS THROUGHOUT SHALL BE OF ORDINARY TEMPERATURE RATING (135 - 170 DEG. F), WITH THE FOLLOWING EXCEPTIONS:
   A. SPECIFIED IN TABLE BELOW AS INTERMEDIATE OR HIGH TEMPERATURE RATING.
   B. SPRINKLER HEADS LOCATED CLOSE TO KITCHEN EQUIPMENT, HEATERS, STEAM PIPE OR LOW-PRESSURE BLOW-OFF VALVE SHALL BE OF THE TEMPERATURE RATING AS REQUIRED BY APPLICABLE EDITION OF NFPA - 13, DRAWINGS, PREPARED BY THE FIRE PROTECTION CONTRACTOR SHALL BE COORDINATED WITH THE HVAC CONTRACTOR AND ALL HVAC EQUIPMENT WHICH CAN AFFECT THE RATING OF THE SPRINKLER HEADS. SPRINKLER HEADS SHALL BE CLEARLY IDENTIFIED ON THE SHOP DRAWINGS PRIOR TO SUBMISSION FOR APPROVAL.
4. ALL SPRINKLER HEAD SYMBOLS NOT SHOWN ON PLANS. REFER TO "GENERAL LOCATION" COLUMN FOR ESTIMATING.
5. SPRINKLER SELECTIONS ARE BASED ON PRODUCTS MANUFACTURED BY VIKING. RELIABLE AND/OR TYCO PRODUCTS SHALL BE CONSIDERED APPROVED EQUAL PRODUCTS AND ARE SUBJECT TO THE APPROVAL OF THE ENGINEER AND ARCHITECT.
6. SPRINKLER CONTRACTOR SHALL COORDINATE THE LOCATIONS OF SPRINKLER HEADS WITH STRUCTURAL ELEMENTS AND HVAC DUCTWORK.

VALVE AND SYMBOL LEGEND

SYMBOL	DESCRIPTION
	BALL VALVE
	BALL VALVE WITH HOSE BIBB, CAP & CHAIN (DRAIN VALVES)
	BUTTERFLY VALVE
	GATE VALVE
	OS&Y VALVE
	PRESSURE REDUCING VALVE
	CHECK VALVE
	STRAINER W/BALL VALVE, HOSE BIBB & CAP
	SAFETY RELIEF VALVE
	FLOW SWITCH
	PRESSURE GAUGE
	THERMOMETER
	DOUBLE CHECK VALVE ASSEMBLY
	ALARM BELL
	"WET" ALARM VALVE RISER
	"DRY" ALARM VALVE RISER
	"DRY" PREACTION, DELUGE VALVE RISER
	ANGLE VALVE
	SIGHT GLASS
	FIRE DEPARTMENT CONNECTION
	POST INDICATOR VALVE
	POST MOUNTED FIRE DEPARTMENT CONNECTION
	STORZ FIRE DEPARTMENT CONNECTION
TS	TAMPER SWITCH
PS	PRESSURE SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
HVC	HOSE VALVE CABINET

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
CR	CORROSION RESISTANT
D	DRY
DCV	DOUBLE CHECK VALVE
EC	EXTENDED COVERAGE
ELEV	ELEVATION
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FD	FIRE DEPARTMENT
FDC	FIRE DEPARTMENT CONNECTION
FHV	FIRE HOSE VALVE
FP	FIRE PROTECTION
FPC	FIRE PUMP CONTROLLER
FPM	FEET PER MINUTE
FS	FLOW SWITCH
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HD	TOTAL DEVELOPED HEAD
HTC	HIGH TEMPERATURE CLASSIFICATION
HVC	HOSE VALVE CABINET
ITC	INTERMEDIATE TEMPERATURE CLASSIFICATION
JP	JOCKEY PUMP
JPC	JOCKEY PUMP CONTROLLER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OS&Y	OUTSIDE STEM AND YOKE
PD	PRESSURE DROP
PIV	PRESSURE INDICATOR VALVE
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
SS	SUPERVISORY SWITCH
TS	TAMPER SWITCH
TYP	TYPICAL
V	VOLTS
VEL	VELOCITY
WG	WIRE GUARD

PIPING LEGEND

SYMBOL	DESCRIPTION
FP-FDC	FIRE DEPARTMENT CONNECTION
FP-FDC	FIRE DEPARTMENT CONNECTION BELOW GROUND
FP-DRAIN	DRAIN PIPING
FP-WET	SPRINKLER MAIN (WET)
FP-DRY	SPRINKLER MAIN (DRY)
	PIPE RISE
	PIPE DROP
	PIPE TEE TOWARDS (UP IN PLAN)
	PIPE TEE AWAY (DOWN IN PLAN)
	PIPE DROP AND RUN
	DIRECTION OF FLOW
	BLIND FLANGE
	END CAP
	REDUCER (ECCENTRIC)
	REDUCER (CONCENTRIC)

FIRE PROTECTION AIR COMPRESSOR SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	DESCRIPTION	SYSTEM CAPACITY AT 40 PSI (GAL)	ELECTRICAL DATA (V/HP/HZ)
FPAC-1	RELIABLE MODEL #QRM2	DRY SYSTEM AIR COMPRESSOR: RISER-MOUNTED, OIL-LESS PISTON COMPRESSOR CUT-IN @40PSI AND CUT-OUT @50PSI	520	220/1/60

FIRE PROTECTION SPECIALTIES SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	DESCRIPTION	COMPONENTS AND ACCESSORIES	MOUNTING HEIGHT	REMARKS
DCVA-1	WATTS LF709-OSY	DOUBLE CHECK VALVE ASSEMBLY: 304 SST HOUSING AND SLEEVE, SINGLE HOUSING CORROSION RESISTANT INTERNAL PARTS, AND SST CAPTURED SPRING CHECK ASSEMBLY	OS&Y GATE VALVES	MAX 5'-0" AFF	ALL

REMARKS:
1. SHALL BE FULL SIZE OF PIPE SERVED. REFER TO FLOOR PLAN FOR SIZE.
2. PROVIDE AN AIR GAP FITTING ON THE DRAIN LINE. MOUNT AT A SUFFICIENT HEIGHT TO ALLOW PROPER DRAINAGE. DRAIN LINE TO BE PIPED TO FLOOR SINK SPECIFIED ON PLUMBING DRAWINGS.

GENERAL NOTES

1. THESE GENERAL NOTES ARE APPLICABLE TO ALL FIRE PROTECTION DRAWINGS.
2. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL INTENT OF WORK, SEE DETAILS, RISERS, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. THE DRAWINGS INDICATE A SUGGESTED SPRINKLER HEAD LAYOUT AND THAT EACH AREA IS COVERED BY SPRINKLER PROTECTION AS REQUIRED BY ALL APPLICABLE CT BUILDING AND FIRE CODES. THE SPRINKLER QUANTITIES SHALL NOT BE COUNTED AS A TAKE OFF OR AS EXACT LOCATIONS. EXACT SPACING, DENSITY, AND LOCATION REQUIREMENTS SHALL BE AS DICTATED BY NFPA 13. FINAL LOCATIONS OF SPRINKLER HEADS SHALL BE COORDINATED WITH THE ARCHITECT.
4. FLOW DATA PERFORMED ON 01/11/2024 AT A HYDRANT LOCATED AT 43 BRANCH STREET WAS RECORDED AS FOLLOWS:
   A. STATIC PRESSURE: 110 PSI
   B. RESIDUAL PRESSURE: 70 PSI
   C. FLOW RATE: 650 GPM
5. THIS FLOW DATA SHALL BE USED AS A GUIDE BY THE CONTRACTOR. THE CONTRACTOR SHALL PERFORM AN ADDITIONAL FLOW TEST TO VERIFY THIS INFORMATION. INFORMATION FROM THE CONTRACTOR'S FLOW TEST SHALL BE USED FOR HYDRAULIC CALCULATIONS.
6. FIRE PROTECTION CONTRACTOR SHALL PROVIDE HYDRAULIC CALCULATIONS. HYDRAULIC CALCULATIONS SHALL INCLUDE A SAFETY FACTOR OF 10 %. COMBINED INSIDE AND OUTSIDE HOSE STREAM ALLOWANCE FOR HYDRAULIC CALCULATIONS SHALL BE 100 GPM.
7. THE CONTENT OF THESE DRAWINGS IS INTENDED TO SATISFY THE BUILDING CODE REQUIREMENTS FOR CONSTRUCTION DOCUMENTS. WHEN STAMPED AND SEALED BY THE ENGINEER OF RECORD, THEY ARE INTENDED TO BE USED AS PART OF THE BUILDING PERMIT APPLICATION ONLY.
8. FIRE SUPPRESSION SYSTEM SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO CONSTRUCTION. PROVIDE A COMPLETE SHOP DRAWING SUBMITTAL INCLUSIVE OF ALL INFORMATION REQUIRED BY STATE BUILDING CODE, NFPA 13 AND THE CONSTRUCTION DOCUMENTS.
9. PREPARE A COMPLETE RECORD SUBMITTAL INCLUSIVE OF ALL FIELD CHANGES AND ALL INFORMATION REQUIRED BY THE STATE BUILDING CODE AND CONSTRUCTION DOCUMENTS.
10. SHOP DRAWINGS AND RECORD DRAWING SUBMITTALS SHALL BE PREPARED BY THE CONTRACTORS QUALIFIED DESIGNER AND SHALL INDICATE THE DESIGNER'S NICET CERTIFICATION NUMBER OR PROFESSIONAL ENGINEERING SEAL AND SIGNATURE.
11. THE ENGINEER OF RECORD WILL NOT SIGN AND SEAL SHOP DRAWINGS OR RECORD DRAWINGS PREPARED BY THE CONTRACTOR. WHERE THE AUTHORITY HAVING JURISDUCTION REQUIRES SHOP DRAWING OR RECORD DRAWING SUBMITTALS TO BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, THE SUBMITTALS SHALL BE PREPARED BY A QUALIFIED PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR.
12. THE SHOP DRAWINGS, SUPPLEMENTAL CALCULATIONS AND MATERIAL SUBMITTALS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD PRIOR TO SUBMITTAL TO THE STATE DIVISION OF ENGINEERING AND BUILDINGS.
13. INSTALLATION OF SPRINKLERS SHALL BE BASED ON THE DESIGN CRITERIA BELOW

SPRINKLER SYSTEM DESIGN CRITERIA - NFPA 13

AREA	OCCUPANCY CLASSIFICATION	DENSITY (GPM/SF)	AREA OF APPLICATION (SF)	MAX. AREA PER SPRINKLER (SF)
OFFICE	LIGHT HAZARD	0.10	1500	225
LOBBY	LIGHT HAZARD	0.10	1500	225
COMMON AREA	LIGHT HAZARD	0.10	1500	225
RESTROOMS	LIGHT HAZARD	0.10	1500	225
CONFERENCE ROOM	LIGHT HAZARD	0.10	1500	225
MECH/ELEC ROOM	ORDINARY HAZARD I	0.15	1500	130
LAB SPACE	ORDINARY HAZARD I	0.15	1500	130

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REVISIONS

NO.	DATE	DESCRIPTION

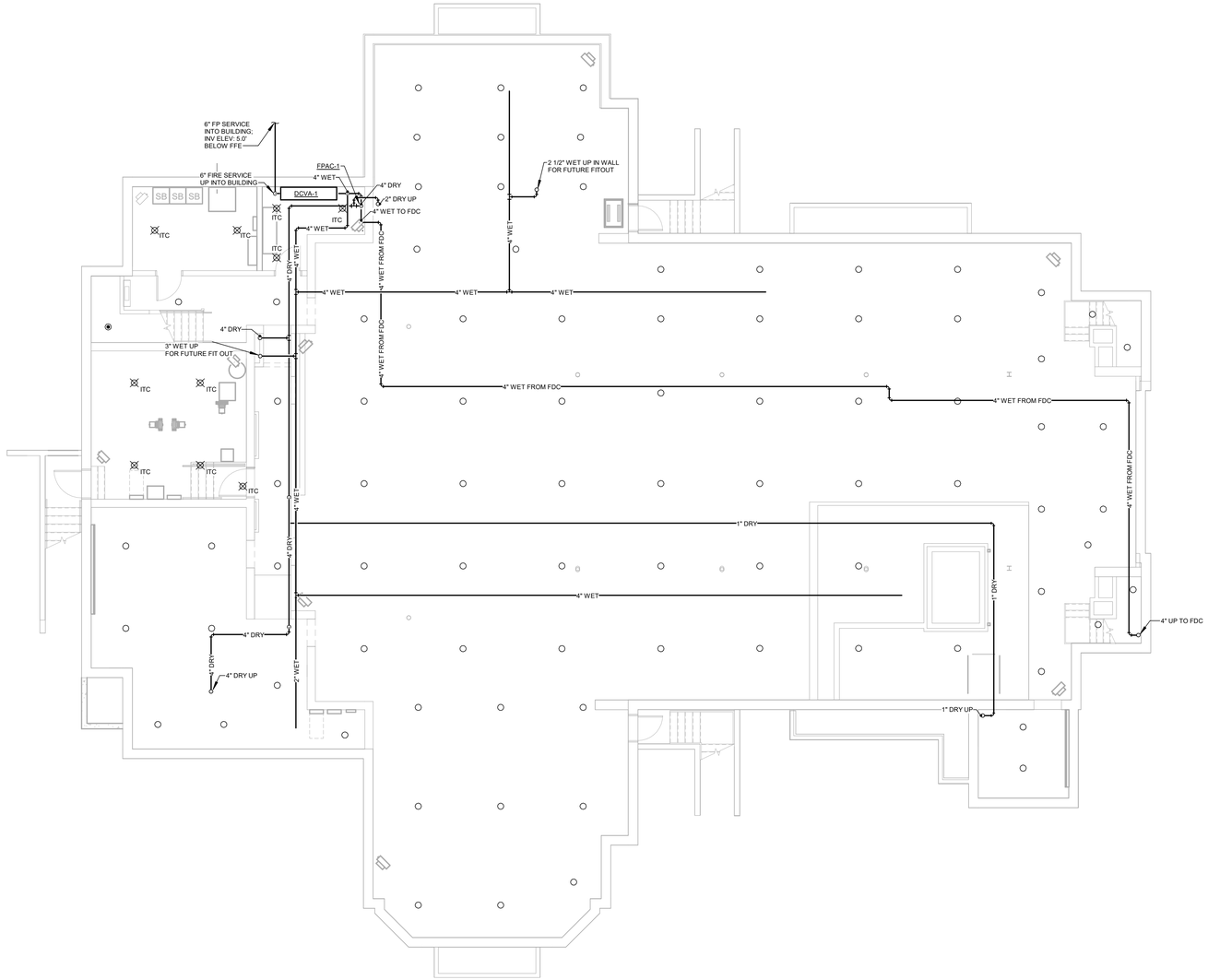
CONTRACT DOCUMENTS

FIRE PROTECTION ABBREVIATIONS, NOTES AND SYMBOLS

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
4/30/2026 2:19:30 PM

SHEET NO.

FP0.0



1 FIRE PROTECTION LOWER FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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FIRE PROTECTION LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
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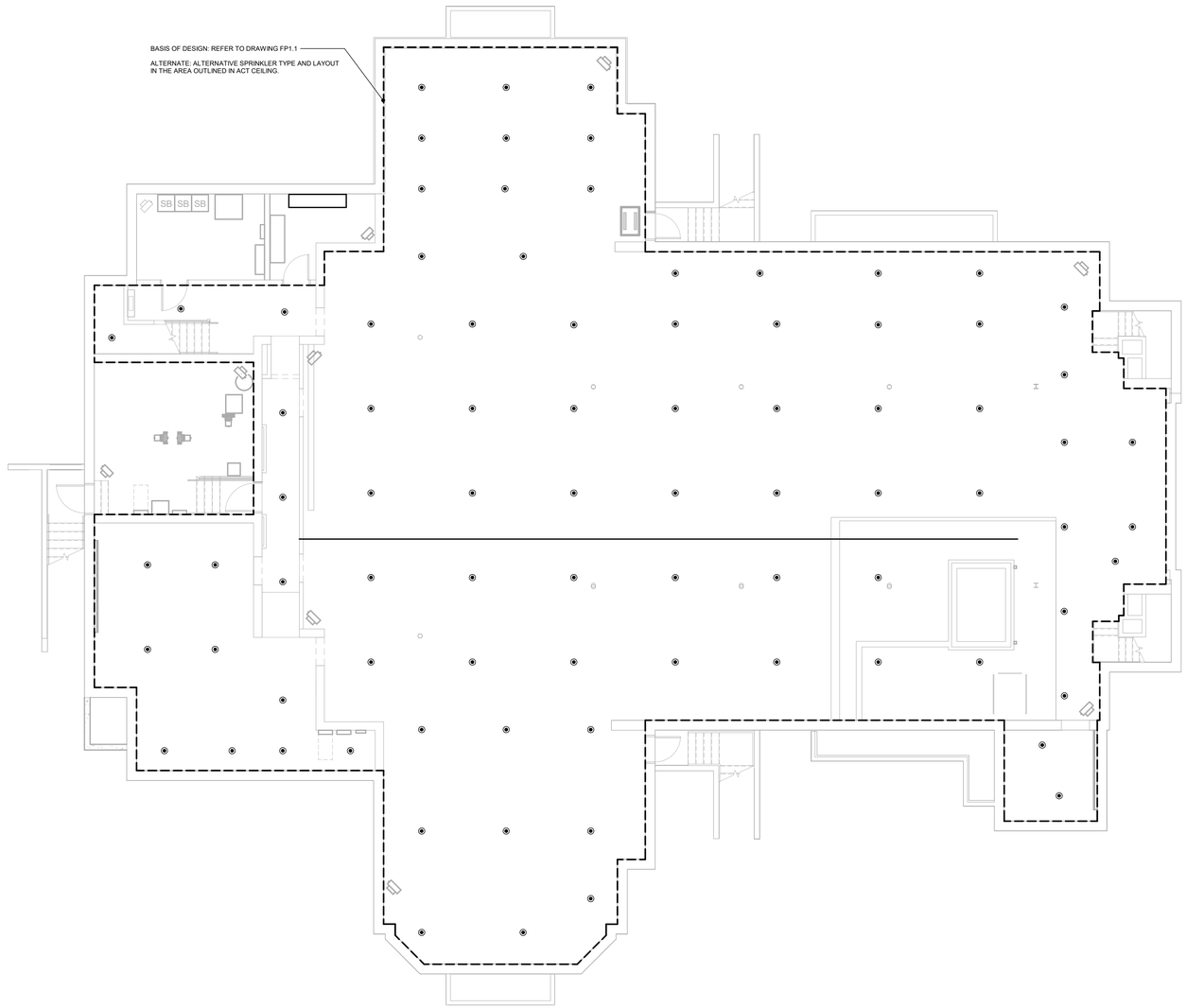
SHEET NO.

FP1.1



1 FIRE PROTECTION LOWER FLOOR PLAN Pre-Fitout ALTERNATE
1/8" = 1'-0"

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REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

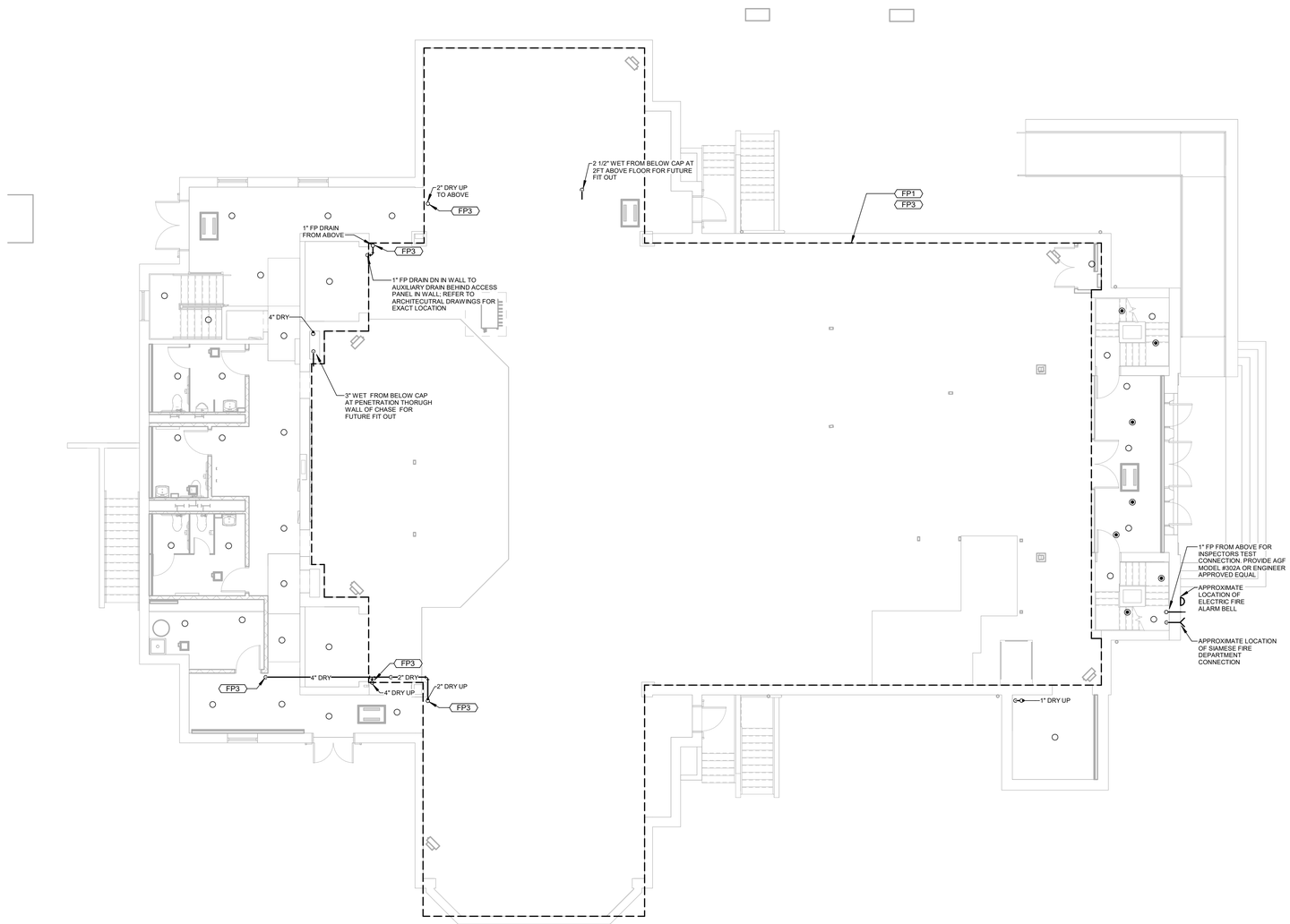
ADD ALT. FIRE PROTECTION LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
4/30/2026 2:19:34 PM

SHEET NO.
FP1.1A

KEYNOTES - FIRE PROTECTION

Key Value	Keynote Text
FP1	AREA TO BE OPEN TO ABOVE. REFER TO FP1.3 FOR SPRINKLER LAYOUT FOR THIS AREA.
FP3	PIPING EXPOSED IN THIS LOCATION TO BE LOCATED WITHIN WALL AS PART OF FITOUT PHASE WORK AND IS EXPOSED WITHIN THIS PROJECT PHASE SHALL BE INDEPENDENTLY SUPPORTED BOTH VERTICALLY AND HORIZONTALLY PER DELEGATED SEISMIC DESIGN.



1 FIRE PROTECTION FIRST FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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CONTRACT DOCUMENTS

FIRE PROTECTION FIRST FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
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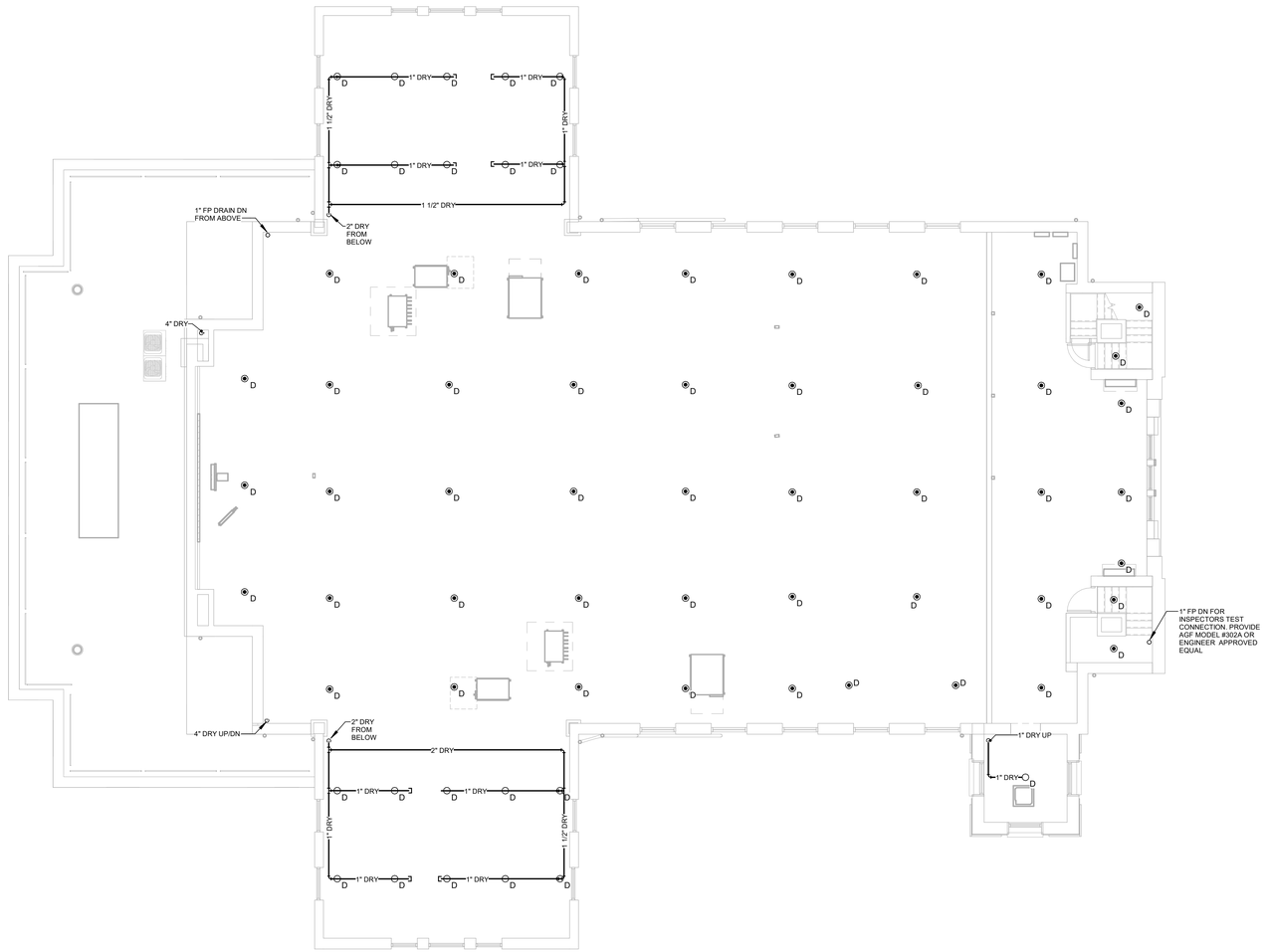
SHEET NO.

FP1.2



1 FIRE PROTECTION MEZZANINE FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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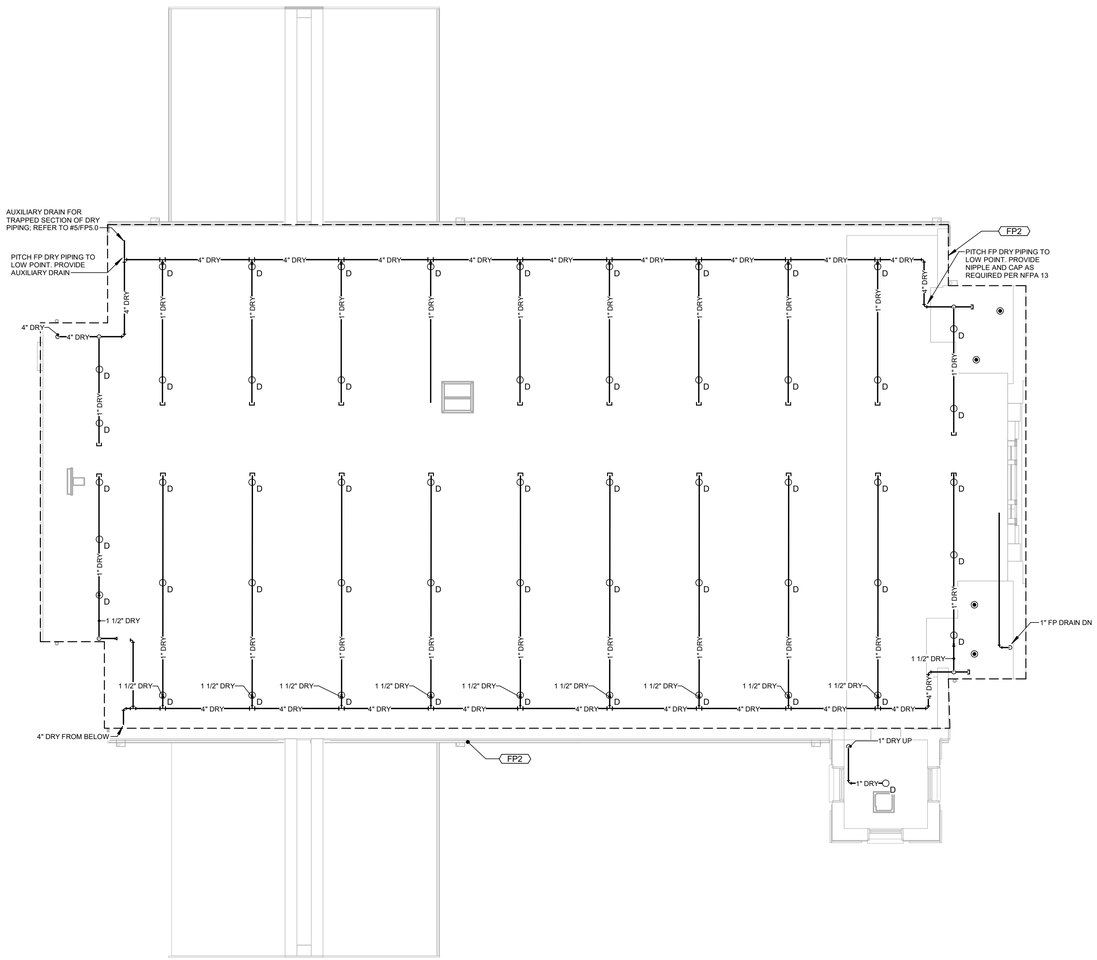
FIRE PROTECTION MEZZANINE FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
4/30/2026 2:19:39 PM

SHEET NO.
FP1.3

KEYNOTES - FIRE PROTECTION

Key Value	Keynote Text
FP2	PROVIDE FULL COVERAGE FOR ATTIC IN ACCORDANCE WITH NFPA 13. CONTRACTOR TO COORDINATE SPRINKLER PIPE ROUTING AND LOCATION OF SPRINKLER HEADS WITH FINAL APPROVED STRUCTURAL SHOP DRAWINGS.



1 FIRE PROTECTION ATTIC FLOOR PLAN Pre-Fitout
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FIRE PROTECTION ATTIC FLOOR PLAN

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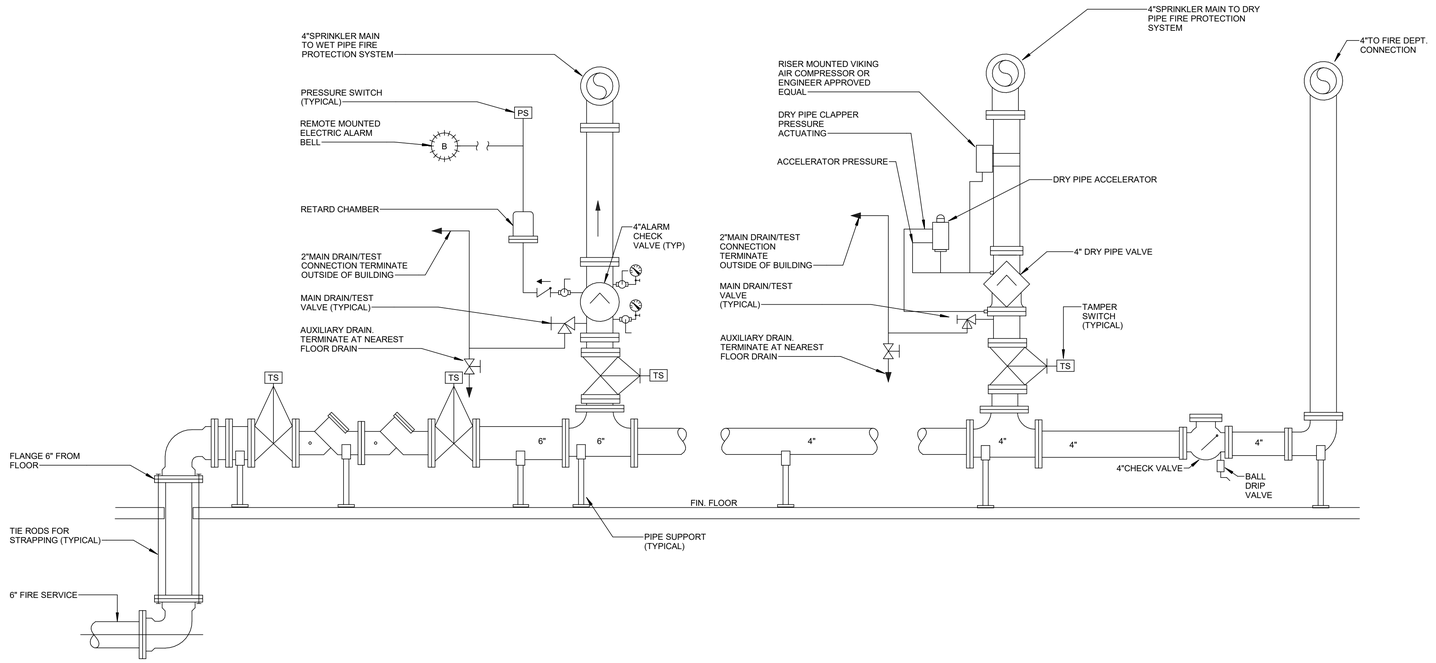
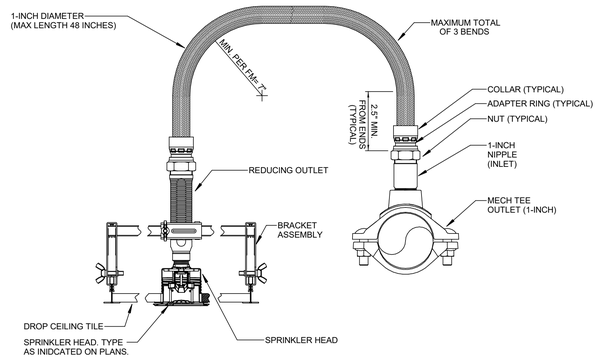
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
4/30/2026 2:19:41 PM

SHEET NO.
FP1.4

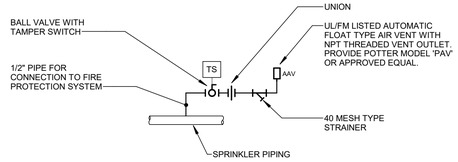


1 FIRE SERVICE DETAIL Pre-Fitout
NTS



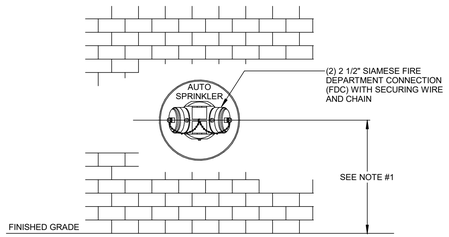
NOTES:
1. REFER TO MANUFACTURERS WRITTEN INSTALLATION INSTRUCTIONS FOR ADDITIONAL DETAILS
2. FLEXIBLE SPRINKLER HEAD ASSEMBLIES SHALL ONLY BE USED IN AREAS WITH ACCESSIBLE CEILINGS

2 FLEXIBLE HOSE SPRINKLER ASSEMBLY
NTS



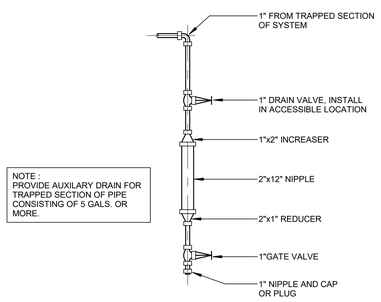
GENERAL NOTE:
PROVIDE AIR VENT CONNECTION ON EVERY WET PIPE SYSTEM UTILIZING METALLIC PIPING, IN ACCORDANCE WITH NFPA 13 AND AS INDICATED HERE. VENT CONNECTION SHALL BE PROVIDED AT THE HIGH POINT OF THE SYSTEM. WHERE THE FIRE PROTECTION SYSTEM INCLUDES MULTIPLE RISERS, AT A MINIMUM, ONE HIGH POINT VENT CONNECTION SHALL BE PROVIDED FOR EACH RISER. WHERE PORTIONS OF THE SYSTEM ARE TRAPPED OR WOULD OTHERWISE IMPEDE VENTING FROM A SINGLE LOCATION, PROVIDE AIR VENT CONNECTIONS AT THE HIGH POINT OF EACH INDIVIDUAL TRAPPED SECTION OF PIPING.

3 WET PIPE SPRINKLER SYSTEM AUTOMATIC AIR VENT DETAIL Pre-Fitout
NTS



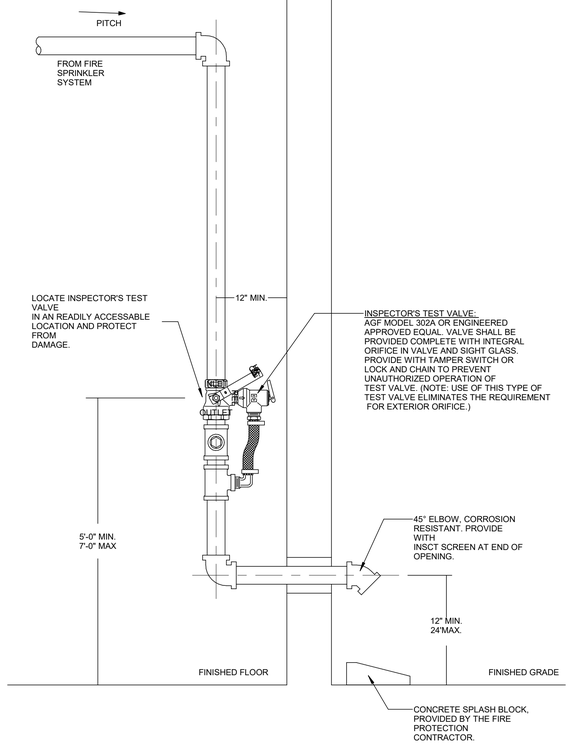
FIRE DEPARTMENT CONNECTION NOTES:
1. FIRE PROTECTION CONTRACTOR SHALL COORDINATE. MOUNTING HEIGHT AND LOCATION OF THE FDC WITH. THE LOCAL FIRE DEPARTMENT'S REQUIREMENTS.
2. THE FIRE PROTECTION CONTRACTOR SHALL COORDINATE. THE CONNECTION THREAD TYPE WITH THE LOCAL FIRE. DEPARTMENT FOR COMPARABILITY.
3. THE FDC FINISH SHALL BE COORDINATED WITH ARCHITECT AND PROVIDED WITH FOLLOWING LETTERING: "AUTO-SPRINKLER"

4 FIRE DEPT. CONNECTION DETAIL Pre-Fitout
NTS



NOTE :
PROVIDE AUXILIARY DRAIN FOR TRAPPED SECTION OF PIPE CONSISTING OF 5 GALS. OR MORE.

5 AUXILARY DRAIN Pre-Fitout
NTS



6 INSPECTOR'S TEST CONNECTION DETAIL Pre-Fitout
NTS

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CONTRACT DOCUMENTS

FIRE PROTECTION DETAILS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
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4/30/2026 2:19:42 PM

SHEET NO.
FP5.0

21 00 00 - GENERAL

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

B. THESE SPECIFICATIONS ARE APPLICABLE TO ALL PLUMBING, MECHANICAL AND ELECTRICAL DRAWINGS UNLESS NOTED OTHERWISE. REVIEW THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, PLUMBING DRAWINGS FOR NOTES, DIMENSIONS, ETC., AND COORDINATE WITH OTHER TRADES INVOLVED.

C. DESCRIPTION

1. THIS PROJECT COMPRISES ALTERATIONS AND RENOVATIONS TO THE EXISTING BUILDING. THE EXISTING BUILDING IS CURRENTLY OCCUPIED AND THE PROJECT SHALL PROCEED IN A MANNER THAT MINIMIZES ANY INCONVENIENCE TO THE BUILDING OCCUPANTS.
2. SCOPE OF WORK CONSISTS OF INSTALLATION OF MATERIALS TO BE FURNISHED UNDER THE CONTRACT DOCUMENTS AND WITHOUT LIMITING GENERALITY THEREOF CONSISTS OF FURNISHING LABOR, MATERIALS, EQUIPMENT, HOISTING, TRANSPORTATION, RIGGING, STAGING, APPURTENANCES, AND SERVICES NECESSARY AND/OR INCIDENTAL TO PROPERLY COMPLETE ALL WORK AS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN.

D. DEFINITIONS: THE FOLLOWING DEFINITIONS APPLY TO THIS CONTRACT

1. FURNISH: THE TERM "FURNISH" MEANS TO "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS"
2. INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."
3. PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."
4. REMOVE: THE TERM "REMOVE" MEANS TO DISCONNECT FROM ITS PRESENT POSITION, REMOVE FROM THE PREMISES AND TO DISPOSE OF IN A LEGAL MANNER."
5. SUBSTITUTIONS: "SUBSTITUTIONS" ARE REQUESTS FOR CHANGES IN PRODUCTS, MATERIALS AND/OR METHODS OF CONSTRUCTION AS PROPOSED BY THE CONTRACTOR AFTER AWARD OF THE CONTRACT."

E. DRAWINGS

1. DRAWINGS ARE DIAGRAMMATIC. THE FINAL PLACEMENT OF EQUIPMENT OR DEVICES IN THE FIELD MAY NOT DIRECTLY CORRESPOND TO THAT WHICH IS SHOWN ON THE DRAWINGS. THOUGH SOME OFFSETS & TRANSITIONS MAY BE SHOWN IN PIPING & SHEET METAL TO HELP INDICATE THE PHYSICAL RELATIONSHIP BETWEEN THEM, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL PIPING & SHEET METAL OFFSETS & TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE WORK AND PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THE WORK OUTLINED ON THESE CONTRACT DOCUMENTS. IF A CONFLICT IN POSITIONING OCCURS THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY TO ASCERTAIN WHAT THE INTENT WAS BY THE DESIGN PROFESSIONAL.

F. CODES AND STANDARDS: WORK SHALL CONFORM TO THE CURRENT EDITIONS OF THE FOLLOWING:

1. NFPA 13 - INSTALLATION OF SPRINKLER SYSTEMS.
2. NFPA STANDARD 14 - STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.
3. NFPA 24 - INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES.
4. STATE BUILDING AND FIRE CODES.
5. LOCAL AUTHORITIES HAVING JURISDICTION.

G. PERMITS AND FEES:

1. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS; AND PAY ALL GOVERNMENT AND STATE SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS IN CONNECTION WITH THE WORK, FILE ALL NECESSARY DRAWINGS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL AND STATE DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK, AND DELIVER A COPY TO THE OWNER AND ENGINEER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

H. SURVEY AND MEASUREMENTS

1. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, SHALL BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITION OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY IDENTIFIED BY EXPERIENCED OBSERVERS.
2. DO NOT SCALE DRAWINGS. SCALE INDICATED ON DRAWINGS IS FOR ESTABLISHING REFERENCE POINTS ONLY. ACTUAL FIELD CONDITIONS SHALL GOVERN ALL DIMENSIONS.
3. PRIOR TO ORDERING ANY MATERIALS AND EQUIPMENT, THOROUGHLY REVIEW THE SITE CONDITIONS TO DETERMINE IF ADEQUATE CLEARANCES AND ACCESS IS ALLOWED TO INSTALL THE COMPONENTS. ORDER EQUIPMENT BROKEN DOWN AS NECESSARY TO ALLOW FOR PROPER RIGGING THROUGH THE PROJECT AREA. PROVIDE ALL NECESSARY ALTERATIONS TO THE STRUCTURE OF THE BUILDING AS NECESSARY TO RIG THE EQUIPMENT IN PLACE.
4. CONTRACTORS SHALL VERIFY, LAYOUT AND BE RESPONSIBLE FOR ALL MEASUREMENTS OF ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND SHALL NOTIFY ARCHITECT AND/OR ENGINEER IF A CONDITION EXISTS THAT PREVENTS THE CONTRACTOR FROM ACCOMPLISHING THE INTENT OF THE DRAWINGS.

I. SUBMITTALS AND SHOP DRAWINGS

1. SUBMIT FOR REVIEW, ELECTRONIC SHOP DRAWINGS IN SEARCHABLE PDF FORMAT FOR THE FOLLOWING.
   a. SUBMITTAL DATA FOR ALL MATERIAL AND EQUIPMENT. CLEARLY IDENTIFY DEVIATIONS OF THE SUBMITTED PRODUCTS FROM THE DESIGN.
   b. SHOP DRAWINGS: DRAWN TO ACCURATE SCALE OF 1/4"=1'0". HIGHLIGHT, ENCIRCLE, OR OTHERWISE INDICATE DEVIATIONS FROM THE CONTRACT DOCUMENTS. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD INFORMATION AS THE BASIS OF SHOP DRAWINGS. STANDARD INFORMATION PREPARED WITHOUT SPECIFIC REFERENCE TO THE PROJECT IS NOT CONSIDERED SHOP DRAWINGS.
   c. HYDRAULIC CALCULATIONS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13.
2. DO NOT USE SHOP DRAWINGS WITHOUT AN APPROPRIATE FINAL STAMP INDICATING ACTION TAKEN IN CONNECTION WITH CONSTRUCTION.
3. DO NOT ORDER ANY MATERIALS OR EQUIPMENT PRIOR TO RECEIVING FINAL APPROVED SUBMITTALS.
4. SCHEDULE AT LEAST TEN WORKING DAYS EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW.

J. AS-BUILT DRAWINGS

A. MAINTAIN ONE SET OF PRINTS ON THE SITE AND NOTE ALL CHANGES OR DEVIATIONS FROM THE ORIGINAL DESIGN THEREON. AT THE COMPLETION OF THE PROJECT, INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT FOR APPROVAL.

K. OPERATION AND MAINTENANCE

1. UPON COMPLETION OF ALL WORK AND TESTS, THE CONTRACTOR SHALL INSTRUCT THE OWNER OR THE OWNER'S REPRESENTATIVE IN THE OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL EQUIPMENT FURNISHED. THE CONTRACTOR SHALL GIVE AT LEAST SEVEN (7) DAYS NOTICE TO THE OWNER AND THE ENGINEER IN ADVANCE OF THIS PERIOD.
2. THE CONTRACTOR SHALL PREPARE THREE (3) COPIES OF A COMPLETE OPERATION AND MAINTENANCE MANUAL, BOUND IN BOOKLET FORM. ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA IN INDIVIDUAL HEAVY-DUTY 3-RING VINYL-COVERED BINDERS, WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION AND DESIGNATION PARTITIONS WITH IDENTIFICATION TABS. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER.
3. MAINTENANCE AND INSTRUCTION MANUALS SHALL BE SUBMITTED TO THE OWNER AT THE SAME TIME AS THE SEVEN (7) DAY NOTICE IS GIVEN PRIOR TO THE INSTRUCTION PERIOD.

L. CLEANING

1. EQUIPMENT: AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS SECTION, INCLUDING REMOVAL OF CONCRETE RESIDUE.
2. WORK AREA: AFTER COMPLETION OF PROJECT, REMOVE ALL CONSTRUCTION DEBRIS, TEMPORARY FACILITIES AND EQUIPMENT FROM WORK AREA. CLEAN WORK AREA TO PERMIT OCCUPATION.

M. GUARANTEE

1. GUARANTEE WORK OF THESE CONTRACT DOCUMENTS IN WRITING FOR NOT LESS THAN ONE (1) YEAR FROM DATE OF FINAL NOTICE OF ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPT AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.

N. MEANS AND METHODS ALL TRADES

1. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. DO NOT BURN WASTE MATERIALS. DO NOT BURY DEBRIS OR EXCESS MATERIALS ON THE OWNER'S PROPERTY. DO NOT DISCHARGE VOLATILE, HARMFUL OR DANGEROUS MATERIALS INTO DRAINAGE SYSTEMS. REMOVE AND DISPOSE OF ALL WASTE MATERIALS, PACKAGING MATERIAL, SKIDS ETC. FROM THE SITE AND DISPOSE OF IN A LAWFUL MANNER IN ACCORDANCE WITH MUNICIPAL, STATE AND FEDERAL REGULATIONS.
3. MATERIALS AND EQUIPMENT SHALL BE UL LISTED WHERE STANDARD HAS BEEN ESTABLISHED.
4. CAREFULLY INSPECT ALL BUILDING ELEMENTS PRIOR TO CUTTING OR DRILLING INTO WALL, FLOORS OR CEILINGS. PATCH AND PAINT SURFACES DISTURBED BY WORK UNDER THIS CONTRACT AS REQUIRED TO RESTORE THEM TO THEIR ORIGINAL CONDITION.
5. SCAFFOLDING, RIGGING, HOISTING: THE CONTRACTOR SHALL FURNISH ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES ANY EQUIPMENT AND APPARATUS FURNISHED UNDER THIS DIVISION. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.
6. EXCAVATION AND BACKFILLING: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE SIZES, DEPTHS, FILL AND BEDDING REQUIREMENTS AND ANY OTHER EXCAVATION WORK REQUIRED UNDER THESE SPECIFICATIONS
7. WATERPROOFING: WHERE ANY WORK PIERCES WATERPROOFING, INCLUDING WATERPROOF CONCRETE, ROOFS, EXTERIOR WALL AND FLOORS IN WET AREAS, THE METHOD OF INSTALLATION SHALL BE REVIEWED BY THE ENGINEER BEFORE WORK IS DONE. THE CONTRACTOR SHALL FURNISH ALL NECESSARY SLEEVES, CAULKING AND FLASHING REQUIRED TO MAKE OPENINGS ABSOLUTELY WATERTIGHT.
8. PROVIDE FIRESTOPPING AROUND ALL FIRE PROTECTION, PLUMBING, MECHANICAL AND ELECTRICAL PENETRATIONS THROUGH FIRE RATED PARTITIONS. PROVIDE ASBESTOS FREE FIRESTOPPING SYSTEM CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME AND GASES. SYSTEM SHALL BE UL LISTED AND COMPLY WITH ASTM E 814.
9. PROVIDE ACCESS PANELS IN WALLS, FLOORS AND GYPSUM WALL BOARD CEILINGS TO ALLOW ACCESS TO: VALVES AND OTHER APPARATUS AND EQUIPMENT REQUIRING PERIODIC SERVICE AND INSPECTION. NOT ALL ACCESS PANELS ARE INDICATED ON THE PLANS. REVIEW ARCHITECTURAL AND MECHANICAL PLANS TO DETERMINE THE LOCATION AND QUANTITY OF ACCESS PANELS REQUIRED. COORDINATE TYPE AND LOCATION WITH ARCHITECTURAL PLANS.

21 05 00 - COMMON WORK RESULTS FOR FIRE SUPPRESSION SYSTEMS

A. WORKMANSHIP AND QUALIFICATIONS: MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH NFPA AND APPLICABLE LOCAL CODES AND ORDINANCES. THE SPRINKLER CONTRACTOR SHALL BE STATE LICENSED TO INSTALL FIRE PROTECTION SYSTEMS. FIRE PROTECTION DEVICES USED SHALL BE LISTED AND APPROVED BY UNDERWRITERS LABORATORIES (UL).

B. GROOVED JOINT COUPLINGS, FITTINGS, VALVES, AND SPECIALTIES SHALL BE THE PRODUCTS OF A SINGLE MANUFACTURER. GROOVING TOOLS SHALL BE OF THE SAME MANUFACTURER AS THE GROOVED COMPONENTS.

C. VALVES: SHALL BEAR UL AND/OR FM LABEL OR MARKING. PROVIDE MANUFACTURER'S NAME AND PRESSURE RATING MARKED ON VALVE BODY. ITEMS OF SIMILAR CLASS SHALL BE THE PRODUCTS OF THE SAME MANUFACTURER. MANUFACTURERS: KENNEDY VALVE MFG. CO., VICTAULIC, STOCKHAM, NIBCO, WATTS, HAMMOND, MILWAUKEE.

D. PIPE & FITTINGS (ABOVE GRADE)

1. STEEL PIPING: ASTM A53, SCHEDULE 40 SEAMLESS CARBON STEEL. SCHEDULE 10 PIPE SHALL BE ALLOWED FOR PIPE SIZES LARGER THAN 1-1/4" DIAMETER WHEN ROLL GROOVED MECHANICAL COUPLINGS ARE USED.
2. CAST IRON FITTINGS: ANSI/ASME B16.1, FLANGES AND FLANGED FITTINGS, ANSI/ASME B16.4, SCREWED FITTINGS.
3. MALLEABLE IRON FITTINGS: ANSI/ASME B16.3, SCREWED CLASS 300 TYPE. THREADS SHALL CONFORM TO ANSI/ASTM A47.
4. GROOVED MECHANICAL FITTINGS: ANSI A21.10/AWWA C-110 DUCTILE IRON, ASTM A536 GRADE 65-45-12 DUCTILE IRON, ASTM A234 GRADE WPB, OR FACTORY FABRICATED FROM CARBON STEEL PIPE CONFORMING TO ASTM A53, WITH GROOVES OR SHOULDERS DESIGNED TO ACCEPT GROOVED END COUPLINGS. FITTINGS SHALL BE OF THE SAME MANUFACTURER AS THE ADJOINING COUPLINGS.
5. GROOVED MECHANICAL COUPLINGS: ASTM A536 GRADE 65-45-12, DUCTILE IRON HOUSING, ELASTOMER GASKET WITH NUTS AND BOLTS TO SECURE ROLL GROOVED PIPE AND FITTINGS.
6. RIGID TYPE COUPLINGS: HOUSINGS CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS TO PROVIDE RIGIDITY AND SYSTEM SUPPORT AND HANGING IN ACCORDANCE WITH NFPA-13.
   a. 1-1/4" THROUGH 4": FACTORY ASSEMBLED FOR INSTALLATION WIHTOUT FIELD DISASSEMBLY. VICTAULIC STYLE 009 EZ.
   b. 5" THROUGH 8": VICTAULIC FIRELOCK STYLE 005.
   c. 10" AND LARGER: VICTAULIC ZERO-FLEX STYLE 07.
7. FLEXIBLE TYPE COUPLINGS: USE IN LOCATIONS WHERE VIBRATION ATTENUATION AND STRESS RELIEF ARE REQUIRED, AND FOR SEISMIC CONSIDERATIONS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. VICTAULIC STYLE 75.

E. GASKETS

1. WET SYSTEMS: C-SHAPE OR EZ STYLE 009.
2. DRY SYSTEMS: FLUSHSEAL OR EZ STYLE 009, DESIGN GRADE EPDM, TYPE A.
3. FREEZERS: FLUSHSEAL GRADE L, SILICONE.

F. JOINTS

1. GROOVED MECHANICAL COUPLINGS: ASTM A536 GRADE 65-45-12, DUCTILE IRON HOUSING, FLUSHSEAL OR QUICKVIC ELASTOMER GASKET WITH NUTS AND BOLTS TO SECURE ROLL GROOVED PIPE AND FITTINGS. HOUSINGS CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS TO PROVIDE RIGIDITY, AND MANUFACTURED TO CONNECT COPPER TUBING AND FITTINGS WITHOUT FLARING. VICTAULIC STYLE 606 OR STYLE 607 QUICKVIC STAB-ON COUPLINGS.
2. ASTM B32, SOLDER, GRADE 95TA OR ANSI/AWS A5.8 BCUP SILVER BRAZE.
3. CAST IRON: AWWA C151 PIPING WITH AWWA C110 STANDARD THICKNESS FITTINGS AND AWWA C111 RUBBER GASKET JOINTS OR MECHANICAL GROOVED COUPLINGS WITH DUCTILE IRON HOUSING CLAMPS TO ENGAGE AND LOCK, "C" SHAPED COMPOSITION SEALING GASKET, STEEL BOLTS, NUTS, AND WASHERS, GALVANIZED FOR GALVANIZED PIPE.

G. GATE VALVES

1. UP TO AND INCLUDING 2": BRONZE BODY AND TRIM, 175 LB, COLD WATER NON-SHOCK WORKING PRESSURE, RISING STEM, HAND WHEEL, SOLID WEDGE OR DISC, THREADED ENDS.
2. OVER 2": IRON BODY, BRONZE TRIM, 175 LB, COLD WATER NON-SHOCK WORKING PRESSURE, RISING STEM PRE-GROOVED FOR MOUNTING TAMPER SWITCH, HAND WHEEL, OUTSIDE SCREW AND YOKE, SOLID TAPER BRONZE OR CAST IRON WEDGE, GROOVED OR FLANGED ENDS.
3. OVER 4": IRON BODY, BRONZE TRIM, 175 POUND COLD WATER, NON-SHOCK WORKING PRESSURE. VALVE SHALL HAVE SOLID TAPER WEDGE; OUTSIDE SCREW AND YOKE, RISING STEM, FLANGED BONNET WITH BODY AND BONNET CONFORMING TO ASTM A126 CLASS B; REPLACEABLE BRONZE WEDGE FACING RINGS; GROOVED OR FLANGED ENDS; AND A PACKING ASSEMBLY CONSISTING OF A CAST IRON GLAND FLANGE, BRASS GLAND, PACKING, BONNET AND BRONZE BONNET BUSHING. VALVE SHALL BE CAPABLE OF BEING REPACKED UNDER PRESSURE, WITH VALVE WIDE OPEN.

H. GLOBE VALVES

1. UP TO AND INCLUDING 2 INCHES (50 MM): CLASS 125, BRONZE BODY, BRONZE TRIM, RISING STEM AND HAND WHEEL, INSIDE SCREW, RENEWABLE RUBBER DISC, THREADED ENDS, WITH BACK SEATING CAPACITY, PACKABLE UNDER PRESSURE.
2. OVER 2 INCHES (50 MM): IRON BODY, BRONZE TRIM, RISING STEM, HAND WHEEL, OS&Y, PLUG-TYPE DISC, FLANGED ENDS, RENEWABLE SEAT AND DISC.

I. ANGLE VALVES

1. UP TO AND INCLUDING 2": CLASS 125, BRONZE BODY, BRONZE TRIM, RISING STEM AND HAND WHEEL, INSIDE SCREW, RENEWABLE RUBBER DISC, THREADED ENDS, WITH BACK SEATING CAPACITY, PACKABLE UNDER PRESSURE.
2. OVER 2": IRON BODY, BRONZE TRIM, RISING STEM, HAND WHEEL, OS&Y, PLUG-TYPE DISC, FLANGED ENDS, RENEWABLE SEAT AND DISC.

J. BALL VALVES

1. UP TO AND INCLUDING 2": BRONZE TWO PIECE BODY, STANDARD PORT, CHROME PLATED BRASS BALL, 316 STAINLESS STEEL STEM, TEFLON SEATS BRASS STEM NUT, DIE-CAST BRASS GEAR BOX WITH SUPERVISORY SWITCHES, THREADED OR GROOVED ENDS.
2. OVER 2": MANUFACTURERS: CAST STEEL BODY, CHROME PLATED STEEL BALL, TEFLON SEAT AND STUFFING BOX SEALS, LEVER HANDLE.

1.

K. BUTTERFLY VALVES

1. DUCTILE IRON BODY, DUCTILE IRON DISC WITH EPDM DISC COATING AND INTEGRALLY CAST STEM, GROOVED ENDS.
2. CAST BRONZE BODY, DUCTILE IRON DISC WITH EPDM DISC COATING AND INTEGRALLY CAST STEM, COPPER-TUBING DIMENSIONED GROOVED ENDS.
3. CAST IRON WITH RESILIENT REPLACEABLE EPDM SEAT, WAFER OR LUG ENDS, EXTENDED NECK WITH 316 STAINLESS STEEL STEM, MSS-SP-67, 200 PSI.
4. DISC: EPDM COATED DUCTILE IRON OR ALUMINUM BRONZE.
5. OPERATOR: NOTCHED PLATE LEVER HANDLE, HANDWHEEL OR GEAR DRIVE, AND WEATHERPROOF ACTUATOR WITH SUPERVISORY SWITCHES.

L. CHECK VALVES

1. UP TO AND INCLUDING 2": CLASS 125, BRONZE SWING DISC, SCREWED ENDS.
2. HORIZONTAL SWING OVER 2": 300 PSI CWP, DUCTILE IRON BODY AND COUPLED CAP CONFORMING TO ASTM A536, GRADE 65-45-12; HORIZONTAL SWING, WITH STAINLESS STEEL DISC, ELASTOMER SEAT, AND GROOVED ENDS.
3. CLASS 175, CAST IRON BODY AND BOLTED CAP CONFORMING TO ASTM A126, CLASS B; HORIZONTAL SWING, WITH A BRONZE DISC OR CAST IRON DISC WITH BRONZE DISC RING, AND FLANGED ENDS.VALVE SHALL BE CAPABLE OF BEING REFITTED WHILE THE VALVE REMAINS IN LINE.
4. SPRING ACTUATED OVER 2": 300 PSI CWP, DUCTILE IRON BODY CONFORMING TO ASTM A536, GRADE 65-45-12; VERTICAL OR HORIZONTAL CHECK; WITH STAINLESS STEEL SPRING AND SHAFT.
5. 2-1/2" AND 3": ALUMINUM BRONZE DISC WITH DISC MOUNTED ELASTOMER SEAL AND PPS (POLYPHENYLENE SULFIDE) COATED SEAT.
6. 4" AND LARGER: ELASTOMER COATED DUCTILE IRON DISC WITH WELDED-IN NICKEL SEAT.

M. DRAIN VALVES: COMPRESSION STOP: BRONZE WITH HOSE THREAD NIPPLE AND CAP.

N. BALL VALVE: BRASS WITH CAP AND CHAIN, 3/4" HOSE THREAD

O. BACKFLOW PREVENTERS

1. REDUCED PRESSURE BACKFLOW PREVENTERS: ANSI/ASSE 1013, AWWA C511, BRONZE BODY, TWO INDEPENDENTLY OPERATING SPRING LOADED CHECK VALVES, DIAPHRAGM TYPE DIFFERENTIAL PRESSURE RELIEF VALVE LOCATED BETWEEN CHECK VALVES, TWO GATE VALVES, STRAINER, TEST COCKS AND AIR GAP FITTING.
2. REDUCED PRESSURE DETECTOR CHECK VALVE ASSEMBLIES: ANSI/ASSE 1047, AWWA C511, BRONZE BODY, TWO INDEPENDENTLY OPERATING SPRING LOADED CHECK VALVES, DIAPHRAGM TYPE DIFFERENTIAL PRESSURE RELIEF VALVE LOCATED BETWEEN CHECK VALVES, METERED BYPASS, TWO GATE VALVES, STRAINER, TEST COCKS AND AIR GAP FITTING.
3. DOUBLE CHECK VALVE ASSEMBLY: ANSI//ASSE 1015, AWWA C510, BRONZE BODY, TWO INDEPENDENTLY OPERATING SPRING LOADED CHECK VALVES, TWO GATE VALVES, STRAINER, AND TEST COCKS.
4. DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLIES: ANSI/ASSE 1048, AWWA C510, BRONZE BODY, TWO INDEPENDENTLY OPERATING SPRING LOADED CHECK VALVES, METERED BYPASS, TWO GATE VALVES, STRAINER, TEST COCKS.

P. UNIONS & DIELECTRIC CONNECTIONS

1. UNIONS FOR PIPE 2" AND UNDER:
   a. FERROUS PIPING: 150 PSIG (1034 KPA) MALLEABLE IRON, THREADED.
   b. COPPER PIPE: BRONZE, SOLDERED JOINTS.
2. DIELECTRIC CONNECTIONS: WATERWAY FITTING WITH WATER IMPERVIOUS ISOLATION BARRIER, VICTAULIC STYLE 47 OR APPROVED EQUAL.

Q. PIPE HANGERS AND SUPPORTS

1. CONFORM TO NFPA 13.
2. HANGERS: MALLEABLE IRON, CARBON STEEL, ADJUSTABLE SWIVEL, SPLIT RING, CARBON STEEL, ADJUSTABLE, CLEVIS.
3. MULTIPLE OR TRAPEZE HANGERS: STEEL CHANNELS WITH WELDED SPACERS AND HANGER RODS.
4. WALL SUPPORT FOR PIPE SIZES TO 3": CAST IRON HOOK.
5. WALL SUPPORT FOR PIPE SIZES 4" AND OVER: WELDED STEEL BRACKET AND WROUGHT STEEL CLAMP.
6. VERTICAL SUPPORT: STEEL RISER CLAMP.
7. FLOOR SUPPORT: CAST IRON ADJUSTABLE PIPE SADDLE, LOCK NUT, NIPPLE, FLOOR FLANGE, AND CONCRETE PIER OR STEEL SUPPORT.
8. PROVIDE SEISMIC RESTRAINTS AS REQUIRED BY CODE INCLUDING EQUIPMENT OR PIPING LOWER THAN 18" BELOW STRUCTURE. FOR EACH SEISMIC RESTRAINT, PROVIDE CERTIFIED CALCULATIONS TO VERIFY ADEQUACY TO MEET THE FOLLOWING DESIGN REQUIREMENTS: ABILITY TO ACCOMMODATE RELATIVE SEISMIC DISPLACEMENTS OF SUPPORTED ITEM BETWEEN POINTS OF SUPPORT. ABILITY TO ACCOMMODATE THE REQUIRED SEISMIC FORCES. FOR EACH RESPECTIVE SET OF ANCHOR BOLTS PROVIDE CALCULATIONS TO VERIFY ADEQUACY TO MEET COMBINED SEISMIC-INDUCED SHEER AND TENSION FORCES. FOR EACH WELDMENT BETWEEN STRUCTURE AND ITEM SUBJECT TO SEISMIC FORCE, PROVIDE CALCULATIONS TO VERIFY ADEQUACY. CALCULATIONS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE WHERE THE WORK IS BEING PERFORMED AND HAS SPECIFIC EXPERIENCE IN SEISMIC CALCULATIONS. RESTRAINTS SHALL MAINTAIN THE RESTRAINED ITEM IN A CAPTIVE POSITION WITHOUT SHORT CIRCUITING THE VIBRATION ISOLATION.

R. GENERAL INSTALLATION REQUIREMENTS FOR PIPE AND FITTINGS

1. INSTALL PIPING IN ACCORDANCE WITH NFPA 13 FOR SPRINKLER SYSTEMS, AND NFPA 24 FOR SERVICE MAINS.
2. PLACE PIPING IN CONCEALED SPACES ABOVE FINISHED CEILINGS UNLESS NOTED OTHERWISE.
3. ROUTE PIPING IN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT.
4. INSTALL PIPING TO CONSERVE BUILDING SPACE, TO NOT INTERFERE WITH USE OF SPACE AND OTHER WORK.
5. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
6. INSTALL PIPE SLEEVE AT PIPING PENETRATIONS THROUGH FOOTINGS, PARTITIONS, WALLS, AND FLOORS. SEAL PIPE AND SLEEVE PENETRATIONS TO MAINTAIN FIRE RESISTANCE EQUIVALENT TO FIRE SEPARATION.
7. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT. USE VICTAULIC STYLE 77 OR 75 COUPLINGS IN ACCORDANCE WITH VICTAULIC INSTRUCTIONS FOR EXPANSION AND CONTRACTION OF PIPE.
8. GROOVED JOINT COUPLINGS AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. GROOVED ENDS SHALL BE CLEAN AND FREE FROM INDENTATIONS, PROJECTIONS, AND ROLL MARKS IN THE AREA FROM PIPE END TO GROOVE. GASKETS SHALL BE VERIFIED AS SUITABLE FOR THE INTENDED SERVICE PRIOR TO INSTALLATION. GASKETS SHALL BE MOLDED AND PRODUCED BY THE COUPLING MANUFACTURER. THE GROOVED COUPLING MANUFACTURER'S FACTORY TRAINED REPRESENTATIVE SHALL PROVIDE ON-SITE TRAINING FOR CONTRACTOR'S FIELD PERSONNEL IN THE USE OF GROOVING TOOLS, APPLICATION OF GROOVE, AND INSTALLATION OF GROOVED JOINT PRODUCTS. THE MANUFACTURER'S REPRESENTATIVE SHALL PERIODICALLY VISIT THE JOBSITE AND REVIEW INSTALLATION. CONTRACTOR SHALL REMOVE AND REPLACE ANY JOINTS DEEMED IMPROPERLY INSTALLED.
9. PITCH PIPING AND ARRANGE SYSTEMS TO DRAIN AT LOW POINTS. USE ECCENTRIC REDUCERS TO MAINTAIN TOP OF PIPE LEVEL.
10. PREPARE PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES FOR FINISH PAINTING. WHERE PIPE SUPPORT MEMBERS ARE WELDED TO STRUCTURAL BUILDING FRAMING, SCRAPE, BRUSH CLEAN, AND APPLY ONE COAT OF ZINC RICH PRIMER TO WELDING.
11. DO NOT PENETRATE BUILDING STRUCTURAL MEMBERS UNLESS INDICATED.
12. WHERE MORE THAN ONE PIPING SYSTEM MATERIAL IS SPECIFIED, INSTALL COMPATIBLE SYSTEM COMPONENTS AND JOINTS. INSTALL FLANGES, UNION, AND COUPLINGS AT LOCATIONS REQUIRING SERVICING.
13. DIE CUT THREADED JOINTS WITH FULL CUT STANDARD TAPER PIPE THREADS WITH RED LEAD AND LINSEED OIL OR OTHER NON-TOXIC JOINT COMPOUND APPLIED TO MALE THREADS ONLY.
14. PROVIDE DIELECTRIC FITTINGS WHENEVER JOINING TWO DISSIMILAR METALS.
15. PROVIDE SURGE RESTRAINERS ON ALL END OF BRANCHES AND ARM OVERS IN EXCESS OF 12".

S. GENERAL INSTALLATION REQUIREMENTS FOR VALVES

1. INSTALL DRAIN VALVES AT MAIN SHUT-OFF VALVES, LOW POINTS OF PIPING AND APPARATUS.
2. VALVES SHALL BE ACCESSIBLE FOR OPERATION AND SERVICING. PROVIDE ACCESS PANELS WHERE REQUIRED.
3. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED. REMOVE PROTECTIVE COATINGS AFTER INSTALLATION.
4. INSTALL GATE OR BUTTERFLY VALVES FOR SHUT-OFF OR ISOLATING SERVICE.
5. INSTALL BURIED SHUT OFF VALVES IN VALVE BOX.
6. PROVIDE BACKFLOW PREVENTER ASSEMBLY AT SPRINKLER SYSTEM WATER SOURCE CONNECTION. INSTALL A DRAIN LINE FROM THE AIR GAP FITTING AND TERMINATE AT THE NEAREST FLOOR DRAIN. THE BACKFLOW PREVENTER SHALL BE INSTALLED AT A MINIMUM HEIGHT TO ALLOW INSTALLATION OF THE AIR GAP FITTING, BUT SHALL NOT BE INSTALLED AT MORE THAN 5'0" ABOVE FINISHED FLOOR FOR MAINTENANCE.

T. GENERAL INSTALLATION REQUIREMENTS FOR PIPE HANGERS AND SUPPORTS

1. INSTALL IN ACCORDANCE WITH NFPA 13.
2. INSTALL HANGERS TO WITH MINIMUM 1/2" SPACE BETWEEN FINISHED COVERING AND ADJACENT WORK.
3. PLACE HANGERS WITHIN 12" OF EACH HORIZONTAL ELBOW.
4. USE HANGERS WITH 1-1/2" MINIMUM VERTICAL ADJUSTMENT. DESIGN HANGERS FOR PIPE MOVEMENT WITHOUT DISENGAGEMENT OF SUPPORTED PIPE.
5. SUPPORT VERTICAL PIPING AT EVERY FLOOR. SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.
6. WHERE INSTALLING SEVERAL PIPES IN PARALLEL AND AT SAME ELEVATION, PROVIDE MULTIPLE OR TRAPEZE HANGERS.
7. INSTALL COPPER PLATED HANGER

GENERAL NOTES

GENERAL

1. GENERAL NOTES, SYMBOLS AND DETAILS ARE APPLICABLE TO DRAWINGS WITHIN DIVISION 22.
2. DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND GENERAL ARRANGEMENT. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
3. COORDINATE CONCRETE PADS AND STEEL PLATFORMS REQUIRED FOR PLUMBING WORK.
4. COORDINATE ROOF AND WALL PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS. COORDINATE SLAB PENETRATIONS WITH WORK OF OTHER SECTIONS.
5. RUN PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.
6. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS AND WITH ALL TRADES INVOLVED.
7. NOT ALL ACCESS DOORS HAVE BEEN SHOWN ON THE PLANS. PROVIDE ACCESS PANELS THROUGH BUILDING ASSEMBLIES TO SERVICE AND MAINTAIN EQUIPMENT UNLESS SUCH EQUIPMENT IS INSTALLED IN EXPOSED LOCATIONS OR ABOVE LAY-IN CEILINGS. COORDINATE THE LOCATION OF ACCESS DOORS AND PANELS AND VERIFY THE QUANTITY, SIZE, AND LOCATIONS AFTER THE SYSTEMS AND EQUIPMENT REQUIRING ACCESS HAVE BEEN INSTALLED AND PRIOR TO THE CLOSURE OF THE AFFECTED CEILINGS AND BUILDING ASSEMBLIES. SUBMIT ACCESS PANEL LOCATIONS FOR REVIEW.
8. AT SUBSTANTIAL COMPLETION, THE FOLLOWING ITEMS, NEW OR EXISTING, SHALL BE FULLY AND REASONABLY ACCESSIBLE: CONTROL BOXES, JUNCTION BOXES, VALVES, DDC CONTROL BOXES, ELECTRICAL PANELS, CLEAN OUTS, DISCONNECT SWITCHES AND ELEMENTS OF EQUIPMENT REQUIRING MAINTENANCE. "FULLY AND REASONABLY ACCESSIBLE" SHALL BE DEFINED AS NATIONAL ELECTRIC CODE REQUIRED CLEARANCE FOR POWERED EQUIPMENT AND CAPABLE OF BEING ACCESSED OR SERVICED WITHOUT REMOVING, MODIFYING OR DISTORTING OTHER COMPONENTS OF THE WORK. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCE FOR ALL EQUIPMENT.
9. VERIFY EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE FITTINGS TO TRANSITION TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE DIMENSIONS BEFORE FABRICATION.
10. IN COMPLIANCE WITH THE FEDERAL SAFE DRINKING WATER ACT (SDWA), THE CONTRACTOR SHALL NOT PROVIDE ANY COMPONENTS IN THE DOMESTIC WATER SYSTEM THAT CONTAIN MORE THAN 0.25% LEAD ON ANY WETTED PARTS. THE CONTRACTOR SHALL PROVIDE THE LEAD FREE EQUIVALENT OF ANY EQUIPMENT SPECIFIED AND PROVIDE A LETTER CERTIFYING THAT ALL PLUMBING PRODUCTS PROVIDED MEET THIS REGULATION.
11. PLUMBING WORK SHALL BE DONE IN ACCORDANCE WITH THE STATE PLUMBING AND FUEL GAS CODE. COORDINATE WITH THE INSPECTOR FOR ALL PLUMBING INSPECTIONS.
12. IN THE EVENT THAT THERE ARE DISCREPANCIES BETWEEN PIPE SIZES SHOWN ON THE PLANS, DETAILS AND DIAGRAMS, THE LARGER PIPE SIZE SHALL BE PROVIDED.

PIPING SYSTEM SPECIFIC NOTES:

1. PROVIDE ESCUTCHEONS AT EXPOSED PIPE PENETRATIONS OF CEILINGS AND WALLS
2. TOPS OF FLOOR DRAINS SHALL BE FLUSH WITH FINISHED FLOOR.
3. PROVIDE SHUT-OFF VALVES ON BRANCH PIPING AND ON SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT.
4. SUPPORT PIPING FROM STRUCTURE. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
5. PROVIDE DRAIN WITH BALL VALVE, HOSE END VACUUM BREAKER, CAP AND CHAIN AT DOMESTIC WATER LOW POINTS AND PITCH PIPING TO DRAIN.
6. PROVIDE ACCESSIBLE CLEANOUTS AT THE BASE OF STACKS.
7. PLUMBING PIPING AND DRAINS SHALL BE PROTECTED FROM DEBRIS AND KEPT CLEAR OF BLOCKAGE DURING CONSTRUCTION.
8. PROVIDE DIELECTRIC FITTINGS WHEN JOINING PIPES OF DISSIMILAR METALS.
9. PROVIDE OFFSETS IN PIPING AROUND OBSTRUCTIONS.

NATURAL GAS NOTES:

1. OBTAIN APPLICABLE PERMITS FOR THE WORK.
2. PROVIDE DRIP POCKET AT THE BOTTOM OF GAS RISERS.
3. GAS PIPING TO COMPLY WITH STATE AND LOCAL CODES.
4. GAS PIPING AND SAFETY DEVICES SHALL CONFORM TO THE REQUIREMENTS OF NFPA 54 AND SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE STATE REGULATORY BOARD.
5. PROVIDE GAS COCK VALVE AT EACH BRANCH RUNOUT FROM THE MAIN RISER SERVING GAS OUTLETS AND AT INDIVIDUAL GAS FIXTURES.
6. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH APPLICABLE CODES, AND APPROVED BY THE LOCAL PLUMBING INSPECTOR. IF INSPECTION AND TEST SHOWS DEFECTS, DEFECTIVE WORK AND MATERIAL SHALL BE REPLACED AND INSPECTION AND TEST SHALL BE REDONE.

FIRESTOPPING NOTES:

1. PROVIDE FIRE STOPPING AND SMOKE BARRIER SEALING OF PENETRATIONS THROUGH FIRE WALLS OR SMOKE BARRIERS INCLUDING BOTH EMPTY OPENINGS AND OPENINGS CONTAINING CABLES, PIPES, DUCTS, CONDUITS AND OTHER PENETRATING ITEMS. REFER TO ARCHITECTURAL FLOOR PLANS AND CODE SHEETS FOR WALL RATINGS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

DEMOLITION NOTES

DEMOLITION GENERAL NOTES

1. SITE VISIT: THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. BEFORE SUBMITTING BID, VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVER.
2. PREPARATORY WORK: BEFORE STARTING WORK IN A PARTICULAR AREA OF THE PROJECT, VISIT SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED INCLUDING PREPARATORY WORK DONE UNDER OTHER SECTIONS OR CONTRACTS BY OWNER. REPORT CONDITIONS THAT MIGHT AFFECT WORK ADVERSELY IN WRITING TO ARCHITECT AND OWNER. DO NOT PROCEED WITH WORK UNTIL DEFECTS HAVE BEEN CORRECTED AND CONDITIONS ARE SATISFACTORY. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.
3. PHASING: DEMOLITION WORK SHALL COMPLY WITH THE PHASING REQUIREMENTS OF THE PROJECT AND BE COORDINATED WITH THE OWNER, ARCHITECT, CM AND ENGINEER. NO REMOVALS SHALL BE IMPLEMENTED WITHOUT A THOROUGH UNDERSTANDING OF THE PHASING REQUIREMENTS.
4. ABANDONING OF DUCTWORK, PIPING OR EQUIPMENT IN PLACE WITHIN SCOPE AREA IS PROHIBITED.
5. PROVIDE 2 WEEKS NOTICE TO OWNER FOR SHUT DOWN OF ANY SERVICES AND/OR SYSTEMS.
6. COORDINATE EXISTING EQUIPMENT AND MATERIALS THAT SHALL REMAIN THE PROPERTY OF THE OWNER. ITEMS OF VALUE WHICH ARE NOT DIRECTED TO BE RETURNED TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF. STORAGE OR SALE OF ITEMS ON THE PROJECT SITE IS PROHIBITED.
7. PROTECTION: ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGED PROPERTY TO THE CONDITION BEFORE BEING DAMAGED. TAKE EFFECTIVE MEASURES TO PREVENT WINDBLOWN DUST.
8. UTILITIES: MAINTAIN ALL UTILITIES EXCEPT THOSE REQUIRING REMOVAL OR RELOCATION. KEEP UTILITIES IN SERVICE AND PROTECT FROM DAMAGE. DO NOT INTERRUPT UTILITIES SERVING OCCUPIED AREAS WITHOUT FIRST OBTAINING PERMISSION FROM THE OWNER IN WRITING. PROVIDE TEMPORARY SERVICES AS REQUIRED.
9. INFORMATION CONTAINED ON THESE DRAWINGS WAS OBTAINED FROM ARCHIVED DRAWINGS AND SITE VISITS. DRAWINGS ARE DIAGRAMMATIC ONLY AND REFLECT OVERALL SYSTEM REMOVAL. NOT EVERY ITEM OR COMPONENT OF A SYSTEM IS SHOWN. PROVIDE COMPLETE REMOVAL OF ASSOCIATED ANCILLARY PIPES, HANGERS, VALVES AND ACCESSORIES SERVING SYSTEM SHOWN.
10. DEMOLITION WORK SHALL COMPLY WITH OSHA, EPA AND APPLICABLE STATE AND LOCAL CODES. COMPLY WITH HAULING AND DISPOSAL REGULATIONS.
11. REFER TO SPECIFICATIONS FOR ADDITIONAL DEMOLITION REQUIREMENTS AND PROCEDURES.
12. THE PLUMBING CONTRACTOR SHALL REMOVE ALL PLUMBING FIXTURES, CARRIERS, TRIM, ACCESSORIES, EQUIPMENT, FLOOR DRAINS AND PIPING ETC. FIXTURES, PIPING, AND DEVICES MAY NOT BE SHOWN. THE INTENT OF THESE DRAWINGS IS THAT IN ALL AREAS OF RENOVATION THAT THEY ARE REMOVED, WHETHER OR NOT SHOWN (UNLESS INDICATED TO REMAIN).
13. ALL PIPING TO BE REMOVED SHALL BE REMOVED COMPLETELY OR AS OTHERWISE SHOWN OR INDICATED ON DRAWINGS. ALL PIPE HANGERS, SLEEVES, RISER CLAMPS, ETC. SHALL BE REMOVED COMPLETELY WITH PIPING. NO EXISTING HANGER SYSTEMS SHALL BE REUSED FOR NEW PIPING.
14. ALL PIPING TO BE REMOVED SHALL BE REMOVED TO SERVICE ENTERANCE ANDPROPERLY CAPPED PER CODE WITHOUT LEAVING DEAD ENDED PIPING.
15. ALL EXISTING PIPING AND EQUIPMENT SHOWN HAS BEEN TAKEN FROM THE BEST AVAILABLE EXISTING INFORMATION. THE DRAWINGS ARE DIAGRAMMATIC AND ALL FIXTURES, PIPING, AND DEVICES MAY NOT BE SHOWN. THE INTENT OF THESE DRAWINGS IS THAT IN ALL AREAS OF RENOVATION THAT THEY ARE REMOVED, WHETHER OR NOT SHOWN (UNLESS INDICATED TO REMAIN).
16. ANY SYSTEMS OR EQUIPMENT TO REMAIN ACTIVE DURING RENOVATION SHALL BE KEPT IN OPERATION BY PROVIDING TEMPORARY PIPING CONNECTIONS AS REQUIRED UNTIL NEW SYSTEMS ARE INSTALLED AND OPERATIONAL.
17. THE PLUMBING CONTRACTOR SHALL ALSO REVIEW THE ARCHITECTURAL DEMOLITON DRAWINGS AS PART OF THIS CONTRACT FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
18. THE PLUMBING CONTRACTOR SHALL COORDINATE THEIR DEMOLITION WORK WITH THAT OF OTHER TRADES IN ORDER TO AVOID CONFLICTS.
19. ANY FIXTURE OR EQUIPMENT TO BE REMOVED AND REUSED OR RETURNED TO OWNER AT OWNERS REQUEST OR AS INDICATED ON DRAWINGS SHALL BE CAREFULLY REMOVED AND STORED TO PREVENT DAMAGE.

GENERAL ABBREVIATIONS

AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
BAS	BUILDING AUTOMATION SYSTEM
BTU	BRITISH THERMAL UNIT
BTUH	BTU / HOUR
BOP	BOTTOM OF PIPE
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CI	CAST IRON
CO	CLEANOUT
CW	COLD WATER
DIA	DIAMETER
DN	DOWN
DSN	DOWN SPOUT NOZZLE
DW	DIRECT WASTE
ELEC	ELECTRICAL
ET	EXPANSION TANK
EWS	EMERGENCY EYEWASH/SHOWER
°F	DEGREES FAHRENHEIT
FCO	FLOOR CLEANOUT
FFE	FINISHED FLOOR ELEVATION
FGCO	FINISHED GRADE CLEANOUT
FLA	FULL LOAD AMPS
FLD	FLOOR DRAIN
FS	FLOOR SINK
FT	FEET
FT WG	FEET HEAD
G	GAS
GALL	GALLONS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GSV	GAS SOLENOID VALVE
GV	GAS VENT
HB	HOSE BIB
HW	HOT WATER
HD	HEAD
HP	HORSEPOWER
HZ	HERTZ
HWR	HOT WATER RECIRCULATION
INT	INTERCEPTOR
INV ELEV	INVERT ELEVATION
IW	INDIRECT WASTE
KW	KILOWATT
LAV	LAVATORY
MAX	MAXIMUM
MECH	MECHANICAL
MBH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
NIC	NOT IN CONTRACT
NG	NATURAL GAS
NTS	NOT TO SCALE
OD	OVERFLOW DRAIN
PCD	PUMPED CONDENSATE DRAIN
PLBG	PLUMBING
PSIG	POUNDS PER SQUARE INCH GAUGE
QTY	QUANTITY
RD	ROOF DRAIN
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RTU	ROOFTOP UNIT
SAN	SANITARY
SQFT / SF	SQUARE FEET
SS	SOIL STACK
ST	STORM
SST	SECONDARY STORM
TEMP	TEMPERATURE
TW	TEMPERED WATER
TYP	TYPICAL
V	VENT
VS	VENT STACK
VTR	VENT THRU ROOF
W	WASTE
WS	WASTE STACK
W&V	WASTE AND VENT

PIPING LEGEND

SYMBOL	DESCRIPTION
	COLD WATER
	HOT WATER (110°F)
	HOT WATER RECIRCULATION (110°F)
SAN	SANITARY DRAIN/WASTE ABOVE FLOOR
SAN	SANITARY DRAIN/WASTE BELOW FLOOR
V	VENT
NMVAC	NON-MEDICAL VACUUM
ST	STORM ABOVE FLOOR (PRIMARY)
ST	STORM BURIED (PRIMARY)
G	NATURAL GAS
T	TEMPID WATER (85°F)
	PIPE RISE
	PIPE DROP
	PIPE TEE TOWARDS (UP IN PLAN)
	PIPE TEE AWAY (DOWN IN PLAN)
	PIPE DROP AND RUN
	DIRECTION OF FLOW
	PIPE TRAP
	DIRT LEG
CO	CLEANOUT
	UNION OR FLANGE
	BLIND FLANGE
	END CAP
	REDUCER (ECCENTRIC)
	REDUCER (CONCENTRIC)

VALVE AND SYMBOL LEGEND

SYMBOL	DESCRIPTION
	BALL VALVE
	BALL VALVE WITH HOSE BIBB, CAP & CHAIN (DRAIN VALVES)
	BUTTERFLY VALVE
	GLOBE VALVE
	GATE VALVE
	OS&Y VALVE
	PLUG VALVE
	PRESSURE REDUCING VALVE
	CHECK VALVE
	Y-PATTERN STRAINER
S	SOLENOID VALVE
	AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR
	AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
	THREE WAY AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR
	THREE WAY AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
	COMBINATION SHUT OFF/BALANCING VALVE (CIRCUIT SETTER)
	SAFETY RELIEF VALVE
	PRESSURE GAUGE
	THERMOMETER
	DOUBLE CHECK VALVE ASSEMBLY
	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY AND DRAIN
	GATE VALVE IN ROAD CURB BOX
	BACKWATER VALVE
	PUMP
M	WATER METER
	FLOOR DRAIN / FLOOR SINK / AREA DRAIN WITH PIPE TRAP
	ROOF / OVERFLOW DRAIN
TP	TRAP PRIMER
GM	GAS METER
	WATER HAMMER ARRESTOR
	VENT THRU ROOF
	ADA ACCESSIBLE FIXTURE

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REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

PLUMBING ABBREVIATIONS, NOTES AND SYMBOLS

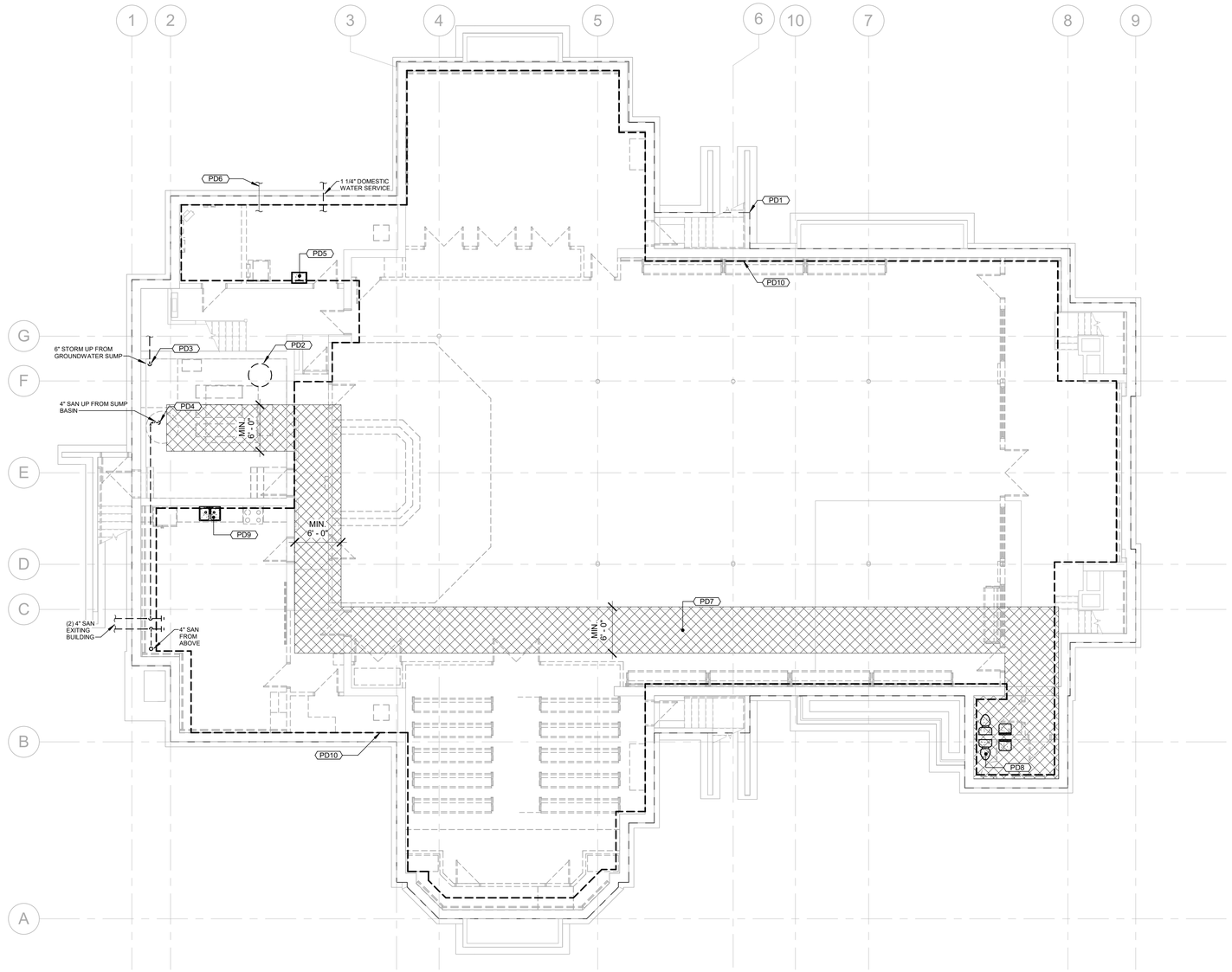
DATE: 2026-0501
SCALE 12" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
5/1/2026 7:47:10 AM

SHEET NO.

P0.0

KEYNOTES - PLUMBING DEMOLITION

Key Value	Keynote Text
PD1	REMOVE EXISTING PLUMBING SYSTEMS INCLUDING BUT NOT LIMITED TO PUMPS, HANGERS, SUPPORTS, AND FIXTURES. REMOVE ALL PLUMBING PIPING INCLUDING BUT NOT LIMITED TO COLD WATER, HOT WATER, GAS, SANITARY, STORM, CONDENSATE, AND VENT PIPING.
PD2	EXISTING WATER HEATER TO BE REMOVED. ALL EXISTING PLUMBING ASSOCIATED WITH THE EXISTING WATER HEATER TO BE REMOVED. STORAGE TANKS, THERMOSTATIC MIXING VALVE ASSEMBLY, HOT WATER RECIRCULATION PUMP AND ASSOCIATED PLUMBING TO BE REMOVED.
PD3	REMOVE EXISTING STORM/GROUNDWATER PUMPS. REMOVE ALL ASSOCIATED PLUMBING PIPING INCLUDING BUT NOT LIMITED TO STORM AND VENT PIPING. GROUNDWATER SUMP BASIN IS EXISTING TO REMAIN.
PD4	REMOVE EXISTING DUPLEX SANITARY SEWAGE PUMPS. REMOVE ALL ASSOCIATED PLUMBING PIPING INCLUDING BUT NOT LIMITED TO SANITARY AND VENT PIPING. EXISTING SEWAGE WATER SUMP BASIN TO BE REMOVED IN ITS ENTIRETY.
PD5	REMOVE EXISTING SINK AND FAUCET IN ITS ENTIRETY. REMOVE ALL ASSOCIATED PIPING AND VALVES.
PD6	REMOVE EXISTING NATURAL GAS SERVICE IN ITS ENTIRETY. ALL ASSOCIATED NATURAL GAS PIPING, VALVES AND METERS SHALL BE REMOVED.
PD7	EXISTING SLAB IN THIS AREA TO BE SAW-CUT. ALL UNDERGROUND SANITARY PIPING IN THIS AREA SHALL BE REMOVED IN ITS ENTIRETY.
PD8	EXISTING WATER CLOSETS AND LAVATORIES TO BE REMOVED. ALL ASSOCIATED PIPING AND VALVES SHALL BE REMOVED.
PD9	REMOVE EXISTING PLUMBING SYSTEMS SERVING KITCHENETTE FIXTURES INCLUDING SINK AND DISHWASHER. ALL ASSOCIATED PIPING AND VALVES SHALL BE REMOVED.
PD10	THE EXISTING SLAB ON THE LOWER LEVEL IS TO BE REMOVED FOR NEW UNDERGROUND SANITARY THAT WILL SERVE THIS PHASE AND FUTURE FIT OUT PHASE. ALL UNDERGROUND PIPING (ACTIVE AND ABANDONED) IN THE LOWER LEVEL SHALL BE REMOVED IN ITS ENTIRETY.



1 PLUMBING LOWER LEVEL DEMO PLAN
1/8" = 1'-0"

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PLUMBING LOWER LEVEL DEMO PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
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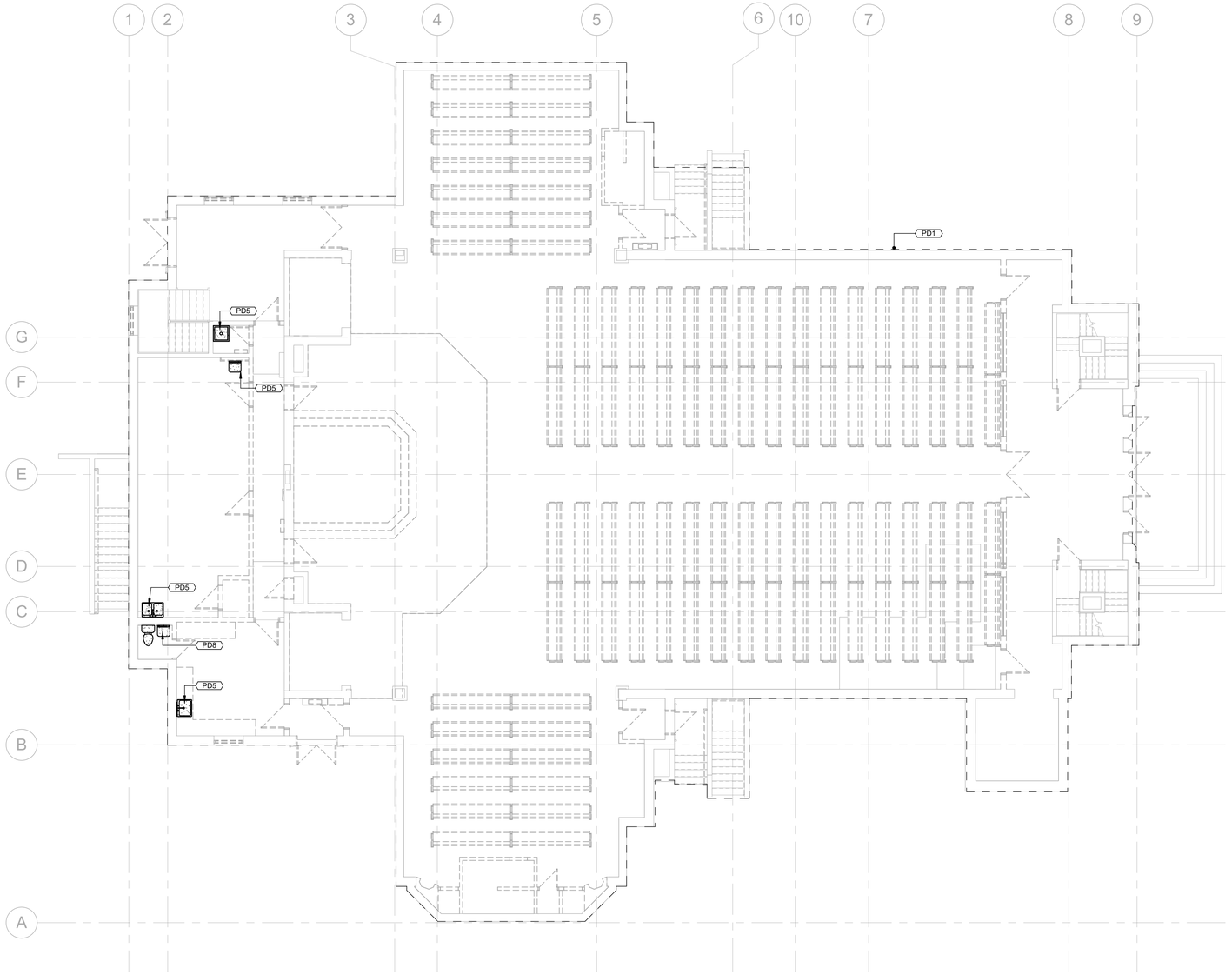
5/1/2026 7:47:13 AM

SHEET NO.

PD1.1

KEYNOTES - PLUMBING DEMOLITION

Key Value	Keynote Text
PD1	REMOVE EXISTING PLUMBING SYSTEMS INCLUDING BUT NOT LIMITED TO PUMPS, HANGERS, SUPPORTS, AND FIXTURES. REMOVE ALL PLUMBING PIPING INCLUDING BUT NOT LIMITED TO COLD WATER, HOT WATER, GAS, SANITARY, STORM, CONDENSATE, AND VENT PIPING.
PD5	REMOVE EXISTING SINK AND FAUCET IN ITS ENTIRETY. REMOVE ALL ASSOCIATED PIPING AND VALVES.
PD8	EXISTING WATER CLOSETS AND LAVATORIES TO BE REMOVED. ALL ASSOCIATED PIPING AND VALVES SHALL BE REMOVED.



1 PLUMBING FIRST FLOOR DEMO PLAN
1/8" = 1'-0"

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PLUMBING FIRST FLOOR DEMO PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
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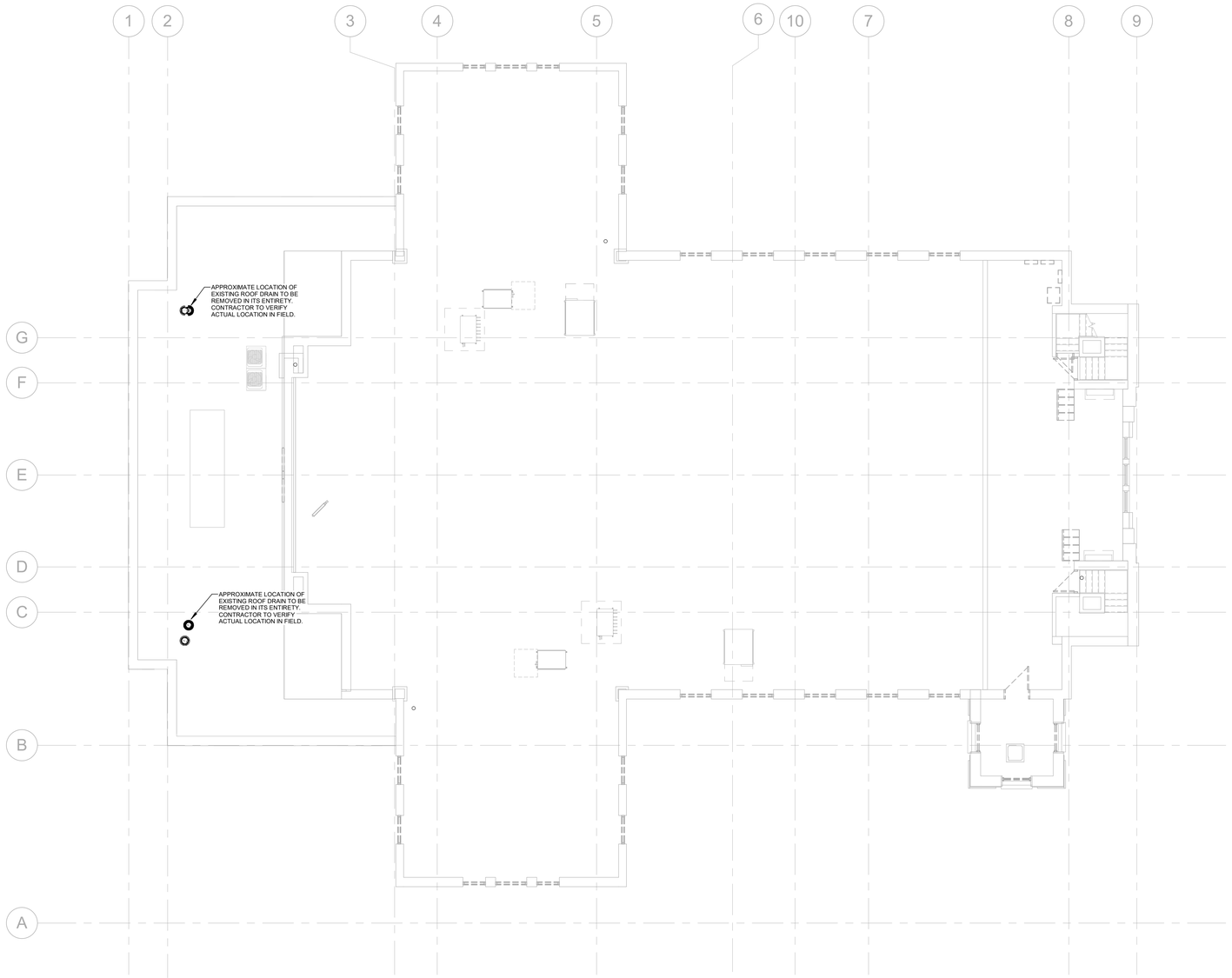
SHEET NO.
PD1.2



1 PLUMBING MEZZANINE LEVEL DEMO PLAN
1/8" = 1'-0"

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PLUMBING MEZZANINE LEVEL DEMO PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
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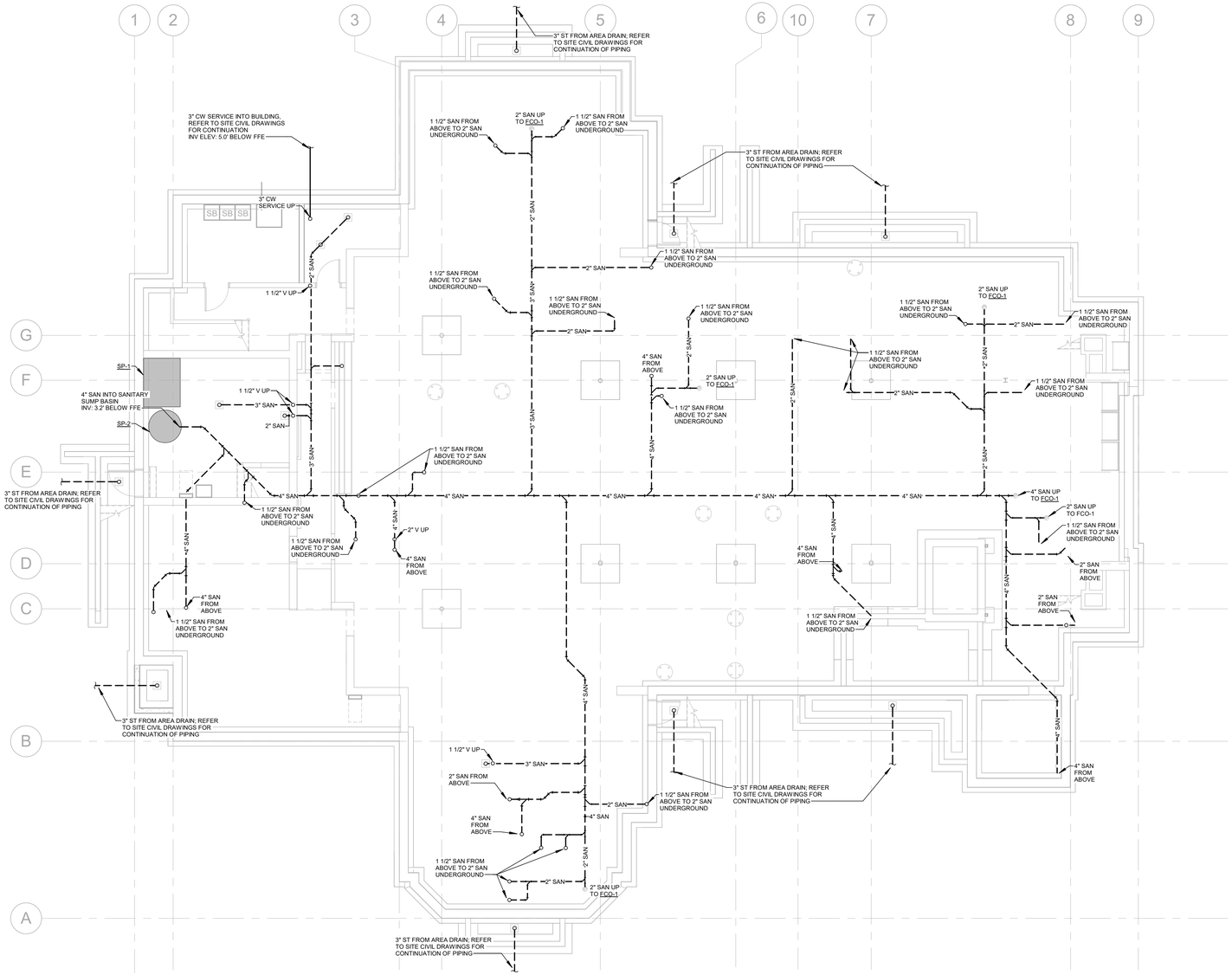
SHEET NO.

PD1.3



1 PLUMBING UNDERGROUND FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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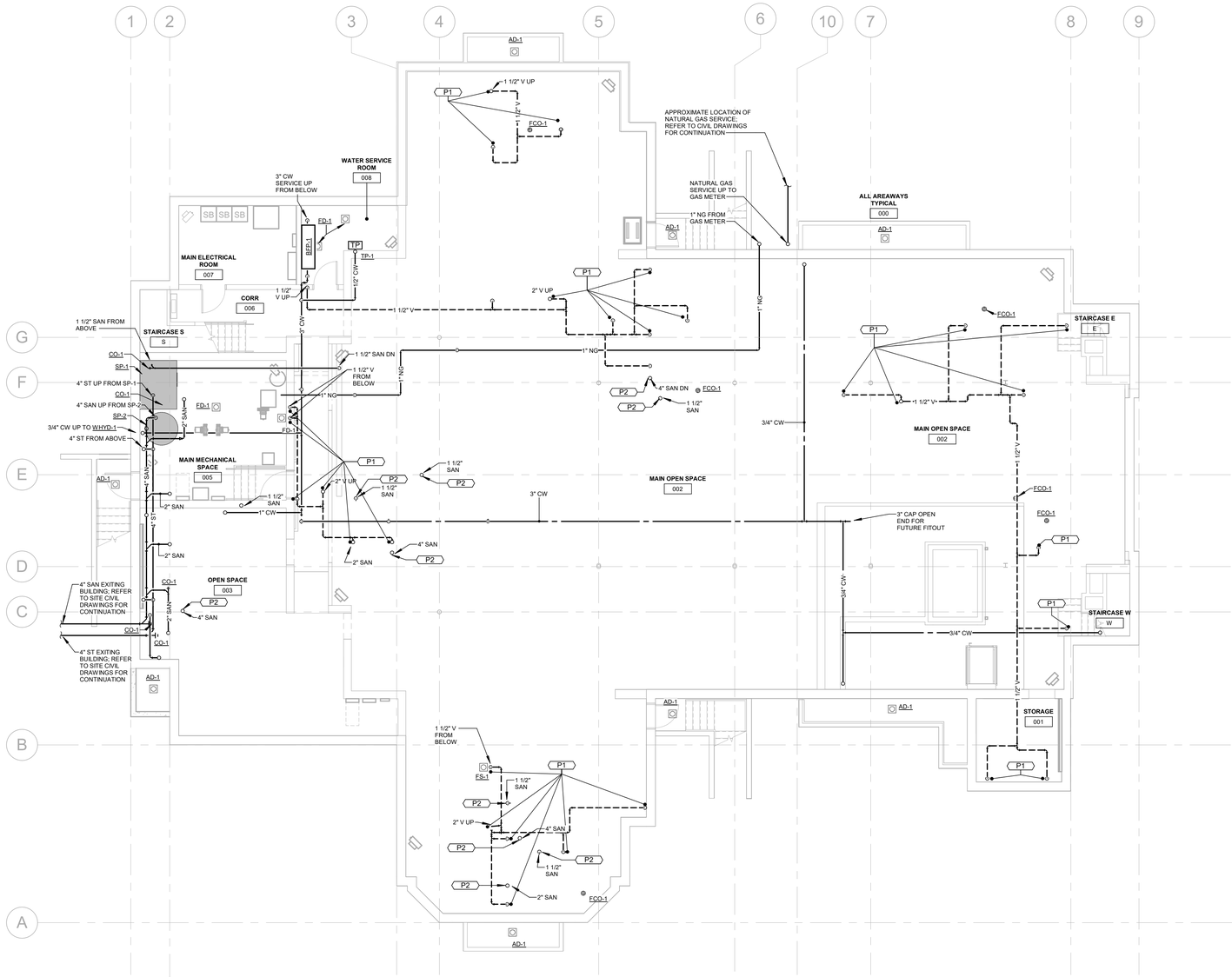
PLUMBING UNDERGROUND FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
5/1/2026 7:47:18 AM

SHEET NO.

P1.1U

KEYNOTES - PLUMBING	
Key Value	Keynote Text
P1	VENT PIPING EXPOSED AND/OR FROM UNDERGROUND IN THIS LOCATION TO BE LOCATED WITHIN WALL AS PART OF FITOUT PHASE WORK AND IS EXPOSED WITHIN THIS PROJECT PHASE SHALL BE INDEPENDENTLY SUPPORTED BOTH VERTICALLY AND HORIZONTALLY PER DELEGATED SEISMIC DESIGN.
P2	SAN UP 18" AFF AND CAP FOR FUTURE FIT OUT CONNECTION



1 PLUMBING LOWER FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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REVISIONS		
NO.	DATE	DESCRIPTION

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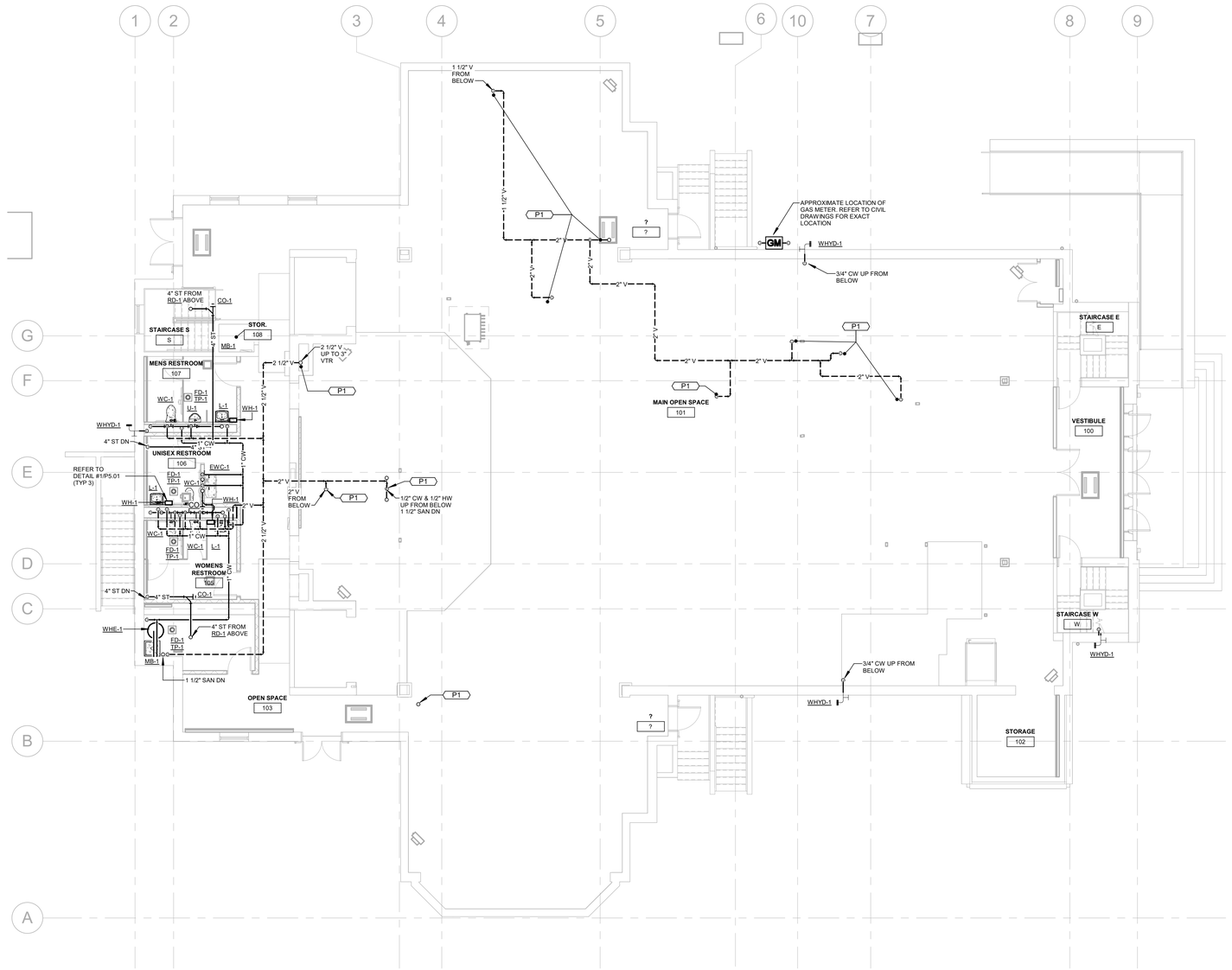
PLUMBING LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
5/1/2026 7:47:20 AM

SHEET NO.
P1.1

KEYNOTES - PLUMBING

Key Value	Keynote Text
P1	VENT PIPING EXPOSED AND/OR FROM UNDERGROUND IN THIS LOCATION TO BE LOCATED WITHIN WALL AS PART OF FITOUT PHASE WORK AND IS EXPOSED WITHIN THIS PROJECT PHASE SHALL BE INDEPENDENTLY SUPPORTED BOTH VERTICALLY AND HORIZONTALLY PER DELEGATED SEISMIC DESIGN.



1 PLUMBING FIRST FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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CONTRACT DOCUMENTS

PLUMBING FIRST FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
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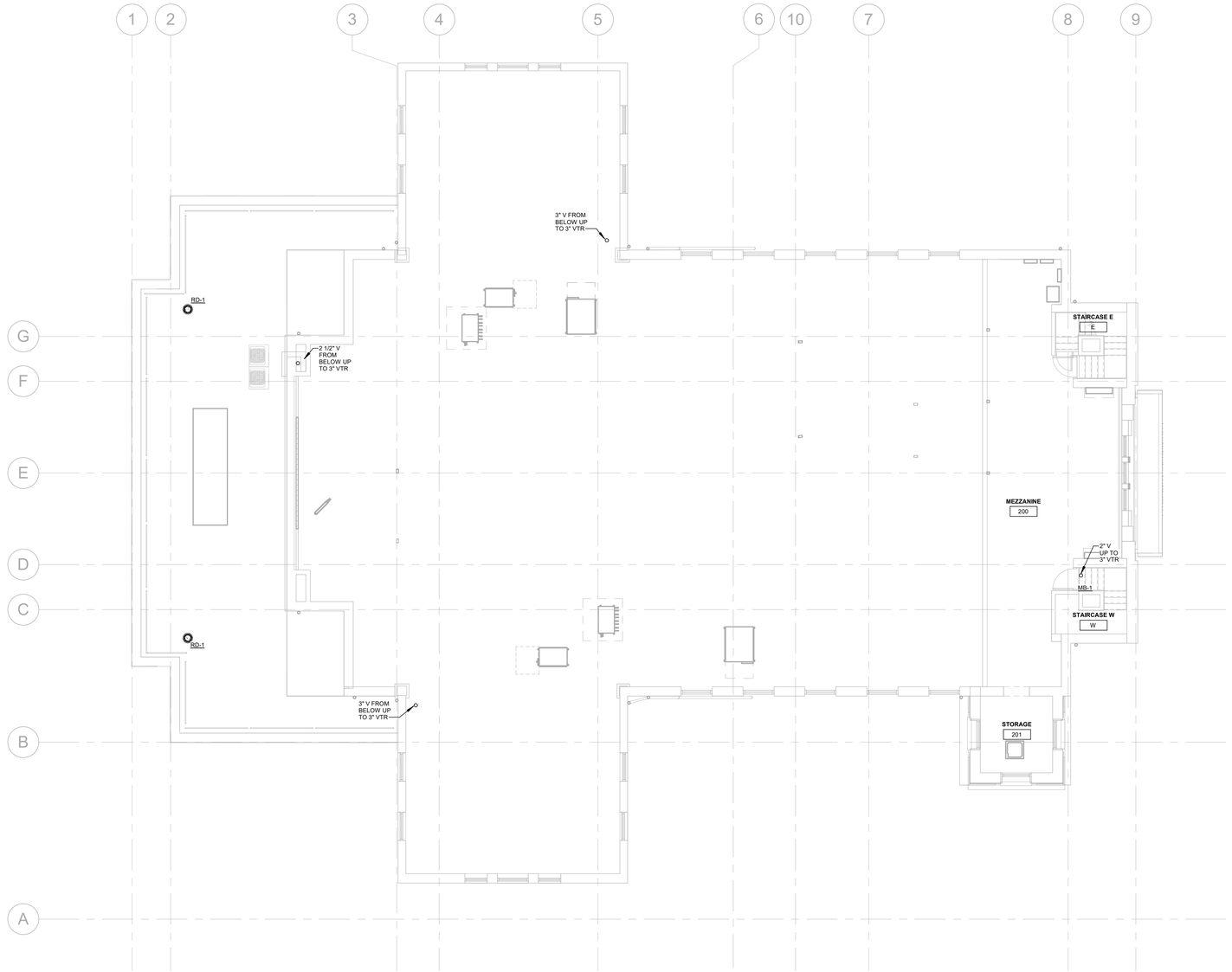
SHEET NO.
P1.2



1 PLUMBING MEZZANINE FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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PLUMBING MEZZANINE FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
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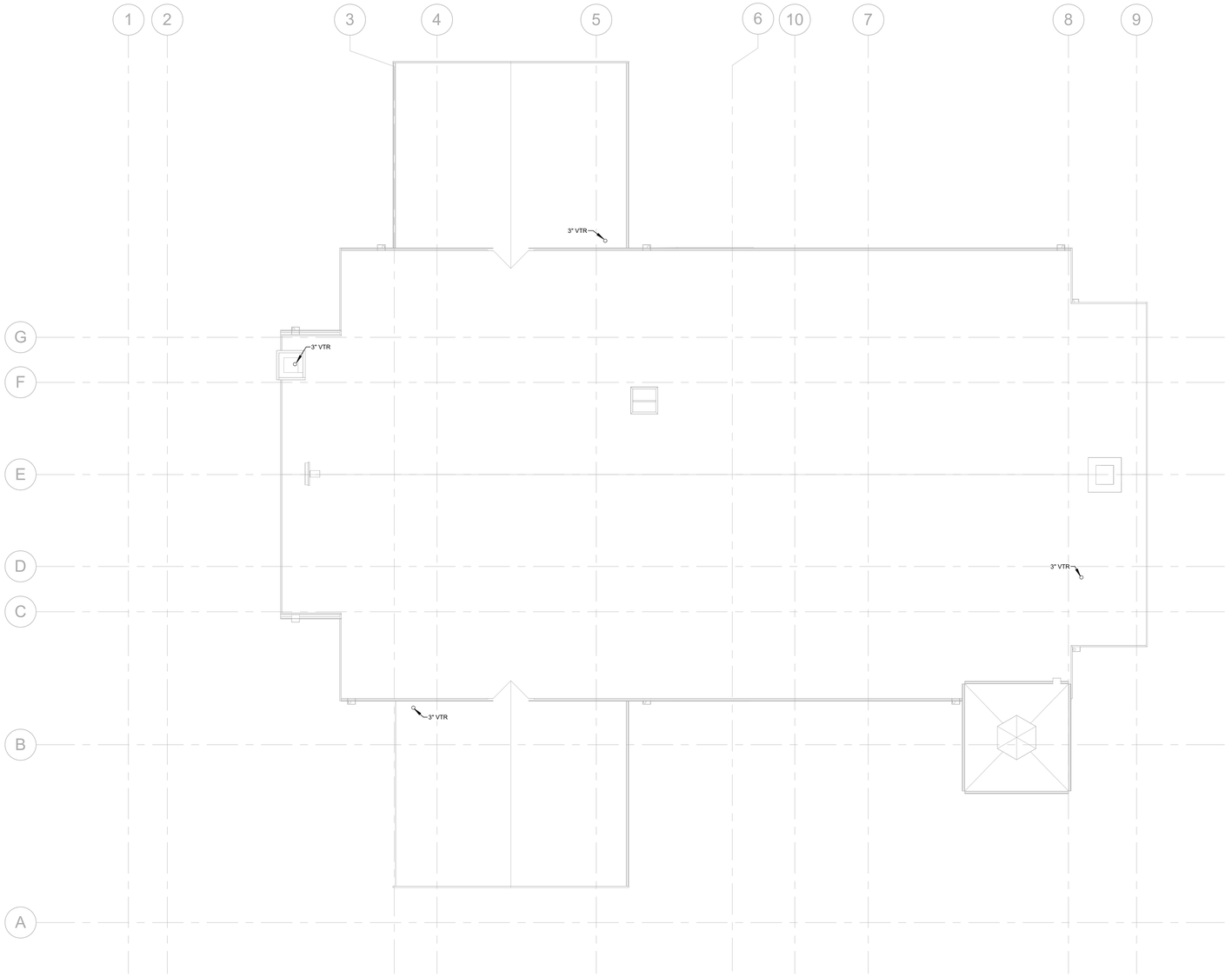
SHEET NO.

P1.3



1 PLUMBING ROOF DEMO PLAN
1/8" = 1'-0"

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REVISIONS

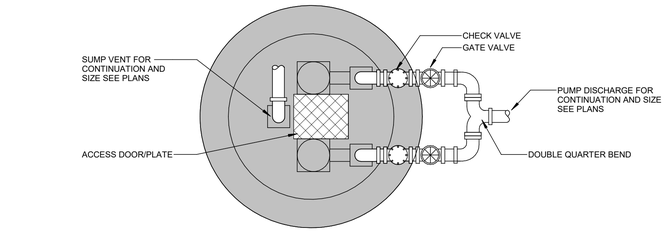
NO.	DATE	DESCRIPTION

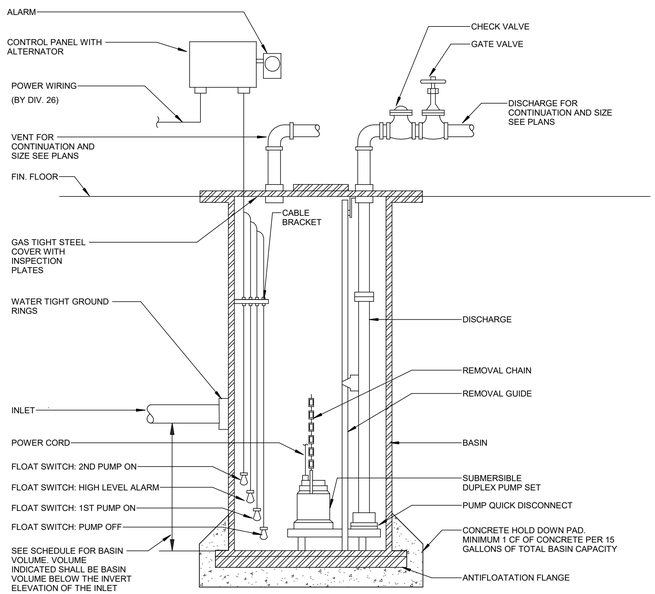
CONTRACT DOCUMENTS

PLUMBING ROOF PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: KWC
CHECKED: DBS
5/1/2026 7:47:27 AM

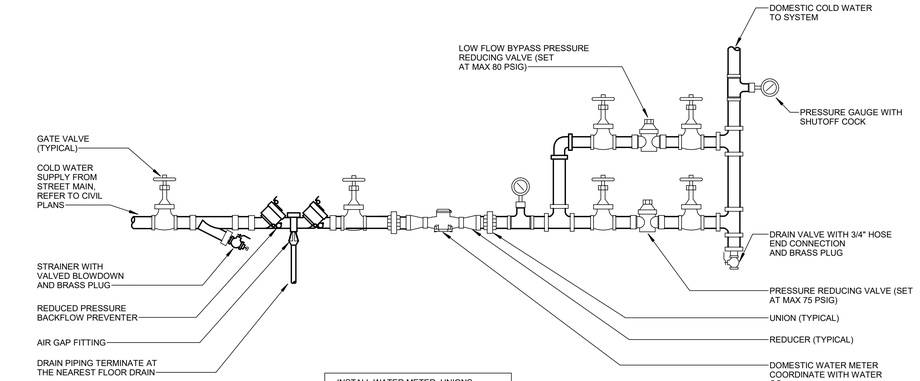
SHEET NO.
P2.1





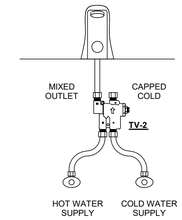
NOTE: TOTAL BASIN DIMENSIONS TO BE FIELD VERIFIED BASED ON FINAL INVERT ELEVATION OF INLET AND MINIM BASIN CAPACITY.

1 SEWAGE EJECTOR PUMP DETAIL - TOP DISCHARGE
NTS



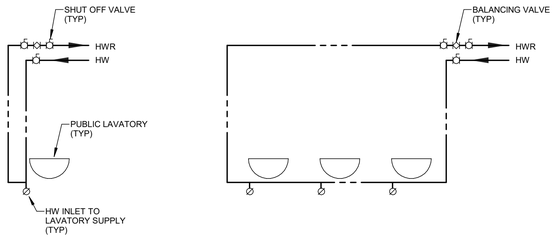
INSTALL WATER METER, UNIONS, VALVES, ETC. IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY.

2 DOMESTIC WATER SERVICE DIAGRAM Pre-Fitout
NTS



SINGLE TEMERATURE FAUCETS

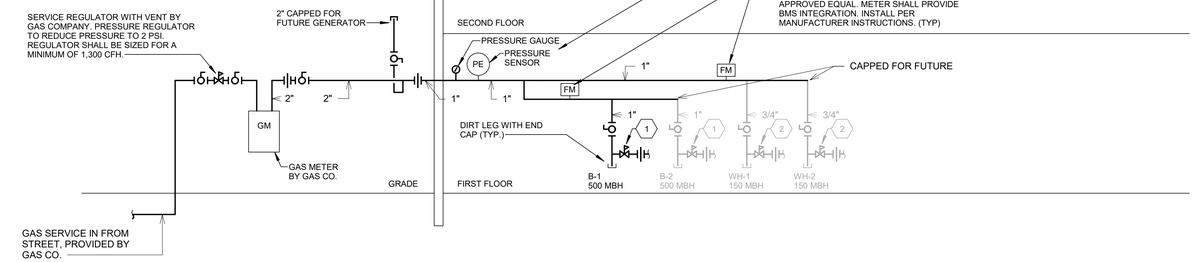
3 LAVATORY MIXING VALVE DETAIL Pre-Fitout
NTS



SINGLE LAVATORY MULTIPLE LAVATORIES

NOTES:
1. LAVATORY SUPPLY PIPING MUST NOT EXCEED 2'0" FOR 1/2" PIPING PER IECC 404.5.1
2. PROVIDE BALANCE VALVE ABOVE ACCESSIBLE CEILING. PROVIDE WITH AN ACCESS DOOR IF LOCATED IN A HARD CEILING.
3. REFER TO FLOOR PLANS FOR PIPE SIZES AND TYPE/QUANTITYOF FIXTURES.
4. THIS DETAIL IS INTENDED TO SHOW THE GENERAL CONFIGURATION OF THE HOT WATER CIRCULATION PIPING TO FIXTURES. NOT ALL FIXTURE REQUIREMENTS, FITTINGS, AND DEVICES ARE SHOWN.

4 RECIRCULATION AT PUBLIC LAVATORIES Pre-Fitout
NTS



NOTES:
1. FURNISH AND INSTALL GAS PIPING, VALVES, AND APPURTENANCES IN ACCORDANCE WITH THE LOCAL GAS UTILITY REQUIREMENTS. .
2. PROVIDE GAS CONNECTION TO ALL GAS FIRED EQUIPMENT.

PRESSURE REGULATOR SCHEDULE

SYMBOL	EQUIPMENT	REGULATOR TYPE	MANUFACTURER	MODEL NUMBER	INLET PRESSURE	OUTLET PRESSURE
1	BOILER	APPLIANCE	KARL DUNGS	FRS SERIES	2 PSI	11 IN.WC
2	WATER HEATER	APPLIANCE	KARL DUNGS	FRS SERIES	2 PSI	11 IN.WC

5 NATURAL GAS RISER
NTS

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CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

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WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

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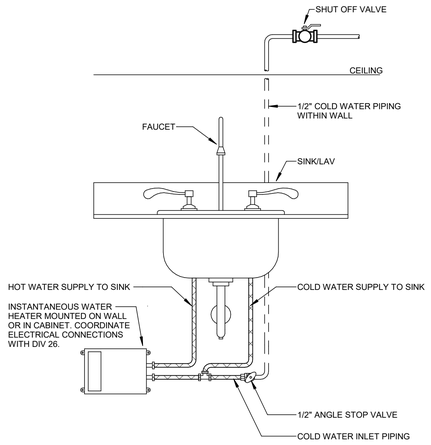
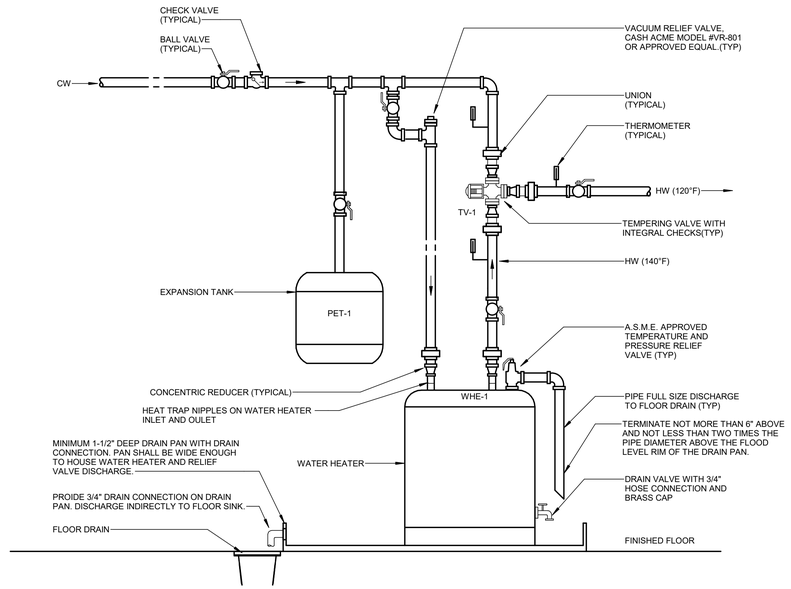


GENERAL NOTE:
1. FOR WATER HEATERS AND HOT WATER STORAGE TANKS THAT HAVE VERTICAL WATER PIPES CONNECTING TO THE INLET AND OUTLET OF THE TANK, PROVIDE INTEGRAL HEAT TRAPS AT THOSE INLETS AND OUTLETS OR PROVIDE PIPE CONFIGURED HEAT TRAPS IN THE PIPING CONNECTED TO THOSE INLETS AND OUTLETS.

1 INSTANTANEOUS WATER HEATER - ELECTRIC
NTS



GENERAL NOTE:
1. CONTRACTOR MUST COORDINATE HOT WATER RECIRCULATION PIPING INSTALLATION PER THERMOSTATIC MIXING VALVE MANUFACTURER'S INSTALLATION INSTRUCTION. HWR PIPING CONFIGURATION IS INDICATED FOR REFERENCE ONLY.
2. CONTRACTOR MUST COORDINATE EXPANSION TANK PIPING INSTALLATION PER EXPANSION TANK MANUFACTURERS INSTALLATION INSTRUCTION. EXPANSION TANK PIPING CONFIGURATION IS INDICATED FOR REFERENCE ONLY.

2 WATER HEATER DETAIL
1/8" = 1'-0"

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PLUMBING FIXTURE SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	DESCRIPTION OF FIXTURE	TRIM AND ACCESSORIES	REMARKS	SYMBOL	MANUFACTURER/ MODEL NUMBER	DESCRIPTION OF FIXTURE	TRIM AND ACCESSORIES	REMARKS
EWC-1	ELKAY MODEL # LZWS-LRPBM28K	DRINKING FOUNTAIN & BOTTLE FILLING STATION: ACCESSIBLE, BI-LEVEL DOUBLE ROUND BOWLS, IN WALL MOUNT, SST, REFRIGERATED, ELECTRONIC ACTIVATION BOTTLE FILLER	WATERSENTRY PLUS 3000-GAL CAPACITY FILTER, MOUNTING FRAMES, CANE APRONS WHERE REQUIRED AND VANDAL RESISTANT BUBBLERS	#3,4,7,8	WC-1	AMERICAN STANDARD "AFWALL" MODEL #3351.101	WATER CLOSET: ACCESSIBLE, WALL HUNG, ELONGATED BOWL, VITREOUS CHINA, 1-1/2" TOP SPUD	SLOAN "ROYAL" MODEL #111 SFSM-1.28-TMO POWERED FLUSH VALVE WITH 1.28 GPF AMERICAN STANDARD #5901.100 HEAVY DUTY OPEN FRONT LESS COVER SEAT. JR SMITH SERIES 0200 WATER CLOSET SUPPORT.	#1,3,4,5,7
MB-1	FIAT MODEL # TSB3001	MOP BASIN SINK: TERRAZZO MOP BASIN, 32"X32"X12" WITH 6" DROP FRONT, SST INTEGRAL DRAIN BODY, SST CURB CAPS.	CHICAGO FAUCETS #897-RCF WALL MOUNTED 8" BODY FAUCET, 3/4" THREADED MALE HOSE OUTLET, PAIL HOOK, WALL BRACE AND VACUUM BREAKER SPOUT, 16 GAUGE STAINLESS STEEL STRAINER, WALL GUARD, MOP HANGER, HOSE AND BRACKET. PROVIDE ADJACENT TO SERVICE FAUCET, ONE CHICAGO #952269CP WASH DOWN AND SILL FAUCET WITH VACUUM BREAKER INSPOUT, HOSE END THREAD.	#4	U-1	AMERICAN STANDARD "WASHBROOK" MODEL #6590.001	URINAL: ACCESSIBLE, WALL HUNG, VITREOUS CHINA, 3/4" TOP SPUD, 0.125 GPF	SLOAN MODEL 186-0.125, 3/4" TOP SPUD, 0.125 GPF FLUSHOMETER. WATTS SERIES 321 URINAL CARRIER.	#1,3,4,5,7
L-1	AMERICAN STANDARD "LUCERNE" MODEL 0356.421	LAVATORY: ACCESSIBLE , WALL HUNG , SINGLE BOWL, VITREOUS CHINA, (1) CENTER FAUCET HOLE, LAVATORY	PROVIDE DRAIN AND OFFSET TAILPIECE # 7723018.002, JR SMITH SERIES 700 CONCEALED SUPPORT. SLOAN OPTIMA BATTERY POWERED SENSOR FAUCET MODEL # EAF-250-BAT-ITM-CP-0.5GPM-AER-IR-IO-FCT WITH BUILT IN THERMOSTATIC MIXING VALVE.	#1,2,3,4,6,7					

REMARKS:

1. FIXTURE SHALL BE WHITE UNLESS SPECIFIED OTHERWISE BY THE ARCHITECT.
2. INSTALL TRUEBRO INC. MODEL #102, HANDI LAV-GUARD PROTECTOR ON THE HOT, COLD, AND DRAIN PIPING UNDER FIXTURE.
3. FIXTURES AND TRIM AS NOTED SHALL BE "ACCESSIBLE" AND SHALL BE INSTALLED TO ADA / ANSI A117 AND FEDERAL 504 REQUIREMENTS.
4. PROVIDE ISOLATION VALVES AT THE PIPE CONNECTIONS.
5. PROVIDE WATER HAMMER ARRESTORS AT THE PIPE CONNECTIONS, LOCATE ABOVE AN ACCESSIBLE CEILING OR IN WALL WITH ACCESS PANEL.
6. PROVIDE SINK WITH OFFSET DRAIN TO LEFT OR RIGHT AND BACK OF BOWL FOR ADA COMPLIANCY, ANSI A117 AND FEDERAL 504 REQUIREMENTS SEE ARCHITECTURAL DRAWINGS FOR DRAIN LOCATIONS.
7. REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURE MOUNTING HEIGHTS.
8. BUBBLER ACTIVATION SHALL BE REMOTE PUSH BUTTON IN FRONT OF CASEWORK. PUSH BUTTON SHALL REQUIRE NO MORE THAN 5 LB. FORCE FOR ACTIVATION.
9. PROVIDE BOTH CW AND HW CONNECTIONS TO TEMPERING VALVE. PROVIDE TEPID WATER SUPPLY TO EMERGENCY FIXTURE WITH CW BYPASS.

PLUMBING SPECIALTIES SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	DESCRIPTION	COMPONENTS AND ACCESSORIES	MOUNTING HEIGHT	REMARKS	SYMBOL	MANUFACTURER/ MODEL NUMBER	DESCRIPTION	COMPONENTS AND ACCESSORIES	MOUNTING HEIGHT	REMARKS
AD-1	JR SMITH MODEL # 9643	FLOOR DRAIN: 14 GAUGE TYPE 304 STAINLESS STEEL BODY, DOME BOTTOM STRAINER AND CAST LOOSE SET GRATE.	PROVIDE WITH FLASHING COLLAR AND SEDIMENT BUCKET.	-	#6	RPBP-1	WATTS MODEL # LF-009-QTS	REDUCED PRESSURE BACKFLOW PREVENTER: QUARTER TURN ISOLATION VALVES WITH STRAINER AND INDIRECT WASTE CONNECTION. DRAIN TO NEAREST FS-1.	-	MAX.5'-0" ABOVE FINISHED FLOOR	#5, 6
BFP-1	WATTS MODEL # LF909-QT-S (3/4" TO 2") LF909-OSY (2-1/2" TO 6")	REDUCED PRESSURE ZONE ASSEMBLY: BRONZE OR CAST BODY W/ CORROSION RESISTANT INTERNAL PARTS AND SST CAPTURED SPRING CHECK ASSEMBLY	SHUTOFF VALVES UP TO 2' SHALL BE BRONZE BODY BALL VALVES. SHUTOFF VALVES OVER 2" SHALL BE OS&Y GATE VALVE.	MAX 5'-0" ABOVE FINISHED FLOOR	#5, 6	TP-1	PRECISION PLUMBING "PRIME-RITE" MODEL # PR-500	TRAP PRIMER: PRESSURE DROP ACTIVATED TRAP PRIMER VALVE, INTERNAL VACUUM BREAKER AND BACKFLOW PREVENTER UNIT, 1/2" INLET AND OUTLET	DISTRIBUTION UNITS MODEL #DU-U AS REQUIRED FOR THE NUMBER OF FLOOR DRAINS SHOWN ON THE DRAWINGS	-	#2, 4
CO-1	JR SMITH MODEL # 4420C	CLEANOUT: CAST IRON SPIGOT FERRULE WITH CAST BRONZE TAPER THREAD PLUG	VANDAL PROOF	-	#6, 7	TV-1	LEONARD MODEL # TM-26-LF-BDT	CENTRAL THERMOSTATIC MIXING VALVE: THERMOSTATIC MIXING VALVE, TEMPERATURE REGULATORS, 3/4" INLETS, 3/4" OUTLET, 3/4" HWR PIPING, 13 GPM @ 15PSI PRESSURE DROP	BRONZE BODY, BALL VALVE WITH DIAL THERMOMETER, INLET CHECK STOPS, 110 OUTLET TEMPERATURE	MAX 5'-0" ABOVE FINISHED FLOOR	#4, 6
FCO-1	JR SMITH MODEL # 4020 SERIES	FLOOR CLEANOUT: CAST IRON BODY, ROUND ADJUSTABLE SCORIATED POLISHED BRONZE TOP, FLANGE GASKET INSIDE, CAULK OUTSIDE	VANDAL PROOF, BRONZE PLUG, FLASHING CLAMP FOR CARPETED FLOORS; COORDINATE ACCESSORIES WITH ARCHITECTURAL FLOORING	-	#6, 7, 8	WCO-1	JR SMITH MODEL # 4402C-U	WALL CLEANOUT: DUCO CAST IRON, SPIGOT FERRULE CAST BRONZE THREAD PLUG, CLEANOUT FINISH SHALL MATCH ARCHITECTURAL FINISHES	VANDAL PROOF. COORDINATE LOCATIONS WITH ARCHITECT.	-	#9
FD-1	JR SMITH MODEL # 2010 SERIES	FLOOR DRAIN: CAST IRON BODY, ROUND ADJUSTABLE NICKEL BRONZE STRAINER. STRAINER SHALL BE SQUARE IN ROOMS WITH TILE FLOOR, ROUND IN ROOMS WITH OTHER FLOOR TYPES.	VANDAL PROOF GRATE, FLASHING COLLAR, SEDIMENT BUCKET. PROVIDE WITH TRAP PRIMER, TP-1 OR RECTOR SEAL "PROSET" WATERLESS TRAP GUARD	-	#6	WHYD-1	WOODFORD MODEL # RB65	WALL HYDRANT: FREEZELESS, INTEGRAL VACUUM BREAKER, 3/4" INLET, ROUND BOX WITH LOCKABLE DOOR. PROVIDE WITH LOOSE TEE KEY. COVER FINISH SHALL MATCH ARCHITECTURAL FINISHES	3/4" CW THREADED HOSE CONNECTION	18" ABOVE GRADE	#3, 4
RD-1	JR SMITH MODEL # 1010	ROOF DRAIN: CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, CAST IRON DOME	UNDERDECK CLAMP, VANDAL PROOF DOME, SUMP RECEIVER EXTENSION SLEEVE FOR ROOF INSULATION	-	#6						

REMARKS:

1. INSTALL SIZED PER LOAD (WSFU) RECOMMENDED BY PDI & MANUFACTURER.
2. TRAP PRIMER SHALL BE INSTALLED A MINIMUM OF 1'-0" ABOVE FINISHED FLOOR FOR EVERY 20'-0" OF PRIMER LINE.
3. PROVIDE EACH HYDRANT WITH A LOOSE KEY. CONTRACTOR SHALL VERIFY WALL THICKNESS.
4. PROVIDE ISOLATION VALVES AT THE SUPPLY PIPE CONNECTIONS.
5. PROVIDE AN AIR GAP FITTING ON THE DRAIN LINE. MOUNT AT A SUFFICIENT HEIGHT TO ALLOW PROPER DRAINAGE. DRAIN SHALL BE ROUTED TO FLOOR SINK.
6. UNLESS OTHERWISE INDICATED, SHALL BE FULL SIZE OF PIPE SERVED. REFER TO FLOOR PLANS FOR SIZES.
7. PROVIDE CLEANOUT AT ALL HORIZONTAL TURNS GREATER THAN 45 DEGREES FOR ALL STORM AND SANITARY PIPING.
8. PROVIDE FLOOR CLEANOUT FOR ALL BURIED STORM AND SANITARY PIPING, NOT MORE THAN 100'-0" APART.
9. PROVIDE WALL CLEANOUT AT BASE OF ALL SANITARY AND STORM STACKS. FURNISH WITH ACCESS DOOR OR COVER.
10. NUMBER OF OUTLETS DETERMINED IN THE FIELD BY CONTRACTOR. FURNISH AND INSTALL OUTLET PIPING FROM TRAP PRIMER ASSEMBLY TO FLOOR RECEPTOR TRAP PRIMING CONNECTION.

SUMP PUMP SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	LOCATION	SYSTEM SERVED	TYPE	CAPACITY (GPM)	CAPACITY FT OF HEAD	TOTAL BASIN DIAMETER (IN.)	TOTAL BASIN HEIGHT (IN.)	ELEC. DATA	REMARKS
SP-1	ASHLAND PUMP MODEL #SWHD200	MECHANICAL ROOM	STORM	SP1	150	33	-	-	2 HP - 3 PH - 460V	ALL INCLUDING SP-1 REMARKS
SP-2	ASHLAND PUMP MODEL #ANC200M	MECHANICAL ROOM	SANITARY	SP2	130	24	48	60	2 HP - 3 PH - 460V	ALL INCLUDING SP-2 REMARKS

TYPE:
SP1 - SUBMERSIBLE PUMP LIFT STATION - DUPLEX
SP2 - SUBMERSIBLE SEWAGE PUMP LIFT STATION NON-CLOG PUMPS - DUPLEX

REMARKS ALL
1. CONTRACTOR TO COORDINATE FINAL INVERT ELEVATIONS BASED ON ACTUAL INSTALLED CONDITIONS.
2. SECOND PUMP FLOAT SHALL BE INSTALLED 6" BELOW LOWEST PIPE INLET, LOW LEVEL ALARM FLOAT SHALL BE INSTALLED 6" FROM THE BOTTOM OF THE BASIN. INTERMEDIATE FLOATS SHALL BE INSTALLED AND SPACE EVENLY BETWEEN SECOND PUMP FLOAT AND LOW LEVEL ALARM FLOAT.

REMARKS SP-1:
1. EXISTING BASIN. EXISTING CONCRETE BASIN SHALL BE UTILIZED.
2. PUMP RAIL QUICK DISCONNECT SYSTEM SHALL BE INSTALLED WITH ALL SCH.PVC INTERNAL PIPING AND TESTED PRIOR TO SHIPMENT. MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
3. EXISTING BASIN SHALL BE EQUIPPED WITH A NEW SINGLE LEAF ALUMINUM HATCH COVER, (2) 3" COVER DISCHARGE CONNECTION, (1) 2" VENT CONNECTION, (1) 2" ELECTRICAL COUPLING FOR FIELD INSTALLATION, (1) NEMA 4 ELECTRICAL JUNCTION BOX AND (1) STAINLESS STEEL FLOAT BRACKET.
4. ALUMINUM HATCH COVER COMPLETE. ALL ELECTRICAL PENETRATIONS SHALL BE SEALED AND FUME TIGHT. HATCH SHALL BE EQUIPPED WITH LOCK OPEN ARM AND LOCKING HASP FOR HATCH.
5. PUMP QUICK DISCONNECT REMOVAL SYSTEM REFER TO 221126 FOR ADDITIONAL INFORMATION
6. CONTROL PANEL REFER TO 221126 FOR ADDITIONAL INFORMATION
7. COORDINATE BACNET COMMUNICATION WITH DIVISION 23 CONTROLS CONTRACTOR
8. REFER TO 221126 FOR ADDITIONAL INFORMATION

REMARKS SP-2:
1. NEW FIBERGLASS BASIN. WITH STEEL ANTI-FLOATATION RING, QUICK DISCONNECT SLIDE AWAY COUPLING, SHUT OFF VALVES, CHECK VALVES, SUBMERSIBLE NON-CLOG PUMPS, ALUMINUM HATCH, STAINLESS STEEL GUIDE RAILS, DISCHARGE PIPING, ETC, PIPED WITH SCHEDULE 80 PVC PIPING.
2. FIBERGLASS BASIN: SHALL BE 48" IN DIAMETER BY 60" DEEP WITH STEEL ANTI-FLOTATION FLANGE MOUNTED ON THE BOTTOM OF THE BASIN. THE BASIN SHALL COME WITH (1) 4" INLET HUB, (1) GAS TIGHT ALUMINUM HATCH COVER WITH PADLOCK PROVISION, PUMP MOUNTING STUDS, DUPLEX RAIL SYSTEM COMPLETELY INSTALLED AND TESTED TO INCLUDE DISCHARGE PIPING, (2) 4" FLAPPER CHECK VALVES, (2) 4" ISOLATION VALVES PRE-PIPED AND MOUNTED, FLOAT MOUNTING BRACKET, 2" STAINLESS STEEL ELECTRICAL HUB AND NEMA 4 JUNCTION BOX SHALL COME LOOSE FOR FIELD MOUNTING ON INSIDE WALL OF FIBERGLASS BASIN. 4" VENT AND 4" DISCHARGE LINES SHALL BE RUN FROM TOP OF COVER. BASIN SHALL BE OF A TWO PIECE DESIGN TO FACILITATE GETTING IT INTO THE BUILDING. EACH SECTION SHALL BE 30" IN HEIGHT. ONCE INSIDE THE SPACE THEY WILL BE GASKETED AND BOLTED TOGETHER TO FORM A SINGLE UNIT. NOTE: EXISTING STEEL BASIN TO BE REMOVED.
3. PUMP QUICK DISCONNECT REMOVAL SYSTEM REFER TO 221125 FOR ADDITIONAL INFORMATION
4. CONTROL PANEL REFER TO 221125 FOR ADDITIONAL INFORMATION
5. COORDINATE BACNET COMMUNICATION WITH DIVISION 23 CONTROLS CONTRACTOR.
6. REFER TO 221125 FOR ADDITIONAL INFORMATION

PLUMBING FIXTURE CONNECTION SCHEDULE

FIXTURE TYPE	WASTE CONNECTION	VENT CONNECTION	COLD WATER CONNECTION	HOT WATER CONNECTION	TEMPID WATER
DRINKING FOUNTAIN (2 BOWL)	1 1/2" (2)	1 1/2" (2)	1/2" (2)	-	-
JANITORS MOP BASIN	2"	1 1/2"	1/2"	1/2"	-
LAVATORY	1 1/2"	1 1/2"	1/2"	1/2"	-
SINK	1 1/2"	1 1/2"	1/2"	1/2"	-
WATER CLOSET (FLUSH VALVE)	4"	2"	1"	-	-
HOSE BIB (CW ONLY)	-	-	1/2"	-	-

NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL PLUMBING FIXTURE MOUNTING HEIGHTS.
2. ALL PIPE TRAPS AT SINKS AND LAVATORIES SHALL BE CHROME PLATED BRASS.

INSTANTANEOUS WATER HEATER SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	TYPE	LOCATION	TURN ON GPM	MAX FLOW GPM	SET FLOW GPM	SIZE (IN)	INLET TEMP (°F)	OUTLET TEMP (°F)	ELECTRICAL DATA			NOTES
WH-1	EEMAX MODEL # SPEX4208T-ML-N4	WM	SEE PLAN	0.2	0.5	0.5	3/8	49	105	4.1 kW	20 A	208/1	ALL

NOTES:
IL = IN-LINE FLOW

REMARKS:
1. INLINE FLOW REGULATOR 3/8" CONNECTION SIZE AND 0.5 GPM INSERT.
2. NEMA 4 STEEL CABINET WITH POWDER COAT FINISH.
3. MOUNT WITHIN TWO FEET OF FIXTURE BEING SERVED.
4. 0.2 TURN ON WITH 110° TEMP SETTING

WATER HEATER SCHEDULE-ELECTRIC

SYMBOL	MANUFACTURER/ MODEL NUMBER	TYPE	LOCATION	ELEMENTS (KW)	STORAGE CAPACITY (GALLONS)	RECOVERY (GPH AT 90°F RISE)	HW STORAGE TEMP.	ELEC DATA (KW / VOLTS / PH)	REMARKS
WHE-1	AO SMITH EJC-6 200	S	SEE PLAN	1.65	6	8	6	1.65/120/1	ALL

TYPE:
S = STORAGE TYPE HEATER
I = INSTANTANEOUS TYPE HEATER

REMARKS:
1. SINGLE ELEMENT
2. FURNISH AND INSTALL EXPANSION TANK AND TEMPERING VALVE

PLUMBING EXPANSION TANK SCHEDULE

SYMBOL	MANUFACTURER/ MODEL NUMBER	TYPE/ CONFIG	LOCATION	TANK VOLUME (GAL)	MAX. ACCEPTANCE VOLUME (GAL)	SIZE (DIA x H)	REMARKS
PET-1	BELL AND GOSSETT MODEL #1BN317LF	D/V	SEE PLAN	2	0.9	13 x 8	1

TYPE:
C = COMPRESSION
D = DIAPHRAGM

CONFIG:
H = HORIZONTAL
V = VERTICAL

REMARKS:
1. TANK SHALL BE ASME CONSTRUCTION

WATER HAMMER ARRESTOR SCHEDULE

MANUFACTURER/ MODEL NUMBER	SIZE N.P.T.	OVER ALL LENGTH	PRELOADED PSI (AIR)	FIXTURE UNITS	REMARKS
PPP MODEL #SC-500	1/2"	5"	60	1-11	ALL
PPP MODEL #SC-750	3/4"	6"	60	12-32	ALL
PPP MODEL# SC-1000	1"	6 3/4"	60	33-60	ALL
PPP MODEL# SC-1250	1 1/4"	8 3/4"	60	61-113	ALL
PPP MODEL# SC-1500	1 1/2"	10 1/4"	60	114-154	ALL
PPP MODEL# SC-2000	2"	10 7/8"	60	155-330	ALL

NOTES:
1. LOCATE WATER HAMMER ARRESTORS AS CLOSE AS POSSIBLE TO SHOCK SOURCE.
2. INSTALL PER ALL MANUFACTURERS WRITTEN INSTALLATION INSTRUCTIONS.
3. LOCATE IN AN ACCESSIBLE LOCATION, PROVIDE ACCESS AS REQUIRED.
4. FIXTURE UNITS SHALL BE BASED ON THE LATEST ADOPTED VERSION OF THE INTERNATIONAL PLUMBING CODE.
5. WATER HAMMER ARRESTORS SHALL BE PROVIDED WHERE QUICK-CLOSING VALVES ARE UTILIZED.
6. PROVIDE WATER HAMMER ARRESTORS AT CLOTHES WASHING MACHINES
7. PROVIDE WATER HAMMER ARRESTORS PER GROUP OF WATER CLOSETS AND PER GROUP OF URINALS, WHERE GROUP DOES NOT EXIST PROVIDE WATER HAMMER ARRESTOR AT SINGLE WATER CLOSET.

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22 00 00 - GENERAL

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

B. THESE SPECIFICATIONS ARE APPLICABLE TO ALL PLUMBING DRAWINGS UNLESS NOTED OTHERWISE. REVIEW THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING DRAWINGS FOR NOTES, DIMENSIONS, ETC., AND COORDINATE WITH OTHER TRADES INVOLVED.

C. THIS SECTION APPLIES TO ALL DIVISION 22 SPECIFICATION. WHERE THERE ARE DIFFERENCES OR DISCREPANCIES BETWEEN THIS SPECIFICATION SECTION AND OTHER DIVISION 22 SPECIFICATION SECTIONS, THE MORE STRINGENT REQUIREMENT(S) SHALL APPLY.

D. DESCRIPTION

1. THIS PROJECT COMPRISES ALTERATIONS AND RENOVATIONS TO THE EXISTING BUILDING. THE EXISTING BUILDING IS CURRENTLY OCCUPIED AND THE PROJECT SHALL PROCEED IN A MANNER THAT MINIMIZES ANY INCONVENIENCE TO THE BUILDING OCCUPANTS.
2. SCOPE OF WORK CONSISTS OF INSTALLATION OF MATERIALS TO BE FURNISHED UNDER THE CONTRACT DOCUMENTS AND WITHOUT LIMITING GENERALITY THEREOF CONSISTS OF FURNISHING LABOR, MATERIALS, EQUIPMENT, HOISTING, TRANSPORTATION, RIGGING, STAGING, APPURTENANCES, AND SERVICES NECESSARY AND/OR INCIDENTAL TO PROPERLY COMPLETE ALL WORK AS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN.

E. DEFINITIONS: THE FOLLOWING DEFINITIONS APPLY TO THIS CONTRACT

1. FURNISH: THE TERM "FURNISH" MEANS TO "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS"
2. INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."
3. PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."
4. REMOVE: THE TERM "REMOVE" MEANS TO DISCONNECT FROM ITS PRESENT POSITION, REMOVE FROM THE PREMISES AND TO DISPOSE OF IN A LEGAL MANNER."
5. SUBSTITUTIONS: "SUBSTITUTIONS" ARE REQUESTS FOR CHANGES IN PRODUCTS, MATERIALS AND/OR METHODS OF CONSTRUCTION AS PROPOSED BY THE CONTRACTOR AFTER AWARD OF THE CONTRACT."

F. DRAWINGS

1. DRAWINGS ARE DIAGRAMMATIC. THE FINAL PLACEMENT OF EQUIPMENT OR DEVICES IN THE FIELD MAY NOT DIRECTLY CORRESPOND TO THAT WHICH IS SHOWN ON THE DRAWINGS. THOUGH SOME OFFSETS & TRANSITIONS MAY BE SHOWN IN PIPING TO HELP INDICATE THE PHYSICAL RELATIONSHIP BETWEEN THEM, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL PIPING OFFSETS & TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE WORK AND PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THE WORK OUTLINED ON THESE CONTRACT DOCUMENTS. IF A CONFLICT IN POSITIONING OCCURS THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY TO ASCERTAIN WHAT THE INTENT WAS BY THE DESIGN PROFESSIONAL.

G. CODES AND STANDARDS: WORK SHALL CONFORM TO THE CURRENT EDITIONS OF THE FOLLOWING:

1. INTERNATIONAL BUILDING CODE
2. INTERNATIONAL PLUMBING CODE
3. INTERNATIONAL MECHANICAL CODE
4. NATIONAL ELECTRIC CODE (NFPA 70)
5. THE LIFE SAFETY CODE (NFPA 101)

H. PERMITS AND FEES:

1. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS; AND PAY ALL GOVERNMENT AND STATE SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS IN CONNECTION WITH THE WORK. FILE ALL NECESSARY DRAWINGS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL AND STATE DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK, AND DELIVER A COPY TO THE OWNER AND ENGINEER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

I. EXISTING SYSTEMS AND EQUIPMENT

1. EXISTING TO BE REUSED/RELOCATED EQUIPMENT: REPORT ANY EXISTING EQUIPMENT DEFICIENCIES TO THE OWNER AND THE ARCHITECT AND/OR ENGINEER.
2. CONNECT WORK TO VARIOUS EXISTING SYSTEMS AS INDICATED ON THE DRAWINGS. WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM CONDITIONS. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED AS WELL AS WITH EXISTING SYSTEMS, THE STRUCTURE, AND OTHER OBSTRUCTIONS.

J. SURVEY AND MEASUREMENTS

1. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, SHALL BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITION OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY IDENTIFIED BY EXPERIENCED OBSERVERS.
2. DO NOT SCALE DRAWINGS. SCALE INDICATED ON DRAWINGS IS FOR ESTABLISHING REFERENCE POINTS ONLY. ACTUAL FIELD CONDITIONS SHALL GOVERN ALL DIMENSIONS.
3. PRIOR TO ORDERING ANY MATERIALS AND EQUIPMENT, THOROUGHLY REVIEW THE SITE CONDITIONS TO DETERMINE IF ADEQUATE CLEARANCES AND ACCESS IS ALLOWED TO INSTALL THE COMPONENTS. ORDER EQUIPMENT BROKEN DOWN AS NECESSARY TO ALLOW FOR PROPER RIGGING THROUGH THE PROJECT AREA. PROVIDE ALL NECESSARY ALTERATIONS TO THE STRUCTURE OF THE BUILDING AS NECESSARY TO RIG THE EQUIPMENT IN PLACE.
4. CONTRACTORS SHALL VERIFY, LAYOUT AND BE RESPONSIBLE FOR ALL MEASUREMENTS OF ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND SHALL NOTIFY ARCHITECT AND/OR ENGINEER IF A CONDITION EXISTS THAT PREVENTS THE CONTRACTOR FROM ACCOMPLISHING THE INTENT OF THE DRAWINGS.

K. SUBMITTALS AND SHOP DRAWINGS

1. SUBMIT FOR REVIEW, ELECTRONIC SHOP DRAWINGS IN SEARCHABLE PDF FORMAT FOR THE FOLLOWING.
   a. SUBMITTAL DATA FOR ALL MATERIAL AND EQUIPMENT. CLEARLY IDENTIFY DEVIATIONS OF THE SUBMITTED PRODUCTS FROM THE DESIGN.
   b. SHOP DRAWINGS: DRAWN TO ACCURATE SCALE OF 1/4"=1'0". HIGHLIGHT, ENCIRCLE, OR OTHERWISE INDICATE DEVIATIONS FROM THE CONTRACT DOCUMENTS. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD INFORMATION AS THE BASIS OF SHOP DRAWINGS. STANDARD INFORMATION PREPARED WITHOUT SPECIFIC REFERENCE TO THE PROJECT IS NOT CONSIDERED SHOP DRAWINGS.
2. DO NOT USE SHOP DRAWINGS WITHOUT AN APPROPRIATE FINAL STAMP INDICATING ACTION TAKEN IN CONNECTION WITH CONSTRUCTION.
3. DO NOT ORDER ANY MATERIALS OR EQUIPMENT PRIOR TO RECEIVING FINAL APPROVED SUBMITTALS.
4. SCHEDULE AT LEAST TEN WORKING DAYS EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW.

L. AS-BUILT DRAWINGS

A. MAINTAIN ONE SET OF PRINTS ON THE SITE AND NOTE ALL CHANGES OR DEVIATIONS FROM THE ORIGINAL DESIGN THEREON. AT THE COMPLETION OF THE PROJECT, INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT FOR APPROVAL.

M. OPERATION AND MAINTENANCE

1. UPON COMPLETION OF ALL WORK AND TESTS, THE CONTRACTOR SHALL INSTRUCT THE OWNER OR THE OWNER'S REPRESENTATIVE IN THE OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL EQUIPMENT FURNISHED. THE CONTRACTOR SHALL GIVE AT LEAST SEVEN (7) DAYS NOTICE TO THE OWNER AND THE ENGINEER IN ADVANCE OF THIS PERIOD.
2. THE CONTRACTOR SHALL PREPARE THREE (3) COPIES OF A COMPLETE OPERATION AND MAINTENANCE MANUAL, BOUND IN BOOKLET FORM. ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA IN INDIVIDUAL HEAVY-DUTY 3-RING VINYL-COVERED BINDERS, WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION AND DESIGNATION PARTITIONS WITH IDENTIFICATION TABS. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER.
3. MAINTENANCE AND INSTRUCTION MANUALS SHALL BE SUBMITTED TO THE OWNER AT THE SAME TIME AS THE SEVEN (7) DAY NOTICE IS GIVEN PRIOR TO THE INSTRUCTION PERIOD.

N. CLEANING

1. EQUIPMENT: AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS SECTION, INCLUDING REMOVAL OF CONCRETE RESIDUE.
2. WORK AREA: AFTER COMPLETION OF PROJECT, REMOVE ALL CONSTRUCTION DEBRIS, TEMPORARY FACILITIES AND EQUIPMENT FROM WORK AREA. CLEAN WORK AREA TO PERMIT OCCUPATION.
3. DOMESTIC WATER PIPING: PRIOR TO STARTING WORK, VERIFY SYSTEM IS COMPLETE, FLUSHED AND CLEANED. ENSURE ACIDITY (pH) OF WATER TO BE TREATED IS BETWEEN 7.4 AND 7.6 BY ADDING ALKALI (CAUSTIC SODA OR SODA ASH) OR ACID (HYDROCHLORIC). INJECT DISINFECTANT, FREE CHLORINE IN LIQUID, POWDER, TABLET OR GAS FORM, THROUGHOUT SYSTEM TO OBTAIN 50 TO 80 mg/L RESIDUAL. BLEED WATER FROM OUTLETS TO ENSURE DISTRIBUTION AND TEST FOR DISINFECTANT RESIDUAL AT MINIMUM 15 PERCENT OF OUTLETS. MAINTAIN DISINFECTANT IN SYSTEM FOR 24 HOURS. IF FINAL DISINFECTANT RESIDUAL TESTS LESS THAN 25 mg/L, REPEAT TREATMENT. FLUSH DISINFECTANT FROM SYSTEM UNTIL RESIDUAL EQUAL TO THAT OF INCOMING WATER OF 1.0 mg/L. TAKE SAMPLES NO SOONER THAN 24 HOURS AFTER FLUSHING, FROM 10 PERCENT OF OUTLETS AND FROM WATER ENTRY, AND ANALYZE IN ACCORDANCE WITH AWWA C651.

O. GUARANTEE

1. GUARANTEE WORK OF THESE CONTRACT DOCUMENTS IN WRITING FOR NOT LESS THAN ONE (1) YEAR FROM DATE OF FINAL NOTICE OF ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPT AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.

P. MEANS AND METHODS ALL TRADES

1. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. DO NOT BURN WASTE MATERIALS. DO NOT BURY DEBRIS OR EXCESS MATERIALS ON THE OWNER'S PROPERTY. DO NOT DISCHARGE VOLATILE, HARMFUL OR DANGEROUS MATERIALS INTO DRAINAGE SYSTEMS. REMOVE AND DISPOSE OF ALL WASTE MATERIALS, PACKAGING MATERIAL, SKIDS ETC. FROM THE SITE AND DISPOSE OF IN A LAWFUL MANNER IN ACCORDANCE WITH MUNICIPAL, STATE AND FEDERAL REGULATIONS.
3. MATERIALS AND EQUIPMENT SHALL BE UL LISTED WHERE STANDARD HAS BEEN ESTABLISHED.
4. CAREFULLY INSPECT ALL BUILDING ELEMENTS PRIOR TO CUTTING OR DRILLING INTO WALL, FLOORS OR CEILINGS. PATCH AND PAINT SURFACES DISTURBED BY WORK UNDER THIS CONTRACT AS REQUIRED TO RESTORE THEM TO THEIR ORIGINAL CONDITION.
5. SCAFFOLDING, RIGGING, HOISTING: THE CONTRACTOR SHALL FURNISH ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES ANY EQUIPMENT AND APPARATUS FURNISHED UNDER THIS DIVISION. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.
6. EXCAVATION AND BACKFILLING: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE SIZES, DEPTHS, FILL AND BEDDING REQUIREMENTS AND ANY OTHER EXCAVATION WORK REQUIRED UNDER THESE SPECIFICATIONS.
7. WATERPROOFING: WHERE ANY WORK PIERCES WATERPROOFING, INCLUDING WATERPROOF CONCRETE, ROOFS, EXTERIOR WALL AND FLOORS IN WET AREAS, THE METHOD OF INSTALLATION SHALL BE REVIEWED BY THE ENGINEER BEFORE WORK IS DONE. THE CONTRACTOR SHALL FURNISH ALL NECESSARY SLEEVES, CAULKING AND FLASHING REQUIRED TO MAKE OPENINGS ABSOLUTELY WATERTIGHT.
8. PROVIDE FIRESTOPPING AROUND ALL FIRE PROTECTION, PLUMBING, MECHANICAL AND ELECTRICAL PENETRATIONS THROUGH FIRE RATED PARTITIONS. PROVIDE ASBESTOS FREE FIRESTOPPING SYSTEM CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME AND GASES. SYSTEM SHALL BE UL LISTED AND COMPLY WITH ASTM E 814. REFER TO ARCHITECTURAL DRAWINGS FOR RATINGS OF ASSEMBLIES.
9. PROVIDE ACCESS PANELS IN WALLS, FLOORS AND GYPSUM WALL BOARD CEILINGS TO ALLOW ACCESS TO: VALVES AND OTHER APPARATUS AND EQUIPMENT REQUIRING PERIODIC SERVICE AND INSPECTION. NOT ALL ACCESS PANELS ARE INDICATED ON THE PLANS. REVIEW ARCHITECTURAL AND PLUMBING PLANS TO DETERMINE THE LOCATION AND QUANTITY OF ACCESS PANELS REQUIRED. COORDINATE TYPE AND LOCATION WITH ARCHITECTURAL PLANS.

22 05 00 - COMMON WORK RESULTS FOR PLUMBING

A. IDENTIFICATION FOR PIPING AND EQUIPMENT:

1. MANUFACTURERS: CRAFTMARK IDENTIFICATION SYSTEMS, SAFETY SIGN CO., SETON IDENTIFICATION PRODUCTS, NORTHTOWN, KOLBI. SUBSTITUTIONS: DIVISION 01 – GENERAL REQUIREMENTS AND 22 04 00 – GENERAL REQUIREMENTS.
2. PLASTIC NAMEPLATES: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED BLACK LETTERS ON LIGHT BACKGROUND COLOR.
3. TAGS
   a. PLASTIC TAGS: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED BLACK LETTERS ON LIGHT BACKGROUND COLOR, MINIMUM 1-1/2 INCHES DIAMETER.
   b. METAL TAGS: ALUMINUM WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2 INCHES DIAMETER WITH FINISHED EDGES.
   c. INFORMATION TAGS: CLEAR PLASTIC WITH PRINTED "DANGER," "CAUTION," OR "WARNING" AND MESSAGE; SIZE 3-1/4 X 5-5/8 INCHES WITH GROMMET AND SELF-LOCKING NYLON TIES.
   d. TAG CHART: TYPEWRITTEN LETTER SIZE LIST OF APPLIED TAGS AND LOCATION IN ANODIZED ALUMINUM FRAME.
4. PIPE MARKERS
   a. COLOR AND LETTERING TO CONFORM TO ASME A13.1.
   b. PLASTIC PIPE MARKERS: FACTORY FABRICATED, FLEXIBLE, SEMI-RIGID PLASTIC, PREFORMED TO FIT AROUND PIPE OR PIPE COVERING. LARGER SIZES MAY HAVE MAXIMUM SHEET SIZE WITH SPRING FASTENER. MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.
   c. PLASTIC TAPE PIPE MARKERS: FLEXIBLE, VINYL FILM TAPE WITH PRESSURE SENSITIVE ADHESIVE BACKING AND PRINTED MARKINGS.
   d. PLASTIC UNDERGROUND PIPE MARKERS: BRIGHT COLORED CONTINUOUSLY PRINTED PLASTIC RIBBON TAPE, MINIMUM 6 INCHES WIDE BY 4 MIL THICK, MANUFACTURED FOR DIRECT BURIAL SERVICE. TRACE WIRE: MAGNETIC DETECTABLE CONDUCTOR, BRIGHTLY COLORED PLASTIC COVERING, IMPRINTED WITH COLOR CODE AS FOLLOWS:
      1. POTABLE, COOLING, BOILER, FEED, OTHER WATER: GREEN WITH WHITE LETTERS.
      2. FIRE QUENCHING FLUIDS: RED WITH WHITE LETTERS.
      3. FLAMMABLE FLUIDS: YELLOW WITH BLACK LETTERS.
      4. COMBUSTIBLE FLUIDS: BROWN WITH WHITE LETTERS.
5. CEILING TACKS
   a. DESCRIPTION: STEEL WITH 3/4 INCH DIAMETER COLOR-CODED HEAD.
   b. COLOR CODE AS FOLLOWS: PLUMBING VALVES: GREEN.
6. LABELS
   a. DESCRIPTION: POLYESTER FOR ABOVE GRADE AND LAMINATED MYLAR FOR BELOW GRADE, SIZE 1.9 X 0.75 INCHES, ADHESIVE BACKED WITH PRINTED IDENTIFICATION.

B. SLEEVES

1. MANUFACTURERS: FLEXICRAFT INDUSTRIES; PIPE WALL SLEEVE, METRAFLEX; PIPE WALL SLEEVE, CCI PIPELINE; PIPE WALL SLEEVE, GPT – CENTURYLINE SLEEVE SERIES, GPT/THUNDERLINE LINK-SEAL, INC, METRAFLEX - METRASEAL, BWM – PIPE SEAL/ PS SERIES. SUBSTITUTIONS: SEE DIVISION 01 - GENERAL REQUIREMENTS AND 22 04 00 – GENERAL REQUIREMENTS.
2. VERTICAL PIPING:
   a. SLEEVE LENGTH: 1 INCH ABOVE FINISHED FLOOR.
   b. PROVIDE SEALANT FOR WATERTIGHT JOINT.
   c. BLOCKED OUT FLOOR OPENINGS: PROVIDE 1-1/2 INCH ANGLE SET IN SILICON ADHESIVE AROUND OPENING.
   d. DRILLED PENETRATIONS: PROVIDE 1-1/2 INCH ANGLE RING OR SQUARE SET IN SILICONE ADHESIVE AROUND PENETRATION.
3. SHEET METAL: PIPE PASSING THROUGH INTERIOR WALLS, PARTITIONS, AND FLOORS, UNLESS STEEL OR BRASS SLEEVES ARE SPECIFIED BELOW.
4. PIPE PASSING THROUGH BELOW GRADE OR EXTERIOR WALLS:
   a. ANCHORED SLEEVE - ZINC COATED OR CAST IRON PIPE.

PROVIDE WATERTIGHT SPACE WITH LINK RUBBER OR MODULAR SEAL BETWEEN SLEEVE AND PIPE ON BOTH PIPE ENDS.

5. CLEARANCES:
   a. PROVIDE ALLOWANCE FOR INSULATED PIPING.
   b. WALL, FLOOR, FLOOR, PARTITIONS, AND BEAM FLANGES: 1 INCH GREATER THAN EXTERNAL; PIPE DIAMETER.
   c. ALL RATED OPENINGS: CAULKED TIGHT WITH FIRE STOPPING MATERIAL CONFORMING TO HYPERLINK "HTTP://GLOBAL.IHS.COM/DOC_DETAIL.CFM?RID=BSD&DOCUMENT_NAME=ASTM E814" ASTM E814-13A IN ACCORDANCE WITH DIVISION 07 THERMAL AND MOISTURE PROTECTION TO PREVENT THE SPREAD OF FIRE, SMOKE, AND GASES.
6. SLEEVES FOR PIPES THROUGH NON-FIRE RATED FLOORS: 18 GAGE THICK GALVANIZED STEEL.
7. SLEEVES FOR PIPES THROUGH NON-FIRE RATED WALLS, AND POTENTIALLY WET FLOORS: STEEL PIPE OR 18 GAGE THICK GALVANIZED STEEL.
8. SEALANT: REFER TO DIVISION 07 THERMAL AND MOISTURE PROTECTION.
9. MECHANICAL SLEEVE SEALS
   a. PRODUCT DESCRIPTION: MODULAR MECHANICAL TYPE, CONSISTING OF INTERLOCKING SYNTHETIC NITRILE RUBBER LINKS SHAPED TO CONTINUOUSLY FILL ANNULAR SPACE BETWEEN OBJECT AND SLEEVE, CONNECTED WITH BOLTS AND PRESSURE PLATES CAUSING RUBBER SEALING ELEMENTS TO EXPAND WHEN TIGHTENED, PROVIDING WATERTIGHT SEAL AND ELECTRICAL INSULATION.
   b. PROVIDE NSF 61 CERTIFIED ASSEMBLY WHEN USED IN POTABLE WATER STORAGE TANK APPLICATIONS.

C. FORMED STEEL CHANNEL

1. MANUFACTURERS: B-LINE SYSTEMS, UNISTRUT CORP., ANVIL INTERNATIONAL, SUBSTITUTIONS: DIVISION 01 - GENERAL REQUIREMENTS AND 22 04 00 – GENERAL REQUIREMENTS.
2. PRODUCT DESCRIPTION: GALVANIZED 12 GAGE THICK STEEL. WITH HOLES 1-1/2 INCHES ON CENTER.

D. GENERAL INSTALLATION REQUIREMENTS FOR PLUMBING

1. CONNECTIONS BETWEEN COPPER & STEEL PIPING SHALL BE MADE WITH DIELECTRIC WATERWAYS, WITH BRONZE BODY VALVES, OR WITH BRASS ADAPTER FITTINGS.
2. INSTALL AND TEST GAS PIPING IN ACCORDANCE WITH THE FUEL GAS CODE AND NFPA 54.
3. PREPARATION
   a. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL OR GROOVE PLAIN END FERROUS PIPE.
   b. REMOVE SCALE AND DIRT ON INSIDE AND OUTSIDE BEFORE ASSEMBLY.
   c. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES OR UNIONS.
   d. KEEP OPEN ENDS OF PIPE FREE FROM SCALE AND DIRT. PROTECT OPEN ENDS WITH TEMPORARY PLUGS OR CAPS.
   e. AFTER COMPLETION, FILL, CLEAN, AND TREAT SYSTEM.

E. INSTALLATION REQUIREMENTS FOR PLUMBING PIPING

1. INSTALL PIPING IN ACCORDANCE WITH ALL APPLICABLE PLUMBING CODES, ASME B31.1, AND ASME B31.9 AS APPLICABLE.
2. ROUTE PIPING PARALLEL TO BUILDING STRUCTURE AND MAINTAIN GRADIENT.
3. INSTALL PIPING TO CONSERVE BUILDING SPACE, AND NOT INTERFERE WITH USE OF SPACE.
4. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
5. SLEEVE PIPE PASSING THROUGH PARTITIONS, WALLS AND FLOORS.
6. INSTALL FIRESTOPPING AT PENETRATIONS OF RATED ASSEMBLIES. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND RATINGS OF RATED ASSEMBLIES.
7. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
8. PROVIDE ACCESS WHERE VALVES AND FITTINGS ARE NOT EXPOSED.
9. SLOPE DOMESTIC WATER PIPING AND ARRANGE SYSTEMS TO DRAIN AT LOW POINTS. USE ECCENTRIC REDUCERS TO MAINTAIN TOP OF PIPE ALIGNED.
10. WHERE PIPE SUPPORT MEMBERS ARE WELDED TO STRUCTURAL BUILDING FRAMING, SCRAPE, BRUSH CLEAN, AND APPLY ONE COAT OF ZINC RICH PRIMER TO WELDS.
11. PREPARE UNFINISHED PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES, READY FOR FINISH PAINTING.
12. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED.

F. TESTING

1. TEST PIPING IN ACCORDANCE WITH ALL APPLICABLE PLUMBING CODES, ASME B31.1 AND ASME B31.9, AS APPLICABLE.

22 05 29 - HANGERS AND SUPPORTS

A. PROVIDE PIPE STANDS, SUPPORTS, HANGERS AND OTHER SUPPORTING APPLIANCES AS NECESSARY TO SUPPORT WORK REQUIRED BY CONTRACT DOCUMENTS. SPACING OF HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES. STRUCTURAL STEEL SUPPORTS, HANGERS, ETC. SHALL BE ANGLE IRON, STEEL CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC. ALL SUPPORTS, HANGERS, BRACKETS, ETC., SHALL BE AS APPROVED BY THE ENGINEER.

B. ALL HANGERS SHALL BE GALVANIZED.

C. ATTACH HANGERS AND SUPPORTS DIRECTLY ONTO THE STRUCTURE BY FIRST REMOVING EXISTING FIRE PROOFING AND AFTER SECURING THE ATTACHMENT, REPAIRING THE FIRE PROOFING TO ITS ORIGINAL CONDITION, CONTINUOUSLY OVER THE ATTACHMENT.

D. FOR EXPANSION BOLTS/SHIELDS USE RED HEAD, HILTI OR WEJ-IT SELF DRILLING OR STEEL SHIELD, LOAD RATED. DO NOT USE DRILLED ANCHORS IN POST TENSION SLABS WITHOUT APPROVAL OF OWNER. DO NOT CUT REINFORCING STEEL WITH DRILLED INSERTS.

E. INSTALLATION REQUIREMENTS FOR HANGERS AND SUPPORTS

1. INSTALL IN ACCORDANCE WITH ASME B31.9, ASTM F708 AND MSS SP 89.
2. SUPPORT HORIZONTAL PIPING AS SCHEDULED.
3. INSTALL HANGERS TO PROVIDE MINIMUM 1/2 INCH SPACE BETWEEN FINISHED COVERING AND ADJACENT WORK.
4. PLACE HANGERS WITHIN 12 INCHES OF EACH HORIZONTAL ELBOW.
5. USE HANGERS WITH 1-1/2 INCH MINIMUM VERTICAL ADJUSTMENT. DESIGN HANGERS FOR PIPE MOVEMENT WITHOUT DISENGAGEMENT OF SUPPORTED PIPE.
6. SUPPORT VERTICAL PIPING AT EVERY FLOOR. SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.
7. WHERE INSTALLING SEVERAL PIPES IN PARALLEL AND AT SAME ELEVATION, PROVIDE MULTIPLE PIPE HANGERS OR TRAPEZE HANGERS.
8. PROVIDE COPPER PLATED HANGERS AND SUPPORTS FOR COPPER PIPING.
9. PRIME COAT EXPOSED STEEL HANGERS AND SUPPORTS. HANGERS AND SUPPORTS LOCATED IN CRAWL SPACES, PIPE SHAFTS, AND SUSPENDED CEILING SPACES ARE NOT CONSIDERED EXPOSED.
10. PROVIDE CLEARANCE IN HANGERS AND FROM STRUCTURE AND OTHER EQUIPMENT FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES AND FITTINGS.

22 05 48 - VIBRATION AND SEISMIC CONTROLS

A. PROVIDE VIBRATION ISOLATION FOR EACH PIECE OF ROTATING OR RECIPROCATING EQUIPMENT SHOWN ON THE DRAWINGS. ALL ISOLATION COMPONENTS SHALL BE SUPPLIED BY A SINGLE MANUFACTURER - MASON INDUSTRIES, KINETICS OR AMBER BOOTH. TYPES OF ISOLATORS, REQUIRED DEFLECTIONS, AND INSTALLATION PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE VIBRATION ISOLATION MANUFACTURER.

B. PROVIDE SEISMIC RESTRAINTS AS REQUIRED BY CODE INCLUDING EQUIPMENT OR PIPING LOWER THAN 18" BELOW STRUCTURE. FOR EACH SEISMIC RESTRAINT, PROVIDE CERTIFIED CALCULATIONS TO VERIFY ADEQUACY TO MEET THE FOLLOWING DESIGN REQUIREMENTS: ABILITY TO ACCOMMODATE RELATIVE SEISMIC DISPLACEMENTS OF SUPPORTED ITEM BETWEEN POINTS OF SUPPORT. ABILITY TO ACCOMMODATE THE REQUIRED SEISMIC FORCES. FOR EACH RESPECTIVE SET OF ANCHOR BOLTS PROVIDE CALCULATIONS TO VERIFY ADEQUACY TO MEET COMBINED SEISMIC-INDUCED SHEER AND TENSION FORCES. FOR EACH WELDMENT BETWEEN STRUCTURE AND ITEM SUBJECT TO SEISMIC FORCE, PROVIDE CALCULATIONS TO VERIFY ADEQUACY. CALCULATIONS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE WHERE THE WORK IS BEING PERFORMED AND HAS SPECIFIC EXPERIENCE IN SEISMIC CALCULATIONS. RESTRAINTS SHALL MAINTAIN THE RESTRAINED ITEM IN A CAPTIVE POSITION WITHOUT SHORT CIRCUITING THE VIBRATION ISOLATION.

22 07 00 - PLUMBING INSULATION

A. GENERAL REQUIREMENTS

1. INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA. INSTALL INSULATION, MASTICS, ADHESIVES, COATINGS, COVERS, WEATHER-PROTECTION AND OTHER WORK IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD, 50 SMOKE DEVELOPED.
2. FITTINGS, VALVES AND FLANGES SHALL BE INSULATED WITH SAME MATERIAL AND TO SAME THICKNESS AS ADJOINING PIPE INSULATION, WITH PRESENT SECTIONS.
3. FOR STRAINERS AND OTHER VALVES OR FITTINGS WHICH NEED MAINTENANCE, PROVIDE PREFORMED REMOVABLE INSULATION SECTION.

B. PRODUCTS AND APPLICATIONS

1. INSULATION SHALL BE FIBROUS GLASS PIPE INSULATION WITH FACTORY-APPLIED ASJ WITH K FACTOR OF AT LEAST 0.23 AT 75F MEAN TEMPERATURE.
2. PROVIDE INSULATION FOR THE FOLLOWING SYSTEMS:
   a. DOMESTIC HOT WATER PIPE INSULATION: MINIMUM 1 INCH THICKNESS. PROVIDE 1-1/2 INCH THICKNESS FOR DOMESTIC HOT WATER PIPES 1-1/2 INCH DIAMETER AND LARGER.
   b. DOMESTIC COLD WATER: MINIMUM 1/2 INCH THICKNESS. PROVIDE 1 INCH THICKNESS FOR COLD WATER PIPES 1-1/2 INCH DIAMETER AND GREATER.
   c. STORM PIPING HORIZONTAL ABOVE GROUND WITHIN BUILDING: MINIMUM 1 INCH THICKNESS.

22 10 00 - PLUMBING PIPING

A. DOMESTIC WATER PIPING - ABOVE GRADE

1. SOLDERED OR BRAZED: ASTM B88, TYPE L HARD DRAWN COPPER TUBING, WITH ASME B16.18 CAST BRASS OR ASME B16.22 WROUGHT COPPER FITTINGS. JOINTS SHALL BE SOLDER TYPE WITH ASTM B32 95-5 TIN-ANTIMONY OR TIN AND SILVER SOLDER, OR BRAZED TYPE WITH AWS A5.8 BCUP ALLOY BRAZE.TEES SHALL BE FITTINGS; MECHANICALLY EXTRACTED COLLARS TEES ARE NOT ALLOWED.
2. GROOVED: ASTM B88, TYPE L WITH ROLLED GROOVED ENDS, WITH ASME B16.18 CAST COPPER ALLOY, ASME B16.22 WROUGHT COPPER AND BRONZE, OR ASTM B584 BRONZE SAND CASTINGS, GROOVED END FITTINGS, AND ASTM F1476 GROOVED MECHANICAL COUPLINGS JOINTS WITH ENAMEL COATED ASTM A395 DUCTILE IRON AND ASTM A536 DUCTILE IRON HOUSING CLAMPS, COMPATIBLE WITH COPPER TUBING SIZES, TO ENGAGE AND LOCK DESIGNED TO PERMIT SOME ANGULAR DEFLECTION, CONTRACTION, AND EXPANSION, ELASTOMER COMPOSITION GASKETS WITH AN OPERATING TEMPERATURE RANGE FROM -40°F TO 230°F, AND GALVANIZED OR STAINLESS STEEL BOLTS, NUTS, AND WASHERS.

EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT
ACCU	AIR COOLED CONDENSING UNIT
AH	AIR HANDLER
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
ASHP	AIR SOURCE HEAT PUMP
B	BOILER
CUH	CABINET UNIT HEATER
CF	CENTRIFUGAL SEPARATOR
CH	CHILLER
CB	CHILLED BEAM
CHWC	CHILLED WATER COIL
CHWP	CHILLED WATER PUMP
CT	COOLING TOWER
CRAC	COMPUTER ROOM AC UNIT
CP	CONDENSATE PUMP
CWP	CONDENSER WATER PUMP
CU	CONDENSING UNIT
CV	CONVECTOR
DEF	DISHWASHER EXHAUST FAN
DAC	DUCTLESS AIR CONDITIONING UNIT
DHP	DUCTLESS HEAT PUMP
DOAS	DEDICATED OUTDOOR AIR SYSTEM
EB	ELECTRIC BASEBOARD
EUH	ELECTRIC UNIT HEATER
EWH	ELECTRIC WALL HEATER
ERU	ENERGY RECOVERY UNIT
ERV	ENERGY RECOVERY VENTILATOR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ET	EXPANSION TANK
F	FAN
FCU	FAN COIL UNIT
FOP	FUEL OIL PUMP
FRP	FUEL OIL RETURN PUMP
FTR	FIN TUBE RADIATION
GMU	GLYCOL MAKE-UP UNIT
HX	HEAT EXCHANGER
HWC	HOT WATER COIL
H	HUMIDIFIER
HWP	HOT WATER PUMP
KEF	KITCHEN EXHAUST FAN
LB	LINEAR BAR GRILLE
LS	LINEAR SLOT DIFFUSER
MAU	MAKE UP AIR UNIT
PHX	PLATE AND FRAME HEAT EXCHANGER
P	PUMP
R	RADIATION
RHC	REHEAT COIL
RF	RETURN FAN OR RELIEF FAN
RP	RADIANT PANEL
RTU	ROOFTOP UNIT
SA	SOUND ATTENUATOR
SPF	STAIR PRESSURIZATION FAN
SEF	SMOKE EXHAUST FAN
SD	SUPPLY DIFFUSER
SG	SUPPLY GRILLE
TEF	TOILET EXHAUST FAN
UH	UNIT HEATER

GENERAL ABBREVIATIONS

AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
CNV	CONVECTOR
APD	AIR PRESSURE DROP
AWT	AVERAGE WATER TEMPERATURE
BAS	BUILDING AUTOMATION SYSTEM
BF	BYPASS FEEDER
BHP	BREAK HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNIT
BTUH	BTU / HOUR
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
CRD	CEILING RADIATION DAMPER
CAP	CAPACITY
COP	COEFFICIENT OF PERFORMANCE
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CFM	CUBIC FEET PER MINUTE
CUFT	CUBIC FEET
dB	DECIBELS
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DN	DOWN
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE (DRY BULB)
EDB	ENTERING DRY BULB
EER	ENERGY EFFICIENCY RATIO
ELEC	ELECTRICAL
ER	EXISTING TO BE RELOCATED
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
°F	DEGREES FAHRENHEIT
FD	FIRE DAMPER
FT	FEET
FT WG	FEET WATER GAUGE
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FSD	COMBINATION FIRE SMOKE DAMPER
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRD	GRILLE, REGISTER, DIFFUSER
HD	HEAD
HP	HORSEPOWER
HSPF	HEATING SEASON PERFORMANCE FACTOR
HZ	HERTZ
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IN	INCHES
IN WG	INCHES WATER GAUGE
IPLV	INTEGRATED PART LOAD VALUE
KW	KILOWATTS
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MECH	MECHANICAL
MBH	THOUSANDS OF BTU / HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OAT	OUTSIDE AIR TEMPERATURE
OD	OUTER DIAMETER
OED	OPEN ENDED DUCT
P	PUMP
PH	PHASE
PLBG	PLUMBING
PRV	PRESSURE REDUCING VALVE
PSIG	POUNDS PER SQUARE INCH GAUGE
QTY	QUANTITY
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
RV	RADON VENT
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SIGHT GLASS
SP	STATIC PRESSURE
SPD	STATIC PRESSURE DROP
SS	STAINLESS STEEL
SST	SATURATED SUCTION PRESSURE
SQFT / SF	SQUARE FEET
TEMP	TEMPERATURE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TYP	TYPICAL
UOI	UNLESS OTHERWISE INDICED
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
W	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP
X	DEMOLISH

CONTROLS GENERAL NOTES

1. GENERAL
   - A. SEQUENCES OUTLINED SHALL BE PERFORMED BY DIRECT DIGITAL CONTROL FIELD PANELS (DDCFPS) AND LOCALLY MOUNTED DIRECT DIGITAL UNIT CONTROLLERS CONNECTED TO A CENTRAL BUILDING AUTOMATION SYSTEM, UNLESS OTHERWISE SPECIFIED. SYSTEM ARCHITECTURE SHALL BE BASED ON A PEER-TO-PEER DISTRIBUTED CONTROL SYSTEM NETWORK. SYSTEM SHALL INTEGRATE OPEN COMMUNICATION PROTOCOL CONTROLLERS. ALL DDCFP AND LOCAL CONTROLLERS SHALL BE CAPABLE OF INDEPENDENT OPERATION REGARDLESS OF THE STATUS OF THE BAS WORKSTATION.
   - B. BMS (BUILDING MANAGEMENT SYSTEM), BAS (BUILDING AUTOMATION SYSTEM) AND DDC (DIRECT DIGITAL CONTROLS) MAY BE USED INTERCHANGEABLY AND SHARE THE SAME MEANING.
   - C. ADDRESS IDENTIFIERS FOR POINTS AND VARIABLES SHALL BE COORDINATED WITH OWNER.
   - D. ABILITY TO REVIEW MEASURED DATA, CONTROL SETPOINTS AND FUNCTIONS SHALL BE PROVIDED AT BAS WORKSTATION AND ON LAPTOP SERVICE TOOL.
   - E. COORDINATE SENSOR LOCATIONS WITH DUCTWORK AND PIPING SHOP DRAWINGS AND INDICATE PROPOSED LOCATIONS ON SUBMITTALS. PROVIDE MANUFACTURER'S RECOMMENDED UPSTREAM AND DOWNSTREAM PIPE OR DUCT DIAMETERS FOR FLOW SENSING ELEMENTS.
   - F. PROVIDE COMMUNICATIONS INTERFACE INCLUDING SOFTWARE BETWEEN THE BAS AND EACH EQUIPMENT MANUFACTURER SUPPLIED CONTROL PANEL. BAS SHALL BE CAPABLE OF READING AND DISPLAYING ALL DATA USED BY THE EQUIPMENT MANUFACTURER CONTROL PANEL. SOFTWARE INTERFACE SHALL BE THROUGH LONMARK OR BACNET COMPLIANT PROTOCOL WHERE THE BAS IS REQUIRED TO CONTROL THE OPERATION OF THE EQUIPMENT. PROVIDE COMPLETE INPUT AND OUTPUT INTERFACE.
   - G. FAIL SAFE POSITIONS INDICATED ARE POSITIONS THAT DEVICES WILL GO TO WHEN THE ASSOCIATED EQUIPMENT IS DE-ENERGIZED.
   - H. PROVIDE ADEQUATE DAMPING OF MODULATING CONTROL LOOPS TO PREVENT HUNTING. MAXIMUM RESPONSE TIME SHALL BE 30 SECONDS. CONTROL LOOPS SHALL BE TUNED TO PROVIDE FOR STABLE OPERATION OF THE CONTROL DEVICE. LOOP TUNING MAY BE REQUIRED TO BE PERFORMED MULTIPLE TIMES DURING MULTIPLE CONTROL SCENARIOS.
   - I. CONTROL DEVICES SHALL BE INSTALLED IN SUCH A WAY TO BE ACCESSIBLE FOR MAINTENANCE AND REPAIR.
   - J. DAMPER END SWITCHES SHALL BE INTERLOCKED VIA HARDWIRE TO THE START/STOP FUNCTION OF ITS ASSOCIATED FAN.
2. WIRING
   - A. PROVIDE CONTROLS, LOW VOLTAGE CONTROL WIRING, HARDWARE POINTS (ANALOG IN, ANALOG OUT, BINARY IN, BINARY OUT) AND ACCESSORIES AS REQUIRED TO PERFORM THE CONTROL SEQUENCES INDICATED. ADDITIONALLY, PROVIDE HARDWARE POINTS INDICATED REGARDLESS THAT SUCH POINTS MAY NOT BE REQUIRED TO PERFORM THE CONTROL SEQUENCES INDICATED.
   - B. POWER WIRING SHALL COMPLY WITH REQUIREMENTS OF DIVISION 26 SECTIONS.
   - C. PROVIDE NORMAL, [AND STANDBY] [AND EMERGENCY POWER] WIRING TO CONTROL DEVICES, INCLUDING CONTROL PANELS, WORKSTATION AND HOST COMPUTERS.
   - D. ELECTRICAL CIRCUITS FOR CONTROLS SHALL BE DEDICATED ONLY TO THE BUILDING AUTOMATION CONTROL SYSTEM AND COMPONENTS. WIRING FROM AND INCLUDING DEDICATED CIRCUIT BREAKERS TO THE POINT OF USE SHALL BE PROVIDED.
3. SAFETIES:
   - A. SAFETY DEVICES SUCH AS FREEZESTATS, SMOKE DETECTION, AND HIGH STATIC PRESSURE SWITCHES SHALL BE MANUAL RESET AND SHALL PERFORM ASSOCIATED SHUTDOWN/FAILSAFE ACTIONS VIA HARDWIRING. SOFTWARE SHALL NOT BE USED TO EXCLUSIVELY PERFORM ANY SHUTDOWN/FAILSAFE ACTIONS FROM SAFETY DEVICES. FOR EXAMPLE FREEZESTATS SHALL SHUT OFF FAN, FULLY OPEN COIL VALVE, AND CLOSE OUTSIDE AIR DAMPER VIA HARDWIRING WITHOUT RELYING ON ANY SOFTWARE FUNCTIONS. SOFTWARE SHUTDOWN/FAILSAFE SHALL BE PROVIDED AS A REDUNDANT BACKUP TO THE REQUIRED HARDWIRED SHUTDOWNS.
   - B. DEVICES SUCH AS CUH AND UH SHALL OPERATE ON A SOFT PERMISSIVE, ONLY ALLOWING FANS TO START AND CONTROL VALVES TO OPEN WHEN SYSTEM IS IN HEATING MODE, USE OF AQUASTATS IS NOT ACCEPTABLE.
   - C. SAFETY DEVICES SHALL FUNCTION AND SHUT DOWN THE ASSOCIATED EQUIPMENT WHEN THE MANUAL SWITCHES ARE IN BOTH THE HAND AND AUTO POSITIONS.
4. ALARMS:
   - A. REFER TO SEQUENCES FOR ALARM FUNCTIONS. WHENEVER AN ALARM IS INITIATED, THE BAS SHALL RETAIN IN MEMORY THE READING AND SETPOINT OF EACH ASSOCIATED DEVICE TO HELP THE OPERATOR IN ISOLATING THE CAUSE OF THE ALARM.
   - B. IF ANY DDCFP OR EQUIPMENT MANUFACTURER'S CONTROL PANEL LOSES COMMUNICATION WITH THE BAS NETWORK, AN ALARM SHALL BE INITIATED AT THE BAS INDICATING THE LOCATION OF THE FAULT.
   - C. WHENEVER A PIECE OF EQUIPMENT IS TAKEN OFFLINE FOR MAINTENANCE, ALARMS RELATED TO THIS PIECE OF EQUIPMENT SHALL BE TEMPORARILY DISABLED.
5. ROOM SENSORS
   - A. FOR REGULARLY OCCUPIED SPACES, PROVIDE WALL MOUNTED ROOM SENSORS WITH INTEGRAL LCD DISPLAY AND USER INTERFACE TO DISPLAY AND ADJUST SETPOINT, MODE AND STATUS.
   - B. FOR CORRIDORS, RESTROOMS, VESTIBULES, STORAGE ROOMS, JANITOR CLOSETS, ELECTRICAL CLOSETS, DATA CLOSETS/ROOMS, AND MECHANICAL ROOMS, PROVIDE WALL MOUNTED, BRUSHED CHROME, WALL PLATE TYPE SENSORS.
6. SETPOINTS:
   - A. SETPOINTS AND TIME DELAYS SHALL BE ADJUSTABLE BY THE OPERATOR THROUGH THE BAS WORKSTATION AND THROUGH LAPTOP SERVICE TOOL CONNECTED TO DDCFPS AND CONTROLLERS WITHOUT HARDWARE OR SOFTWARE REVISIONS. UNLESS OTHERWISE NOTED, ROOM TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE AT THE LOCAL ROOM TEMPERATURE SENSOR.
   - B. INITIAL SPACE TEMPERATURE SETPOINTS SHALL BE AS FOLLOWS:
     - a. OFFICES, CIRCULATION SPACES & TOILET ROOMS:

OCCUPIED COOLING	75 DEGREES F
OCCUPIED HEATING	72 DEGREES F
UNOCCUPIED COOLING	80 DEGREES F
UNOCCUPIED HEATING	65 DEGREES F

     - b. UTILITY ROOMS (ELECTRICAL ROOMS, MECH. ROOMS & PENTHOUSES):

COOLING OR VENTILATION	85 DEGREES F (24 HOURS)
HEATING	60 DEGREES F MIN (24 HOURS)

7. OCCUPANCY SCHEDULES:
   - A. OCCUPANCY SCHEDULES SHALL BE USER-PROGRAMMABLE THROUGH THE BAS AND BE CAPABLE OF SCHEDULING BY AREA, ZONE, GROUPS OF ZONES, INDIVIDUALLY CONTROLLED EQUIPMENT AND GROUPS OF INDIVIDUALLY CONTROLLED EQUIPMENT. EACH SCHEDULE SHALL PROVIDE BEGINNING AND ENDING DATES AND TIMES (HOURS:MINUTES).
   - B. WHERE THERE ARE NO OCCUPANCY SENSORS IN THE SAME SPACE AS A TEMPERATURE SENSOR, TEMPERATURE SENSORS SHALL BE PROVIDED WITH MOMENTARY TYPE OCCUPIED OVERRIDE BUTTONS. UPON ACTIVATION OF THE OCCUPIED OVERRIDE BUTTON, THE SPACE WILL GO TO OCCUPIED MODE FOR A SPECIFIC PERIOD OF TIME. SET OVERRIDE TIME AT 3 HOURS INITIALLY (CONFIGURABLE).
   - C. WHERE OCCUPANCY SENSORS (REFER TO ELECTRICAL POWER DRAWINGS FOR OCCUPANCY SENSOR QUANTITIES AND LOCATIONS) ARE LOCATED IN THE SAME SPACE AS A TEMPERATURE SENSOR, THE AUXILIARY CONTACTS OF THE OCCUPANCY SENSORS SHALL BE CONNECTED TO THE BMS FOR OCCUPIED OVERRIDE PURPOSES.
   - D. INITIAL OCCUPANCY SCHEDULES SHALL BE AS FOLLOWS:
     - a. OCCUPIED 8:00 AM TO 6:00 PM MON. THRU FRI.
     - b. UNOCCUPIED ALL OTHER TIME PERIODS
8. HISTORIES, TRENDS AND REPORTS
   - A. THE BAS SHALL RETAIN IN MEMORY 5 MINUTES OF TREND DATA (OR LAST 5 READINGS WHICHEVER IS LONGER) FOR EACH CONTROL POINT OR VARIABLE. RESOLUTION OF THIS SHALL NOT EXCEED ONE READING PER 15 SECOND INTERVAL.
   - B. BAS SHALL RETAIN ONE YEAR (ROLLING) OF DATA FOR CONTROL POINTS IN TEN MINUTE INTERVALS.
   - C. USER SHALL BE ABLE TO SELECT TABULAR OR GRAPHICAL OUTPUT OF DATA. GRAPHIC DATA SHALL BE AVAILABLE IN USER SELECTABLE COLOR OR BLACK AND WHITE VERSIONS.
   - D. TABULAR DATA SHALL BE MADE AVAILABLE IN COMMA SEPARATED VALUES OR IN FORMAT COMPATIBLE WITH MICROSOFT EXCEL SOFTWARE.
   - E. WHENEVER A UNIT IS SHUT DOWN BECAUSE OF ONE OF ITS SAFETIES, THE BAS SHALL RETAIN IN MEMORY THE READING AND SETPOINT OF EACH ASSOCIATED DEVICE TO HELP THE OPERATOR IN ISOLATING THE CAUSE OF THE SHUT DOWN.

DEMOLITION NOTES

DEMOLITION NOTES

1. SITE VISIT: THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. BEFORE SUBMITTING BID, VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVER.
2. PREPARATORY WORK: BEFORE STARTING WORK IN A PARTICULAR AREA OF THE PROJECT, VISIT SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED INCLUDING PREPARATORY WORK DONE UNDER OTHER SECTIONS OR CONTRACTS BY OWNER. REPORT CONDITIONS THAT MIGHT AFFECT WORK ADVERSELY IN WRITING TO ARCHITECT AND OWNER. DO NOT PROCEED WITH WORK UNTIL DEFECTS HAVE BEEN CORRECTED AND CONDITIONS ARE SATISFACTORY. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.
3. PHASING: DEMOLITION WORK SHALL COMPLY WITH THE PHASING REQUIREMENTS OF THE PROJECT AND BE COORDINATED WITH THE OWNER, ARCHITECT, CM AND ENGINEER. NO REMOVALS SHALL BE IMPLEMENTED WITHOUT A THOROUGH UNDERSTANDING OF THE PHASING REQUIREMENTS.
4. ABANDONING OF DUCTWORK, PIPING OR EQUIPMENT IN PLACE WITHIN SCOPE AREA IS PROHIBITED.
5. PROVIDE 2 WEEKS NOTICE TO OWNER FOR SHUT DOWN OF ANY SERVICES AND/OR SYSTEMS.
6. COORDINATE EXISTING EQUIPMENT AND MATERIALS THAT SHALL REMAIN THE PROPERTY OF THE OWNER. ITEMS OF VALUE WHICH ARE NOT DIRECTED TO BE RETURNED TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF. STORAGE OR SALE OF ITEMS ON THE PROJECT SITE IS PROHIBITED.
7. PROTECTION: ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGED PROPERTY TO THE CONDITION BEFORE BEING DAMAGED. TAKE EFFECTIVE MEASURES TO PREVENT WINDBLOWN DUST.
8. UTILITIES: MAINTAIN ALL UTILITIES EXCEPT THOSE REQUIRING REMOVAL OR RELOCATION. KEEP UTILITIES IN SERVICE AND PROTECT FROM DAMAGE. DO NOT INTERRUPT UTILITIES SERVING OCCUPIED AREAS WITHOUT FIRST OBTAINING PERMISSION FROM THE OWNER IN WRITING. PROVIDE TEMPORARY SERVICES AS REQUIRED.
9. INFORMATION CONTAINED ON THESE DRAWINGS WAS OBTAINED FROM ARCHIVED DRAWINGS AND SITE VISITS. DRAWINGS ARE DIAGRAMMATIC ONLY AND REFLECT OVERALL SYSTEM REMOVAL. NOT EVERY ITEM OR COMPONENT OF A SYSTEM IS SHOWN. PROVIDE COMPLETE REMOVAL OF ASSOCIATED ANCILLARY PIPES, HANGERS, VALVES AND ACCESSORIES SERVING SYSTEM SHOWN.
10. DEMOLITION WORK SHALL COMPLY WITH OSHA, EPA AND APPLICABLE STATE AND LOCAL CODES. COMPLY WITH HAULING AND DISPOSAL REGULATIONS.
11. REFER TO SPECIFICATIONS FOR ADDITIONAL DEMOLITION REQUIREMENTS AND PROCEDURES.
12. THE MECHANICAL CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TRIM, ACCESSORIES, DUCTWORK AND PIPING ETC. DUCTWORK, PIPING, AND DEVICES MAY NOT BE SHOWN. THE INTENT OF THESE DRAWINGS IS THAT IN ALL AREAS OF RENOVATION THAT THEY ARE REMOVED, WHETHER OR NOT SHOWN (UNLESS INDICATED TO REMAIN).

PRE-DEMO TESTING, ADJUSTING AND BALANCING (TAB)

1. CONFIRM SUPPLY, RETURN AND EXHAUST SYSTEM AIRFLOW CAPACITY THROUGH PRE-CONSTRUCTION TESTING AND BALANCING OF SYSTEMS AFFECTED BY THE WORK. REPORTS SHALL INCLUDE COMPLETE FAN INFORMATION, CFM, ESP, TSP, RPM, VOLTS, AMPS AND VFD SPEEDS.
2. CONFIRM HYDRONIC SYSTEM CAPACITY THROUGH PRE-CONSTRUCTION TESTING AND BALANCING REPORTS OF SYSTEMS AFFECTED BY THE WORK. REPORTS SHALL INCLUDE PIPE SIZE, FLOW RATE, SUPPLY PRESSURE AND RETURN PRESSURE.
3. CONFIRM STEAM PIPING CAPACITY THROUGH PRE-CONSTRUCTION TESTING AND BALANCING REPORTS OF SYSTEMS AFFECTED BT THE WORK. REPORTS SHALL INCLUDE PIPE SIZE AND STEAM PRESSURE (PSIG).

GENERAL NOTES

1. GENERAL NOTES, SYMBOLS AND DETAILS ARE APPLICABLE TO DRAWINGS WITHIN DIVISION 23.
2. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODES.
3. DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND GENERAL ARRANGEMENT. COORDINATE LOCATIONS OF SYSTEMS AND COMPONENTS.
4. COORDINATE ROOF AND WALL PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS. COORDINATE SLAB PENETRATIONS WITH WORK OF OTHER SECTIONS.
5. RUN DUCTS AND PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE NOTED.
6. INSTALL SENSORS (TEMPERATURE, HUMIDITY, CO2, THERMOSTATS) AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY ARCHITECT. MOUNTING HEIGHT AFF SHALL COMPLY WITH ADA AND SHALL BE MOUNTED LEVEL WITH ADJACENT SWITCHES (IE LIGHT SWITCHES).
7. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS AND WITH ALL TRADES INVOLVED. PROVIDE OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS.
8. NOT ALL ACCESS DOORS HAVE BEEN SHOWN ON THE PLANS. PROVIDE ACCESS PANELS THROUGH BUILDING ASSEMBLIES TO SERVICE AND MAINTAIN EQUIPMENT UNLESS SUCH EQUIPMENT IS INSTALLED IN EXPOSED LOCATIONS OR ABOVE LAY-IN CEILINGS. COORDINATE THE LOCATION OF ACCESS DOORS AND PANELS AND VERIFY THE QUANTITY, SIZE, AND LOCATIONS AFTER THE SYSTEMS AND EQUIPMENT REQUIRING ACCESS HAVE BEEN INSTALLED AND PRIOR TO THE CLOSURE OF THE AFFECTED CEILINGS AND BUILDING ASSEMBLIES. SUBMIT ACCESS PANEL LOCATIONS FOR REVIEW.
9. AT SUBSTANTIAL COMPLETION, THE FOLLOWING ITEMS, NEW OR EXISTING, SHALL BE FULLY AND REASONABLY ACCESSIBLE: HVAC CONTROL BOXES, JUNCTION BOXES, VALVES, DDC CONTROL BOXES, ELECTRICAL PANELS, FILTERS, BELTS, WATER COILS, DISCONNECT SWITCHES AND ELEMENTS OF EQUIPMENT REQUIRING MAINTENANCE. "FULLY AND REASONABLY ACCESSIBLE" SHALL BE DEFINED AS NATIONAL ELECTRIC CODE REQUIRED CLEARANCE FOR POWERED EQUIPMENT AND CAPABLE OF BEING ACCESSED OR SERVICED WITHOUT REMOVING, MODIFYING OR DISTORTING OTHER COMPONENTS OF THE WORK. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCE FOR ALL EQUIPMENT.
10. SUPPORT EQUIPMENT, PIPING, AND DUCTWORK FROM BUILDING STRUCTURE OR WITH STEEL SUPPORTS AND PLATFORMS AS REQUIRED. PROVIDE VIBRATION ISOLATION FOR ROTATING EQUIPMENT, DUCTWORK, AND PIPING IN ACCORDANCE WITH THE SPECIFICATIONS.
11. ROOF CURB AND RAIL HEIGHTS INDICATED ARE THE DIMENSIONS BETWEEN THE ROOF SURFACE AND THE TOPS OF THE CURBS AND RAILS. WHERE THE ROOF IS PITCHED, CONSTRUCT CURBS AND RAILS SUCH THAT THE BOTTOM PITCHES WITH THE ROOF AND THE TOP IS LEVEL.
12. CONTROL WIRING METHODS SHALL COMPLY WITH NEC, AND DIVISION 26 SPECIFICATIONS.
13. VERIFY EQUIPMENT CONNECTIONS WITH MANUFACTURER'S DRAWINGS. VERIFY AND PROVIDE FITTINGS TO TRANSITION TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE DIMENSIONS BEFORE FABRICATION.
14. PERFORM PRESSURE AND LEAKAGE TESTS BEFORE INSULATING DUCTWORK AND PIPING
15. COORDINATE AND PROVIDE HOUSEKEEPING PADS FOR FLOOR-MOUNTED MECHANICAL EQUIPMENT. HOUSEKEEPING PADS SHALL BE REINFORCED CONCRETE WITH 1" CHAMFERED EDGES, 6" THICK, WITH MINIMUM CLEARANCE OF 6" FROM EQUIPMENT BASE TO EDGE OF PAD. INCREASE DEPTH WHERE REQUIRED FOR PROPER INSTALLATION OF EQUIPMENT, INCLUDING BUT NOT LIMITED TO CONDENSING BOILERS (TO ALLOW PROPER INSTALLATION OF NEUTRALIZATION EQUIPMENT AND GRAVITY DISCHARGE TO FLOOR DRAIN OR CONDENSATE PUMP) AND AHU (TO ALLOW INSTALLATION OF CONDENSATE TRAP).
16. MAINTAIN 6'-8" CLEARANCE TO THE UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ROUTES IN MECHANICAL ROOMS. MAINTAIN 3'-0" WIDE MEANS OF EGRESS IN MECHANICAL ROOMS.
17. WHERE BEAMS AND STRUCTURE ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND LOCATION. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATING OF THE BEAMS.
18. MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND, AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT, SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR.
19. AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT AND ROOFTOP UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET WITH P-TRAP. P TRAP ARRANGEMENT SHALL BE BASED ON THE UNIT (NEGATIVE OR POSITIVE PRESSURE).
20. INSTALL UNITS WITH CLEARANCE FOR SERVICE AS REQUIRED BY THE MANUFACTURER.
21. SEISMIC SUPPORS SHALL BE PROVIDED FOR ALL DUCTWORK, EQUIPMENT, AND PIPING HUNG GREATER THAN 18" BELOW STUCTURE

HYDRONIC PIPING GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PIPING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
2. INSTALL PIPING SO ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
3. PIPE CONDENSATE DRAIN LINES FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, CONNECTED TO BUILDING DRAINAGE SYSTEMS WITH AIR GAP. SIZE DEPTH OF TRAP FOR ASSOCIATED AIR PRESSURE DIFFERENTIAL.
4. PROVIDE AIR VENTS AT ALL HIGH POINTS.
5. INSTALL DRAIN VALVES WITH HOSE CONNECTIONS AT ALL LOW POINTS.
6. PROVIDE HOSE END CAPS WITH CHAINS ON ALL DRAIN VALVES.
7. THE FINAL SENSOR/THERMOSTAT LOCATION SHALL BE APPROVED BY THE ARCHITECT/ENGINEER.
8. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL INTENT OF THE WORK. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES BEFORE WORK BEGINS.
9. ON EXTERIOR WALLS, PIPES SHALL RUN ON THE WARM SIDE OF THE INSULATION.
10. THIS CONTRACTOR SHALL PROVIDE PIPING EXPANSION LOOPS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
11. THIS CONTRACTOR SHALL PROVIDE PIPING EXPANSION AND/OR SEISMIC EXPANSION JOINTS AT ALL LOCATIONS WHERE PIPES CROSS EXPANSION OR SEISMIC JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR LOCATIONS.
12. REFER TO SPECIFICATION FOR THROUGH PENETRATION FIRE STOP SYSTEMS FOR SEALING PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION REQUIREMENTS.
13. PROVIDE ACOUSTIC SOUND SEALANT MATERIAL FOR PIPING THAT PENETRATES SPACES LIKE CLASSROOMS, OFFICES, AND CONFERENCE ROOMS.
14. UNLESS OTHERWISE NOTED, ALL HEATING WATER PIPING TO UNITS SHALL BE MIN. 3/4" SIZE.
15. VALVES SHALL BE INSTALLED SO THAT THE VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON THE EQUIPMENT SIDE OF THE VALVE IS REMOVED.
16. BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOP (MEMORY STOPS).
17. VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE THE FULL SIZE OF PIPE BEFORE REDUCING IN SIZE TO MAKE CONNECTION TO EQUIPMENT AND CONTROLS.
18. UNION AND OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT, IN BYPASSES, AND IN LONG PIPING RUNS (100 FT OR MORE) TO PERMIT DISASSEMBLY FOR ALTERNATION AND REPAIRS.
19. INSTALL PIPING WITHOUT FORCING OR SPRINGING.
20. VALVES SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.
21. PIPING WORK SHALL BE COORDINATED WITH OTHER TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
22. PROVIDE FLEXIBLE CONNECTIONS IN PIPING SYSTEMS CONNECTED TO EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTION SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE OR AS INDICATED ON THE DRAWINGS.

VRF GENERAL NOTES

VRF GENERAL NOTES:

1. MANUFACTURER MUST BE CERTIFIED, LISTED, AND LABELED PER AHRI 1230.
2. MANUFACTURER MUST MEET MINIMUM EFFICIENCIES AND PERFORMANCE EQUAL TO OR GREATER THAN THE BASIS OF DESIGN.
3. SUBMITTED PERFORMANCE DATA MUST BE FULLY DE-RATED FOR ALL COMPONENTS AND ACCESSORIES, INC

CONTROLS LEGEND COMPLETE

PLAN SYMBOL	DIAGRAM SYMBOL	DESCRIPTION
	AI	ANALOG INPUT
	AO	ANALOG OUTPUT
	DI	DIGITAL INPUT
	DO	DIGITAL OUTPUT
AFMS	FE	AIR FLOW MEASURING STATION
C	CO2	CARBON DIOXIDE SENSOR
CO	CO	CARBON MONOXIDE SENSOR
	IT	CURRENT SENSING RELAY AND TRANSMITTER
DPS	DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DPT	DIFFERENTIAL PRESSURE SENSOR AND TRANSMITTER
FE	FE	FLOW METER
AFS	FS	FLOW SWITCH
S	HS	HAND SWITCH (USER OPERATED)
H		HUMIDISTAT - STAND ALONE
H	HE	HUMIDITY SENSOR
HL	HSH	HUMIDITY SWITCH - HIGH LIMIT
	LS	LEVEL SENSOR
	MS	MOISTURE SWITCH
N	NO2	NITROGEN DIOXIDE SENSOR
	ZS	POSITION SWITCH ASSOCIATED WITH VALVE OR DAMPER
	PE	PRESSURE SENSOR
	PSH	PRESSURE SWITCH - HIGH LIMIT
	PSL	PRESSURE SWITCH - LOW LIMIT
S/D	SD	SMOKE DETECTOR
T	TE	THERMOSTAT - DAIKIN BUTTON SENSOR
T	TE	TEMPERATURE SENSOR - WITH DISPLAY BMS
T_F	TE	TEMPERATURE SENSOR - FLAT FRONT BMS
	TSH	TEMPERATURE SWITCH - HIGH LIMIT
	TSL	TEMPERATURE SWITCH - LOW LIMIT
R	TE	RADIANT FLOOR SENSOR
	VSH	VIBRATION SWITCH - HIGH LIMIT
BMS		DDC CONTROL PANEL NETWORKED TO BMS
VFD		VARIABLE FREQUENCY DRIVE
BYP		VFD BYPASS
VRF		VRF CONTROL PANEL

ACTUATOR LEGEND

SYMBOL	DESCRIPTION
	DAMPER OR VALVE WITH TWO POSITION ACTUATOR
	DAMPER OR VALVE WITH MODULATING ACTUATOR

VALVES AND PIPE ACCESSORIES LEGEND

SYMBOL - SINGLE LINE	DESCRIPTION
	BALL VALVE
	BALL VALVE WITH HOSE BIBB, CAP & CHAIN (DRAIN VALVES)
	BUTTERFLY VALVE
	GLOBE VALVE
	GATE VALVE
	OS&Y VALVE
	PLUG VALVE
	PRESSURE REDUCING VALVE
	CHECK VALVE
	Y- PATTERN STRAINER
	Y-PATTERN STRAINER W/BALL VALVE, HOSE BIBB & CAP
	FLOAT OPERATED VALVE
	VALVE WITH TWO POSITION ACTUATOR
	SOLENOID VALVE
	AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR
	AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
	THREE WAY AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR
	THREE WAY AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
	AUTOMATIC FLOW CONTROL VALVE (PRESSURE INDEPENDENT)
	MANUAL BALANCING VALVE (CIRCUIT SETTER)
	SAFETY RELIEF VALVE
	PRESSURE GAUGE
	THERMOMETER
PT	PRESSURE/TEMPERATURE WELL
AAV	AUTOMATIC AIR VENT WITH ISOLATION VALVE
MAV	MANUAL AIR VENT
	UNION OR FLANGE (AS INDICATED BY PIPE SIZE - SEE SPEC.)
	FLEXIBLE CONNECTION
E	EXPANSION JOINT
	PIPE GUIDE
	ANCHOR

SYMBOL - DOUBLE LINE	DESCRIPTION
	QUARTER TURN VALVE (REFER TO SPECIFICATIONS FOR TYPE)
	GLOBE VALVE
	ANGLE VALVE
	GATE VALVE
	OS&Y VALVE
	CHECK VALVE (SWING / SILENT NON-SLAM)
	STRAINER (STANDARD / COMBO W/ SHUT OFF)
	AUTO FLOW CONTROL VALVE (STANDARD / COMBO W/ SHUT OFF)
	CIRCUIT SETTER (STANDARD / COMBO W/ SHUT-OFF)
	MOTORIZED CONTROL VALVE (TWO WAY / THREE WAY)
	PRESSURE RELIEF VALVE
	FLEX CONNECTION (STAINLESS STEEL BRAIDED)
	FLEX CONNECTION (STAINLESS STEEL BRAIDED FLEX HOSE)
	FLEX CONNECTION (SINGLE SPHERE / TWIN SPHERE)

TAG SYMBOLS

DIFFUSER TAG	TYPE — A 6" 100 — NECK SIZE / LINEAR LENGTH; AIRFLOW (CFM)
VRF TAG	TYPE — A VRF-1-2 1.0 TONS — SYSTEM INDEX / INSTANCE; NOMINAL TONNAGE
RADIATION / RADIANT PANEL TAG	TYPE — R-1 8'-0" / RP-1 10'-6" — LENGTH OF ELEMENT
EQUIPMENT	TAG-#

PIPING LEGEND

SYMBOL - DOUBLE LINE	DESCRIPTION
	SUPPLY PIPING
	RETURN PIPING
	PIPE RISE
	PIPE DROP
	BLIND FLANGE
	BLIND FLANGE WITH TAP
	END CAP
	REDUCER (ECCENTRIC-FLAT ON BOTTOM OR FLAT ON TOP)
	REDUCER (CONCENTRIC)
	UNION

SYMBOL - SINGLE LINE	DESCRIPTION
	SUPPLY PIPING
	RETURN PIPING
	ELBOW UP
	ELBOW DOWN
	TEE TOWARDS (UP IN PLAN)
	TEE AWAY (DOWN IN PLAN)
	DROP AND RUN
	DIRECTION OF FLOW
	DIRT LEG
CO	CLEANOUT
	BLIND FLANGE
	END CAP
	REDUCER (ECCENTRIC-FLAT ON BOTTOM OR FLAT ON TOP)
	REDUCER (CONCENTRIC)
HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN
CD	CONDENSATE DRAIN
RS	REFRIGERANT SUCTION
RL	REFRIGERANT LIQUID
RG	REFRIGERANT GAS
RF	REFRIGERANT LINE SET PIPING FROM REFRIGERANT BRANCH CONTROLLER

MECHANICAL DEMOLITION LEGEND

SYMBOL	DESCRIPTION
	DEMOLISH EXISTING DUCTWORK LINETYPE
	EXISTING DUCTWORK AND/OR PIPING
	DEMOLISH EXISTING CEILING GRILLE
RE	RELOCATE EXISTING
ETR	EXISTING TO REMAIN
	CONNECT TO EXISTING

DUCTWORK LEGEND

SYMBOL	DESCRIPTION
12x6	RECTANGULAR DUCTWORK
12"ø	ROUND DUCTWORK
12/6	OVAL DUCTWORK
12x6	DUCTWORK SHOWN SINGLE LINE
	ACOUSTICALLY LINED DUCTWORK
	ACOUSTICALLY LINED DUCTWORK (SINGLE LINE)
	RECTANGULAR SUPPLY DUCTWORK TOWARDS (UP IN PLAN)
	ROUND SUPPLY DUCTWORK TOWARDS (UP IN PLAN)
	RECTANGULAR SUPPLY DUCTWORK AWAY (DOWN IN PLAN)
	ROUND SUPPLY DUCTWORK AWAY (DOWN IN PLAN)
	RECTANGULAR RETURN DUCTWORK TOWARDS (UP IN PLAN)
	ROUND RETURN DUCTWORK TOWARDS (UP IN PLAN)
	RECTANGULAR RETURN DUCTWORK AWAY (DOWN IN PLAN)
	ROUND RETURN DUCTWORK AWAY (DOWN IN PLAN)
	RECTANGULAR EXHAUST DUCTWORK TOWARDS (UP IN PLAN)
	ROUND EXHAUST DUCTWORK TOWARDS (UP IN PLAN)
	RECTANGULAR EXHAUST DUCTWORK AWAY (DOWN IN PLAN)
	ROUND EXHAUST DUCTWORK AWAY (DOWN IN PLAN)
	FLEXIBLE DUCT
	OPEN ENDED DUCT WITH WIRE MESH SCREEN
	CAPPED DUCT
	DUCT TRANSITION

AIR DEVICE LEGEND

SYMBOL	DESCRIPTION
	SUPPLY DIFFUSER
	RETURN GRILLE OR REGISTER
	EXHAUST GRILLE OR REGISTER
	SIDEWALL SUPPLY GRILLE
	SIDEWALL RETURN OR EXHAUST GRILLE OR REGISTER
	SUPPLY DIFFUSER (BLOW INDICATED)
	LINEAR DIFFUSER

DAMPER LEGEND

SYMBOL	DESCRIPTION
	MANUAL VOLUME DAMPER
FD	FIRE DAMPER W/ACCESS DOOR
MD	MOTORIZED CONTROL DAMPER W/ACCESS DOOR
SD	SMOKE DAMPER W/SMOKE DETECTOR AND ACCESS DOOR
FSD	COMBINATION FIRE/SMOKE DAMPER W/SMOKE DETECTOR AND ACCESS DOOR
RD	RADIATION DAMPER
BD	BACKDRAFT DAMPER
AVD	AUTOMATIC VOLUME DAMPER (PRESSURE INDEPENDENT)

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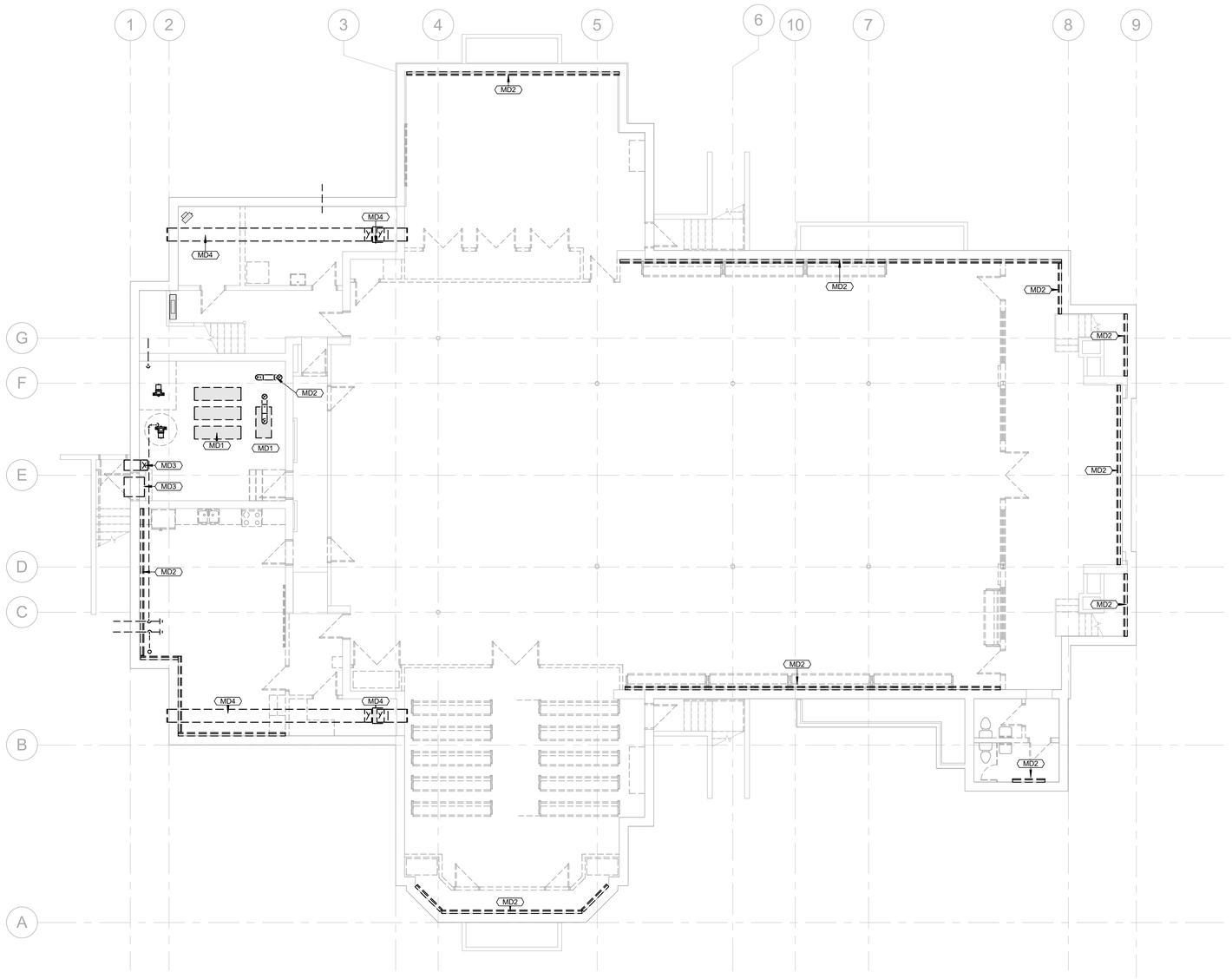
MECHANICAL ABBREVIATIONS, NOTES AND SYMBOLS

DATE: 2026-0501
SCALE 12" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:16:51 PM

SHEET NO.

M0.1

KEYNOTES - MECHANICAL DEMOLITION	
Key Value	Keynote Text
MD1	REMOVE EXISTING H.W. BOILERS & ASSOCIATED HEATING HOT WATER PIPING & PERFORM COMPLETE MECHANICAL DEMOLITION OF THIS ENTIRE BOILER ROOM UNDER THIS PROJECT INCLUDING BUT NOT LIMITED TO EXISTING BOILERS, BREECHING, PUMPS, GAS/OIL PIPING, HYDRONIC PIPING, EXPANSION TANKS, CONDENSATE RECEIVERS, DUCTWORK AND ALL ASSOCIATED ELECTRICAL CONTROLS."
MD2	REMOVE EXISTING H.W. BASEBOARD FINNED TUBE RADIATION & ASSOCIATED ENCLOSURE; REMOVE ALL EXIST H.W. SUPPLY & RETURN PIPING, VALVES, FITTINGS, HANGERS & SUPPORTS.
MD3	REMOVE EXISTING OUTDOOR COMBUSTION AIR & RELIEF AIR DUCTWORK & ASSOCIATED LOUVERS, DAMPERS, FITTINGS, HANGERS & SUPPORTS.
MD4	REMOVE EXISTING UTILITY TYPE EXHAUST FAN & ASSOCIATED EXHAUST AIR DUCTWORK IN ITS ENTIRETY; REMOVE ALL REGISTERS, GRILLES DAMPERS & CONTROLS.



1 MECHANICAL LOWER LEVEL DEMO PLAN
1/8" = 1'-0"

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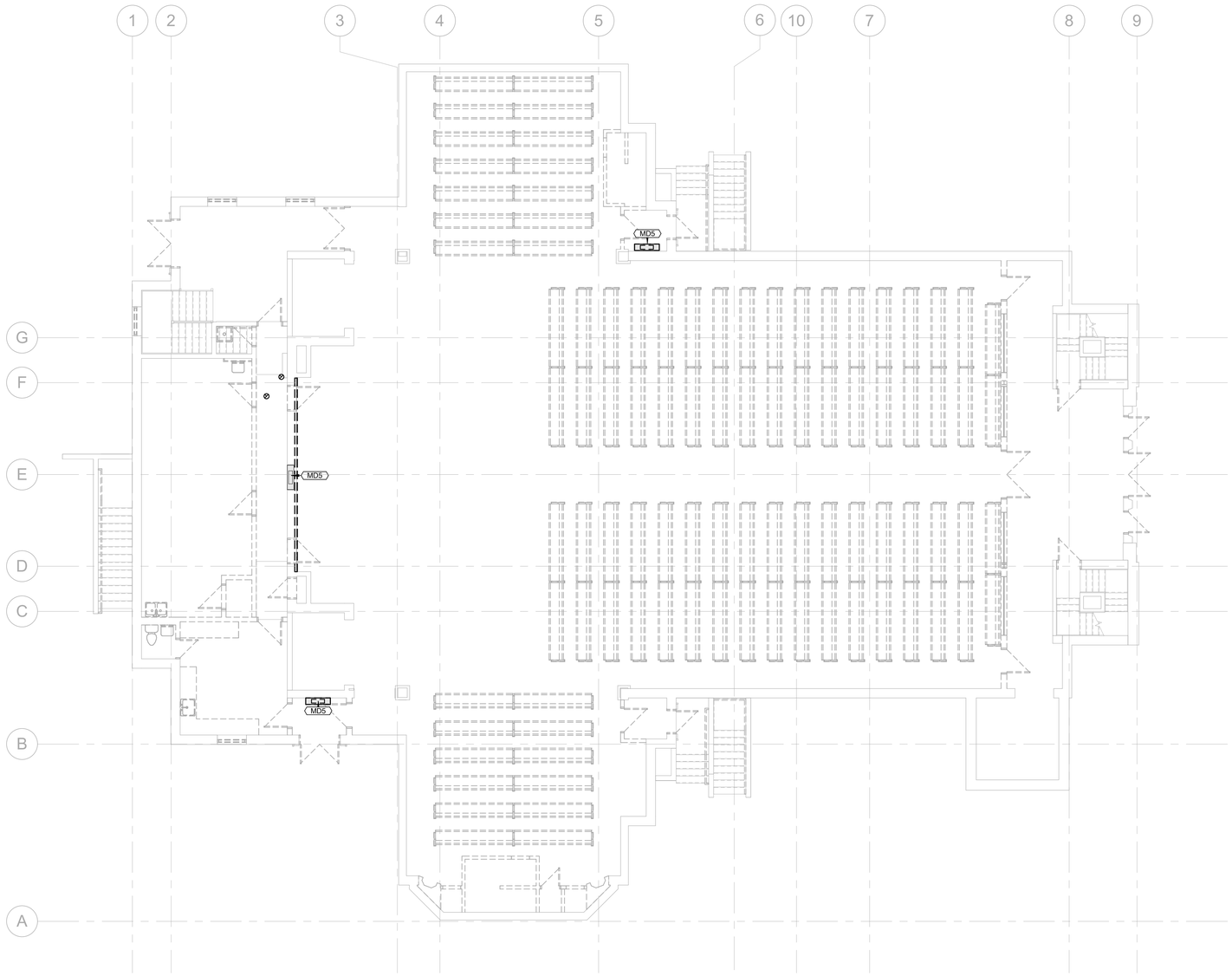
DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:16:53 PM

SHEET NO.
MD1.1

KEYNOTES - MECHANICAL DEMOLITION

Key Value	Keynote Text
MD5	REMOVE EXISTING H.W. CONVECTORS & ASSOCIATED H.W. SUPPLY & RETURN WATER PIPING; REMOVE ALL VALVES, FITTINGS & CONTROLS.



1 MECHANICAL FIRST FLOOR DEMO PLAN
1/8" = 1'-0"

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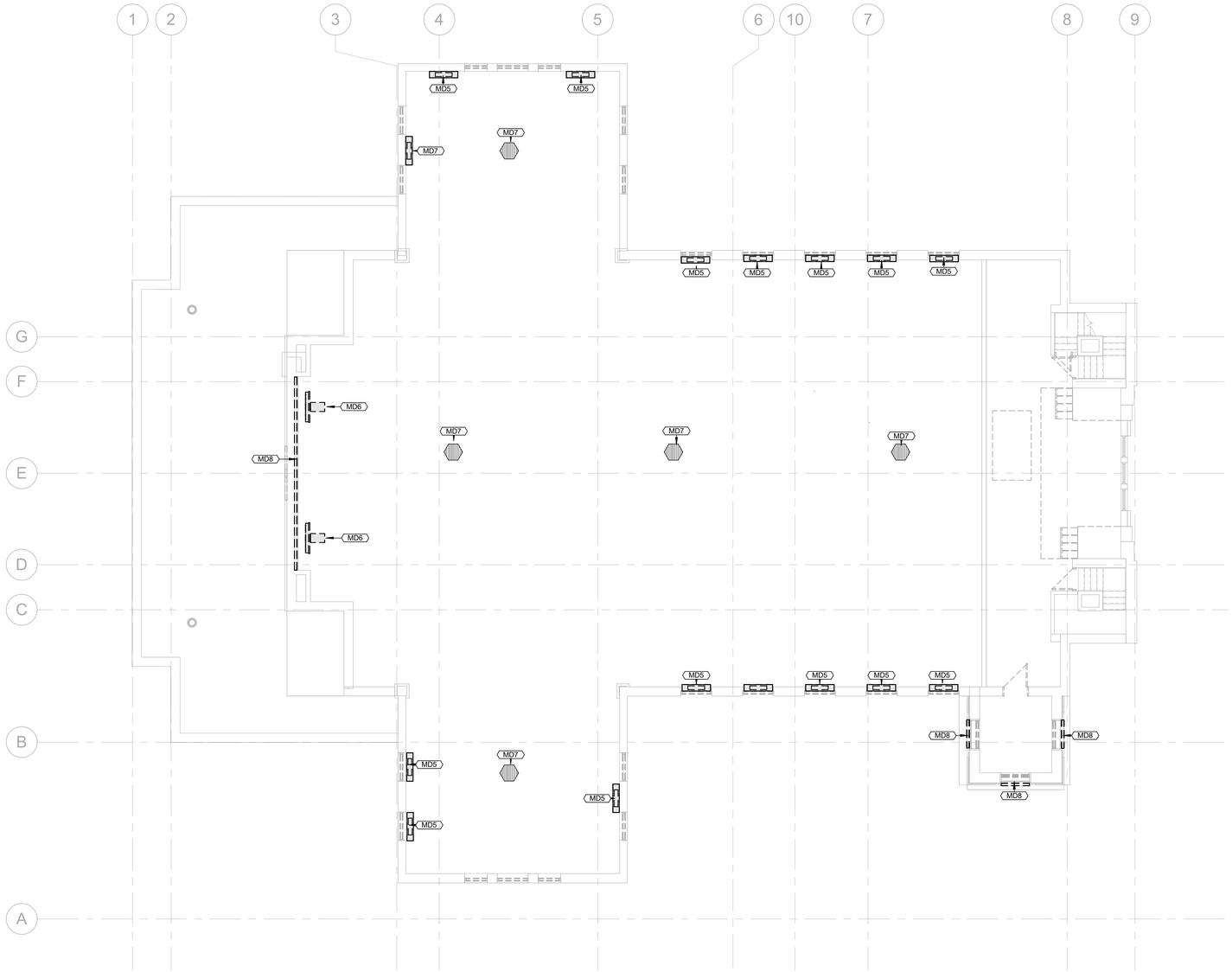
MECHANICAL FIRST FLOOR DEMO PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:16:55 PM

SHEET NO.
MD1.2

KEYNOTES - MECHANICAL DEMOLITION

Key Value	Keynote Text
MD5	REMOVE EXISTING H.W. CONVECTORS & ASSOCIATED H.W. SUPPLY & RETURN WATER PIPING; REMOVE ALL VALVES, FITTINGS & CONTROLS.
MD6	REMOVE EXISTING EXHAUST FANS SERVING ATTIC AREA; REMOVE EXISTING EXHAUST AIR EXTERIOR LOUVER & ASSOCIATED DAMPERS, WIRING & CONTROLS.
MD7	EXISTING HEXAGON SHAPED CEILING GRILLE SHALL REMAIN & SHALL BE BLANKED OFF AIR TIGHT WITH 2" RIGID POLYSTYRENE FOAM BOARD INSULSATION.
MD8	FIVE (5) EXISTING EXTERIOR LOUVERS SHALL REMAIN FOR REUSE; REMOVE EXISTING WOOD FRAME STUDDED WALL WHEREPROPELLAR FANS ARE MOUNTED.



1 MECHANICAL MEZZANINE LEVEL DEMO PLAN
1/8" = 1'-0"

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MECHANICAL MEZZANINE LEVEL DEMO PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
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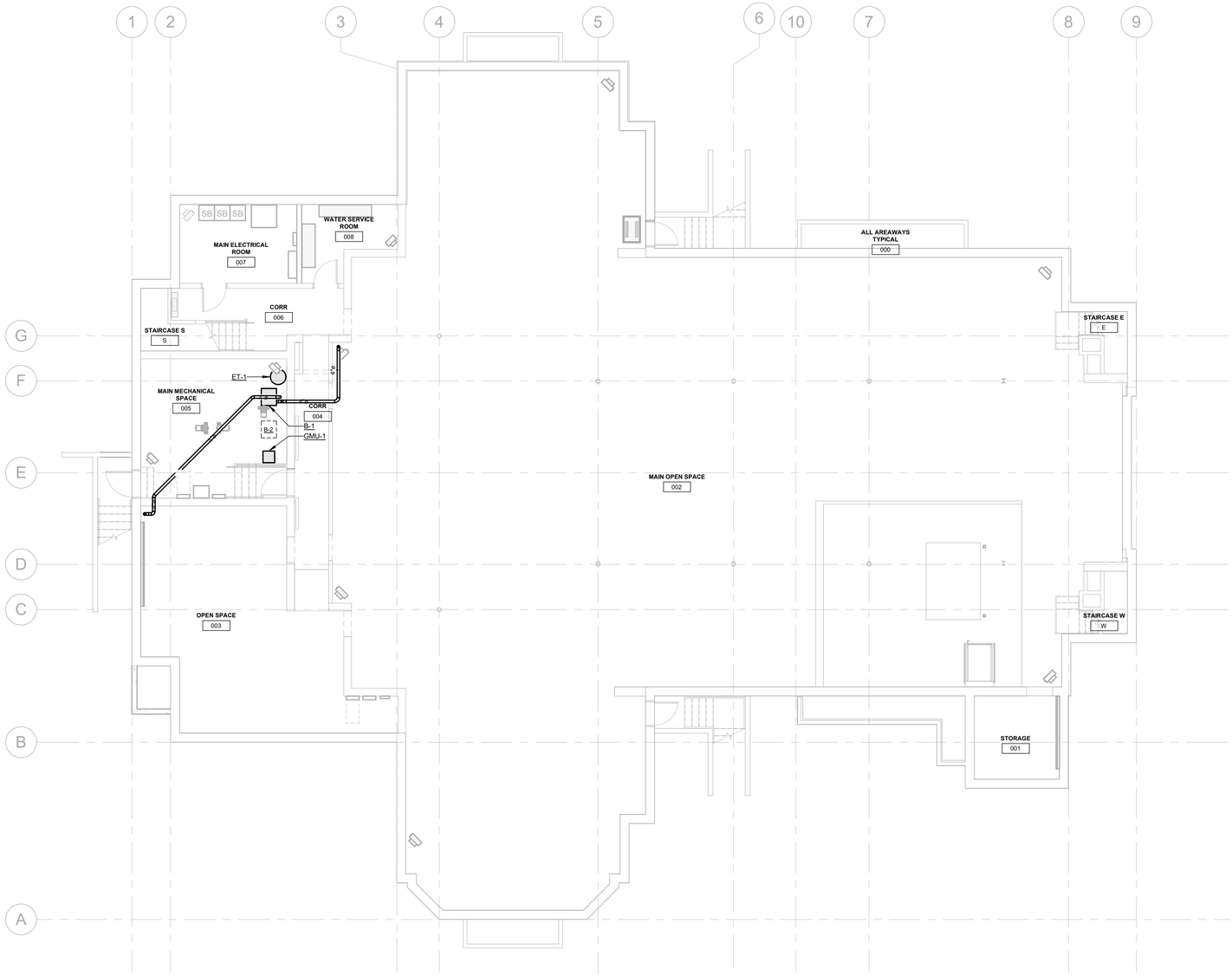
SHEET NO.
MD1.3



1 MECHANICAL DUCTWORK LOWER FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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MECHANICAL DUCTWORK LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
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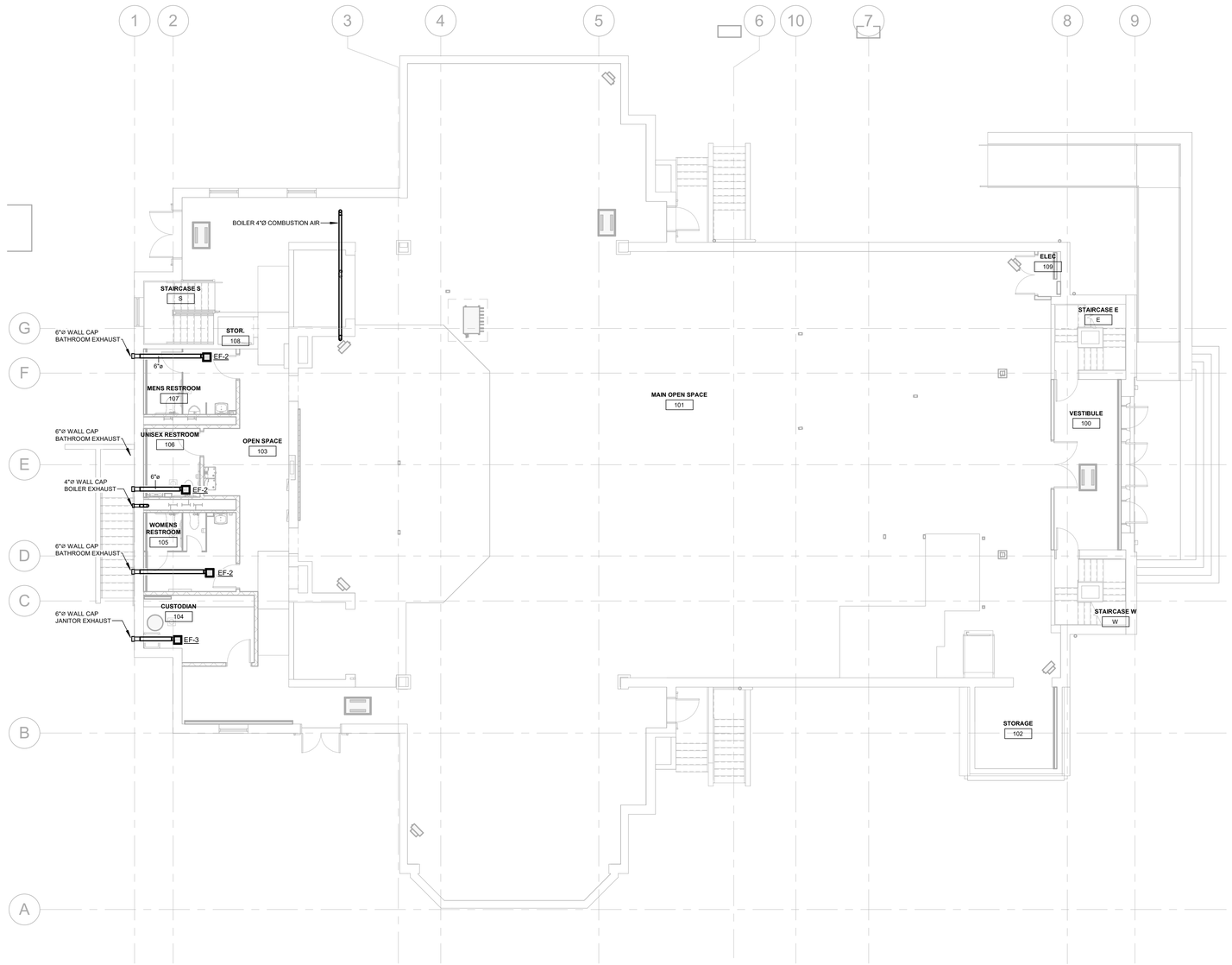
SHEET NO.
M1.1



1 MECHANICAL DUCTWORK FIRST FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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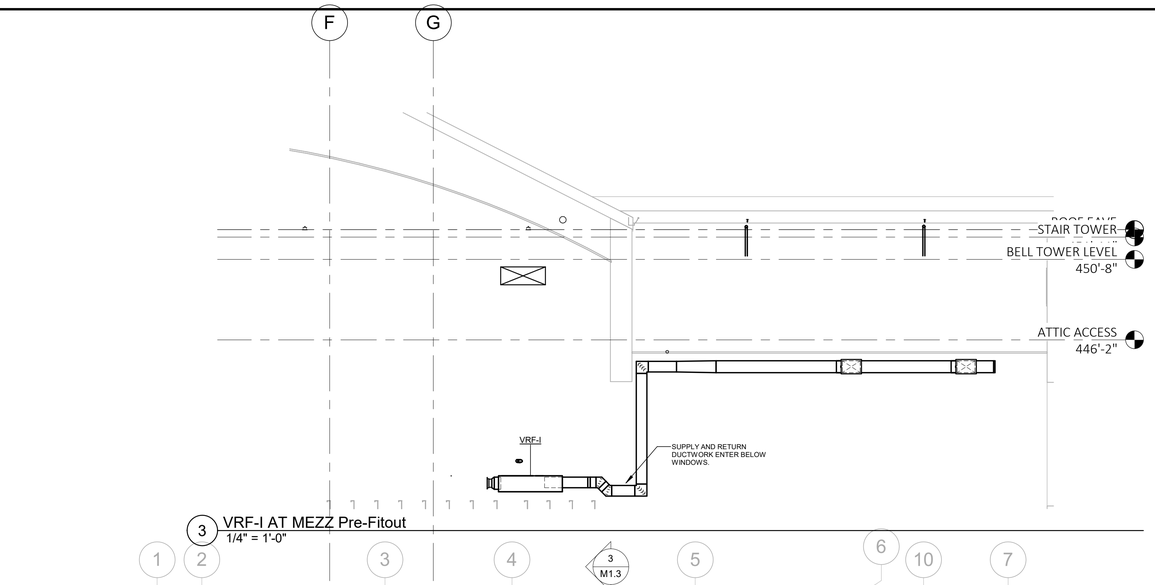
MECHANICAL DUCTWORK FIRST FLOOR PLAN

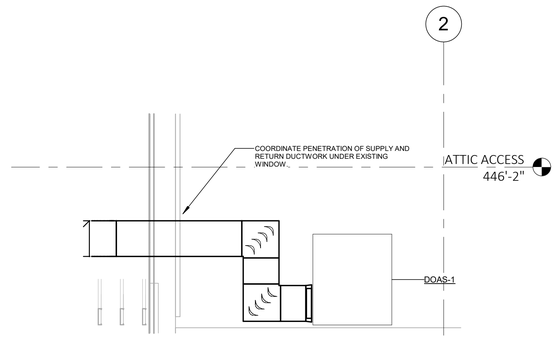
DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:16:59 PM

SHEET NO.
M1.2

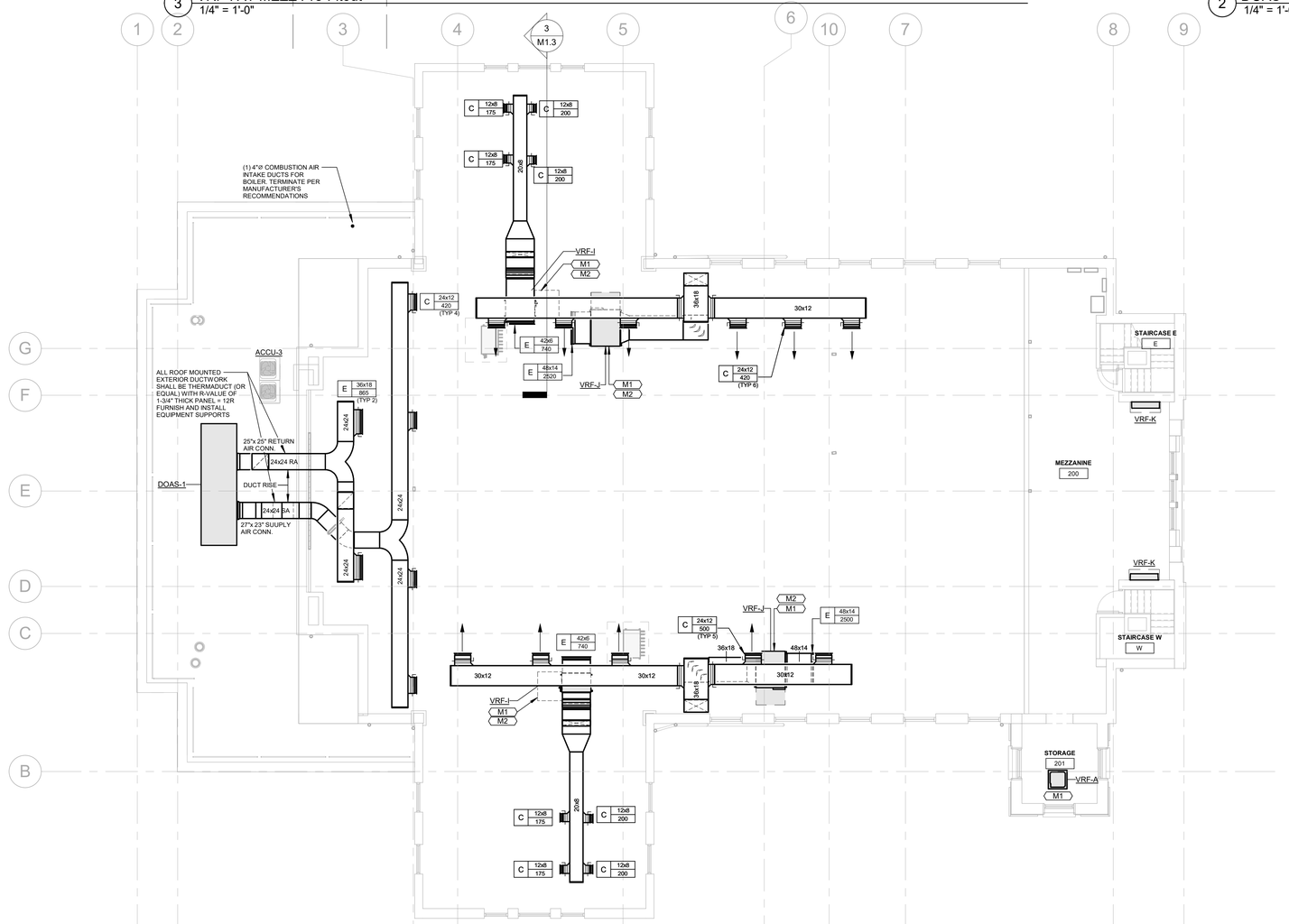


3 VRF-I AT MEZZ Pre-Fitout
1/4" = 1'-0"

KEYNOTES - MECHANICAL DUCTWORK	
Key Value	Keynote Text
M1	DELEGATED DESIGN: SEISMIC SUPPORTS SHALL BE PROVIDED FOR ALL DUCTWORK, EQUIPMENT, AND PIPING HUNG GREATER THAN 18" BELOW BOTTOM OF STRUCTURE.
M2	LOCATE EQUIPMENT, DUCTWORK AND PIPING MINIMUM 13'AFF WHERE FUTURE FIT OUT ROOM CEILING IS INTENDED TO BE LOCATED. COORDINATE WITH ARCHITECT EXACT LOCATION AND MINIMIZE VISUAL IMPACT TO WINDOWS.



2 DOAS-1 ROOF MOUNTED DUCTWORK Pre-Fitout
1/4" = 1'-0"



1 MECHANICAL DUCTWORK MEZZANINE FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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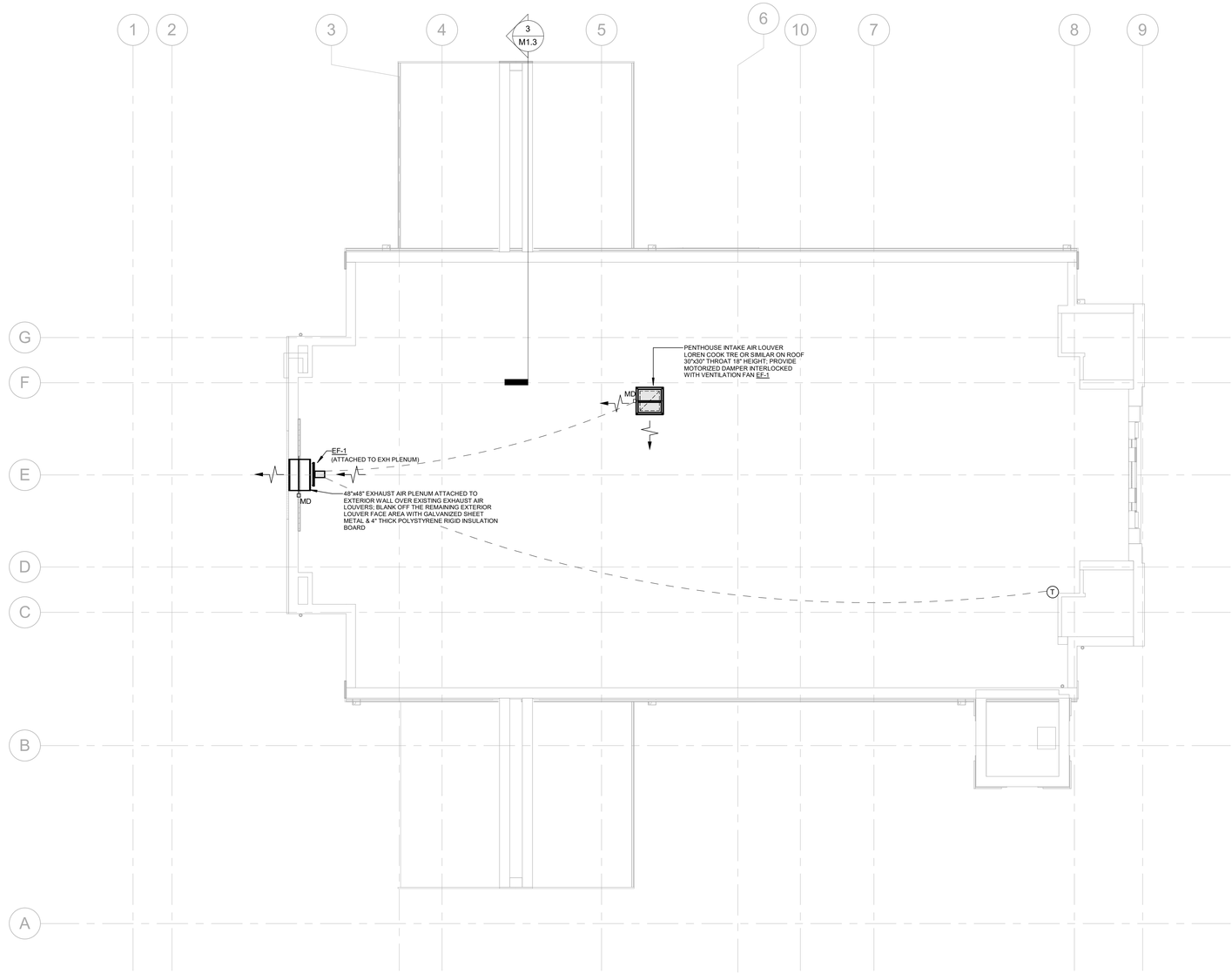
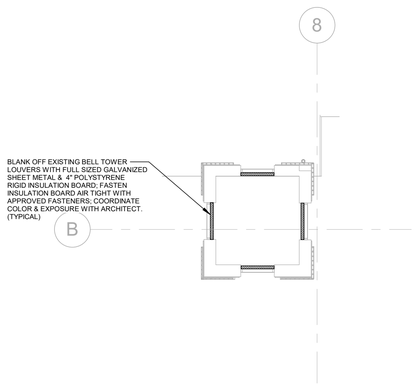
MECHANICAL DUCTWORK MEZZANINE FLOOR PLAN

DATE: 2026-0501
SCALE As indicated
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:17:01 PM

SHEET NO.
M1.3





2 UPPER TOWER PARTIAL PLAN
1/8" = 1'-0"

1 MECHANICAL DUCTWORK ATTIC FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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REVISIONS

NO.	DATE	DESCRIPTION

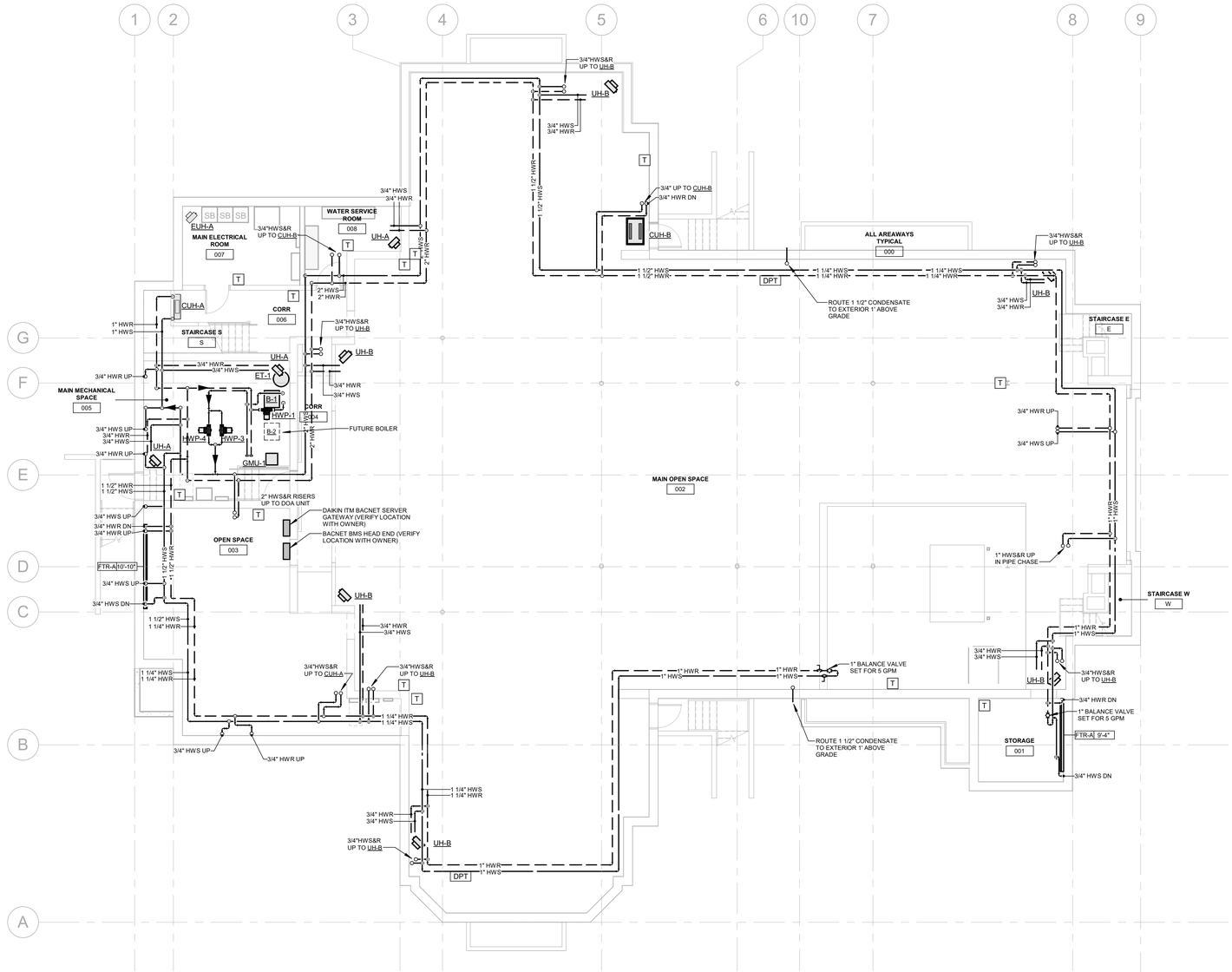
CONTRACT DOCUMENTS

MECHANICAL DUCTWORK ATTIC FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:17:02 PM

SHEET NO.

M1.4



1 MECHANICAL PIPING LOWER FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

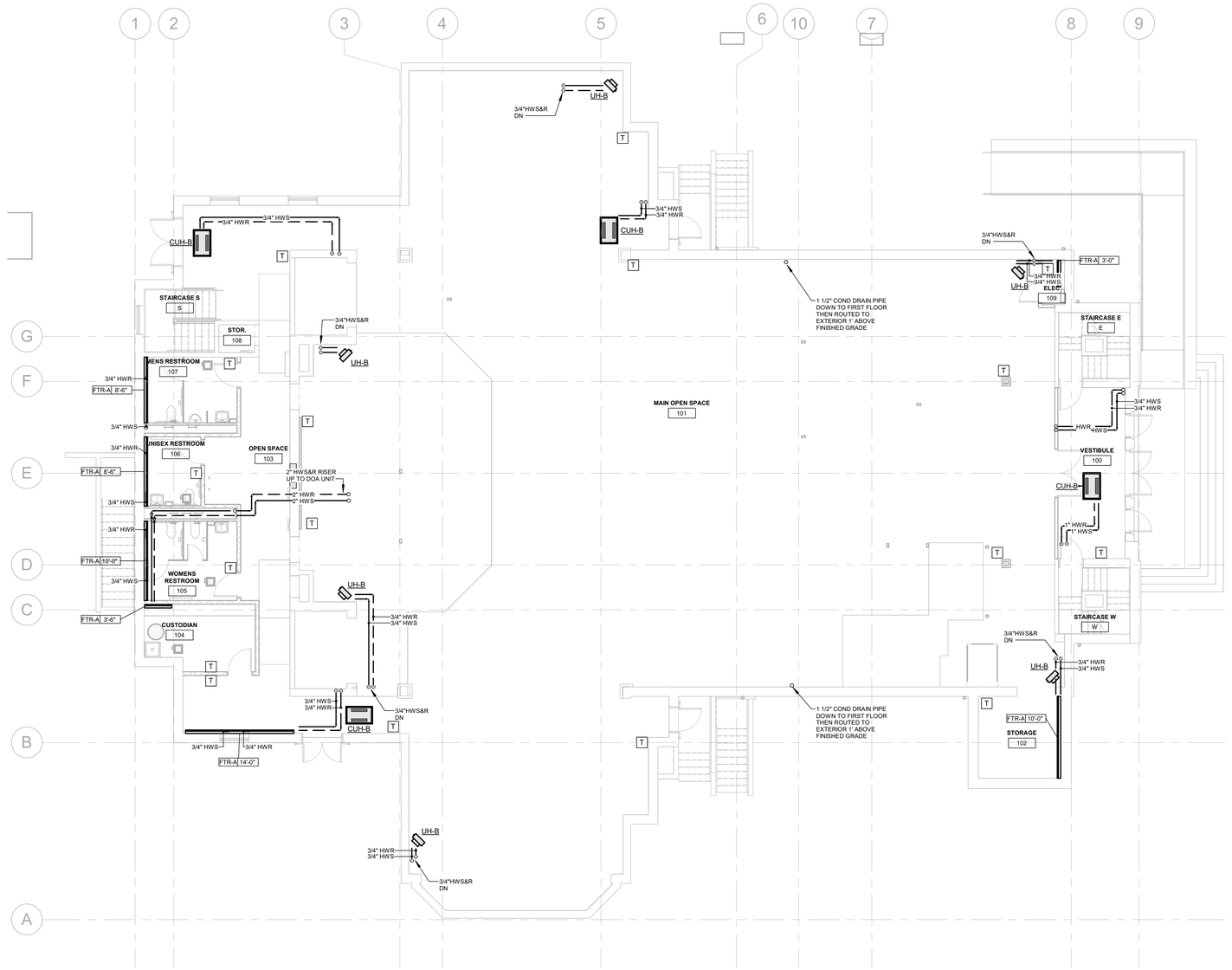
CONTRACT DOCUMENTS

MECHANICAL PIPING LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:17:05 PM

SHEET NO.

MP1.1



1 MECHANICAL PIPING FIRST FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

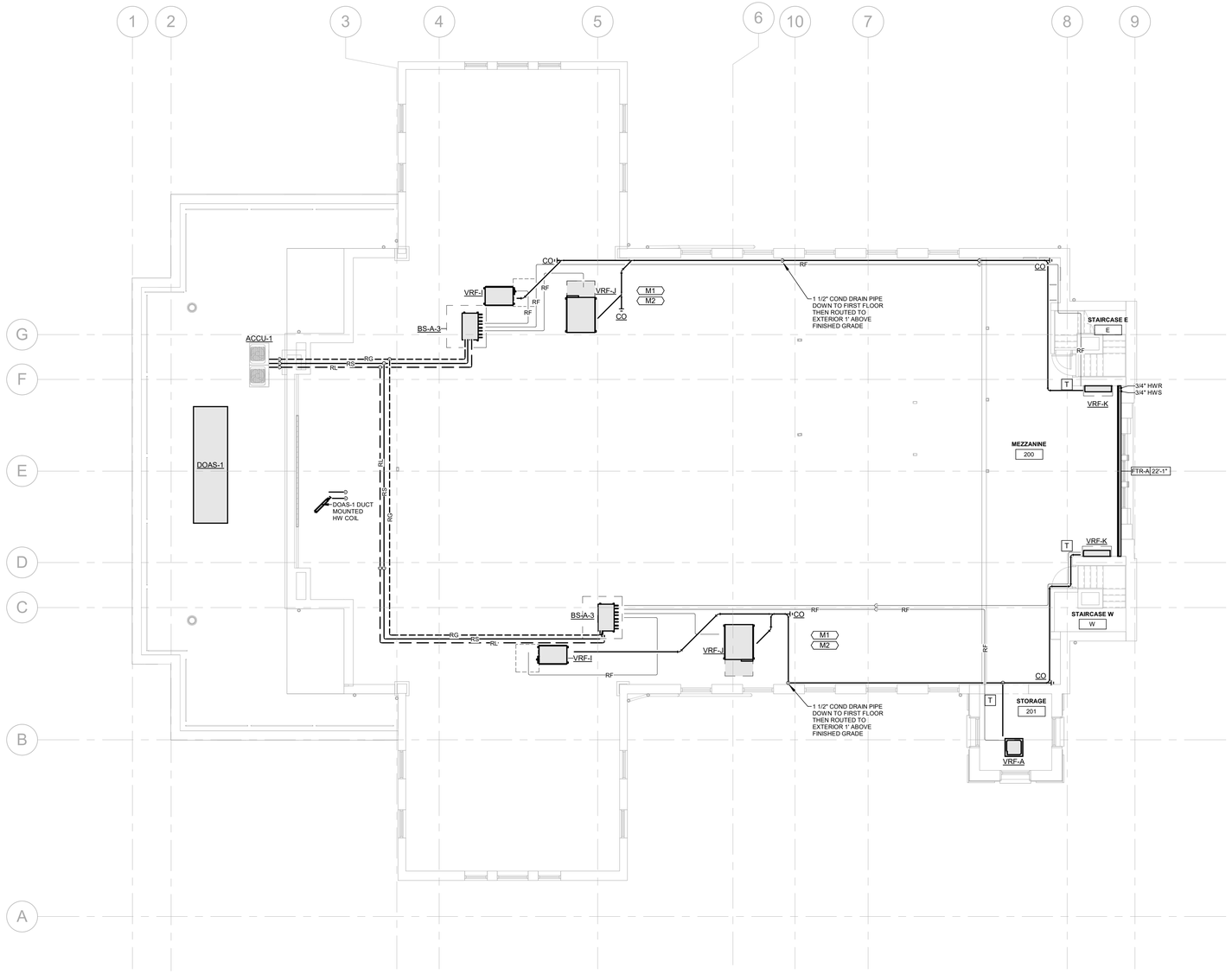
MECHANICAL PIPING FIRST FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:17:08 PM

SHEET NO.

MP1.2

KEYNOTES - MECHANICAL DUCTWORK	
Key Value	Keynote Text
M1	DELEGATED DESIGN: SEISMIC SUPPORTS SHALL BE PROVIDED FOR ALL DUCTWORK, EQUIPMENT, AND PIPING HUNG GREATER THAN 18" BELOW BOTTOM OF STRUCTURE.
M2	LOCATE EQUIPMENT, DUCTWORK AND PIPING MINIMUM 13'AFF WHERE FUTURE FIT OUT ROOM CEILING IS INTENDED TO BE LOCATED. COORDINATE WITH ARCHITECT EXACT LOCATION AND MINIMIZE VISUAL IMPACT TO WINDOWS.



1 MECHANICAL PIPING MEZZANINE FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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interior design
master planning
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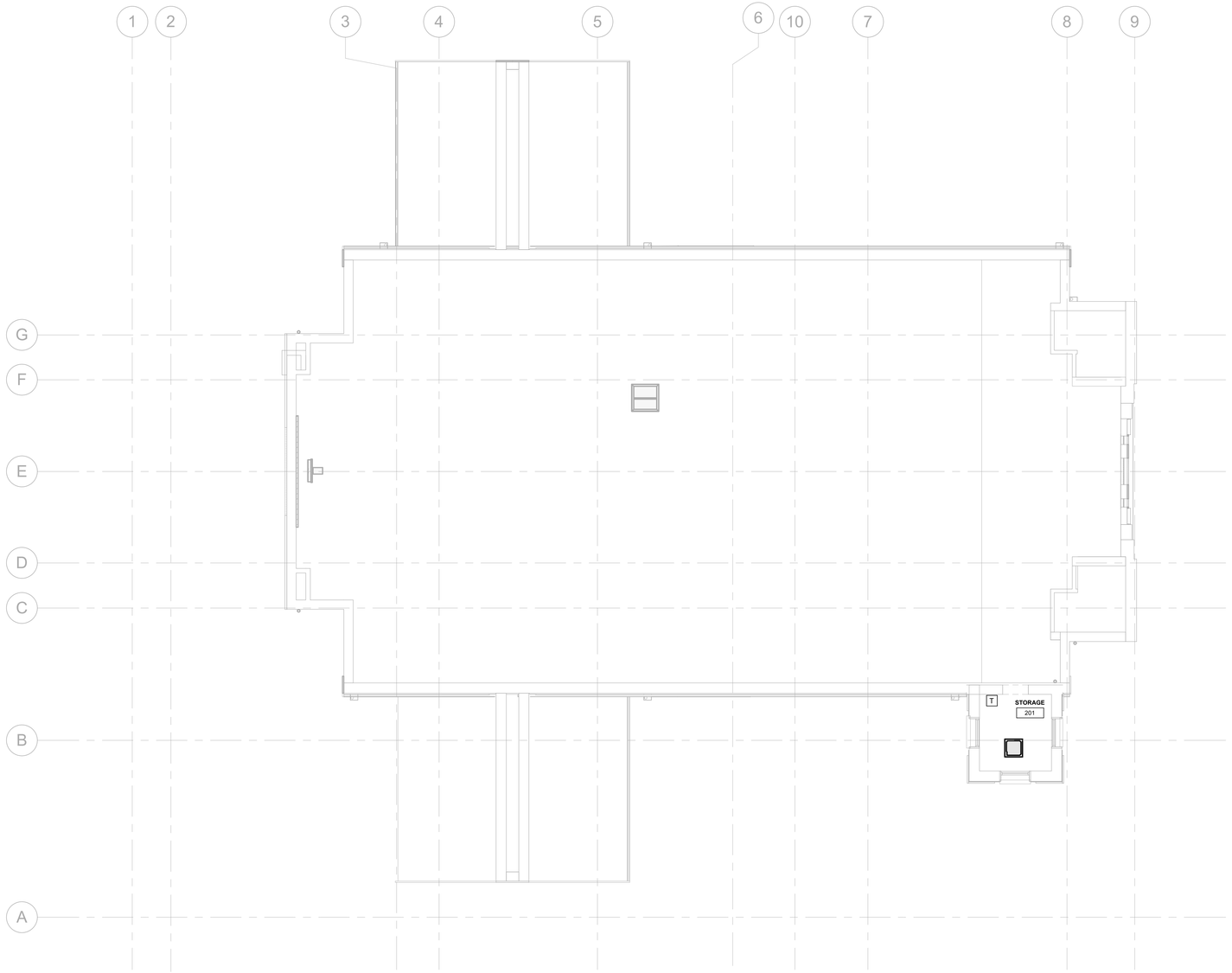
SHEET NO.

MP1.3



1 MECHANICAL PIPING ATTIC FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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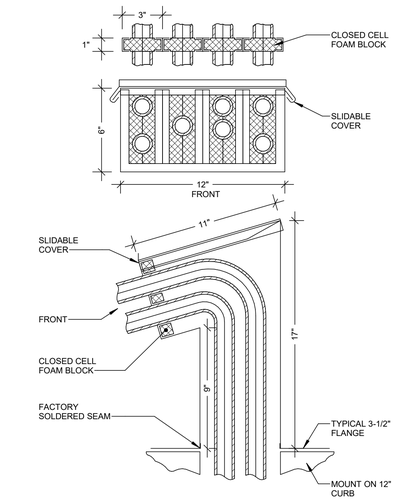
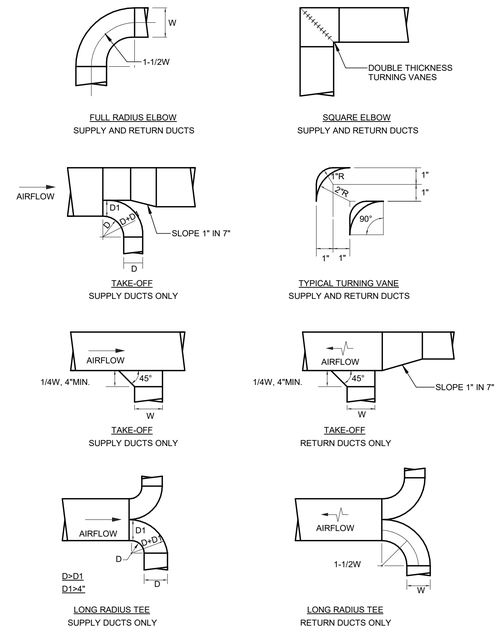
SHEET NO.

MP1.4

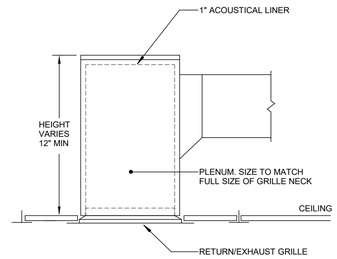


* DRAWING AND DIMENSIONS ARE BASED ON IN STOCK MODEL.

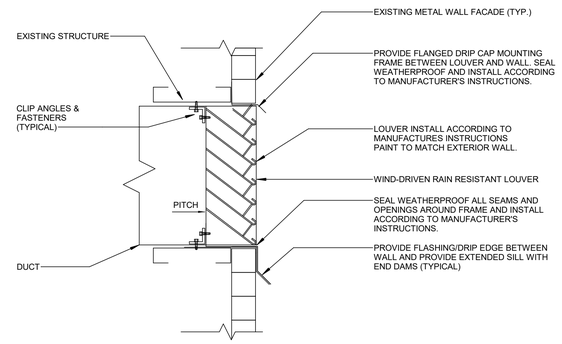
4 REFRIGERANT PIPING ROOF PENETRATION DETAIL
NTS



1 TYPICAL DUCT DETAILS
NTS



2 TYPICAL RETURN AIR / EXHAUST AIR GRILLE PLENUM DETAIL
NTS



3 WIND DRIVEN RAIN RESISTANT LOUVER MOUNTING DETAIL
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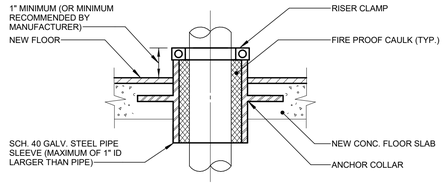
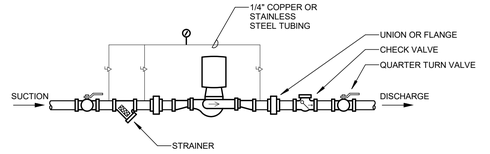
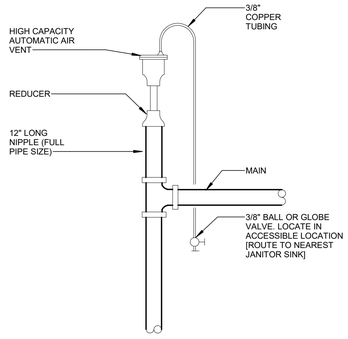
M5.0



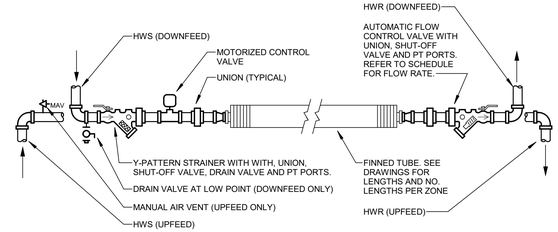
5 PIPE FLOOR PENETRATION WITH SLEEVE DETAIL
NTS



1 PUMP - INLINE
NTS

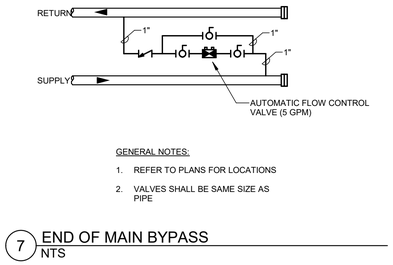


6 AIR VENT PIPING DIAGRAM - AUTOMATIC
NTS



NOTES:
1. LOCATE PIPING AND VALVES CONCEALED. VALVES MAY BE LOCATED ABOVE ACCESSIBLE CEILING OR WITHIN ACCESSIBLE FINNED TUBE ENCLOSURE.

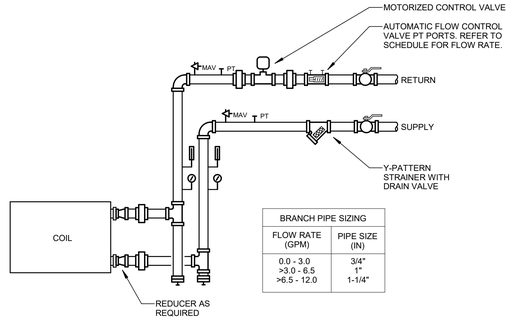
2 FINNED TUBE RADIATOR - 1 TIER
NTS



GENERAL NOTES:

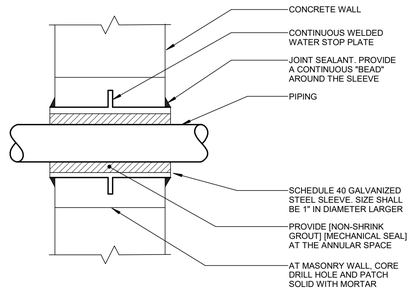
1. REFER TO PLANS FOR LOCATIONS
2. VALVES SHALL BE SAME SIZE AS PIPE

7 END OF MAIN BYPASS
NTS



BRANCH PIPE SIZING	
FLOW RATE (GPM)	PIPE SIZE (IN)
0.0 - 3.0	3/4"
>3.0 - 6.5	1"
>6.5 - 12.0	1-1/4"

3 COIL HOOKUP - SINGLE COIL
NTS



4 PIPE WALL PENETRATION DETAIL
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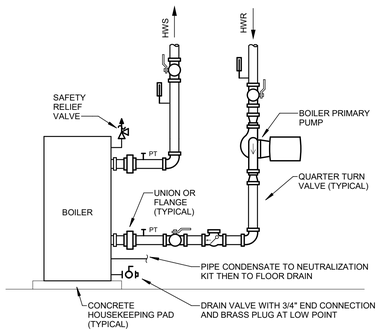
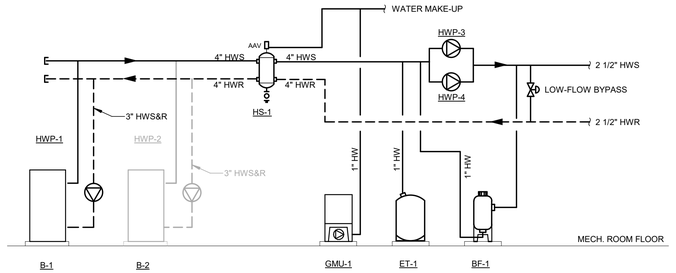
SHEET NO.

M5.1

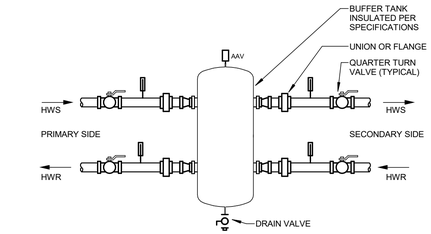


NOTES:
1. INSTALL PER MANUFACTURER'S INSTALLATION REQUIREMENTS
2. PROVIDE LOW-WATER CUT OFF, CONDENSATE DRAIN KIT WITH ACID NEUTRALIZER, AIR VENT, COMBUSTION AIR AND FLUE PER SPECIFICATIONS.
3. PROVIDE GAS PIPING WITH DIRT LEG AND SHUT-OFF VALVE PER DIV. 22

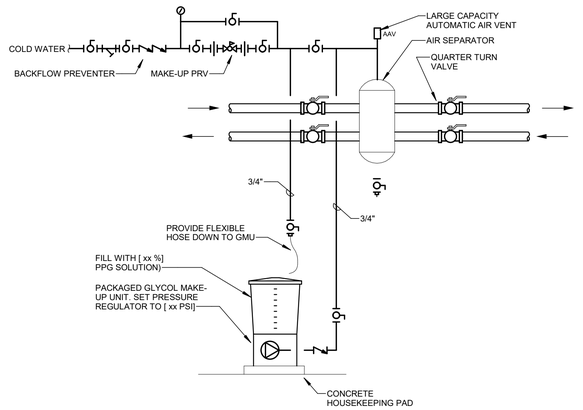
6 BOILER - CONDENSING W/PUMP
NTS



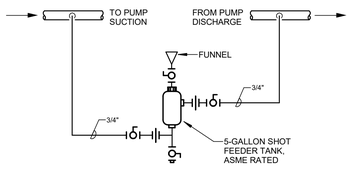
1 HOT WATER BOILER DIAGRAM
NTS



4 LOW LOSS HEADER - SUSPENDED
NTS

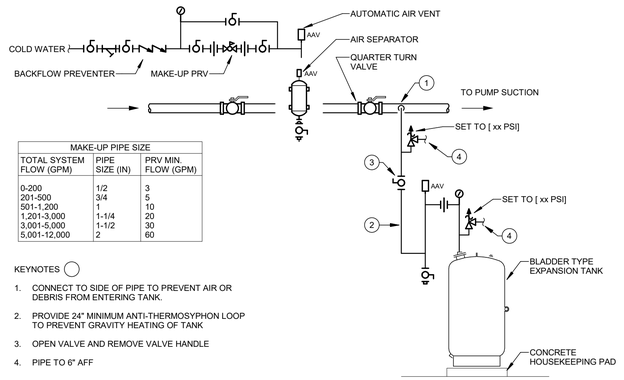


2 GLYCOL MAKE-UP UNIT
NTS



NOTE: TOP OF POT FEEDER TANK SHALL NOT BE MORE THAN 4'-0" ABOVE FINISHED FLOOR.

5 POT FEEDER
NTS



MAKE-UP PIPE SIZE		
TOTAL SYSTEM FLOW (GPM)	PIPE SIZE (IN)	PRV MIN. FLOW (GPM)
0-200	1/2	3
201-500	3/4	5
501-1,200	1	10
1,201-3,000	1-1/4	20
3,001-5,000	1-1/2	30
5,001-12,000	2	60

KEYNOTES

1. CONNECT TO SIDE OF PIPE TO PREVENT AIR OR DEBRIS FROM ENTERING TANK.
2. PROVIDE 24" MINIMUM ANTI-THERMOSYPHON LOOP TO PREVENT GRAVITY HEATING OF TANK
3. OPEN VALVE AND REMOVE VALVE HANDLE
4. PIPE TO 6" AFF

3 EXPANSION TANK AND AIR SEPARATOR
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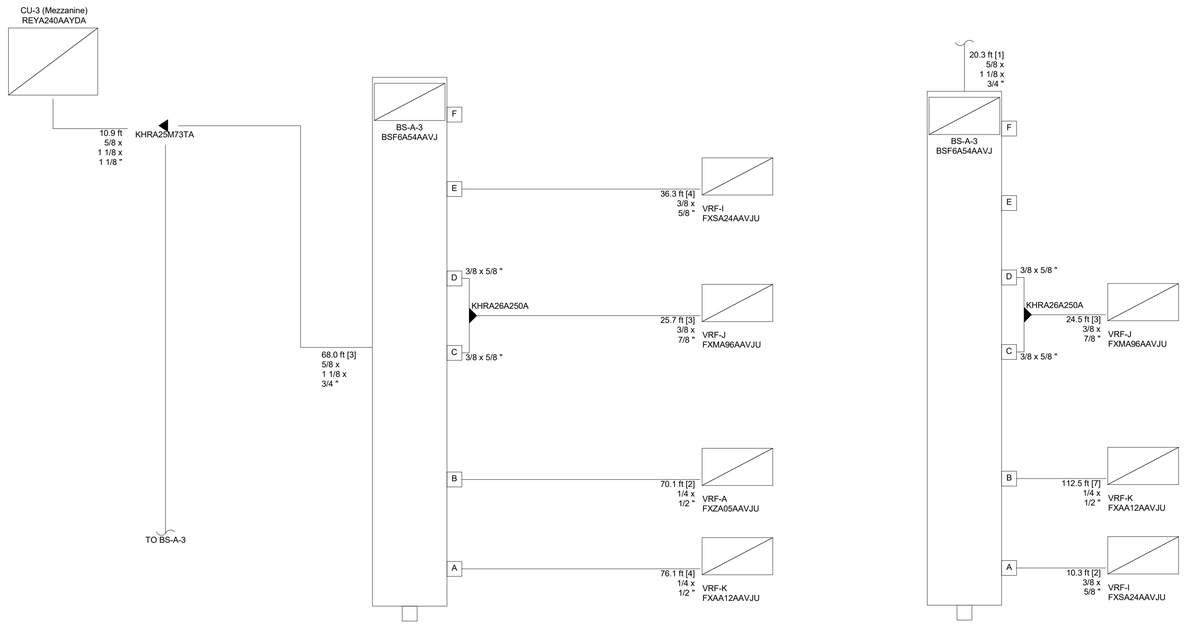

1 ACCU-3 PIPING DIAGRAMS Pre-Fitout
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M5.3

CONDENSING BOILER SCHEDULE

GENERAL					FUEL			WATER				ELECTRIC SERVICE					REMARKS			
TAG	MANUFACTURER	MODEL	INPUT CAPACITY (MBH)	GROSS OUTPUT CAPACITY (MBH)	GAS	INLET PRESSURE (MIN/MAX IN.WG.)	MAX OPER. PRESS (PSIG)	EWT (°F)	LWT (°F)	MIN. FLOW (GPM)	FLOW (GPM)	V	PH	HZ	AMPS	OPERATING WEIGHT (LB)	TYPE	RATINGS	FEATURES	INSTALL
B-1	LOCHINVAR	FTXL 500	500	489	NG	4.0 / 14.0	0.5	110	140	10	33	120	1	60	15	560	ALL	ALL	ALL	ALL
B-2 (FUTURE)	LOCHINVAR	FUTURE	500	489	NG	4.0 / 14.0	0.5	110	140	10	33	120	1	60	15	560	ALL	ALL	ALL	ALL

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. CONDENSING GAS FIRED, STAINLESS STEEL FIRETUBE BOILER	1. ASME CERTIFIED 2. CSD-1 FIRING CONTROLS 3. 150 PSI ASME RELIEF VALVE 4. 30% PROPYLENE GLYCOL / WATER SOLUTION	1. BURNER FIRING SHALL BE MODULATING WITH 10:1 TURN-DOWN RATIO. 2. PROVIDE WITH ELECTRONIC SPARK IGNITION. 3. ON-BOARD OUTDOOR RESET CONTROL. 4. PROVIDE WITH BACNET MSTP CONNECTION. 5. PROVIDW WITH ON-BOARD CONTROLS AND LOW WATER CUTOFF W/MANUAL RESET. 6. CONDENSATE NEUTRALIZATION KIT.	1. SEE DETAIL 6 / SHEET M5.2

PUMP SCHEDULE

GENERAL				PHYSICAL			PERFORMANCE			ELECTRICAL				REMARKS			
TAG	MANUFACTURER	MODEL	SERVICE	INLET (IN)	OUTLET (IN)	IMPELLER (IN)	FLOW (GPM)	TDH (FT WG)	EFFI-CIENCY (%)	HP	RPM	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
HWP-1	GRUNDFOS	MAGNA 1 32-100	HW BOILER PUMP	1.25	1.25	2.0	33	15	57	1/4	3600	115	1	1	1	ALL	ALL
HWP-2 (FUTURE)	GRUNDFOS	FUTURE	HW BOILER PUMP	1.25	1.25	2.0	33	15	57	1/4	3600	115	1	1	1	ALL	ALL
HWP-3	GRUNDFOS	MAGNA 3 40-180	HW SYSTEM PUMP	1.5	1.5	2.91	66	40	59	1	2965	208	1	1	1	ALL	ALL
HWP-4	GRUNDFOS	MAGNA 3 40-180	HW SYSTEM PUMP	1.5	1.5	2.91	66	40	59	1	2965	208	1	1	1	ALL	ALL

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. IN-LINE PUMP, CLOSE COUPLED, INTEGRAL VARIABLE SPEED MOTOR	1. 30% PROPYLENE GLYCOL AT 140°F	1. NEMA PREMIUM EFFICIENCY, EC MOTOR, INTEGRAL VARIABLE SPEED DRIVE 2. ANSI B16.1 CLASS 125 (175 PSIG AT 250°F) 3. HIGH TEMPERATURE SEAL (300°F)	1. SEE DETAIL 1/M5.1 2. NON-FUSED DISCONNECT SWITCH

MISCELLANEOUS EQUIPMENT SCHEDULE

TAG	DESCRIPTION
ET-1	EXPANSION TANK, AMTROL MODEL AX-40X, VERTICAL, 125 PSIG ASME. 240°F OPERATING TEMPERATURE, REMOVABLE BUTYL BLADDER, 21.7 GALLON TANK VOLUME, 11.3 GALLON ACCEPTANCE VOLUME, 16" DIAMETER x 30"
BF-1	POT FEEDER, WESSELS MODEL CPFTA-5, 5 GALLONS, PRIME PAINTED STEEL, 200 PSIG ASME OPERATING PRESSURE, 450°F OPERATING TEMPERATURE, 10-1/2" DIAMETER x 19-3/4"
HS-1	HYDRO SEPERATOR, CALEFFI MODEL NA548062A, INTEGRAL AIR VENT, 2 1/2" 150# FLANGED RAISED FACE, 165 PSIG ASME, 220°F
GMU-1	GLYCOL MAKE-UP UNIT, WESSELS GMP-18, 120 VAC SINGLE POINT POWER, HIGH AND LOW LEVEL ALARMS, ULCONTROL PANEL

HYDRONIC FIN TUBE SCHEDULE

GENERAL			PHYSICAL								PERF.	REMARKS			
			ENCLOSURE		MOUNTING HEIGHT (IN)	TIERS		TUBE SIZE (IN)	FINS			BTUH PER FOOT	TYPE	RATINGS	FEATURES	INSTALL
TAG	MANUFACTURER	MODEL	WIDTH (IN)	HEIGHT (IN)		NUMBER	CENTERS (IN)		WIDTH (IN)	HEIGHT (IN)	PER FT					
FTR-A	STERLING	JVA-S11	4 3/8	11	4	1	-	3/4	3 1/4	3 1/4	50	400	1	1	ALL	1

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL	SYMBOL DESCRIPTION
1. SLOPE TOP 2. BARE FIN TUBE	1. 125°F AVERAGE WATER TEMPERATURE	1. COPPER TUBE, 0.020" THICK ALUMINUM FINS 2. 16 GAUGE STEEL ENCLOSURE 3. BAKED ENAMEL FINISH, COLOR SELECTABLE BY ARCHITECT	1. SEE DETAIL 2/M5.1	TAG — ELEMENT LENGTH

HYDRONIC CABINET UNIT HEATER SCHEDULE

GENERAL				PERFORMANCE						ELECTRICAL				REMARKS			
TAG	MANUFACTURER	MODEL	LOCATION	MBH	GPM	WPD (FT WG)	LAT (°F)	CFM	FAN SPEED	HP	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
CUH-A	STERLING	F-1000	SEE PLANS	20.0	2.6	0.8	100	220	HIGH	1/30	120	1	2	1	ALL	1
CUH-B	STERLING	RC-1200	SEE PLANS	20.0	2.6	0.8	100	220	HIGH	1/30	120	1	1	1	ALL	1

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. FLOOR, TOP DISCHARGE 2. RECESSED CEILING, BOTTOM INLET GRILLE, BOTTOM DISCHARGE GRILLE	1. 140°F EWT, 110°F LWT, 60°F EAT, 30% PROPYLENE GLYCOL	1. LIMITED ACCESS FASTENERS, FRONT PANEL 2. LIMITED ACCESS FASTENERS, ACCESS DOORS 3. EXTRUDED ALUMINUM GRILLE INLET & OUTLET 4. BAKED ENAMEL FINISH, COLOR SELECTABLE BY ARCHITECT 5. LOUVERED INLET GRILLE 6. MOTOR STARTER 7. INSULATED INTERNAL CABINET 8. HIGH CAPACITY TWO ROW COIL 9. LEVELING LEGS 10. WALL SEAL KIT	1. SEE DETAIL 3/M5.1

HYDRONIC UNIT HEATER SCHEDULE

GENERAL				PHYS.	PERFORMANCE						ELECTRICAL				REMARKS			
TAG	MANUFACTURER	MODEL	LOCATION	WEIGHT (LBS)	MBH	GPM	WPD (FT WG)	LAT (°F)	CFM	FAN SPEED	WATTS	MCA	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
UH-A	STERLING	HS-118A	SEE PLANS	30	12,000	1.2	0.80	82	500	HIGH	16	0.80	115	1	1	1	ALL	1
UH-B	STERLING	HS-60	SEE PLANS	30	20,000	2.9	0.07	92	900	HIGH	37	1.4	115	1	1	1	ALL	1

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. HORIZONTAL	1. 140°F EWT, 110°F LWT, 60°F EAT, 30% PROPYLENE GLYCOL	1. OSHA STANDARD FAN GUARD 2. NON-FUSED DISCONNECT SWITCH 3. OFF/AUTO/FAN SWITCH 4. SPEED CONTROL SWITCH	1. SEE DETAIL 3/M5.1

DIFFUSER, GRILLE & REGISTER SCHEDULE

GENERAL			PHYSICAL		PERFORMANCE			REMARKS		
SYMBOL	MANUFACTURER / MODEL	DUTY	NECK SIZE/ RUNOUT SIZE (IN)	FACE SIZE (IN)	AIRFLOW SELECTION RANGE (CFM)	MAX. AIR P.D.	MAX. N.C. LEVEL	TYPE	FEATURES	INSTALL
A	TITUS TDC	SUPPLY	6	18x18	0-100	0.1	10	1	3	1
			8	18x18	101-200	0.1	16			
			10	18x18	201-300	0.1	19			
			12	18x18	301-450	0.1	21			
			14	18x18	451-600	0.1	21			
B	TITUS TDC	SUPPLY	6	9x9	0-100	0.1	10	2	3	1
			8	12x12	101-200	0.1	16			
			10	18x18	201-300	0.1	19			
			12	18x18	301-450	0.1	21			
			14	18x18	451-600	0.1	21			
C	TITUS 300RL	SUPPLY	10x6	10x6	0-200	0.1	18	3	2,3	1
			12x8	12x8	200-320	0.1	18			
			18x10	18x10	321-550	0.1	18			
			24x12	24x12	551-900	0.1	19			
			24x24	24x24	991-2000	0.1	25			
D	TITUS 350RL	RETURN / EXHAUST	12x12	12x12	0-450	0.1	12	4	2,3	1
			16x16	16x16	451-800	0.1	14			
			20x20	20x20	801-1200	0.1	16			
E	TITUS 350RL	RETURN / EXHAUST	8x8	8x8	0-100	0.1	10	5	2,3	1
			12x12	12x12	101-450	0.1	12			
			16x16	16x16	451-800	0.1	14			
			20x20	20x20	801-2000	0.1	16			
			10x6	10x6	0-200	0.1	16			
			18x8	18x8	201-350	0.1	18			
			22x10	22x10	351-675	0.1	13			
			36x18	36x18	0-2000	0.1	18			
			42x6	42x6	0-750	0.1	18			
			48x14	48x14	0-2550	0.1	28			

REMARKS - GENERAL NOTES

1. PERFORMANCE DATA LISTED IS AT MAX AIRFLOW
2. BORDER TYPES SHALL BE COMPATIBLE WITH CEILING TYPE FOR THE ROOM IN WHICH IT IS LOCATED. CONTRACTOR SHALL REVIEW THE ARCHITECTURAL REFLECTED CEILING PLANS FOR SPECIFIC CEILING TYPES IN EACH SPACE.
3. PROVIDE WHITE FINISH UNLESS OTHERWISE NOTED. FINISHES, COLOR, AND BORDER TYPES SHALL BE APPROVED BY THE ARCHITECT
4. REFER TO PLANS FOR LOCATION, AIR QUANTITIES, TYPE, AND BLOW PATTERN OF EACH DEVICE.

REMARKS - TYPE	REMARKS - FEATURES	REMARKS - INSTALLATION
1. LOUVERED FACE CEILING SUPPLY DIFFUSER, ROUND NECK, LAY-IN T-BAR CEILING MOUNT. 2. LOUVERED FACE CEILING SUPPLY DIFFUSER, ROUND NECK, SURFACE MOUNT FLANGE BORDER. 3. SUPPLY GRILLE, ADJUSTABLE DOUBLE DEFLECTION BLADES, 3/4" BLADE SPACING, FRONT BLADES PARALLEL TO LONG DIMENSION, SURFACE MOUNT FLANGE BORDER. 4. LOUVERED GRILLE WITH 35-DEGREE FIXED BLADES, 3/4" SPACING, BLADES PARALLEL TO LONG DIMENSION, LAY-IN T-BAR CEILING MOUNT. 5. LOUVERED GRILLE WITH 35-DEGREE FIXED BLADES, 3/4" SPACING, BLADES PARALLEL TO LONG DIMENSION, SURFACE MOUNT FLANGE BORDER.	1. PROVIDE A 1/2" THICK ACOUSTICALLY LINED PLENUM, HEIGHT/DEPTH AS NECESSARY TO CONNECT THE BRANCH DUCT INDICATED. PROVIDE ONE SHEET METAL PLENUM FOR EACH DUCT CONNECTION SHOWN ON DRAWINGS. 2. INTEGRAL VOLUME DAMPER 3. PROVIDE ALUMINUM CONSTRUCTION FOR DEVICES INSTALLED IN HIGH MOISTURE AREAS INCLUDING TOILET ROOMS, SHOWER ROOMS, KITCHEN, ETC. 4. WHERE CONTINUOUS LENGTH IS SPECIFIED, COORDINATE LENGTH WITH ARCHITECT. PROVIDE INACTIVE SECTIONS AS REQUIRED FOR CONTINUOUS LOOK. BLANK OFF INACTIVE SECTIONS WITH SHEETMETAL PAINTED BLACK. 5. PROVIDE CABLE-OPERATED DAMPER WITH REMOTE ACTUATOR FOR VOLUME DAMPERS LOCATED ABOVE GYP AND INACCESSIBLE CEILINGS.	1. PROVIDE A DUCT MOUNTED VOLUME DAMPER WHETHER OR NOT A DUCT MOUNTED VOLUME DAMPER IS INDICATED ON PLAN, EXCEPT THAT A VOLUME DAMPER IS NOT REQUIRED: A. AT TRANSFER AIR APPLICATIONS - WHERE DIFFUSER OR GRILLE IS NOT CONNECTED BY A DUCTWORK SYSTEM TO A FAN B. WHERE ONLY ONE SUPPLY DIFFUSER OR GRILLE, OR ONE EXHAUST GRILLE, OR ONE RETURN GRILLE IS SERVED BY THE FAN OR AIR HANDLING EQUIPMENT C. AT GRILLES CONNECTED TO RELIEF AIR HOODS AND RELIEF AIR LOUVERS D. WHERE A VOLUME DAMPER IS SPECIFIED AS INTEGRAL TO THE ASSOCIATED DEVICE.

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AIR HANDLING UNIT SCHEDULE - PART 1

GENERAL			PHYSICAL		OUTSIDE AIR		SUPPLY FAN						RETURN/EXHAUST FAN						HOT WATER HEATING COIL - 30% PROPYLENE GLYCOL (2ND STAGE HEAT) DUCT MOUNTED								ELECTRICAL				REMARKS			
								STATIC PRESS (IN.WG)						STATIC PRESS (IN.WG)							AIR DATA			HOT WATER DATA									
TAG	MANUFACTURER	MODEL	WEIGHT (LBS)	L x W x H (IN.)	CFM	%	AIRFLOW (CFM)	EXTERNAL	TOTAL W/DIRTY FILTERS	WHEEL DIA. (IN)	RPM	BHP	MOTOR HP	TOTAL AIRFLOW (CFM)	EXTERNAL	TOTAL W/DIRTY FILTERS	WHEEL DIA. (IN)	RPM	BHP	MOTOR HP	TOTAL MBH	FACE VELOC. (FPM)	EAT (°F)	LAT (°F)	P.D. (IN.WG)	GPM	EWT (°F)	LWT (°F)	PD (FT)	MCA	MOP	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
DOAS-1	VALENT	VXE	3,750	181x86x60	1,730	100	1,730	1.5	1.85	18.5	1,569	1.19	1 1/2	1,730	1.0	1.15	15.0	1,491	1.04	1 1/2	52.0	469	49.5	77.5	0.22	8.0	140	126	1.4	18.1	25	460	3	ALL	ALL	ALL	ALL

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. ROOFTOP DEDICATED OUTSIDE AIR UNIT, AIR SOURCE HEAT PUMP, DUCT MOUNTED HOT WATER COIL: R-32	1. AHRI 340/360 2. DUCT MOUNTED HOT WATER COIL: 30% PROPYLENE GLYCOL / WATER SOLUTION	1. PREMIUM EFFICIENCY FANS WITH INTEGRATED VARIABLE SPEED DRIVE. 2. PROVIDE CONDENSERS WITH HAIL GUARDS. 3. PROVIDE WITH FACTORY WIRED DISCONNECT, SERVICE OUTLET AND LIGHT.	1. PROVIDE WITH 24" TALL VIBRATION ISOLATOR CURB 2. DUCT MOUNTED HOT WATER COIL. COORDINATE COIL OPERATION WITH FACTORY CONTROLS 3. FACTORY CONTROLS WITH BMS BACNET INTERFACE.

SEE PART 2

AIR HANDLING UNIT SCHEDULE - PART 2

SEE PART 1

DX COOLING COIL											AIR-SOURCE HEAT PUMP						HEAT PUMP HEATING COIL (1ST STAGE HEAT)					ENERGY RECOVERY												
			AIR DATA					HOT GAS REHEAT			PHYSICAL		PERFORMANCE						AIR DATA				SUPPLY AIR DATA - WINTER				SUPPLY AIR DATA - SUMMER					RECOVERED MBH		% EFFICIENCY	
TOTAL MBH	SENS. MBH	FACE VELOC. (FPM)	EAT (°F)		LAT (°F)		P.D. (IN.WG)	CAPACITY (MBH)	EAT (°F)	LAT (°F)	# OF COMP.	# OF REFRIG. CIRCUITS	NOMINAL MBH	AMBIENT TEMP. (°F)	COP	SOUND POWER (dBA)	TOTAL MBH	FACE VELOC. (FPM)	EAT (°F)	LAT (°F)	P.D. (IN.WG)	TYPE	EAT(°F)		LAT(°F)		EAT(°F)		LAT(°F)		MAX PD (IN WC)	WIN-TER	SUM-MER	WIN-TER	SUM-MER
			DB	WB	DB	WB																	DB	WB	DB	WB	DB	WB	DB	WB					
75.5	53.1	140.0	79.7	66.0	51.7	51.4	0.11	49.4	51.7	78.2	1	MOD.	29.1	10.0	2.4	-	40.3	203.4	49.5	70.0	0.11	WHEEL	9.8	9.0	49.5	38.3	90.0	73.0	79.7	66.0	0.92	72.7	59.1	67.0	66.0

VRF FAN COIL SCHEDULE

GENERAL			PERFORMANCE						ELECTRICAL			REMARKS			
						FAN									
TAG	MANUFACTURER	MODEL	NOMINAL TONS	NET COOLING MBH	NET HEATING MBH	CFM	ESP (IN WG)	SOUND PRESS. (dBA)	MCA	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
VRF-A	DAIKIN	FXZA05AAVJU	0.5	5,800	6,824	300	-	-	0.3	208	1	2	ALL	1	ALL
VRF-I	DAIKIN	FXSA24AAVJU	2.0	23,989	27,932	742	0.6	-	1.8	208	1	3	ALL	1	ALL
VRF-J	DAIKIN	FXMA96AAVJU	8.0	96,000	112,000	2,543	0.6	-	6.8	208	1	3	ALL	1	ALL
VRF-K	DAIKIN	FXAA12AAVJU	1.0	12,000	13,500	290	-	-	0.4	208	1	1	ALL	1	ALL

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. WALL MOUNTED 2. CEILING RECESSED, FOUR WAY, 24"x24" 3. HORIZONTAL DUCTED, MEDIUM STATIC	1. COOLING MBH AT 80°F EDB, 67°F EWB, 95°F ODB. 2. HEATING MBH AT 70°F EDB, 47°F ODB, 43°F OWB.	1. INTEGRAL CONDENSATE LIFT PUMP	1. INSTALL WITH SPRING VIBRATION ISOLATION HANGER 2. PROVIDE R32 REFRIGERANT LIQUID AND REFRIGERANT GAS PIPING BETWEEN FAN COIL AND HEAT RECOVERY UNIT 3. BRC1NRV71 NAVIGATION REMOTE CONTROLLER FOR EACH INDOOR UNIT

VRF BRANCH CONTROLLER SCHEDULE

GENERAL				PHYS.	ELECTRICAL			REMARKS	
TAG	MANUFACTURER	MODEL	LOCATION	# OF PORTS	MCA	VOLTAGE	PHASE	TYPE	INSTALL
BS-A	DAIKIN	BSF6A54AAVJ	SEE PLANS	6	0.6	208	1	1	1

REMARKS - TYPE	REMARKS - INSTALL
1. MULTI-PORT BRANCH SELECTOR BOX	1. INSTALL PER MANUFACTURER'S INSTALLATION AND OPERATION INSTRUCTIONS

1. BRANCH SELECTOR BOX NOMENCLATURE PER THE FOLLOW TAG CONVENTION: BRANCH BOX TAG PER SCHEDULE — BS-A-1 — ASSOCIATED VRF SYSTEM

VARIABLE REFRIGERANT FLOW (VRF) COMPRESSOR UNIT SCHEDULE

GENERAL			PHYSICAL			PERFORMANCE							ELECTRICAL			REMARKS			
				COMPRESSORS			COOLING		HEATING										
TAG	MANUFACTURER	MODEL	MODULE	INVERTER	WEIGHT (LBS)	NOMINAL TONS	MBH	EER	IEER	MBH	COP47	SOUND PRESS. (dBA)	MCA	MOP	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
ACCU-3	DAIKIN	REYA240AAYDA	A	YES	972.2	18	236	11.5	21	157	3.87	65	35	40	460	3	1	ALL	ALL	ALL

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. HEAT RECOVERY (SIMULTANEOUS HEATING AND COOLING) HEAT PUMP, SCROLL COMPRESSOR(S), R-32	1. COOLING MBH AT 80°F EDB, 67°F EWB, 95°F ODB. HEATING MBH AT 70°F EDB, 10°F ODB, 10°F OWB. 2. SOUND PRESSURE LEVELS PER ISO STANDARD 1996	1. HEATING TO -20°F ODB 2. DUAL MODULE, DUAL POINT POWER CONNECTION 3. TRIPLE MODULE, TRIPLE POINT POWER CONNECTION	1. MOUNT UNIT ON (2) ROOF RAILS, SIMILAR TO THYCURB MODEL TEMS SERIES OR SIMILAR, 18" HIGH, 6" WIDE. PROVIDE WITH VIBRATION ISOLATION. MOUNT RAILS DIRECTLY TO THE ROOF STRUCTURE. THEN ROOF AND FLASH WATER TIGHT. 2. FACTORY REPRESENTATIVES SHALL STARTUP AND COMMISSION CITY MULTI EQUIPMENT UPON COMPLETION OF EQUIPMENT INSTALLATIONS 3. FACTORY REPRESENTATIVES SHALL PROVIDE ON-SITE ASSISTANCE FOR THE BMS INTEGRATION OF THE EQUIPMENT 4. FACTORY REPRESENTATIVES SHALL PROVIDE END-USER TRAINING ON THE EQUIPMENT UPON COMPLETION OF THE INSTALLATION OF EQUIPMENT. 5. FURNISH AND INSTALL SBC INDUSTRIES LINE SHACK MODEL L/S OR EQUAL REFRIGERANT PIPING ROOF PENETRATION BOX. 6. ITM BACNET SERVER GATEWAY WITH SCREEN MODEL DCM014A51

ELECTRIC UNIT HEATER SCHEDULE

GENERAL				PERFORMANCE						ELECTRICAL			REMARKS			
TAG	MANUFACTURER	MODEL	LOCATION	KW	STAGES	MBH	CFM	FAN SPEED	LAT (°F)	AMPS	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
EUH-A	QMARK	MUH-03-81	SEE PLANS	3.0	1	10.2	350	MED	87	14.5	208	1Ø	1	1	1	1,2

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. COMMERCIAL GRADE, HORIZONTAL MOUNT	1. LAT AT 60°F INLET AIR TEMPERATURE	1. INTEGRAL SINGLE STAGE THERMOSTAT	1. INSTALL AT 7' ABOVE FINISHED FLOOR 2. PROVIDE WITH MANUFACTURERS MOUNTING BRACKET

FAN SCHEDULE

GENERAL					PHYSICAL			PERFORMANCE				ACOUSTICAL DATA	ELECTRICAL					REMARKS			
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	WEIGHT (LBS)	DRIVE	DIA. (IN.)	CFM	ESP (IN WG)	RPM	BHP	INLET SONES	HP	MAX AMPS	MAX WATTS	VOLTAGE	PHASE	TYPE	RATINGS	FEATURES	INSTALL
EF-1	GREENHECK	AER-20-02-0620-VG	ATTIC	EXHAUST	80	DIRECT	20.125	4,000	0.25	1,426	0.59	16.0	1	-	-	115	1	1	1, 2	ALL	1
EF-2	GREENHECK	SP-LP0511-1	BATHROOM	EXHAUST	10	DIRECT	-	80	0.25	802	-	1.3	-	.26	17.7	115	1	2	3	-	ALL
EF-3	GREENHECK	SP-LP0511-1	JANITOR	EXHAUST	10	DIRECT	-	50	0.25	726	-	0.8	-	.19	14.7	115	1	2	3	-	ALL

REMARKS - TYPE	REMARKS - RATINGS	REMARKS - FEATURES	REMARKS - INSTALL
1. SIDEWALL FAN, CAST ALUMINUM BLADES, DIRECT DRIVE 2. CEILING BATHROOM EXHAUST FAN	1. AIR PERFORMANCE CERTIFIED IN ACCORDANCE TO AMCA 211 2. SOUND PERFORMANCE CERTIFIED IN ACCORDANCE TO AMCA 311 3. UL 507 CERTIFIED	1. WALL HOUSING WITH GUARD 2. WALL COLLAR 3. OSHA MOTOR SIDE GUARD 4. WIRING PIGTAIL 5. DIRECT DRIVE MOTOR WITH INTEGRAL VARIABLE SPEED DRIVE	1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS 2. EF-2: TIME DELAY SWITCH, 1 TO 60 MINUTES ADJUSTABLE 3. EF-3: OPERATE 24/7 WITH LOCAL SWITCH 4. PROVIDE HOODED WALL CAP ON DUCT TERMINATION TO EXTERIOR 5. SUSPEND UNIT FROM STRUCTURE ABOVE AT FOUR CORNERS WITH NEOPRENE VIBRATION HANGERS 6. DELUXE ALUMINUM GRILLE PAINTED WHITE (COLOR SELECTED BY ARCHITECT) 7. WASHABLE ALUMINUM MESH GRILLE MOUNTED FILTER 8. WALL PENETRATION PROVIDE: 6" EXTERIOR HOODED WALL CAP LOW-PROFILE VENT CLOSURE MODEL 6WVW-(COLOR BY ARCHITECT) [HTTPS://PREMIUMWALLVENT.COM] 9. ROOF PENETRATION PROVIDE: LOREN COOK ROOF JACK ROOF VENT CAP WITH BACKDRAFT DAMPER

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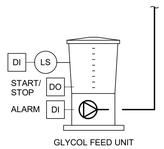

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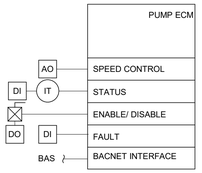

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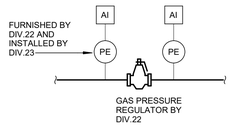

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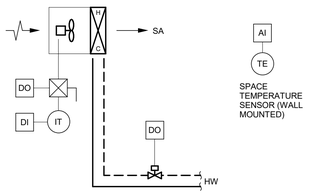

8 UNIT HEATER / CABINET UNIT HEATER
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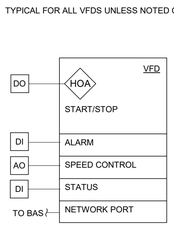

9 VFDS
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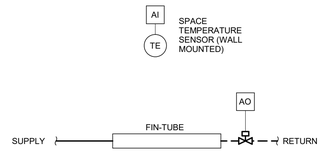

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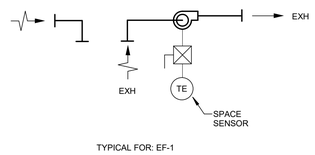

TYPICAL FOR: EF-1

4 ATTIC EXHAUST FAN
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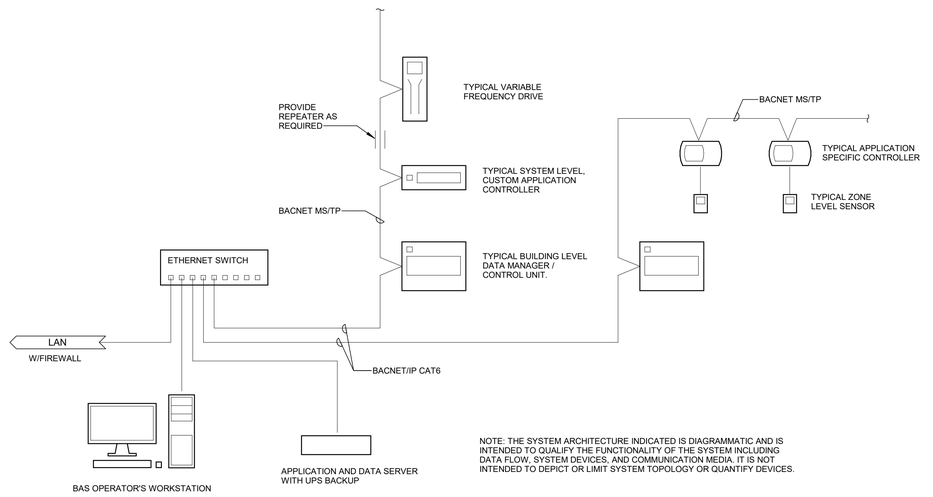

NOTE: THE SYSTEM ARCHITECTURE INDICATED IS DIAGRAMMATIC AND IS INTENDED TO QUALIFY THE FUNCTIONALITY OF THE SYSTEM INCLUDING DATA FLOW, SYSTEM DEVICES, AND COMMUNICATION MEDIA. IT IS NOT INTENDED TO DEPICT OR LIMIT SYSTEM TOPOLOGY OR QUANTIFY DEVICES.

1 BAS SYSTEM ARCHITECTURE
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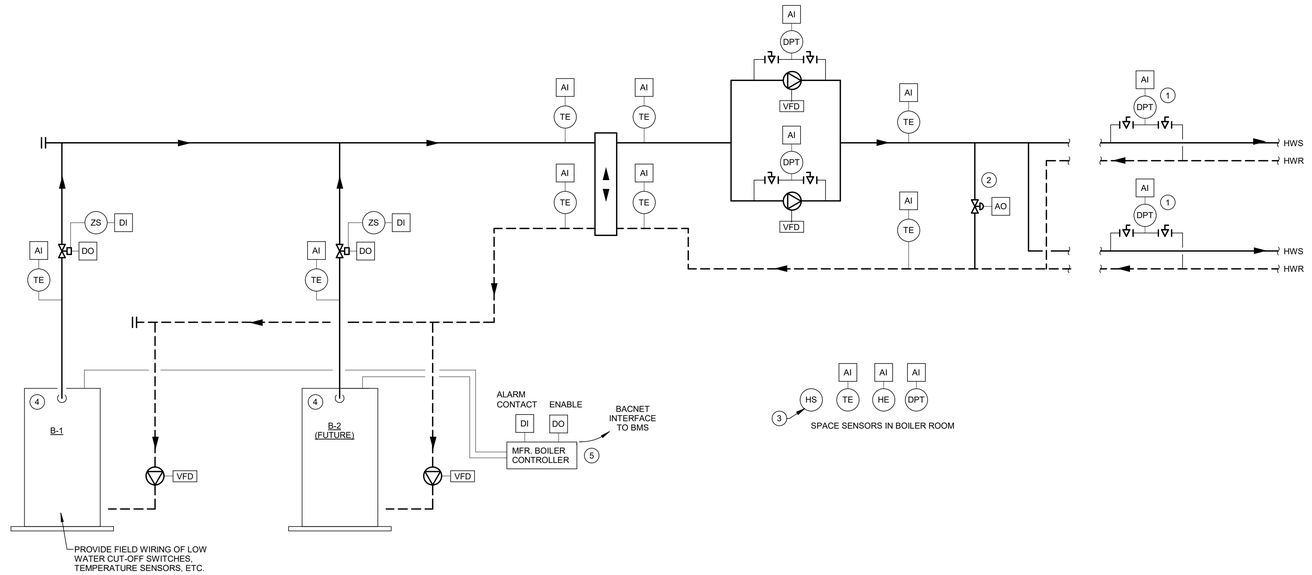

KEYNOTES

1. HW DIFFERENTIAL PRESSURE SENSOR. REFER TO PLANS FOR LOCATION.
2. MINIMUM FLOW BYPASS VALVE. SIZE FOR 15 GPM
3. BOILER EMERGENCY CUT OFF SWITCH TO CONTROL ALL HEATING BOILERS AND DOMESTIC WATER HEATERS. PROVIDE ONE SHUT-OFF SWITCH AT EACH MECHANICAL ROOM EXIT DOOR.
4. BOILERS ARE PROVIDED WITH DIRECT VENT FLUE AND COMBUSTION AIR. WHERE REQUIRED BY MANUFACTURER, PROVIDE AIR FLOW SWITCH AND ASSOCIATED CONTROLS.
5. BOILER MANUFACTURER'S CONTROL PANEL. HEATING HOT WATER PUMPS AND BOILER ISOLATION VALVES SHALL BE CONTROLLED THROUGH THE BOILER MANUFACTURER'S CONTROL PANEL. COMMUNICATE THE FOLLOWING INTEGRATED POINTS TO THE BAS:
   - HWS TEMP. CONTROL LOGIC
   - TEMP RESET CONTROL LOGIC
   - SYSTEM START/STOP CONTROL LOGIC
   - BOILER STATUS (TYP. EA BOILER)
   - BOILER ALARM (TYP. EA BOILER)
   - BOILER % MODULATION (TYP. EA BOILER)

2 HOT WATER BOILER PLANTS
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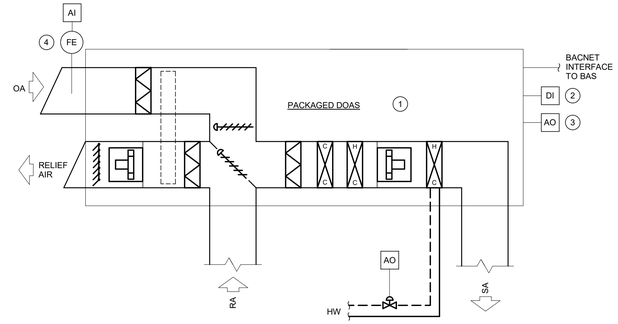
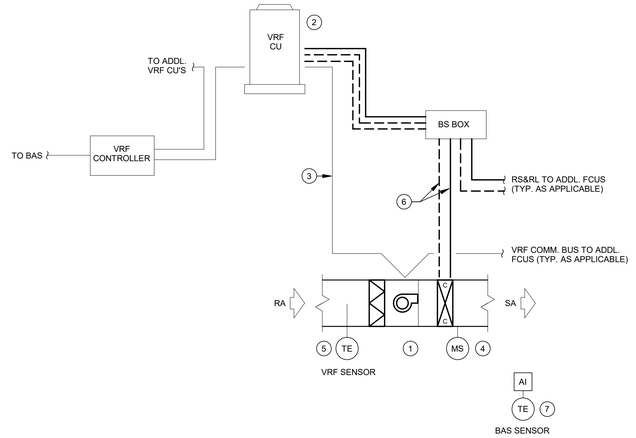


KEYNOTES

1. PACKAGED DOAS. PROVIDE MANUFACTURER'S DIGITAL CONTROLLER WITH BAS INTERFACE AND SELF-CONTAINED LOW-VOLTAGE CONTROL CIRCUIT PROTECTED BY A RESETTABLE CIRCUIT BREAKER ON THE 24-VOLT TRANSFORMER SIDE. FACTORY-MOUNTED CONTROLS SHALL INCLUDE THE FOLLOWING, AT A MINIMUM:
   - RETURN AIR TEMPERATURE SENSOR
   - OUTSIDE AIR TEMPERATURE SENSOR
   - DISCHARGE AIR TEMPERATURE SENSOR
   - RETURN AIR ENTHALPY SENSOR
   - OUTSIDE AIR ENTHALPY SENSOR
   - DIRTY FILTER SWITCH
   - SUPPLY FAN AIR PROVING SWITCH
   - LEAVING COIL TEMPERATURE SENSOR
   - CONDENSATE OVERFLOW SWITCH
   - RETURN AIR RELATIVE HUMIDITY SENSOR
   - SUPPLY LEAVING [WHEEL] [PLATE HEAT EXCHANGER]
   - OTHER SENSORS AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION BELOW
2. ALARM POINT HARDWIRED FROM MFRS. CONTROLLER TO BAS
3. DISCHARGE TEMPERATURE SETPOINT HARDWIRED FROM MFRS. CONTROLLER TO BAS
4. FIELD INSTALLED AIR FLOW MEASURING STATION (IF NOT FACTORY-PROVIDED).

1 DEDICATED OUTSIDE AIR SYSTEM
NTS



KEYNOTES

1. INDOOR EVAPORATOR UNIT. REFER TO PLANS FOR QTY. AND TYPE.
2. OUTDOOR CONDENSING UNIT
3. PROVIDE WIRING IN ACCORDANCE WITH UNIT MANUFACTURER'S INSTALLATION GUIDELINES
4. PLENUM RATED, UL508 CONDENSATE OVERFLOW SWITCH MOUNTED IN PRIMARY DRAIN PAN. SWITCH SHALL BE WIRED TO DE-ENERGIZE UNIT UPON DETECTION OF OF RISING WATER (BLOCKED DRAIN) AND GENERATE [A LOCAL BUZZER ALARM] [AN ALARM THROUGH THE BAS].
5. VRF TEMPERATURE SENSOR (THERMISTOR) MOUNTED IN RETURN AIR.
6. REFRIGERANT LIQUID AND SUCTION LINES SIZED PER MANUFACTURER
7. BAS SENSOR WALL MOUNTED IN SPACE WITH LED DISPLAY AND USER INTERFACE.

2 VRF SYSTEMS
NTS

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architecture
interior design
master planning
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Farmington, CT 06032
friar.com
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PROFESSIONAL SEAL

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CONSULTANT

CITY OF WATERBURY
WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

MECHANICAL CONTROLS DIAGRAMS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
DRAWN: DJH
CHECKED: BBP
4/30/2026 2:17:17 PM

SHEET NO.

M7.1

23 00 00 - GENERAL

A. THESE SPECIFICATIONS ARE APPLICABLE TO ALL PLUMBING, MECHANICAL AND ELECTRICAL DRAWINGS UNLESS NOTED OTHERWISE. REVIEW THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, PLUMBING DRAWINGS FOR NOTES, DIMENSIONS, ETC., AND COORDINATE WITH OTHER TRADES INVOLVED. THE WORK REQUIREMENTS DESCRIBED WITHIN DIVISION 20 SPECIFICATION SECTION "COMMON MECHANICAL / ELECTRICAL REQUIREMENTS" FORM COMPLIMENTARY REQUIREMENTS TO THE SCOPE OF WORK CONTAINED WITHIN DIVISION 23.

B. DESCRIPTION

1. THIS PROJECT COMPRISES ALTERATIONS AND RENOVATIONS TO THE EXISTING BUILDING. THE EXISTING BUILDING IS CURRENTLY OCCUPIED AND THE PROJECT SHALL PROCEED IN A MANNER THAT MINIMIZES ANY INCONVENIENCE TO THE BUILDING OCCUPANTS.

2. SCOPE OF WORK CONSISTS OF INSTALLATION OF MATERIALS TO BE FURNISHED UNDER THE CONTRACT DOCUMENTS AND WITHOUT LIMITING GENERALITY THEREOF CONSISTS OF FURNISHING LABOR, MATERIALS, EQUIPMENT, HOISTING, TRANSPORTATION, RIGGING, STAGING, APPURTENANCES, AND SERVICES NECESSARY AND/OR INCIDENTAL TO PROPERLY COMPLETE ALL WORK AS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN.

C. DEFINITIONS: THE FOLLOWING DEFINITIONS APPLY TO THIS CONTRACT

1. FURNISH: THE TERM "FURNISH" MEANS TO "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS"

2. INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

3. PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

4. REMOVE: THE TERM "REMOVE" MEANS TO DISCONNECT FROM ITS PRESENT POSITION, REMOVE FROM THE PREMISES AND TO DISPOSE OF IN A LEGAL MANNER."

5. SUBSTITUTIONS: "SUBSTITUTIONS" ARE REQUESTS FOR CHANGES IN PRODUCTS, MATERIALS AND/OR METHODS OF CONSTRUCTION AS PROPOSED BY THE CONTRACTOR AFTER AWARD OF THE CONTRACT."

D. DRAWINGS

1. DRAWINGS ARE DIAGRAMMATIC. THE FINAL PLACEMENT OF EQUIPMENT OR DEVICES IN THE FIELD MAY NOT DIRECTLY CORRESPOND TO THAT WHICH IS SHOWN ON THE DRAWINGS. THOUGH SOME OFFSETS & TRANSITIONS MAY BE SHOWN IN PIPING & SHEET METAL TO HELP INDICATE THE PHYSICAL RELATIONSHIP BETWEEN THEM, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL PIPING & SHEET METAL OFFSETS & TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE WORK AND PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THE WORK OUTLINED ON THESE CONTRACT DOCUMENTS. IF A CONFLICT IN POSITIONING OCCURS THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY TO ASCERTAIN WHAT THE INTENT WAS BY THE DESIGN PROFESSIONAL.

E. CODES AND STANDARDS: WORK SHALL CONFORM TO THE CURRENT EDITIONS OF THE FOLLOWING:

1. SHEET METAL SMACNA STANDARDS
2. INTERNATIONAL MECHANICAL CODE
3. INTERNATIONAL ENERGY CONSERVATION CODE
4. INTERNATIONAL EXISTING BUILDING CODE
5. ALL OTHER APPLICABLE STATE AND LOCAL CODES AND ORDINANCES, OWNER STANDARDS AND BASE BUILDING SPECIFICATIONS AND STANDARDS.

F. PERMITS AND FEES:

1. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS; AND PAY ALL GOVERNMENT AND STATE SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS IN CONNECTION WITH THE WORK, FILE ALL NECESSARY DRAWINGS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL AND STATE DEPARTMENTS HAVING JURISDICTION. OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK, AND DELIVER A COPY TO THE OWNER AND ENGINEER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

G. SURVEY AND MEASUREMENTS

1. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, SHALL BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITION OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY IDENTIFIED BY EXPERIENCED OBSERVERS.

2. DO NOT SCALE DRAWINGS. SCALE INDICATED ON DRAWINGS IS FOR ESTABLISHING REFERENCE POINTS ONLY. ACTUAL FIELD CONDITIONS SHALL GOVERN ALL DIMENSIONS.

3. PRIOR TO ORDERING ANY MATERIALS AND EQUIPMENT, THOROUGHLY REVIEW THE SITE CONDITIONS TO DETERMINE IF ADEQUATE CLEARANCES AND ACCESS IS ALLOWED TO INSTALL THE COMPONENTS. ORDER EQUIPMENT BROKEN DOWN AS NECESSARY TO ALLOW FOR PROPER RIGGING THROUGH THE PROJECT AREA. PROVIDE ALL NECESSARY ALTERATIONS TO THE STRUCTURE OF THE BUILDING AS NECESSARY TO RIG THE EQUIPMENT IN PLACE.

4. CONTRACTORS SHALL VERIFY, LAYOUT AND BE RESPONSIBLE FOR ALL MEASUREMENTS OF ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND SHALL NOTIFY ARCHITECT AND/OR ENGINEER IF A CONDITION EXISTS THAT PREVENTS THE CONTRACTOR FROM ACCOMPLISHING THE INTENT OF THE DRAWINGS.

H. SUBMITTALS AND SHOP DRAWINGS

1. SUBMIT FOR REVIEW, ELECTRONIC SHOP DRAWINGS IN SEARCHABLE PDF FORMAT FOR THE FOLLOWING.

   a. SUBMITTAL DATA FOR ALL MATERIAL AND EQUIPMENT. CLEARLY IDENTIFY DEVIATIONS OF THE SUBMITTED PRODUCTS FROM THE DESIGN.

   b. DUCTWORK AND PIPING SHOP DRAWINGS: DRAWN TO ACCURATE SCALE OF 1/4"=1'0". HIGHLIGHT, ENCIRCLE, OR OTHERWISE INDICATE DEVIATIONS FROM THE CONTRACT DOCUMENTS. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD INFORMATION AS THE BASIS OF SHOP DRAWINGS. STANDARD INFORMATION PREPARED WITHOUT SPECIFIC REFERENCE TO THE PROJECT IS NOT CONSIDERED SHOP DRAWINGS.

   c. CONTROLS SHOP DRAWINGS: INCLUDE EQUIPMENT AND SYSTEM CONTROL SCHEMATICS, SEQUENCES OF OPERATIONS, LOGIC DIAGRAMS AND SYSTEM COMPONENTS INCLUDING DETAILS OF TIE-IN TO EXISTING BUILDING CONTROL MANAGEMENT SYSTEM.

2. DO NOT USE SHOP DRAWINGS WITHOUT AN APPROPRIATE FINAL STAMP INDICATING ACTION TAKEN IN CONNECTION WITH CONSTRUCTION.

3. DO NOT ORDER ANY MATERIALS OR EQUIPMENT PRIOR TO RECEIVING FINAL APPROVED SUBMITTALS.

4. SCHEDULE AT LEAST TEN WORKING DAYS EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW.

I. AS-BUILT DRAWINGS

A. MAINTAIN ONE SET OF PRINTS ON THE SITE AND NOTE ALL CHANGES OR DEVIATIONS FROM THE ORIGINAL DESIGN THEREON. AT THE COMPLETION OF THE PROJECT, INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT FOR APPROVAL.

J. OPERATION AND MAINTENANCE

1. UPON COMPLETION OF ALL WORK AND TESTS, THE CONTRACTOR SHALL INSTRUCT THE OWNER OR THE OWNER'S REPRESENTATIVE IN THE OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL EQUIPMENT FURNISHED. THE CONTRACTOR SHALL GIVE AT LEAST SEVEN (7) DAYS NOTICE TO THE OWNER AND THE ENGINEER IN ADVANCE OF THIS PERIOD.

2. THE CONTRACTOR SHALL PREPARE THREE (3) COPIES OF A COMPLETE OPERATION AND MAINTENANCE MANUAL, BOUND IN BOOKLET FORM. ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA IN INDIVIDUAL HEAVY-DUTY 3-RING VINYL-COVERED BINDERS, WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION AND DESIGNATION PARTITIONS WITH IDENTIFICATION TABS. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER.

3. OPERATION AND MAINTENANCE MANUAL SHALL INCLUDE THE FOLLOWING:

   a. MANUFACTURER'S PRINTED OPERATING AND MAINTENANCE PROCEDURES.

   b. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING.

   c. COPIES OF WARRANTIES.

   d. APPROVED SHOP DRAWINGS AND PRODUCT DATA.

   e. BALANCE REPORTS.

   f. INCLUDE IN THE MANUAL, A TABULATED EQUIPMENT SCHEDULE FOR ALL EQUIPMENT. SCHEDULE SHALL INCLUDE PERTINENT DATA SUCH AS: MAKE, MODEL NUMBER, SERIAL NUMBER, VOLTAGE, NORMAL OPERATING CURRENT, BELT SIZE, FILTER QUANTITIES AND SIZES, BEARING NUMBER, ETC. SCHEDULE SHALL INCLUDE MAINTENANCE TO BE DONE AND FREQUENCY.

4. MAINTENANCE AND INSTRUCTION MANUALS SHALL BE SUBMITTED TO THE OWNER AT THE SAME TIME AS THE SEVEN (7) DAY NOTICE IS GIVEN PRIOR TO THE INSTRUCTION PERIOD.

K. CLEANING

1. ALL WORK AREAS SHALL BE LEFT AS CLEAN AS NEW. CLEAN INTERNALS OF ALL DUCTWORK AND AIR HANDLING UNITS AND REPLACE FILTERS AFTERWARDS.

2. DUCTWORK: DUCTS SHALL BE THOROUGHLY CLEANED SO THAT NO DIRT OR DUST SHALL BE DISCHARGED FROM DIFFUSERS, REGISTERS, OR GRILLES, WHEN SYSTEM IS OPERATED.

3. PIPING: AFTER CONDENSATE PIPING HAS BEEN PRESSURE TESTED AND APPROVED FOR TIGHTNESS, CLEAN AND FLUSH PIPING.

4. EQUIPMENT: AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS SECTION, INCLUDING REMOVAL OF CONCRETE RESIDUE.

5. WORK AREA: AFTER COMPLETION OF PROJECT, REMOVE ALL CONSTRUCTION DEBRIS, TEMPORARY FACILITIES AND EQUIPMENT FROM WORK AREA. CLEAN WORK AREA TO PERMIT OCCUPATION.

L. GUARANTEE

1. GUARANTEE WORK OF THESE CONTRACT DOCUMENTS IN WRITING FOR NOT LESS THAN ONE (1) YEAR FROM DATE OF FINAL NOTICE OF ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPT AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.

M. MEANS AND METHODS ALL TRADES

1. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2. DO NOT BURN WASTE MATERIALS. DO NOT BURY DEBRIS OR EXCESS MATERIALS ON THE OWNER'S PROPERTY. DO NOT DISCHARGE VOLATILE, HARMFUL OR DANGEROUS MATERIALS INTO DRAINAGE SYSTEMS. REMOVE AND DISPOSE OF ALL WASTE MATERIALS, PACKAGING MATERIAL, SKIDS ETC. FROM THE SITE AND DISPOSE OF IN A LAWFUL MANNER IN ACCORDANCE WITH MUNICIPAL, STATE AND FEDERAL REGULATIONS.

3. MATERIALS AND EQUIPMENT SHALL BE UL LISTED WHERE STANDARD HAS BEEN ESTABLISHED.

4. CAREFULLY INSPECT ALL BUILDING ELEMENTS PRIOR TO CUTTING OR DRILLING INTO WALL, FLOORS OR CEILINGS. PATCH AND PAINT SURFACES DISTURBED BY WORK UNDER THIS CONTRACT AS REQUIRED TO RESTORE THEM TO THEIR ORIGINAL CONDITION.

5. SCAFFOLDING, RIGGING, HOISTING: THE CONTRACTOR SHALL FURNISH ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES ANY EQUIPMENT AND APPARATUS FURNISHED UNDER THIS DIVISION. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

6. EXCAVATION AND BACKFILLING: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE SIZES, DEPTHS, FILL AND BEDDING REQUIREMENTS AND ANY OTHER EXCAVATION WORK REQUIRED UNDER THESE SPECIFICATIONS

7. WATERPROOFING: WHERE ANY WORK PIERCES WATERPROOFING, INCLUDING WATERPROOF CONCRETE, ROOFS, EXTERIOR WALL AND FLOORS IN WET AREAS, THE METHOD OF INSTALLATION SHALL BE REVIEWED BY THE ENGINEER BEFORE WORK IS DONE. THE CONTRACTOR SHALL FURNISH ALL NECESSARY SLEEVES, CAULKING AND FLASHING REQUIRED TO MAKE OPENINGS ABSOLUTELY WATERTIGHT.

8. PROVIDE FIRESTOPPING AROUND ALL FIRE PROTECTION, PLUMBING, MECHANICAL AND ELECTRICAL PENETRATIONS THROUGH FIRE RATED PARTITIONS. PROVIDE ASBESTOS FREE FIRESTOPPING SYSTEM CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME AND GASES. SYSTEM SHALL BE UL LISTED AND COMPLY WITH ASTM E 814.

9. PROVIDE ACCESS PANELS IN WALLS, FLOORS AND GYPSUM WALL BOARD CEILINGS TO ALLOW ACCESS TO: DAMPERS, HEATERS, VALVES, VARIABLE AIR VOLUME BOXES, FAN BOXES AND OTHER APPARATUS AND EQUIPMENT REQUIRING PERIODIC SERVICE AND INSPECTION. NOT ALL ACCESS PANELS ARE INDICATED ON THE PLANS. REVIEW ARCHITECTURAL AND MECHANICAL PLANS TO DETERMINE THE LOCATION AND QUANTITY OF ACCESS PANELS REQUIRED. COORDINATE TYPE AND LOCATION WITH ARCHITECTURAL PLANS.

23 05 05 - DEMOLITION

A. REFER TO DRAWINGS FOR GENERAL DESCRIPTION OF AREAS REQUIRING DEMOLITION.

B. ANY DEMOLITION SHALL BE COORDINATED WITH OWNER, ARCHITECT, G.C.. AND ENGINEER

C. REFER TO GENERAL CONTRACTOR'S/CONSTRUCTION MANAGER'S INSTRUCTIONS FOR EXISTING EQUIPMENT AND MATERIALS THAT SHALL REMAIN THE PROPERTY OF THE OWNER.

D. WHERE IT IS NOTED THAT ITEMS OF VALUE ARE NOT TO BE RETURNED TO THE OWNER, THE ITEMS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. STORAGE OR SALE OF ITEMS ON THE PROJECT SITE IS PROHIBITED. ITEMS SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF.

E. PROTECTION: ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING/SITE DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGE TO THE CONDITION BEFORE BEING DAMAGED TO THE SATISFACTION OF THE ARCHITECT AND OWNER. TAKE EFFECTIVE MEASURES TO PREVENT WINDBLOWN DUST.

F. UTILITIES:

1. MAINTAIN UTILITIES EXCEPT THOSE REQUIRING REMOVAL OR RELOCATION. KEEP UTILITIES IN SERVICE AND PROTECT FROM DAMAGE. DO NOT INTERRUPT UTILITIES SERVING IN-USE AREAS WITHOUT FIRST OBTAINING PERMISSION FROM THE UTILITY COMPANY AND THE OWNER.

2. COORDINATE ALL INTERRUPTIONS OF SERVICES AND LIMITATIONS OF ACCESS WITH THE OWNER NO LESS THAN 5 DAYS PRIOR TO THE INTERRUPTION.

3. PROVIDE TEMPORARY SERVICES AS REQUIRED. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION OF NEW WORK SHALL BE COORDINATED IN ADVANCE WITH THE CONSTRUCTION MANAGER AND BUILDING OWNER.

G. DISCONNECT, DEMOLISH, AND REMOVE HVAC SYSTEMS, EQUIPMENT, AND COMPONENTS INDICATED TO BE REMOVED. PIPING TO BE REMOVED: REMOVE PORTION OF PIPING INDICATED TO BE REMOVED AND CAP REMAINING PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.

1. PIPING TO BE ABANDONED IN PLACE: DRAIN PIPING AND CAP PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.

2. DUCTS TO BE REMOVED: REMOVE PORTION OF DUCTS INDICATED TO BE REMOVED AND CAP REMAINING DUCTS WITH SAME OR COMPATIBLE DUCTWORK MATERIAL.

3. DUCTS TO BE ABANDONED IN PLACE: CAP DUCTS WITH SAME OR COMPATIBLE DUCTWORK MATERIAL.

4. EQUIPMENT TO BE REMOVED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT.

5. EQUIPMENT TO BE REMOVED AND REINSTALLED: DISCONNECT AND CAP SERVICES AND REMOVE, CLEAN, AND STORE EQUIPMENT; WHEN APPROPRIATE, REINSTALL, RECONNECT, AND MAKE EQUIPMENT OPERATIONAL.

6. EQUIPMENT TO BE REMOVED AND SALVAGED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT AND DELIVER TO OWNER.

H. IF PIPE, INSULATION, OR EQUIPMENT TO REMAIN IS DAMAGED IN APPEARANCE OR IS UNSERVICEABLE, REMOVE DAMAGED OR UNSERVICEABLE PORTIONS AND REPLACE WITH NEW PRODUCTS OF EQUAL CAPACITY AND QUALITY.

23 05 13 - MOTORS, STARTERS AND WIRING

A. PROVIDE MOTORS AND CONTROLS, AND FURNISH STARTERS FOR HVAC EQUIPMENT, EXCEPT UNITS SERVED BY MCC PROVIDED UNDER ELECTRICAL SECTION. PROVIDE CONTROL AND OTHER RELATED WIRING INCLUDING INTERLOCKS. ALL MOTORS SHALL TO BE PREMIUM EFFICIENCY. ALL THREE PHASE MOTORS SHALL BE RATED FOR INVERTER DUTY SERVICE.

B. STARTERS THAT REQUIRE INTERLOCKS OR REMOTE CONTROL SHALL BE MAGNETIC WITH HAND-OFF-AUTOMATIC SWITCH (FAST-SLOW-OFF-AUTO FOR TWO SPEED MOTORS) IN COVER. STARTERS SHALL BE BY SINGLE MANUFACTURER: CUTLER-HAMMER, CLARK, ARROW HART OR SQUARE D.

23 05 17 - SLEEVES AND PENETRATIONS

A. GENERAL REQUIREMENTS

1. LAY OUT PENETRATION AND SLEEVE OPENINGS IN ADVANCE. COORDINATE WORK CAREFULLY WITH ARCHITECTURAL AND STRUCTURAL WORK. PROVIDE CORE DRILLING OF EXISTING CONSTRUCTION WHERE REQUIRED. SUBMIT PROPOSED LOCATIONS FOR REVIEW PRIOR TO CORE DRILLING.

2. MAINTAIN FIRE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT PENETRATIONS. SEAL PENETRATIONS WITH APPROVED FIRESTOP MATERIALS.

3. SLEEVES FOR INSULATED PIPE AND DUCT IN NON-FIRE RATED CONSTRUCTION SHALL ACCOMMODATE CONTINUOUS INSULATION WITHOUT COMPRESSION.

B. PIPE SLEEVES:

1. PROVIDE HOT-DIPPED GALVANIZED SCHEDULE 40 STEEL PIPE SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND MASONRY WALLS AND CONCRETE FLOOR AND ROOF SLABS.

2. PROVIDE 26 GAUGE GALVANIZED STEEL SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION.

3. PROVIDE MECHANICAL SLEEVE SEALS CONSISTING OF INTERLOCKING MODULES AT EXTERIOR PIPE PENETRATIONS.

4. PROVIDE ADJUSTABLE ESCUTCHEONS ON EXPOSED PIPING THAT PASSES THROUGH FINISHED FLOORS, WALLS AND CEILINGS. ESCUTCHEONS SHALL BE CHROMIUM-PLATED CAST BRASS, SIZED TO COVER SLEEVE OPENING AND TO ACCOMMODATE PIPE AND INSULATION.

C. DUCT SLEEVES AND OPENINGS:

1. PROVIDE GALVANIZED-STEEL SHEET DUCT SLEEVES FOR ROUND DUCTS 15 INCHES AND SMALLER. PROVIDE PREPARED, FRAMED OPENINGS FOR ROUND DUCTS LARGER THAN 15 INCHES AND FOR SQUARE, RECTANGULAR AND FLAT OVAL DUCTS, EXCEPT AS SPECIFIED OTHERWISE. SLEEVES SHALL MEET SMACNA REQUIREMENTS.

2. PROVIDE GALVANIZED-STEEL SHEET DUCT SLEEVES FOR SLEEVES THROUGH FIRE-RATED CONSTRUCTION AND THROUGH SMOKE PARTITIONS. SLEEVE AND SEAL MATERIALS, CONSTRUCTION AND CLEARANCES SHALL MEET REQUIREMENTS OF SMACNA FIRE DAMPER AND HEAT STOP GUIDE FOR AIR HANDLING SYSTEMS. WHERE FIRE DAMPERS ARE REQUIRED, INSTALL SLEEVE AND DAMPER ASSEMBLY IN ACCORDANCE WITH DAMPER LISTING.

23 05 29 - HANGERS AND SUPPORTS

A. PROVIDE PIPE STANDS, SUPPORTS, HANGERS AND OTHER SUPPORTING APPLIANCES AS NECESSARY TO SUPPORT WORK REQUIRED BY CONTRACT DOCUMENTS. SPACING OF HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES. STRUCTURAL STEEL SUPPORTS, HANGERS, ETC. SHALL BE ANGLE IRON, STEEL CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC. ALL SUPPORTS, HANGERS, BRACKETS, ETC., SHALL BE AS APPROVED BY THE ENGINEER.

B. ALL HANGERS SHALL BE GALVANIZED.

C. ATTACH HANGERS AND SUPPORTS DIRECTLY ONTO THE STRUCTURE BY FIRST REMOVING EXISTING FIRE PROOFING AND AFTER SECURING THE ATTACHMENT, REPAIRING THE FIRE PROOFING TO ITS ORIGINAL CONDITION, CONTINUOUSLY OVER THE ATTACHMENT.

D. FOR EXPANSION BOLTS/SHIELDS USE RED HEAD, HILTI OR WEJ-IT SELF DRILLING OR STEEL SHIELD, LOAD RATED. DO NOT USE DRILLED ANCHORS IN POST TENSION SLABS WITHOUT APPROVAL OF OWNER. DO NOT CUT REINFORCING STEEL WITH DRILLED INSERTS.

E. SUPPORT ALL GALVANIZED DUCTWORK WITH GALVANIZED HANGERS AND MOUNTS AS REQUIRED BY SMACNA (8 FT SPACING). DO NOT SUPPORT RISERS FROM SLEEVES IN SLABS.

23 05 48 - VIBRATION AND SEISMIC CONTROLS FOR HVAC

A. PROVIDE VIBRATION ISOLATION FOR EACH PIECE OF ROTATING OR RECIPROCATING HVAC EQUIPMENT SHOWN ON THE DRAWINGS. ALL ISOLATION COMPONENTS SHALL BE SUPPLIED BY A SINGLE MANUFACTURER - MASON INDUSTRIES, KINETICS OR AMBER BOOTH. TYPES OF ISOLATORS, REQUIRED DEFLECTIONS, AND INSTALLATION PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE VIBRATION ISOLATION MANUFACTURER.

B. PROVIDE SEISMIC RESTRAINTS AS REQUIRED BY CODE INCLUDING EQUIPMENT, PIPING OR DUCTWORK LOWER THAN 15" BELOW STRUCTURE. FOR EACH SEISMIC RESTRAINT, PROVIDE CERTIFIED CALCULATIONS TO VERIFY ADEQUACY TO MEET THE FOLLOWING DESIGN REQUIREMENTS: ABILITY TO ACCOMMODATE RELATIVE SEISMIC DISPLACEMENTS OF SUPPORTED ITEM BETWEEN POINTS OF SUPPORT. ABILITY TO ACCOMMODATE THE REQUIRED SEISMIC FORCES. FOR EACH RESPECTIVE SET OF ANCHOR BOLTS PROVIDE CALCULATIONS TO VERIFY ADEQUACY TO MEET COMBINED SEISMIC-INDUCED SHEER AND TENSION FORCES. FOR EACH WELDMENT BETWEEN STRUCTURE AND ITEM SUBJECT TO SEISMIC FORCE, PROVIDE CALCULATIONS TO VERIFY ADEQUACY. CALCULATIONS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE WHERE THE WORK IS BEING PERFORMED AND HAS SPECIFIC EXPERIENCE IN SEISMIC CALCULATIONS. RESTRAINTS SHALL MAINTAIN THE RESTRAINED ITEM IN A CAPTIVE POSITION WITHOUT SHORT CIRCUITING THE VIBRATION ISOLATION.

23 05 53 - PIPE AND DUCT IDENTIFICATION

A. DUCTWORK AND PIPING SHALL BE LABELED WITH PREPRINTED SELF-ADHESIVE, PREMIUM GRADE VINYL, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION.

B. VALVES SHALL BE TAGGED WITH STAMPED OR ENGRAVED BRASS VALVE TAGS. INSTALL TAGS ON VALVES AND CONTROL DEVICES IN PIPING SYSTEMS, EXCEPT CHECK VALVES; VALVES WITHIN FACTORY-FABRICATED EQUIPMENT UNITS; SHUTOFF VALVES; FAUCETS; CONVENIENCE AND LAWN-WATERING HOSE CONNECTIONS; AND HVAC TERMINAL DEVICES AND SIMILAR ROUGHING-IN CONNECTIONS OF END-USE FIXTURES AND UNITS. LIST TAGGED VALVES IN A VALVE SCHEDULE.

C. MACHINERY SUCH AS RTU'S, FANS, ETC., SHALL BE LABELED WITH PLASTIC LABELS WITH ENGRAVED EQUIPMENT NUMBER CORRESPONDING TO DRAWING SCHEDULE NUMBERS.

23 05 93 - TESTING ADJUSTING AND BALANCING

A. PROVIDE QUALIFIED PERSONNEL, EQUIPMENT, APPARATUS AND SERVICES FOR START-UP, TESTING AND BALANCING OF MECHANICAL SYSTEMS, TO PERFORMANCE DATA SHOWN IN SCHEDULES, AS SPECIFIED, AND AS REQUIRED BY CODES, STANDARDS, REGULATIONS AND AUTHORITIES HAVING JURISDICTION INCLUDING CITY INSPECTORS, OWNERS AND ARCHITECT

B. PROVIDE THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING (TAB) AGENCY TO PROVIDE TAB SERVICES FOR THE MECHANICAL SYSTEMS. THE TAB AGENCY SHALL BE CERTIFIED BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR THE ASSOCIATED AIR BALANCE COUNCIL (AABC) IN THOSE TESTING AND BALANCING DISCIPLINES REQUIRED FOR THIS PROJECT. THE TAB AGENCY SHALL HAVE AT LEAST ONE PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE SERVICES ARE TO BE PERFORMED AND CERTIFIED BY NEBB OR AABC AS A TEST AND BALANCE ENGINEER.

C. PRIOR TO TESTING, ADJUSTING, AND BALANCING, THE MECHANICAL CONTRACTOR SHALL VERIFY THAT THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING AS SPECIFIED. APPROVED SHOP DRAWINGS, AS BUILT DRAWINGS, AND ALL OTHER DATA REQUIRED FOR EACH SYSTEM AND/OR COMPONENT TO BE TESTED SHALL BE MADE AVAILABLE AT THE JOB SITE DURING THE ENTIRE TAB EFFORT. OWNER SHALL BE NOTIFIED IN WRITING OF ALL EQUIPMENT, COMPONENTS, OR BALANCING DEVICES, THAT ARE DAMAGED, INCORRECTLY INSTALLED, OR MISSING, AS WELL AS ANY DESIGN DEFICIENCIES THAT WILL PREVENT PROPER TESTING, ADJUSTING, AND BALANCING. TESTING, ADJUSTING, AND BALANCING SHALL NOT COMMENCE UNTIL APPROVED BY THE OWNER.

D. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM IDENTIFIED, IN ACCORDANCE WITH THE DETAILED PROCEDURES OUTLINED IN EITHER NEBB: "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS" OR AABC: "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE." THE TAB AGENCY SHALL TEST, ADJUST, AND BALANCE THE FOLLOWING MECHANICAL SYSTEMS:

1. ALL AIR HANDLING EQUIPMENT
2. ALL PUMPING SYSTEMS
3. ALL SUPPLY AIR SYSTEMS
4. ALL RETURN AIR SYSTEMS
5. ALL HYDRONIC SYSTEMS
6. VERIFY OPERATION OF ALL TEMPERATURE CONTROL SYSTEMS
7. TEST SYSTEMS FOR PROPER SOUND AND VIBRATION LEVELS

A. SUBMIT TESTING, ADJUSTING, AND BALANCING REPORTS BEARING THE SEAL AND SIGNATURE OF THE TAB PROFESSIONAL ENGINEER. PREPARE A REPORT OF RECOMMENDATIONS FOR CORRECTING UNSATISFACTORY MECHANICAL PERFORMANCES WHEN A SYSTEM CANNOT BE SUCCESSFULLY BALANCED.

B. START UP ALL SYSTEMS. PRESSURE TEST DUCTWORK AND PIPING, AND BALANCE SYSTEMS INCLUDING, BUT NOT LIMITED TO, ALL NEW AND EXISTING REGISTERS, GRILLES, DIFFUSERS, TERMINAL UNITS, FANS, ETC. WITHIN THE AREA OF WORK TO PERFORMANCE DATA SHOWN ON PLANS, SCHEDULES, AND AS SPECIFIED.

C. DO NOT COVER OR CONCEAL WORK BEFORE TESTING AND INSPECTION AND OBTAINING APPROVAL.

D. LEAKS, DAMAGE AND DEFECTS DISCOVERED OR RESULTING FROM STARTUP, TESTING, AND BALANCING SHALL BE REPAIRED OR REPLACED TO LIKE-NEW CONDITION WITH ACCEPTABLE MATERIALS. TEST SHALL BE CONTINUED UNTIL SYSTEM OPERATES WITHOUT ADJUSTMENT OR REPAIR.

E. REPORT ON REPORTING FORMS, SUBMITTED TO ARCHITECT FOR APPROVAL IN ADVANCE.

F. SUBMIT PROCEDURES, RECORDING FORMS, AND TEST EQUIPMENT FOR REVIEW PRIOR TO BALANCING, AS DESCRIBED IN SPECIFICATIONS. SUBMIT ELECTRONIC COPY OF TESTING AND BALANCING REPORTS TO ARCHITECT FOR APPROVAL.

G. FURNISH ALL TEST MEDIUMS AND DISPOSE OF ALL TEST MEDIUMS AT AN APPROVED OFF-SITE LOCATION AFTER TESTING IS COMPLETE.

H. NOTE REQUIREMENT ABOVE FOR CFM AND STATIC PRESSURE READINGS PRIOR TO DEMOLITION.

I. THE BALANCING CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL DIRECTIONAL ADJUSTMENT OF ALL LINEAR DIFFUSERS AS INDICATED ON PLANS. IF NO DIRECTIONAL FLOW IS INDICATED INTERIOR LINEAR DIFFUSERS SHALL BE DIRECTED HORIZONTALLY AND PERIMETER LINEAR DIFFUSER SHALL BE DIRECTED VERTICALLY, IF PERIMETER LINEAR DIFFUSERS HAVE MULTIPLE SLOTS THE PERIMETER SLOT DIRECTED VERTICALLY, AND THE INTERIOR SLOT DIRECTED HORIZONTALLY TOWARDS THE INTERIOR SPACE.

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23 07 13 - HVAC INSULATION

A. GENERAL REQUIREMENTS

1. INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA. INSTALL INSULATION, MASTICS, ADHESIVES, COATINGS, COVERS, WEATHER-PROTECTION AND OTHER WORK IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD, 50 SMOKE DEVELOPED.

2. INSULATION AND VAPOR BARRIER SHALL BE CONTINUOUS AROUND ENTIRE PERIMETER OF DUCTS. DUCTS SUPPORTED BY METAL STRAPS SHALL HAVE INSULATION ENCOMPASSING STRAPS, WHERE STRAPS PENETRATE AT TOP OF DUCT TIGHTLY SEAL AROUND STRAP WITH INSULATING TAPE. DUCTS SUPPORTED BY TRAPEZE TYPE HANGERS UNDER DUCTS SHALL HAVE 6 LB. DENSITY RIGID INSULATION PROVIDED BETWEEN DUCT AND HANGER, INSULATION SHALL BE SAME THICKNESS AND VAPOR BARRIER AS SPECIFIED FOR SPECIFIC DUCT TYPE. RIGID INSULATION SECTION SHALL BE FULL WIDTH OF DUCT AND MINIMUM 12" LONG. TAPE AND SEAL ALL SEAMS WHERE RIGID INSULATION MEETS OTHER INSULATION.

3. FITTINGS, VALVES AND FLANGES SHALL BE INSULATED WITH SAME MATERIAL AND TO SAME THICKNESS AS ADJOINING PIPE INSULATION, WITH PRESENT SECTIONS.

4. FOR STRAINERS AND OTHER VALVES OR FITTINGS WHICH NEED MAINTENANCE, PROVIDE PREFORMED REMOVABLE INSULATION SECTION.

B. PRODUCTS AND APPLICATIONS

1. INDOOR DUCT INSULATION SHALL BE MINERAL FIBER BLANKET DUCT INSULATION WITH FACTORY APPLIED FSK JACKET. PROVIDE MINIMUM OF R-6 (AS INSTALLED) INSULATION FOR THE FOLLOWING:

   a. SUPPLY AND FRESH AIR DUCTS WHEN LOCATED WITHIN CONCEALED SPACES INSIDE THE BUILDING ENVELOPE.

   b. RETURN AIR DUCTWORK IN UNCONDITIONED SPACES (WHERE SPACE TEMPERATURE IS MORE THAN 10 DEGREES F DIFFERENT FROM DUCT TEMPERATURE)

2. OUTDOOR DUCT INSULATION SHALL BE ROOF MOUNTED EXTERIOR DUCTWORK SHALL BE THERMADUCT (OR EQUAL) PRE-ENGINEERED DUCTWORK SYSTEM WITH R-VALUE OF 1-3/4" THICK PANEL = 12R (AS INSTALLED) INSULATION FOR SUPPLY, RETURN, EXHAUST AND FRESH AIR DUCTS WHEN LOCATED OUTSIDE THE BUILDING ENVELOPE.

3. HOT WATER PIPE INSULATION SHALL BE FIBROUS GLASS PIPE INSULATION WITH FACTORY-APPLIED ASJ WITH K FACTOR OF AT LEAST 0.23 AT 75F MEAN TEMPERATURE. PROVIDE MINIMUM 1-1/2 INCH THICKNESS. PROVIDE 2 INCH THICKNESS FOR HEATING HOT WATER PIPES 1-1/2 INCH DIAMETER AND GREATER.

4. REFRIGERANT LINE AND CONDENSATE DRAIN LINE INSULATION SHALL BE 1 INCH THICK FLEXIBLE ELASTOMERIC. ACCEPTABLE MANUFACTURERS: ARMACELL OR K-FLEX.

5. CONDENSATE DRAIN LINE INSULATION SHALL BE 1 INCH THICK FLEXIBLE ELASTOMERIC. ACCEPTABLE MANUFACTURERS: ARMACELL OR K-FLEX.

6. EQUIPMENT INSULATION SHALL BE MINERAL FIBER BOARD INSULATION WITH FACTORY APPLIED ASJ. PROVIDE 2 INCH THICK FOR HEATING SYSTEM HEAT EXCHANGERS, 1 INCH THICK FOR OTHER EQUIPMENT. INSULATION SHALL BE FORMED OR FABRICATED TO FIT EQUIPMENT.

C. OUTDOOR JACKET

a. PROVIDE OUTDOOR DUCTWORK WITH WEATHER-PROOF LAMINATE JACKETING SYSTEM, 3M VENTURECLAD OR APPROVED EQUAL.

b. PROVIDE OUTDOOR PIPING WITH WATERPROOF 0.016" THICK ALUMINUM JACKET WITH 2" TRANSVERSE AND LONGITUDINAL LAPPED SEAMS ORIENTED TO SHED WATER.

23 08 00 - COMMISSIONING OF HVAC

A. SCOPE OF HVAC TESTING SHALL INCLUDE ENTIRE HVAC INSTALLATION, FROM CENTRAL EQUIPMENT FOR HEAT GENERATION AND REFRIGERATION THROUGH DISTRIBUTION SYSTEMS TO EACH CONDITIONED SPACE. TESTING SHALL INCLUDE MEASURING CAPACITIES AND EFFECTIVENESS OF OPERATIONAL AND CONTROL FUNCTIONS.

B. TEST ALL OPERATING MODES, INTERLOCKS, CONTROL RESPONSES, AND RESPONSES TO ABNORMAL OR EMERGENCY CONDITIONS, AND VERIFY PROPER RESPONSE OF BUILDING AUTOMATION SYSTEM CONTROLLERS AND SENSORS.

C. THE CXA ALONG WITH THE HVAC CONTRACTOR, TESTING AND BALANCING CONTRACTOR, AND CONTROLS CONTRACTOR SHALL PREPARE DETAILED TESTING PLANS, PROCEDURES, AND CHECKLISTS FOR HVAC SYSTEMS, SUBSYSTEMS, AND EQUIPMENT.

D. PERFORM COMMISSIONING TESTS AT THE DIRECTION OF THE CXA. PROVIDE TECHNICIANS, INSTRUMENTATION, AND TOOLS REQUIRED TO PERFORM COMMISSIONING TESTS. PROVIDE INFORMATION REQUESTED BY THE CXA FOR FINAL COMMISSIONING DOCUMENTATION.

23 09 00 - INSTRUMENTATION AND CONTROLS

A. REFER TO 23 0900 INSTRUMENTATION AND CONTROLS FOR HVAC SPECIFICATION BOOK
B. REFER TO 23 0993 SEQUENCE OF OPERATIONS FOR HVAC CONTROL SPECIFICATION BOOK

23 21 00 - PIPING AND PUMPS

A. GENERAL REQUIREMENTS

1. PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS INDICATED IN SCHEDULE OF PIPE AND FITTING MATERIALS. PROVIDE DIELECTRIC FITTINGS TO CONNECT DIFFERENT PIPING MATERIALS.

2. PIPING 2-1/2 AND LARGER AND ALL DIRECT-BURIED PIPING SHALL BE WELDED STEEL. PIPING 2" AND SMALLER (EXCEPT DIRECT-BURIED PIPING) SHALL BE SCREWED STEEL OR COPPER, STEEL PIPING SHALL BE ASTM A53 OR A106, GRADE B, COPPER PIPING SHALL BE ASTM B88.

B. SCHEDULE OF PIPE AND FITTING MATERIALS

1. HOT WATER: 150 PSI WORKING PRESSURE. SCHEDULE 40 STEEL WITH THREADED STEEL JOINTS OR TYPE L COPPER WITH SOLDERED COPPER JOINTS.

2. CONDENSATE DRAIN (INCLUDING PUMPED CONDENSATE): 125 PSI WORKING PRESSURE. TYPE L COPPER WITH SOLDERED COPPER JOINTS.

3. REFRIGERANT PIPING: TYPE ACR COPPER

C. VALVES AND STRAINERS

1. VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER. VALVES SHALL BE AS MANUFACTURED BY APOLLO, CRANE, HAMMOND, JENKINS, STOCKHOLM OR MILWAUKEE.

2. FOR WATER SERVICE, STRAINERS SHALL BE FULL SIZE OF EXTERNAL PIPE SIZE AND HAVE A MAXIMUM CLEAN PRESSURE DROP OF ONE PSI (FOR STEAM CONDENSATE 1/4 PSI). STRAINERS SHALL BE PER MANUFACTURER'S TABLE BY SARCO, WATTS, OR ARMSTRONG. INSTALL STRAINERS AT LOCATIONS THAT WILL ALLOW REMOVAL OF SCREENS FOR CLEANING.

D. COMBINATION BALANCING AND SHUT-OFF VALVES

1. PROVIDE CALIBRATED COMBINATION BALANCING SHUT-OFF VALVES AS INDICATED ON THE PLANS. ACCEPTABLE MANUFACTURERS SHALL BE ARMSTRONG, BELL AND GOSSET, FLOWSET, OR TACO.

E. AUTOMATIC FLOW CONTROL VALVES

1. PROVIDE AUTOMATIC PRESSURE COMPENSATING FLOW CONTROL VALVES BY GRISWOLD, FDI OR T&A AS INDICATED ON THE PLANS. VALVES SHALL BE FACTORY SET AND SHALL AUTOMATICALLY LIMIT THE RATE OF FLOW TO WITHIN 5 PERCENT OF THE SPECIFIED CAPACITY.

F. CENTRIFUGAL PUMPS

1. PROVIDE CENTRIFUGAL PUMPS, OF CAPACITIES, TYPES, AND CONFIGURATIONS AS INDICATED ON THE PLANS. PUMPS SHALL BE DESIGNED SPECIFICALLY FOR INTENDED CLASSES OF SERVICE, WITH NON-OVERLOADING CHARACTERISTICS THROUGHOUT THE DESIGN CURVE (MOTORS SHALL NOT OPERATE IN THEIR SERVICE FACTOR). IMPELLER SHALL BE STATICALLY AND DYNAMICALLY BALANCED. IMPELLER SIZE SHALL BE NO MORE THAN 90% OF CASING SIZE. SUBMIT PUMP CURVE FOR REVIEW. PUMP SUBMITTALS MAY BE REJECTED, WHICH OPERATE IN AN INAPPROPRIATE PORTION OF THEIR PERFORMANCE CURVES, INCLUDING, BUT NOT LIMITED TO, OPERATING IN THE RIGHTMOST THIRD OF THE CURVE.

2. PROVIDE PUMPS WITH BRONZE FITTED CONSTRUCTION, INCLUDING CAST IRON CASINGS, BRONZE OR COPPER SHAFT SLEEVES, ALLOY STEEL SHAFTS AND BRONZE IMPELLERS. BEARINGS SHALL BE EITHER BE SLEEVE TYPE OR REGREASABLE BALL BEARINGS. PROVIDE CASING WEAR RINGS, DRAIN AND VENT CONNECTIONS AND MECHANICAL COUPLING OR DIRECT DRIVE CONNECTION BETWEEN PUMP AND MOTOR. ACCEPTABLE MANUFACTURERS: ARMSTRONG, BELL AND GOSSETT AND TACO.

23 25 00 - HVAC WATER TREATMENT

A. PROVIDE THE SERVICES OF AN EXPERIENCED HVAC WATER-TREATMENT SERVICE PROVIDER CAPABLE OF ANALYZING WATER QUALITIES, INSTALLING WATER-TREATMENT EQUIPMENT, AND APPLYING WATER TREATMENT TO MINIMIZE CORROSION, SCALE BUILDUP, AND BIOLOGICAL GROWTH FOR OPTIMUM EFFICIENCY OF HVAC EQUIPMENT WITHOUT CREATING A HAZARD TO OPERATING PERSONNEL OR THE ENVIRONMENT. BASE HVAC WATER TREATMENT ON QUALITY OF WATER AVAILABLE AT PROJECT SITE, HVAC SYSTEM EQUIPMENT MATERIAL CHARACTERISTICS AND FUNCTIONAL PERFORMANCE CHARACTERISTICS, OPERATING PERSONNEL CAPABILITIES, AND REQUIREMENTS AND GUIDELINES OF AUTHORITIES HAVING JURISDICTION.

B. CLOSED LOOP SYSTEMS

1. PROVIDE CLOSED LOOP SYSTEM WITH WATER TREATMENT CONSISTING OF 5 GALLON BY-PASS SHOT FEEDER TO FEED CHEMICAL SOLUTION INTO EACH PIPING SYSTEM.

2. FLUSH AND CLEAN ALL SYSTEMS WITH DEARBORN BC-45 CLEANER AFTER COMPLETION OF INSTALLATION. AFTER CLEANING, ADD NITRITE INHIBITOR TO CLOSED LOOP SYSTEMS, TO CONTROL NITRITE STRENGTH TO 800-1000 PPM MAXIMUM. SUBMIT WRITTEN REPORT INDICATING THAT SYSTEMS HAVE BEEN THOROUGHLY CLEANED AND CHARGED WITH CORROSION INHIBITOR.

3. SYSTEM CONTAINING GLYCOL SHALL BE CHARGED TO THE PERCENT BY VOLUME INDICATED ON THE DRAWING. SUBMIT WRITTEN REPORT INDICATING THAT SYSTEMS HAVE BEEN PROPERLY CHARGED.

4. PROVIDE ONE YEAR SERVICE INCLUDING MAINTAINING CHEMICALS AND MAINTAINING FEEDING DEVICES, AS WELL AS ANALYZING WATER SAMPLES.

23 31 00 - HVAC DUCTS

A. GENERAL REQUIREMENTS

1. FOR GALVANIZED DUCTWORK, SEAL AIR DUCT JOINTS AND JOINTS BETWEEN FITTINGS AND DUCTS WITH HARDCAST SEALANT OR APPROVED EQUAL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

2. DUCTWORK SHALL BE FREE FROM VIBRATION UNDER ALL CONDITIONS OF OPERATION.

3. DIFFUSER & REGISTER LOCATIONS SHALL BE COORDINATED WITH ARCHITECTURAL REFLECTED CEILING PLANS.

4. DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZES ARE NOMINAL.

5. ALL DUCTS PENETRATING RATED FIRE WALLS SHALL BE PROVIDED WITH FIRE DAMPERS AND ACCESS DOORS.

6. DUCTWORK SHALL NOT RUN ALONG FULL HEIGHT PARTITIONS.

7. PATCH AND SEAL ALL EXISTING OPENINGS IN DUCTWORK NOT UTILIZED FOR NEW LAYOUT.

8. THE INSIDE OF ALL UNLINED DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.

9. WHEN SECTION OF DUCTWORK IS NOT LABELED FOR SIZE, THE LARGER SIZE INDICATED ON THE CONNECTED DUCT SHALL PREVAIL. SIZE OF DUCT RUN-OUTS TO DIFFUSER SHALL EQUAL DIFFUSER NECK SIZE.

10. DUCT BRANCH CONNECTIONS AND TAKE OFFS SHALL BE MADE WITH 45° CONNECTION, BELLMOUTH OR CONICAL ONLY. SPIN IN COLLARS AND STRAIGHT TAPS SHALL NOT BE USED.

11. ELBOWS AND BENDS FOR RECTANGULAR DUCTS SHALL HAVE CENTER LINE RADIUS OF 1.5 TIMES DUCT WIDTH WHEREVER POSSIBLE. WHERE CENTERLINE RADIUS IS LESS THAN 1.5 TIMES DUCT WITH, ELBOWS SHALL BE RADIUS THROAT WITH RADIUS HEEL AND FULL-LENGTH SPLITTER VANES.

12. NO PIPE, CONDUIT, HANGER, ARCHITECTURAL ELEMENT NOR STRUCTURAL MEMBER SHALL PASS THROUGH DUCT WITHOUT ARCHITECT'S AND/OR ENGINEER'S WRITTEN APPROVAL.

B. SHEETMETAL DUCTWORK

1. SHEET METAL DUCTS SHALL BE CONSTRUCTED OF HOT DIPPED G90 GALVANIZED SHEET METAL UNLESS OTHERWISE SPECIFIED. MATERIAL, CONSTRUCTION AND INSTALLATION SHALL MEET REQUIREMENTS OF MOST RECENT EDITIONS OF SMACNA STANDARDS (EXCEPT FOR MORE STRINGENT REQUIREMENTS SPECIFIED OR SHOWN ON DRAWINGS). ALL MEDIUM PRESSURE DUCTWORK BETWEEN MAIN SYSTEM FAN AND AIR TERMINAL DEVICE SHALL BE MINIMUM 4"(wg) PRESSURE CLASS, SEAL CLASS A, LEAKAGE CLASS 6. ALL LOW-PRESSURE DUCTWORK BETWEEN TERMINAL DEVICE AND AIR OUTLETS SHALL BE MINIMUM 2"(wg) PRESSURE CLASS. SEAL CLASS B, LEAKAGE CLASS 12

C. FLEXIBLE DUCTWORK

1. FLEXIBLE DUCTWORK, CONNECTING TO UNINSULATED OR UNLINED DUCT, SHALL BE VINYL COATED FIBERGLASS CLOTH 0.0057" MINIMUM THICKNESS, 25 STRANDS PER INCH MINIMUM THREAD COUNT WITH CORROSION-RESISTANT HELICAL WIRE REINFORCEMENT. FLEX DUCT SHALL BE UL RATED FOR 12" W.C. POSITIVE PRESSURE, 2" W.C. NEGATIVE PRESSURE WITH A MAXIMUM VELOCITY OF 4000 FPM. FLEXDUCT MUST BE LISTED AS A CLASS 1 CONNECTOR ACCORDING TO UL 181 AND SHALL MEET THE REQUIREMENTS OF NFPA 90A - MAXIMUM ASTM E-84 FIRE HAZARD RATING SHALL BE 25 FLAME SPREAD, 50 FUEL CONTRIBUTED, AND 50 SMOKE DEVELOPED. UNINSULATED FLEXIBLE DUCT SHALL BE EQUIVALENT TO FLEXMASTER TYPE 4.

2. FLEXIBLE DUCT CONNECTED TO INSULATED OR LINED DUCT SHALL BE INSULATED WITH 1-1/2", 1/2 LB. DENSITY FIBERGLASS INSULATION AND FLAME RETARDANT (UL LISTED) VAPOR BARRIER, MEETING ASTM E-84 RATING AS REFERENCED ABOVE.

3. FLEXIBLE DUCTS SHALL NOT EXCEED 5 FEET LONG AND SHALL BE USED FOR STRAIGHT RUN ONLY, NO OFFSETS OR TURNS. MAXIMUM SAG OF 1/2" PER 1'-0".

4. HANGER AND SADDLE IN CONTACT WITH FLEXIBLE DUCT SHALL BE WIDE ENOUGH TO PREVENT RESTRICTION OF INTERNAL DUCT DIAMETER WHEN WEIGHT OF SUPPORTED SECTION RESTS ON HANGER OR SADDLE MATERIAL.

5. COLLARS TO WHICH FLEXIBLE DUCTS ARE ATTACHED SHALL BE AT LEAST 2" LONG. SLEEVES FOR JOINING SECTIONS OF FLEXIBLE DUCT SHALL BE AT LEAST 4" LONG.

6. APPLY SEALING COMPOUND TO METALLIC SURFACE AT CONNECTION OF FLEXIBLE DUCT WITH SHEET METAL DUCTS, COLLARS AND MIXING BOXES. SLIP FLEXIBLE DUCTWORK OVER SEALING COMPOUND. COMPLETE SEAL WITH 1/2" WIDE, COMMERCIALLY-MADE METAL DRAW BANDS.

23 33 00 - AIR DUCT ACCESSORIES

A. ACOUSTICAL DUCT LINING

1. PROVIDE UL-LISTED, 1" THICK (UNLESS OTHERWISE NOTED) 1.5 LB DENSITY, BY CERTAIN-TEED, KNAUF, OWENS CORNING OR MANVILLE FIBERGLASS ACOUSTICAL LINING WITH ANTIMICROBIAL COATING FOR THE FOLLOWING DUCTWORK:

   a. SUPPLY AND RETURN AIR DUCTWORK (INCLUDING PLENUMS) FOR MINIMUM OF 20 FEET DOWNSTREAM OF AIR HANDLING UNITS (OR TO SOUND ATTENUATOR IF ATTENUATOR IS LOCATED FURTHER THAN 20' FROM FAN).

   b. EXHAUST DUCTWORK, INCLUDING PLENUMS, FOR MINIMUM OF 20 FEET UPSTREAM AND DOWNSTREAM OF FANS.

   c. TRANSFER DUCTS

   d. FOR A MIMIMUM OF 10 FEET DOWNSTREAM OF VAV BOXES.

   e. DUCTWORK INDICATED AS LINED ON DRAWINGS.

2. DIMENSIONS SHOWN ON DRAWINGS FOR DUCTWORK ARE NET INSIDE DIMENSIONS. INCREASE SHEETMETAL SIZE FOR LINING WHERE SPECIFIED.

3. MATERIALS AND INSTALLATION SHALL MEET THE FOLLOWING STANDARDS, AS APPLICABLE: NFPA-90A, UL723, NFPA-255; SMACNA DUCT LINER APPLICATIONS STANDARD; SMACNA MECHANICAL FASTENERS STANDARD; ADHESIVE AND SEALANT COUNCIL; ADHESIVES STANDARD FOR DUCT LINER - ASC-A-7001A; ASTM E-84 FIRE HAZARD CLASSIFICATIONS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED, AND 50 FUEL CONTRIBUTED.

B. ADJUSTABLE MANUAL BALANCING DAMPERS:

1. GENERAL: NOT ALL MANUAL BALANCING DAMPERS MAY BE SHOWN ON THE PLANS FOR CLARITY. PROVIDE MANUAL ADJUSTABLE VOLUME DAMPERS, WITH EXTENDED MOUNT INDICATING AND LOCKING QUADRANTS ON EACH SUPPLY, RETURN, AND GENERAL EXHAUST DUCT TAKEOFF, AND AT EACH TAKEOFF TO A REGISTER, GRILLE, OR DIFFUSER. DAMPERS SHALL BE LOCATED AS FAR UPSTREAM AS POSSIBLE IN THE BRANCH DUCT OR TAKE OFF TO MINIMIZE DOWNSTREAM NOISE.

2. REMOTE ADJUSTABLE VOLUME DAMPERS: PROVIDE REMOTE ADJUSTABLE VOLUME DAMPERS IN AREAS WHERE CEILING CAVITY ACCESS IS LIMITED BY HARD (SOLID) CEILINGS, EQUIPMENT OBSTRUCTIONS, ARCHITECTURAL FEATURES, ETC. COORDINATE BETWEEN MECHANICAL PLANS AND ARCHITECTURAL CEILING PLANS TO DETERMINE IF AND WHERE REMOTE ADJUSTABLE VOLUME DAMPERS ARE REQUIRED. MANUALLY ADJUSTED REMOTE VOLUME DAMPERS SHALL BE SIMILAR TO YOUNG REGULATOR MODEL 270.

C. FLEXIBLE CONNECTIONS

1. MAKE ALL CONNECTIONS BETWEEN AIR HANDLING UNITS AND DUCTWORK AND BETWEEN FANS AND DUCTWORK WITH FLEXIBLE CONNECTIONS. FOR INDOOR APPLICATIONS, FLEXIBLE CONNECTIONS SHALL BE NEOPRENE-COATED FIBROUS GLASS FIRE RETARDANT FABRIC, BY VENTFABRICS, OR DURODYNE. FOR OUTDOOR APPLICATIONS, FLEXIBLE CONNECTIONS SHALL BE DUPONT HYPALON-COATED FIBROUS GLASS FIRE-, WEATHER-, AND UV-RESISTANT BY VENTFABRICS OR DURODYNE.

23 34 00 - HVAC FANS

A. ALL FANS SHALL HAVE THEIR AIR PERFORMANCE RATED IN ACCORDANCE WITH AMCA AND SHALL BE LICENSED TO BEAR THE AMCA SEAL.

B. ACCEPTABLE MANUFACTURERS: GREENHECK, COOK, TWIN CITY.

23 37 00 - AIR OUTLETS AND INLETS

A. PROVIDE DIFFUSERS, REGISTERS, AND GRILLES FOR SUPPLY, RETURN, AND EXHAUST OUTLETS, OF SIZE, TYPE, MATERIAL AND DESIGN SHOWN ON DRAWINGS. ACCEPTABLE MANUFACTURERS: KRUEGER, NAILOR, METALAIRE, TITUS, OR PRICE. SOUND PRESSURE LEVELS SHALL NOT EXCEED NC 30. COLOR AND FINISH SHALL BE SELECTED BY THE ARCHITECT.

B. EXISTING TO REMAIN/BE REUSED DIFFUSERS/REGISTIERS/GRILLES SHALL BE CLEANED, TOUCH-UP PAINTED AND RENDERED IN 'LIKE-NEW-CONDITION' BY THE CONTRACTOR.

23 51 00 - BREECHING, CHIMNEYS, AND STACKS

A. PROVIDE DOUBLE WALL UL-LISTED STAINLESS STEEL BREACHING AND STACK BY SELKIRK, HEAT-FAB, OR METAL-FAB. PROVIDE ALL REQUIRED FITTINGS FOR A COMPLETE OPERATIONAL INSTALLATION. INSTALL SYSTEM AND MAKE IT SMOKE TIGHT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. BREECHING FOR CONDENSING GAS APPLIANCES SHALL BE AL29-4C INNER WALL CONSTRUCTION WITH STAINLESS STEEL JACKET.

23 52 00 - BOILERS

A. CONDENSING BOILERS SHALL BE LOCHINVAR, WEIL MCLAIN, FULTON, AERCO OR VIESSMANN.

23 70 00 - CENTRAL HVAC EQUIPMENT

PACKAGED OUTDOOR ROOFTOP UNIT

1. PROVIDE PACKAGED DX ROOFTOP UNIT BY VALENT, DAIKIN, TRANE OR YORK. UNIT SHALL HAVE HEAT PUMP WITH SECOND STAGE HOT WATER HEATING AND MICROPROCESSOR BASED DISCHARGE AIR AND VARIABLE AIR VOLUME CONTROLS (FOR VAV UNITS). PROVIDE VARIABLE SPEED DRIVES FOR VAV UNITS. PROVIDE INSULATED PREFABRICATED ROOF CURB FOR MOUNTING THE UNIT. PROVIDE ALL NECESSARY SAFETY CONTROLS FOR FURNACE OR ELECTRIC COILS. PROVIDE MINIMUM OF FOUR STAGES OF CAPACITY CONTROL AND HOT GAS BYPASS FOR COMPRESSOR. REFRIGERANT SHALL BE R32.

23 81 29 - VARIABLE REFRIGERANT FLOW SYSTEMS

A. SYSTEM DESCRIPTION:

1. PROVIDE A VARIABLE REFRIGERANT CAPACITY, AIR-COOLED HEAT PUMP AIR CONDITIONING SPLIT SYSTEM CONSISTING OF EVAPORATOR UNITS AND BRANCH SELECTOR BOXES, THREE PIPE REFRIGERANT DISTRIBUTION CONFIGURATION USING PID CONTROL, AND AIR-COOLED CONDENSING UNITS. THE CONDENSER SHALL BE A DIRECT EXPANSION (DX), AIR-COOLED, HEAT RECOVERY/HEAT PUMP MULTI-ZONE SPLIT AIR CONDITIONING SYSTEM WITH INVERTER DRIVEN VARIABLE SPEED COMPRESSORS, USING R32 REFRIGERANT. ALL INDOOR UNITS ARE EACH CAPABLE OF OPERATING SEPARATELY WITH INDIVIDUAL TEMPERATURE CONTROL, SYSTEM SHALL BE CAPABLE OF INTEGRATING WITH OPEN PROTOCOL BACNET BMS. INSTALL IN STRICT CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS.

B. CONDENSING UNIT:

1. FACTORY ASSEMBLED AND PRE-WIRED WITH ALL NECESSARY ELECTRONIC AND REFRIGERANT CONTROLS, CAPABLE OF HEATING OPERATION AT 12F AND 95F OUTDOOR AIR DRY-BULB TEMPERATURE.

C. INDOOR UNITS:

1. FACTORY ASSEMBLED AND TESTED WITH FACTORY WIRING, PIPING, ELECTRONIC PROPORTIONAL EXPANSION VALVE, CONTROL CIRCUIT BOARD, FAN MOTOR THERMAL PROTECTOR, FLARE CONNECTIONS, CONDENSATE DRAIN PAN, CONDENSATE DRAIN PUMP, CONDENSATE SAFETY SHUTOFF AND ALARM, SELF-DIAGNOSTICS, AUTO-RESTART FUNCTION, 3-MINUTE FUSED TIME DELAY, AND TEST RUN SWITCH.

D. BRANCH SELECTOR (BS) BOX:

1. DESIGNED SPECIFICALLY FOR USE WITH THE MANUFACTURER'S VRF HEAT RECOVERY SYSTEM COMPONENTS. THESE SELECTOR BOXES SHALL BE FACTORY ASSEMBLED, WIRED, PIPED, AND RUN TESTED AND PROVIDED WITH ELECTRONIC EXPANSION VALVES (EEVS) THAT ARE SERVICEABLE AND REPLACEABLE WITHOUT OPENING THE REFRIGERATION SYSTEM. IF THE MANUFACTURER EMPLOYS ANY SOLENOID VALVES IN LIEU OF EEVS PRESSURE-RATED SHUTOFF ISOLATION VALVES SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR UPSTREAM AND DOWNSTREAM OF THE BS BOX TO FACILITATE SERVICEABILITY WITHOUT OPENING THE REFRIGERATION SYSTEM.

E. VRF SYSTEM CONTROLS:

1. INTELLIGENT MULTI-ZONE CONTROLLER CAPABLE OF CONTROLLING A MAXIMUM OF 64 INDOOR UNIT GROUPS AND 128 INDOOR UNITS CONNECTED TO A MAXIMUM OF 10 OUTDOOR UNITS. THE INTELLIGENT TOUCH MANAGER SHALL SUPPORT OPERATIONS SUPERSEDING THAT OF THE LOCAL REMOTE CONTROLLER, SYSTEM CONFIGURATION, DAILY/WEEKLY SCHEDULING, MONITORING OF OPERATION STATUS, AND MALFUNCTION MONITORING.

F. ALLOWABLE ALTERNATE MANUFACTURER REQUIREMENTS:

1. MITSUBISHI, DAIKIN, TRANE

A. 23 82 00 - HEATING AND COOLING UNITS

B. FAN COIL UNITS

1. PROVIDE FAN COILS OF CAPACITIES AS INDICATED ON SCHEDULES. PROVIDE VALVING AND FITTINGS AS SHOWN ON DETAILS. PROVIDE INTEGRAL THERMOSTATS AND ELECTRIC CONTROL VALVES. UNLESS INDICATED OTHERWISE ON DRAWINGS, SCHEDULES OR CONTROLS. PROVIDE THREE-SPEED SWITCH. PROVIDE EXTENDED DRAIN PAN ASSEMBLY TO CAPTURE CONDENSATE FROM BOTH COIL AND VALVING ASSEMBLY. PROVIDE UNIT MOUNTED DISCONNECT SWITCH. PROVIDE SECONDARY DRAIN PAN UNDER FAN SHUT OFF UNIT AND SEND ALARM TO BAS PRIOR TO OVERFLOW OF PAN. ACCEPTABLE MANUFACTURERS: CARRIER, MCQUAY, TRANE, YORK, OR ENVIROTEC

C. UNIT HEATERS

1. PROVIDE UNIT HEATERS OF TYPE AND CAPACITIES AS INDICATED ON SCHEDULES. PROVIDE THERMOSTATS AND MANUFACTURER'S STANDARD SAFETY CONTROLS. ACCEPTABLE MANUFACTURERS: TRANE, MCQUAY, AAF, Q-MARK, INDEECO OR STERLING.

D. DUCT MOUNTED ELECTRIC HEATING COILS

1. PROVIDE SLIP-IN TYPE ELECTRIC DUCT MOUNTED HEATING COILS OF CAPACITIES SHOWN ON THE SCHEDULES. COILS SHALL BE UL LISTED AND BE PROVIDED WITH REQUIRED AIR FLOW PROVING SWITCHES, THERMAL CUTOUTS, DOOR DISCONNECTS AND ALL OTHER REQUIRED SAFETY AND OPERATING CONTROLS. ACCEPTABLE MANUFACTURERS: INDEECO, Q-MARK, OR BRASCH

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

MECHANICAL SPECIFICATIONS

DATE:	2026-0501
SCALE	12" = 1'-0"
PROJ. #:	2023-026B
DRAWN:	DJH
CHECKED:	BBP

4/30/2026 2:17:18 PM

SHEET NO.

M9.1

ELECTRICAL DEMOLITION NOTES

1. EXISTING ELECTRICAL DEVICES IN REGIONS OF DEMOLITION SHALL BE REMOVED UNLESS NOTED OTHERWISE, INCLUDING BUT NOT LIMITED TO PANELBOARDS, RECEPTACLES, LIGHT FIXTURES, LIGHTING CONTROLS, TRANSFORMERS, TELECOMMUNICATION DEVICES, FIRE ALARM DEVICES, SECURITY DEVICES, AND MECHANICAL EQUIPMENT CONNECTIONS. REMOVAL SHALL BE COMPLETE INCLUDING BOXES, BRACKETS, HANGERS AND BRANCH CIRCUIT WIRING BACK TO SOURCE PANELBOARD OR LAST ACTIVE DEVICE TO REMAIN.
2. ELECTRICAL DEMOLITION PLANS ARE DIAGRAMMATIC AND NOT INTENDED TO DEPICT THE ENTIRE SCOPE OF ELECTRICAL DEMOLITION. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EXISTING DEVICES. ADDITIONAL DEMOLITION AND MODIFICATION WORK NOT SHOWN SHOULD BE ANTICIPATED.
3. REFER TO DRAWING E0.0 FOR SYMBOL LIST AND OTHER ABBREVIATIONS.
4. DEMOLITION OF EXISTING TELECOMMUNICATIONS DEVICES SHALL INCLUDE REMOVAL OF CONNECTORS, FACEPLATE, BACKBOX, CONDUIT AND WIRING BACK TO SOURCE.
5. DEMOLITION OF EXISTING SECURITY AND FIRE ALARM DEVICES SHALL INCLUDE REMOVAL OF DEVICE, CONNECTORS, MOUNTING HARDWARE, BACKBOX, CONDUIT AND WIRING BACK TO SOURCE OR LAST ACTIVE DEVICE TO REMAIN.
6. DEMOLITION OF EXISTING LIGHTING FIXTURES SHALL ALSO INCLUDE REMOVAL OF ASSOCIATED SWITCHES AND SWITCHED WIRING UNLESS OTHERWISE NOTED IN NEW WORK PLANS. LOCATIONS OF ALL SWITCHES SHALL BE FIELD VERIFIED PRIOR TO DEMOLITION.
7. REFER TO MECHANICAL/PLUMBING DEMOLITION DRAWINGS FOR EXISTING MECHANICAL AND PLUMBING EQUIPMENT TO BE REMOVED. FOR THIS EQUIPMENT, DISCONNECT AND REMOVE WIRING BACK TO SOURCE AND REMOVE ASSOCIATED STARTERS, DRIVES AND DISCONNECT SWITCHES AT EQUIPMENT LOCATIONS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL ITEMS TO BE REMOVED IN A SAFE, LEGAL AND RESPONSIBLE MANNER.
9. CONTRACTOR SHALL MODIFY EXISTING CIRCUITS, WHEN EXISTING DEVICES ARE REMOVED, AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY.
10. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK TO BE PERFORMED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY IDENTIFIED BY EXPERIENCED OBSERVERS. INCLUDE IN THE BID ALL DEMOLITION WORK REQUIRED.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR STORAGE AND HANDLING OF EXISTING TO BE RELOCATED EQUIPMENT AND DEVICES.
12. EXISTING FIRE ALARM SYSTEM SHALL BE MODIFIED IN AREA OF WORK AND BE MAINTAINED OUTSIDE OF AREA OF WORK. MAINTAIN OPERATION OF THE EXISTING FIRE ALARM SYSTEM DURING DEMOLITION. DEVICES ARE TO BE REMOVED BACK TO NEXT DEVICE OUTSIDE THE AREA OF WORK. EXTEND CIRCUITS WITH WIRING TO MATCH EXISTING CLASS AND STYLE TO MAINTAIN CONTINUITY OF CIRCUITS UPSTREAM AND DOWNSTREAM OF THE WORK AFFECTED BY DEMOLITION. PROTECT EXISTING DEVICES DURING CONSTRUCTION. TAKE DEVICES OFF-LINE IF NECESSARY. COORDINATE BYPASSING AND REACTIVATION OF THESE DEVICES WITH OWNER. PROVIDE TESTING AND REPROGRAMMING OF SYSTEM, AND COORDINATE ACCEPTANCE TESTING WITH THE LOCAL AHJ.
13. BRANCH CIRCUITS THAT ARE EXISTING TO REMAIN OR TO BE RELOCATED IN PANELBOARDS THAT ARE BEING DEMOLISHED SHALL BE LABELED TO INDICATE WHAT THEY ARE SERVING (BASED ON EXISTING PANELBOARD DIRECTORY).
14. PANELBOARDS THAT ARE EXISTING TO REMAIN SHALL HAVE THEIR DIRECTORY UPDATED TO INDICATE CIRCUITS THAT ARE EXISTING TO REMAIN. CIRCUITS THAT HAVE BEEN REMOVED AS PART OF DEMOLITION SHALL BE INDICATED IN THE REVISED DIRECTORY AS SPARES.
15. WHERE EXISTING LIGHT FIXTURES ARE SCHEDULED FOR RELOCATION, RECONFIGURATION OR REINSTALLATION IN NEW CEILINGS, CLEAN, RE-LAMP (IF APPLICABLE) AND TEST THE FIXTURES. REPLACE DAMAGED LENSES AND DEFECTIVE BALLASTS OR DRIVERS AS NEEDED.
16. REPLACE BATTERIES FOR EMERGENCY LIGHTING UNITS THAT ARE SCHEDULED TO BE RELOCATED AND REINSTALLED.

ELECTRICAL LIGHTING NOTES

1. REFER TO DRAWING E6.0 FOR LIGHTING FIXTURE SCHEDULE.
2. EXIT SIGNS AND EMERGENCY BATTERY UNITS SHALL BE WIRED TO LINE SIDE OF LOCAL LIGHTING BRANCH CIRCUIT, AHEAD OF ALL SWITCHING DEVICES.
3. EMERGENCY LIGHTING RELAY LOCATIONS ARE SHOWN DIAGRAMMATICALLY. CONTRACTOR SHALL INSTALL RELAYS ABOVE NEAREST ACCESSIBLE CEILING, OR IN NEAREST STORAGE ROOM/ UTILITY SPACE, AND SHALL COORDINATE LOCATION WITH OTHER TRADES. REFER TO EMERGENCY LIGHTING WIRING SCHEMATICS FOR ADDITIONAL INFORMATION.
4. REFER TO DRAWINGS E5.3, E5.4 AND E5.5 FOR TYPICAL LIGHTING CONTROL WIRING SCHEMATICS.

ELECTRICAL POWER NOTES

1. REFER TO DRAWING E6.0 FOR MOTOR/ EQUIPMENT CIRCUIT SCHEDULE.
2. RECEPTACLES LOCATED WITHIN 6' FROM WATER SOURCES SHALL BE GFCI TYPE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE (1) -2" CONDUIT SLEEVE INTO EACH ROOM SHOWN WITH COMMUNICATIONS DEVICE(S). LOCATE ABOVE CEILING WHERE POSSIBLE.
4. SOUND SYSTEM EQUIPMENT SHALL BE POWERED OFF THE SAME PHASE OF SOURCE PANELBOARD.
5. 15A AND 20A, 120V AND 250V NON-LOCKING TYPE RECEPTACLES MOUNTED BELOW 5'-6" AFF SHALL BE LISTED TAMPER-RESISTANT TYPE IN ACCORDANCE WITH NEC 406.12.

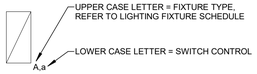
ELECTRICAL GENERAL NOTES

1. BRANCH CIRCUITS AND FEEDER CIRCUITS SHALL BE CONCEALED IN WALLS AND ABOVE CEILINGS WHERE POSSIBLE, INCLUDING HOMERUNS TO PANELBOARDS. BRANCH CIRCUITS AND FEEDERS SHALL NOT BE ROUTED IN OR UNDER SLAB UNLESS SPECIFICALLY INDICATED ON ELECTRICAL FLOOR PLANS OR DETAILS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. BRANCH CIRCUITS SHALL BE 2#12,#12G, 3/4"C., TO NEW 20A/1P CIRCUIT BREAKER IN PANEL INDICATED UNLESS NOTED OTHERWISE.
3. 120V, 1-PHASE, 20A BRANCH CIRCUITS EXCEEDING 150' IN LENGTH SHALL BE 2#10,#10G., 3/4"C. UNLESS NOTED OTHERWISE.
4. 277V, 1-PHASE, 20A BRANCH CIRCUITS EXCEEDING 250' IN LENGTH SHALL BE 2#10,#10G., 3/4"C. UNLESS NOTED OTHERWISE.
5. DEVICES SHALL BE LABELED WITH SOURCE PANEL AND CIRCUIT NUMBER(S).
6. REFER TO ARCHITECTS REFLECTED CEILING PLAN FOR EXACT LOCATION OF CEILING MOUNTED ELECTRICAL DEVICES. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATION OF WALL MOUNTED ELECTRICAL DEVICES.
7. PROVIDE FIRE STOPPING AND SMOKE BARRIER SEALING OF PENETRATIONS THROUGH FIRE WALLS OR SMOKE BARRIERS AS REQUIRED. REFER TO ARCHITECTURAL FLOOR PLANS AND CODE SHEETS FOR WALLS.
8. COORDINATE LOCATIONS OF ELECTRICAL DEVICES AND CONTROLS WITH RESPECT TO LOCATIONS OF CASEWORK AND EQUIPMENT PRIOR TO ROUGH-IN.
9. WHEN DEVICES ARE SHOWN ON PLANS OFFSET FROM ONE ANOTHER, DEVICES SHALL BE MOUNTED IN LINE, CENTERED ON WALL.
10. SHARED NEUTRAL WIRING IS NOT ACCEPTABLE, UNLESS NOTED OTHERWISE ON DRAWINGS. PROVIDE A DEDICATED NEUTRAL WIRE FOR EACH CIRCUIT, WHERE APPLICABLE.
11. DRAWINGS ARE DIAGRAMMATIC ONLY. DO NOT SCALE ELECTRICAL DRAWINGS. FIELD CONDITIONS AND ARCHITECTURAL ELEVATIONS AND DIMENSIONS SHALL GOVERN EXACT LOCATION AND MOUNTING HEIGHTS OF ELECTRICAL DEVICES AND RACEWAYS.
12. FINISHES AND COLOR OF ELECTRICAL WIRING DEVICES, EXPOSED RACEWAY, LIGHT FIXTURES, AND OTHER ELECTRICAL DEVICES SHALL BE DETERMINED BY THE ARCHITECT.
13. ELECTRICAL WORK SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE (OTHER THAN ROOF DECK).
14. THE ELECTRICAL CONTRACTOR SHALL PERFORM CORES REQUIRED FOR ELECTRICAL WORK.
15. BUILDING WIRE AND CABLE NOT IN RACEWAY SHALL BE PLENUM RATED.
16. PROVIDE SURFACE MOUNTED RACEWAY FOR NEW DEVICES LOCATED ON EXISTING TO REMAIN CMU OR MASONRY WALLS, UNLESS OTHERWISE NOTED. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS REGARDING SURFACE MOUNTED RACEWAY APPLICATIONS AND WIRING METHODS.

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION
EQUIPMENT	
EAS	EMERGENCY 2-WAY COMMUNICATION SYSTEM AREA CALL STATION. REFER TO 2-WAY COMMUNICATION SYSTEM WIRING DIAGRAM FOR ADDITIONAL INFORMATION.
EMS	EMERGENCY 2-WAY COMMUNICATION SYSTEM MASTER STATION. REFER TO 2-WAY COMMUNICATION SYSTEM WIRING DIAGRAM FOR ADDITIONAL INFORMATION.
FACP	FIRE ALARM CONTROL PANEL
FARA	FIRE ALARM REMOTE ANNUNCIATOR PANEL
INITIATING DEVICES	
S	CEILING MOUNTED SMOKE DETECTOR
(S)	CEILING MOUNTED SMOKE DETECTOR WIRED TO ELEVATOR RECALL SYSTEM
H	CEILING MOUNTED HEAT DETECTOR WITH TEMPERATURE RATING OF 135 DEGREES UNLESS OTHERWISE NOTED
H RR	CEILING MOUNTED COMBINATION FIXED TEMPERATURE / RATE-OF-RISE HEAT DETECTOR
S/D	DUCT MOUNTED SMOKE DETECTOR AND HOUSING
SD FSD	SMOKE OR FIRE/SMOKE DAMPER WITH ASSOCIATED DUCT SMOKE DETECTOR. PROVIDE ALL ITEMS LISTED AS BY DIVISION 26 AND BY DIVISION 28 IN ELECTRICAL SMOKE DAMPER DETAIL. PROVIDE WITH ONE DUCT SMOKE DETECTOR UNLESS OTHERWISE NOTED.
F	WALL MOUNTED FIRE ALARM MANUAL PULL STATION. MOUNT AT 48" AFF
(H)	HEAT DETECTOR FOR ELEVATOR RECALL CONTROLS
CO	CEILING MOUNTED CARBON MONOXIDE DETECTOR
NOTIFICATION	
XX	WALL MOUNTED COMBINATION SPEAKER / STROBE LIGHT WITH A MULTI-CANDELA STROBE. MOUNT AT 6'-8" AFF. WG= PROVIDE WITH WIREGUARD. "XX"=CANDELA RATING
XX	WALL MOUNTED STROBE-ONLY UNIT WITH A MULTI-CANDELA STROBE. MOUNT AT 6'-8" AFF. WG= PROVIDE WITH WIREGUARD. "XX"=CANDELA RATING
XX c	CEILING MOUNTED COMBINATION SPEAKER/STROBE LIGHT WITH A MULTI-CANDELA STROBE. "XX"=CANDELA RATING
XX c	CEILING MOUNTED STROBE-ONLY UNIT WITH A MULTI-CANDELA STROBE. "XX"=CANDELA RATING
F	WALL MOUNTED FIRE ALARM MANUAL PULL STATION. MOUNT AT 48" AFF. PROVIDE WITH MANUAL STATION GUARD, STI "STOPPER II" OR EQUAL WHERE REQUIRED.
B	EXTERIOR SPRINKLER BELL. PROVIDE 20A/1P CIRCUIT.
INTERFACE MODULES	
MM	FIRE ALARM MONITOR MODULE
CM	FIRE ALARM CONTROL MODULE
RM	FIRE ALARM RELAY MODULE
MISCELLANEOUS	
RTS	REMOTE DUCT SMOKE DETECTOR TEST SWITCH
TS	FIRE PROTECTION TAMPER SWITCH AND FIRE ALARM MONITOR MODULE
FS	FIRE PROTECTION FLOW SWITCH AND FIRE ALARM MONITOR MODULE
PS	FIRE PROTECTION PRESSURE SWITCH AND FIRE ALARM MONITOR MODULE

LIGHTING FIXTURE TAGS



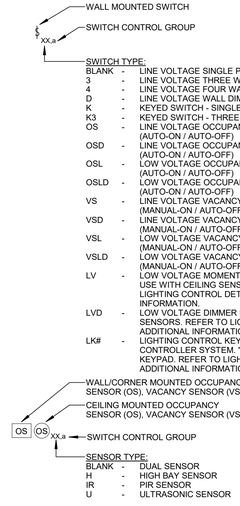
NOTES

1. FIXTURE CONTROL DESIGNATION REFERS TO ZONE/SWITCH/RELAY CONTROL OF FIXTURES CONTROLLED BY COMMON:
   A. SWITCH FOR LIGHTING IN ROOM, CORRIDOR, OPEN AREA.
   B. ZONE RELAY IN LOCAL LIGHTING CONTROL PANEL OR LIGHTING CONTROL RELAY PANEL.
   C. ALL CONTROL DEVICES (SWITCHES, CONTROL PANELS, OCCUPANCY/VACANCY SENSORS, ETC) WITH CONTROL DESIGNATIONS REFERS TO COMMON CONTROL OF THE SAME ZONE/SWITCH/RELAY CONTROL.
2. WHERE CONTROL DESIGNATION IS NOT SHOWN, ALL FIXTURES IN ASSOCIATED ROOM OR SPACE SHALL BE CONTROLLED SIMULTANEOUSLY VIA THE CONTROL DEVICES INDICATED ON PLANS.
3. WHERE EMERGENCY AND NORMAL FIXTURES ARE CONTROLLED FROM THE SAME ZONE/SWITCH/CONTROL RELAY, UL 924 EMERGENCY BYPASS RELAYS SHOWN WITH SAME CONTROL DESIGNATION BYPASS THAT ZONE/SWITCH/CONTROL RELAY. REFER TO EMERGENCY LIGHTING CIRCUIT SCHEMATICS FOR ADDITIONAL WIRING INFORMATION.
4. UNSWITCHED LIGHTING BRANCH CIRCUIT WIRING IS SHOWN TO A SINGLE FIXTURE IN EACH COMMON CONTROL ZONE. UNLESS OTHERWISE INDICATED, PROVIDE 2#12,#12G,3/4"C FOR SWITCHED WIRING TO ALL COMMON CONTROL FIXTURES.
5. PROVIDE LOW VOLTAGE DIMMING CONTROL WIRING AS INDICATED IN LIGHTING CONTROL DETAILS FOR DIMMABLE LIGHT FIXTURES IN COMMON CONTROL ZONES/SWITCHES/RELAY CONTROL.
6. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL WIRING AND CONTROL INFORMATION.
7. REFER TO LIGHTING CONTROL RELAY PANEL SCHEDULES WHERE APPLICABLE FOR ADDITIONAL CONTROL INFORMATION.

LIGHTING SYMBOLS

SYMBOL	DESCRIPTION
	POLE MOUNTED SITE LIGHTING FIXTURE
	EXTERIOR BUILDING MOUNTED LIGHTING FIXTURE
	EXTERIOR BUILDING MOUNTED EMERGENCY LIGHTING FIXTURE
	SURFACE MOUNTED LIGHTING FIXTURE
	SURFACE MOUNTED EMERGENCY LIGHTING FIXTURE
	PENDANT MOUNTED LIGHTING FIXTURE
	PENDANT MOUNTED EMERGENCY LIGHTING FIXTURE
	RECESSED LIGHTING FIXTURE
	RECESSED EMERGENCY LIGHTING FIXTURE
	INDUSTRIAL OR STRIP TYPE FIXTURE
	RECESSED DOWNLIGHT FIXTURE
	RECESSED DOWNLIGHT EMERGENCY FIXTURE
	SURFACE MOUNTED ROUND FIXTURE
	SURFACE MOUNTED ROUND EMERGENCY FIXTURE
	PENDANT HUNG LIGHTING FIXTURE
	PENDANT HUNG EMERGENCY LIGHTING FIXTURE
	WALL SCONCE
	EMERGENCY WALL SCONCE
	WALL MOUNTED LIGHTING FIXTURE
	WALL MOUNTED EMERGENCY LIGHTING FIXTURE
	WALL MOUNTED EXIT SIGN, DOUBLE FACED
	WALL MOUNTED EXIT SIGN
	CEILING MOUNTED EXIT SIGN
	CEILING MOUNTED EXIT SIGN, DOUBLE FACED
R	UL924 EMERGENCY LIGHTING RELAY. REFER TO EMERGENCY LIGHTING DETAILS FOR ADDITIONAL INFORMATION.
PP	POWER PACK FOR STANDALONE CONTROLS. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION.
NLC	NORMAL LIGHTING CONTROLLER FOR LOW VOLTAGE CONTROLS. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION.

LIGHTING SWITCH AND SENSOR TAGS



NOTES:

1. FIXTURE(S) SHALL BE CONTROLLED BY SWITCH OR RELAY LOCATED IN THE ROOM UNLESS OTHERWISE NOTED ON PLAN.
2. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION ON WIRING AND SWITCHING.
3. WALL MOUNTED SWITCHES SHALL BE MOUNTED AT 42" AFF UNLESS OTHERWISE NOTED. COORDINATE WITH ARCHITECT.
4. SET ALL OCCUPANCY TYPE SENSORS TO AUTO-ON, AUTO-OFF MODE. SET ALL VACANCY TYPE SENSORS TO MANUAL-ON, AUTO-OFF MODE.
5. REFER TO CONTROL SCHEME NOTES AND CONTROL SCHEDULE FOR ADDITIONAL INFORMATION.
6. REFER TO SYMBOL LIST FOR ADDITIONAL LIGHTING CONTROL DEVICES.
7. WHERE SWITCHES ARE NOT TAGGED WITH CONTROL LETTER ON PLANS, ALL FIXTURES IN ASSOCIATED ROOM SHALL BE CONTROLLED SIMULTANEOUSLY VIA CONTROLS SPECIFIED.

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	SURFACE MOUNTED PANELBOARD
	RECESSED PANELBOARD
J	DISCONNECT SWITCH
J	FUSED DISCONNECT SWITCH
J	COMBINATION STARTER AND DISCONNECT SWITCH
	MOTOR STARTER OR CONTACTOR
S M	MANUAL MOTOR STARTER
	MOTOR (REFER TO MOTOR CIRCUIT SCHEDULE FOR POWER REQUIREMENTS)
T	TRANSFORMER
M	ELECTRICAL METER
SPD	SURGE PROTECTIVE DEVICE
VFD	VARIABLE FREQUENCY DRIVE
	BRANCH CIRCUIT WIRING, CONCEALED IN WALLS OR CEILINGS
	HOMERUN TO PANELBOARD
	SWITCHED BRANCH CIRCUIT WIRING
PT #	POKE-THRU DEVICE. SUPERSCRIPT '#' INDICATES TYPE. REFER TO FLOOR BOX DEVICE SCHEDULE FOR TYPE.
FB #	FLOOR BOX. SUPERSCRIPT '#' INDICATES TYPE. REFER TO FLOOR BOX DEVICE SCHEDULE FOR TYPE.
J J	JUNCTION BOX
WM	WIREMOLD, LOCATE DEVICES AS INDICATED ON DRAWINGS
	DUPLEX WALL MOUNTED RECEPTACLE, 18" AFF UNLESS OTHERWISE NOTED
	RECEPTACLE, HALF SWITCHED. REFER TO TYPICAL SWITCHED RECEPTACLE WIRING DIAGRAM FOR ADDITIONAL INFORMATION.
M	DUPLEX WALL MOUNTED RECEPTACLE FOR MICROWAVE. COORDINATE WITH MICROWAVE LOCATION. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH ARCH PRIOR TO ROUGH-IN.
DW	DUPLEX WALL MOUNTED RECEPTACLE FOR DISHWASHER. MOUNT 18" AFF UNLESS OTHERWISE NOTED. CONNECT TO GFCI BREAKER IN PANELBOARD.
REF	DUPLEX WALL MOUNTED RECEPTACLE FOR REFRIGERATOR. MOUNT 48" AFF UNLESS OTHERWISE NOTED. CONNECT TO GFCI BREAKER IN PANELBOARD.
EWC	DUPLEX WALL MOUNTED RECEPTACLE FOR ELECTRIC WATER COOLER. MOUNT 18" AFF UNLESS OTHERWISE NOTED. CONNECT TO GFCI BREAKER IN PANELBOARD.
TR	DUPLEX WALL MOUNTED TAMPER RESISTANT RECEPTACLE. MOUNT 18" AFF UNLESS OTHERWISE NOTED.
XX"	DUPLEX WALL MOUNTED RECEPTACLE MOUNTED AT XX" ABOVE FINISHED FLOOR
	DOUBLE DUPLEX WALL MOUNTED RECEPTACLE, 18" AFF UNLESS OTHERWISE NOTED
a a	RECEPTACLE, MOUNT 6" ABOVE COUNTER OR CASEWORK
bc bc	RECEPTACLE MOUNTED BELOW FRONT OF COUNTER
GFI GFI	RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTION
WP WP	RECEPTACLE WITH WEATHERPROOF COVER
c c	RECEPTACLE, CEILING MOUNTED
U U	RECEPTACLE WITH INTEGRAL USB OUTLET FOR CHARGING
GFI	DOUBLE DUPLEX WALL MOUNTED RECEPTACLE, HALF SWITCHED WITH GROUND FAULT CIRCUIT INTERRUPTION. REFER TO TYPICAL SWITCHED RECEPTACLE WIRING DIAGRAM FOR ADDITIONAL INFORMATION.
	SPECIAL PURPOSE HARDWIRED CONNECTION: WIRING AS INDICATED
HD	HARDWIRED 20A/2P CONNECTION TO HAND DRYER. MAKE FINAL CONNECTIONS AS REQUIRED BY MANUFACTURER.
	SPECIAL PURPOSE RECEPTACLE, NEMA CONFIGURATION AND WIRING AS INDICATED
E	EMERGENCY CALL TOGGLE SWITCH
	EMERGENCY CALL FOR AID COMBINATION BUZZER / LIGHT: REFER TO CALL-FOR-AID WIRING SCHEMATIC FOR MORE INFORMATION.
B	JUNCTION BOX FOR BUILDING MANAGEMENT SYSTEM LOCATED ABOVE CEILING. PROVIDE 20A/1P DEDICATED CIRCUIT. COORDINATE EXACT LOCATION WITH BMS CONTRACTOR PRIOR TO INSTALLATION.
LVT	LOW VOLTAGE TRANSFORMER
GAP	REMOTE GENERATOR ANNUNCIATOR PANEL
EPO	EMERGENCY POWER OFF PUSH BUTTON
PL	PLUG LOAD CONTROLLER FOR AUTOMATIC RECEPTACLE SHUTOFF. TIED INTO LIGHTING CONTROL SYSTEM. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION. CONTROLLED RECEPTACLES ARE INDICATED WITH SWITCHED WIRING ON PLANS.
NG	NATURAL GAS DETECTOR, REFER TO BOILER ROOM GAS AND ELECTRIC SHUTOFF DETAIL FOR ADDITIONAL INFORMATION.
UC	UTILITY CONTROL PANEL FOR GAS AND ELECTRIC SHUTOFF. REFER TO BOILER ROOM GAS AND ELECTRIC SHUTOFF DETAIL FOR ADDITIONAL INFORMATION.
AV	DOUBLE DUPLEX RECEPTACLE WITH INTEGRAL USB CHARGING AND 3A/5VDC OUTPUT AVAILABLE FROM BACK SIDE OF DEVICE - EQUAL TO HUBBELL AVPS152X. MOUNT IN SAME BACKBOX AS ADJACENT "AV" AUDIO VIDEO DEVICE SHOWN ON TECHNOLOGY PLANS. HALF SWITCHED, REFER TO TYPICAL SWITCHED RECEPTACLE WIRING DIAGRAM FOR ADDITIONAL INFORMATION

ELECTRICAL ABBREVIATIONS

A/AMP	AMPERE
AC	ALTERNATING CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CURRENT
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAL WIRE GAUGE
BSMT	BASEMENT
C	CONDUIT
CATV	CABLE TELEVISION
C/B	CIRCUIT BREAKER
CKT	CIRCUIT
COMP	COMPRESSOR
CP	CONDENSATE PUMP
CT	CURRENT TRANSFORMER
CU	CONDENSING UNIT OR COPPER
CUH	CABINET UNIT HEATER
D	DRYER
DEG.	DEGREE
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
ETR	EXISTING TO REMAIN
EF	EXHAUST FAN
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
EP	EMERGENCY PANEL
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FAHRENHEIT
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FCU	FAN COIL UNIT
G	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSE POWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HZ	HERTZ
IG	ISOLATED GROUND
IN	INCHES
JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERE
KW	KILOWATT
MAX	MAXIMUM
MAU	MAKE-UP AIR UNIT
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MH	METAL HALIDE OR MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
NA	NOT APPLICABLE
NE	NEW DEVICE INSTALLED IN SAME LOCATION AS EXISTING REMOVED DEVICE
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NL	NEW LOCATION OF RELOCATED DEVICE
NR	NEW TO REPLACE EXISTING
NTS	NOT TO SCALE
P	POLE
PE	PRIMARY ELECTRIC SERVCE
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE CONDUIT
RE	EXISTING TO BE REMOVED
REF	REFRIGERATOR
RGS	RIGID GALVANIZED STEEL CONDUIT
RL	EXISTING TO BE RELOCATED
RM	ROOM
RN	EXISTING TO BE REMOVED AND REPLACED WITH NEW (EXISTING BACKBOXES, CONDUIT AND WIRING TO REMAIN)
RR	EXISTING TO BE RELOCATED IN SAME LOCATION ON NEW SURFACE
RTU	ROOFTOP UNIT
SE	SECONDARY ELECTRICAL SERVICE
SPEC	SPECIFICATION
SWBD	SWITCHBOARD
SPD	SURGE PROTECTION DEVICE
TELE	TELECOMMUNICATIONS/TELEPHONE
TV	TELEVISION
T/TX	TRANSFORMER
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT AMPERE
VAC	VOLTS ALTERNATING CURRENT
VIF	VERIFY IN FIELD
W	WATT OR WIRE
WA	WASHER
WG	WIRE GUARD
WP	WEATHERPROOF

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ELECTRICAL ABBREVIATIONS, NOTES AND SYMBOLS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
DRAWN: AJG
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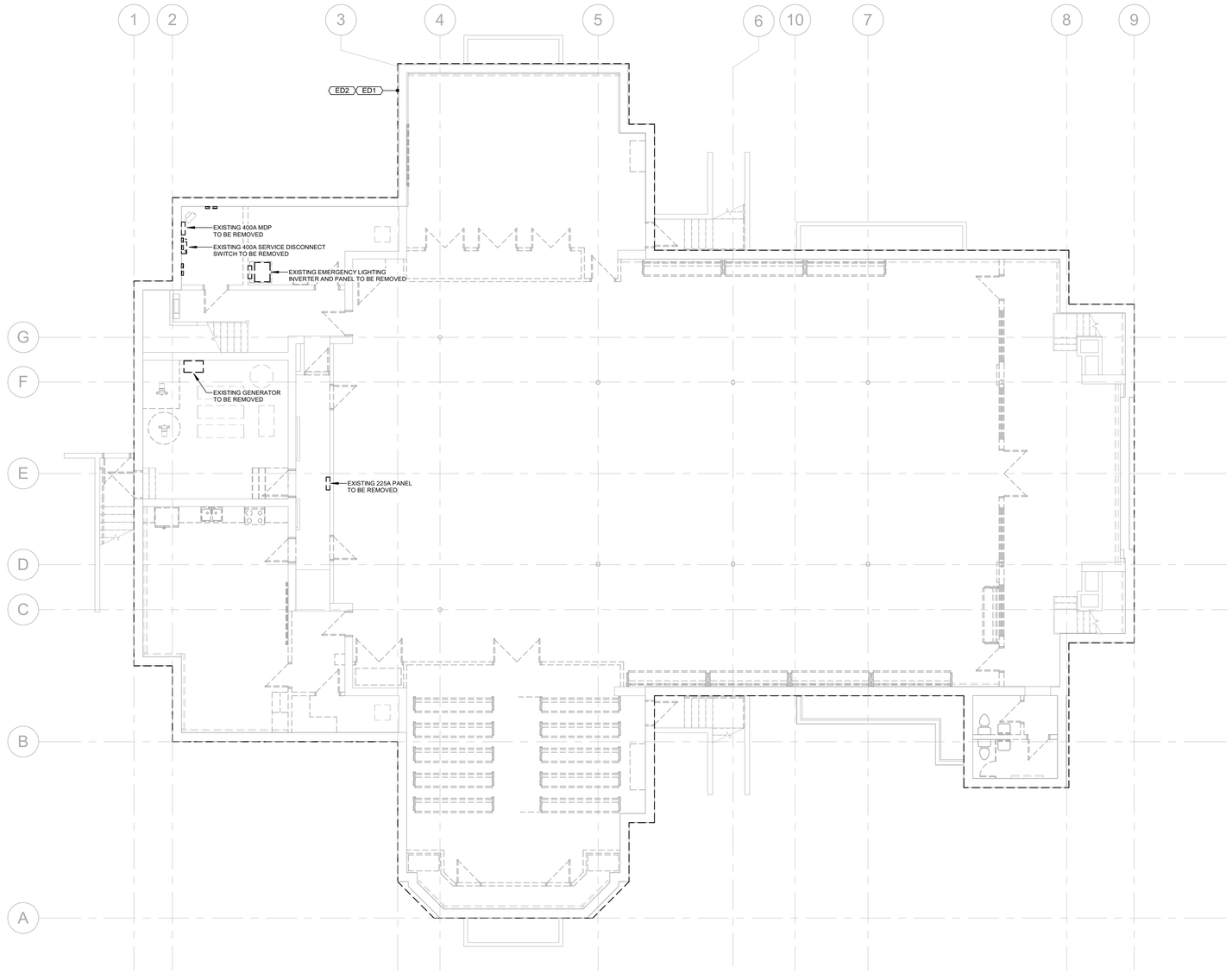
5/1/2026 1:53:01 PM

SHEET NO.

E0.0

KEYNOTES - ELECTRICAL DEMOLITION

Key Value	Keynote Text
ED1	UNLESS OTHERWISE NOTED, A COMPLETE REMOVAL OF THE EXISTING ELECTRICAL SYSTEM IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO TRANSFORMERS, DISTRIBUTION PANELS, ALL WIRING, CONDUITS, HANGERS, SUPPORTS, OUTLETS, LIGHTS, SWITCHES AND LIGHTING CONTROL SYSTEMS WITHIN SCOPE BOX. REFER TO GENERAL ELECTRICAL DEMOLITION NOTES ON E0.0.
ED2	UNLESS OTHERWISE NOTED, A COMPLETE REMOVAL OF THE EXISTING FIRE ALARM SYSTEM IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO PANELS, BATTERIES, ANNUNCIATORS, PULL STATIONS, STROBES, ALL WIRING, CONDUITS, HANGERS, AND SUPPORTS WITHIN SCOPE BOX. REFER TO GENERAL ELECTRICAL DEMOLITION NOTES ON E0.0.



1 ELECTRICAL LOWER LEVEL DEMO PLAN
1/8" = 1'-0"

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ELECTRICAL LOWER LEVEL DEMO PLAN

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SHEET NO.

ED1.1

KEYNOTES - ELECTRICAL DEMOLITION

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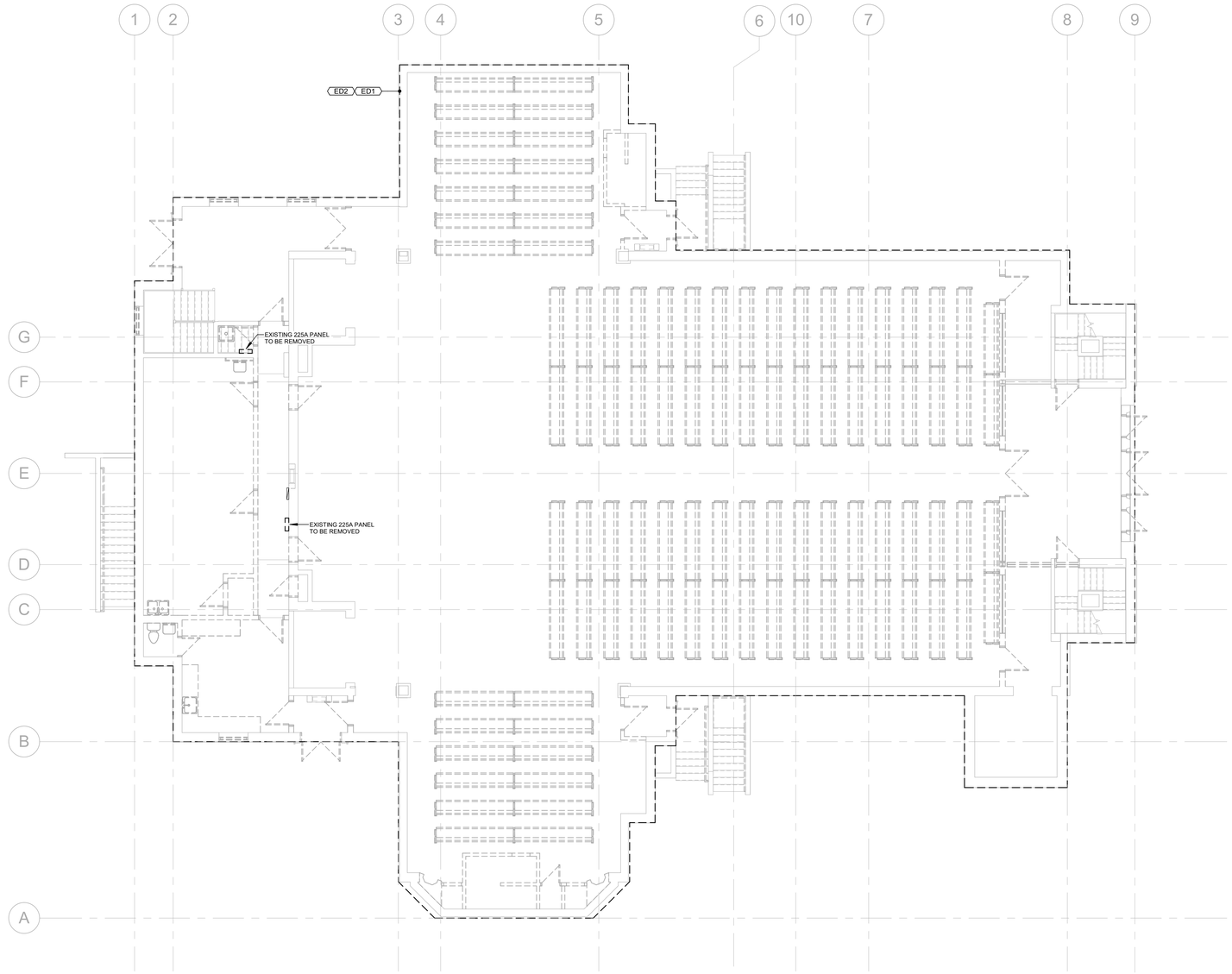

1 ELECTRICAL FIRST FLOOR DEMO PLAN
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ELECTRICAL FIRST FLOOR DEMO PLAN

DATE: 2026-0501
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SHEET NO.

ED1.2

KEYNOTES - ELECTRICAL DEMOLITION	
Key Value	Keynote Text
ED1	UNLESS OTHERWISE NOTED, A COMPLETE REMOVAL OF THE EXISTING ELECTRICAL SYSTEM IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO TRANSFORMERS, DISTRIBUTION PANELS, ALL WIRING, CONDUITS, HANGERS, SUPPORTS, OUTLETS, LIGHTS, SWITCHES AND LIGHTING CONTROL SYSTEMS WITHIN SCOPE BOX. REFER TO GENERAL ELECTRICAL DEMOLITION NOTES ON E0.0.
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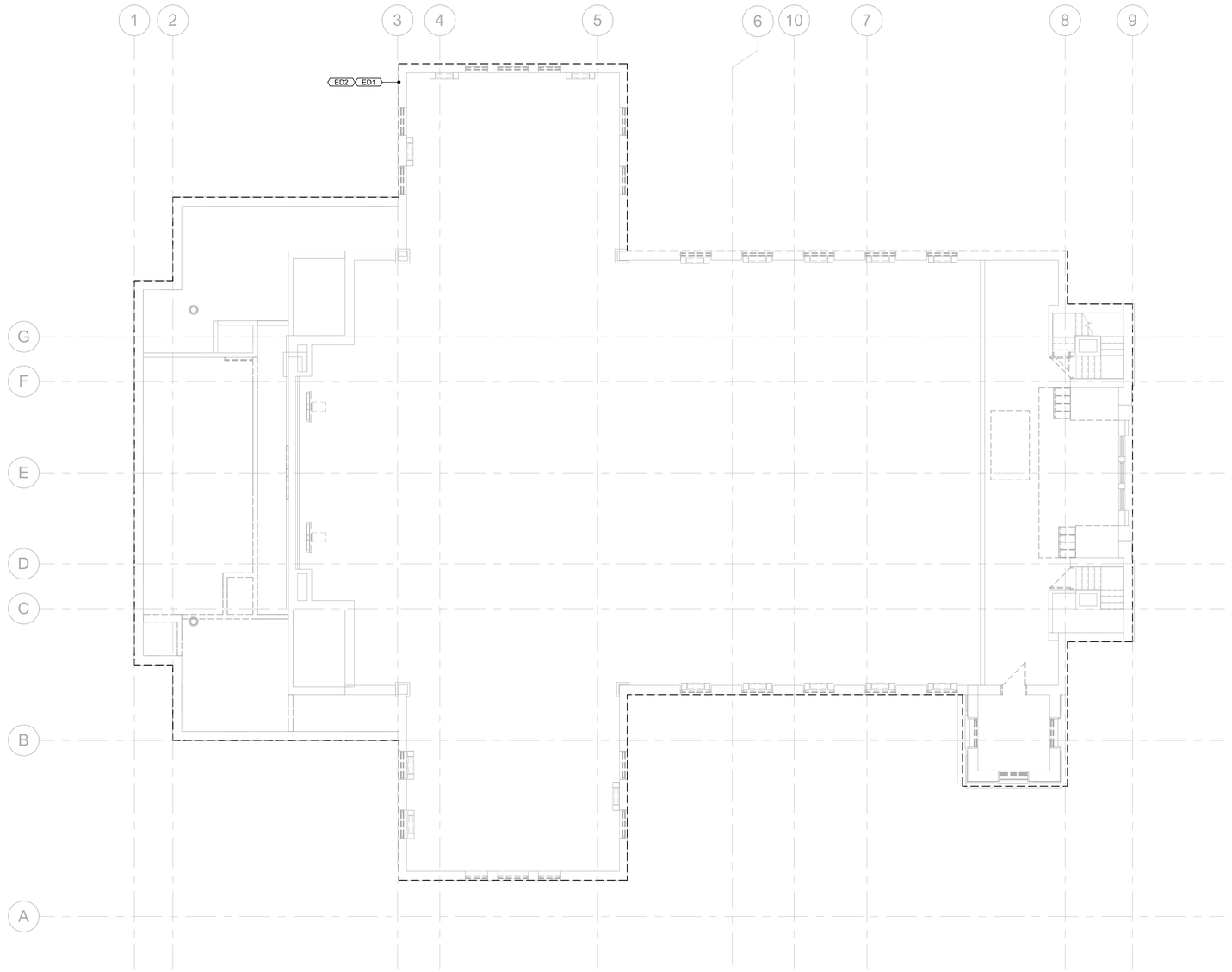

1 ELECTRICAL MEZZANINE LEVEL DEMO PLAN
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ELECTRICAL MEZZANINE LEVEL DEMO PLAN

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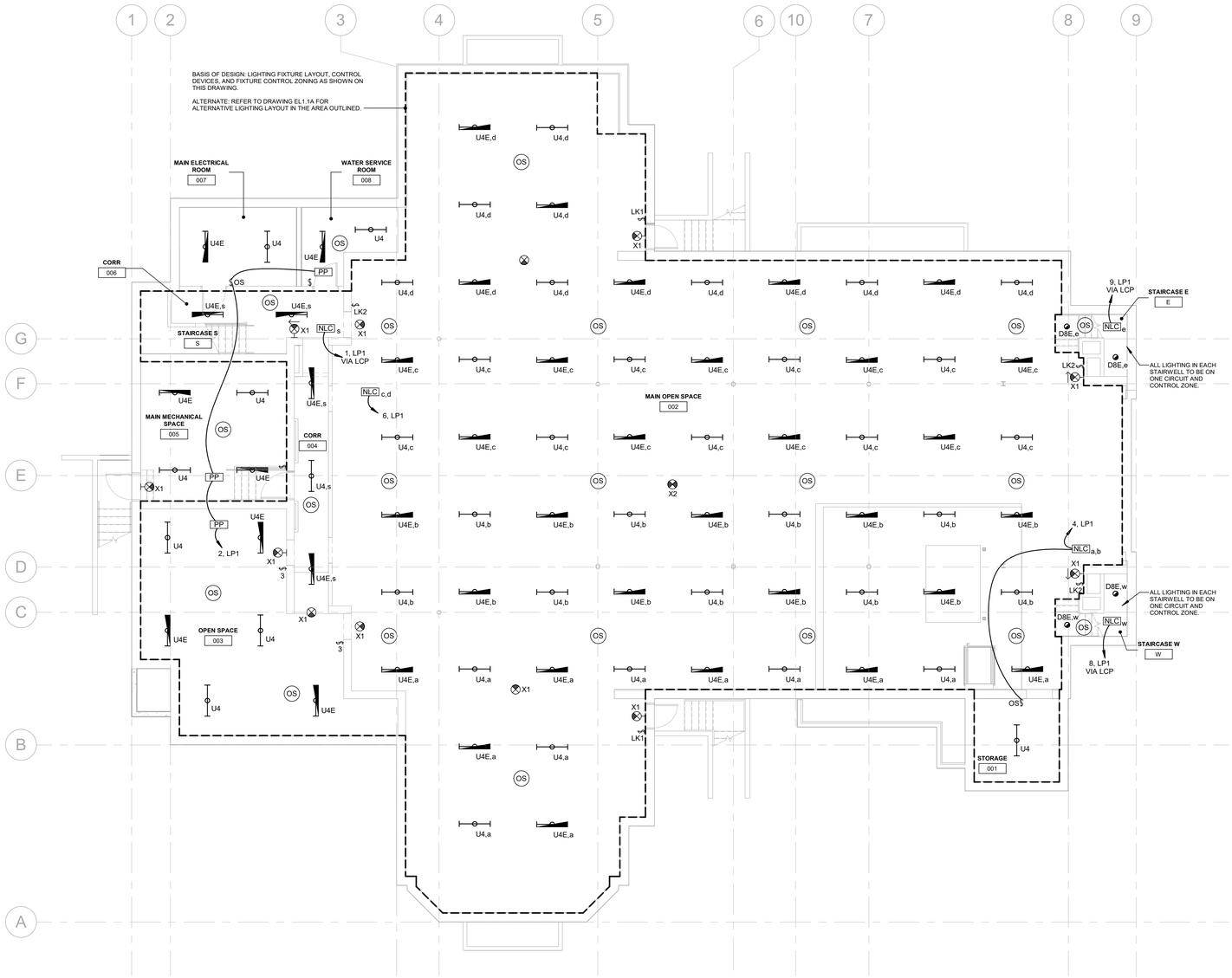
ED1.3



1 ELECTRICAL LIGHTING LOWER FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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SHEET NO.
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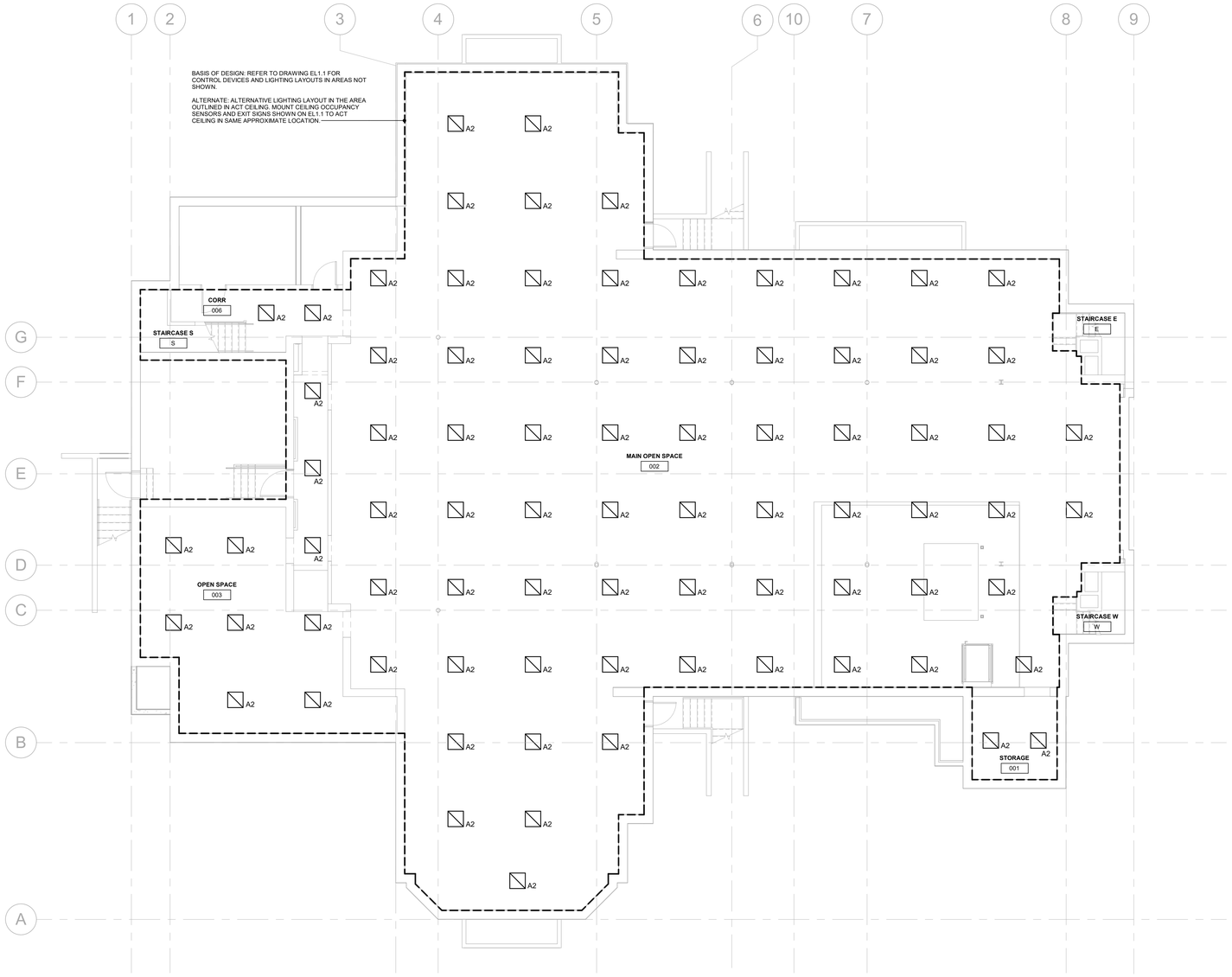

1 ELECTRICAL LIGHTING LOWER FLOOR PLAN Pre-Fitout-ALT
1/8" = 1'-0"

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ADD ALT. ELECTRICAL LIGHTING LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
PROJ. #: 2023-026B
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CHECKED: SAS
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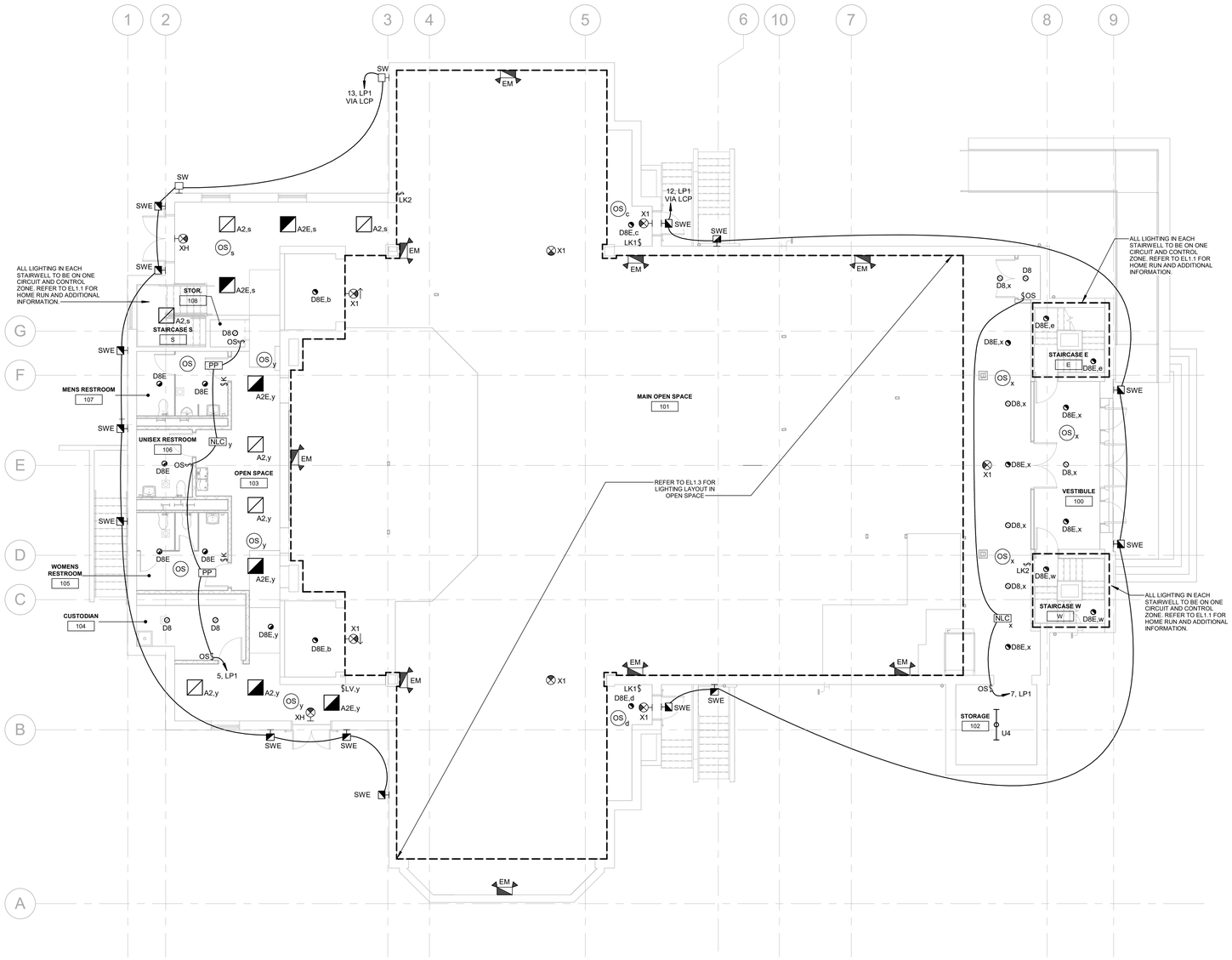
SHEET NO.

EL1.1A

KEYNOTES - ELECTRICAL LIGHTING	
Key Value	Keynote Text



1 ELECTRICAL LIGHTING FIRST FLOOR PLAN Pre-Fitout
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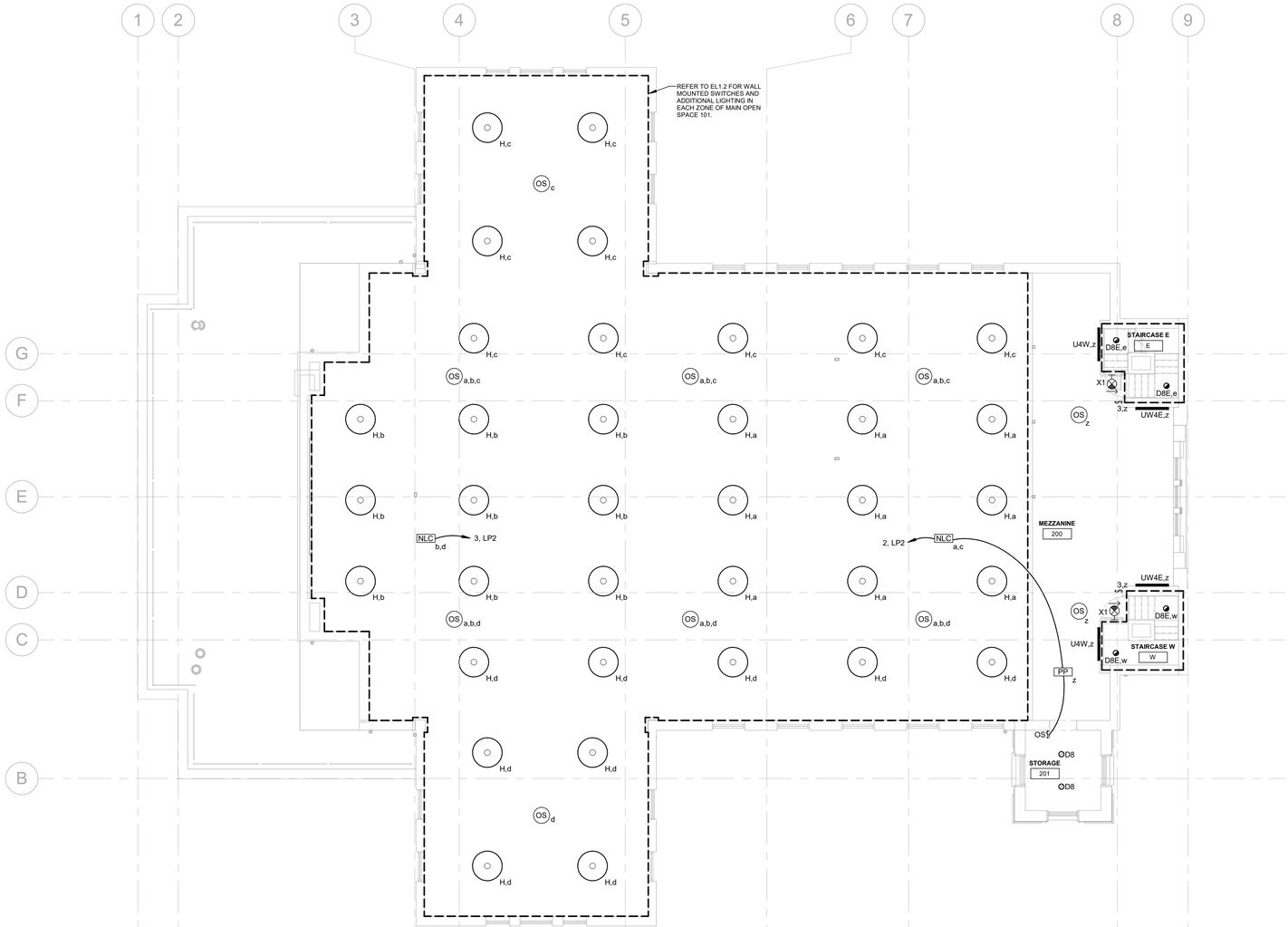
SHEET NO.

EL1.2

KEYNOTES - ELECTRICAL LIGHTING

Key Value	Keynote Text



1 ELECTRICAL LIGHTING MEZZANINE FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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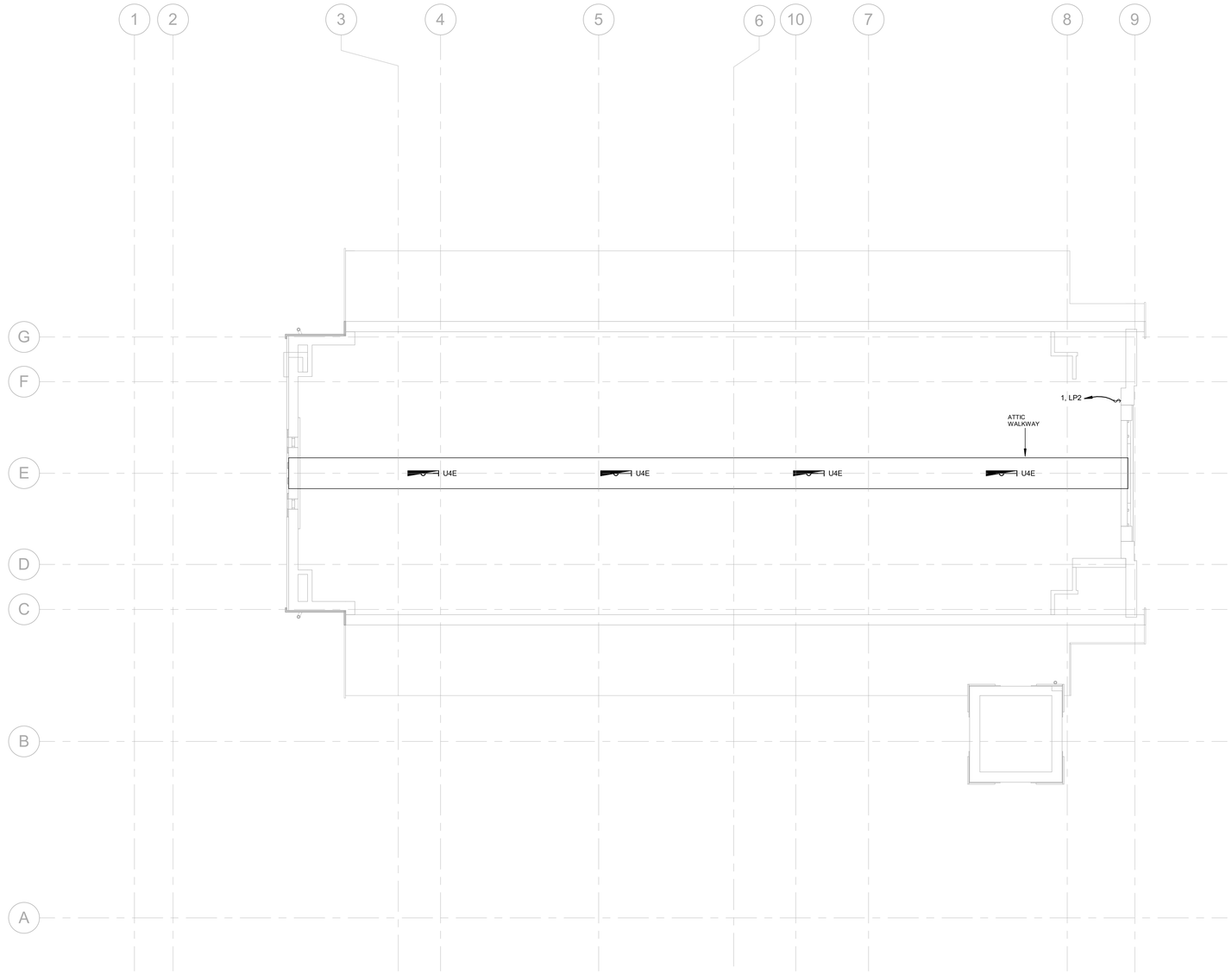

1 ELECTRICAL LIGHTING ATTIC FLOOR PLAN Pre-Fitout
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SHEET NO.

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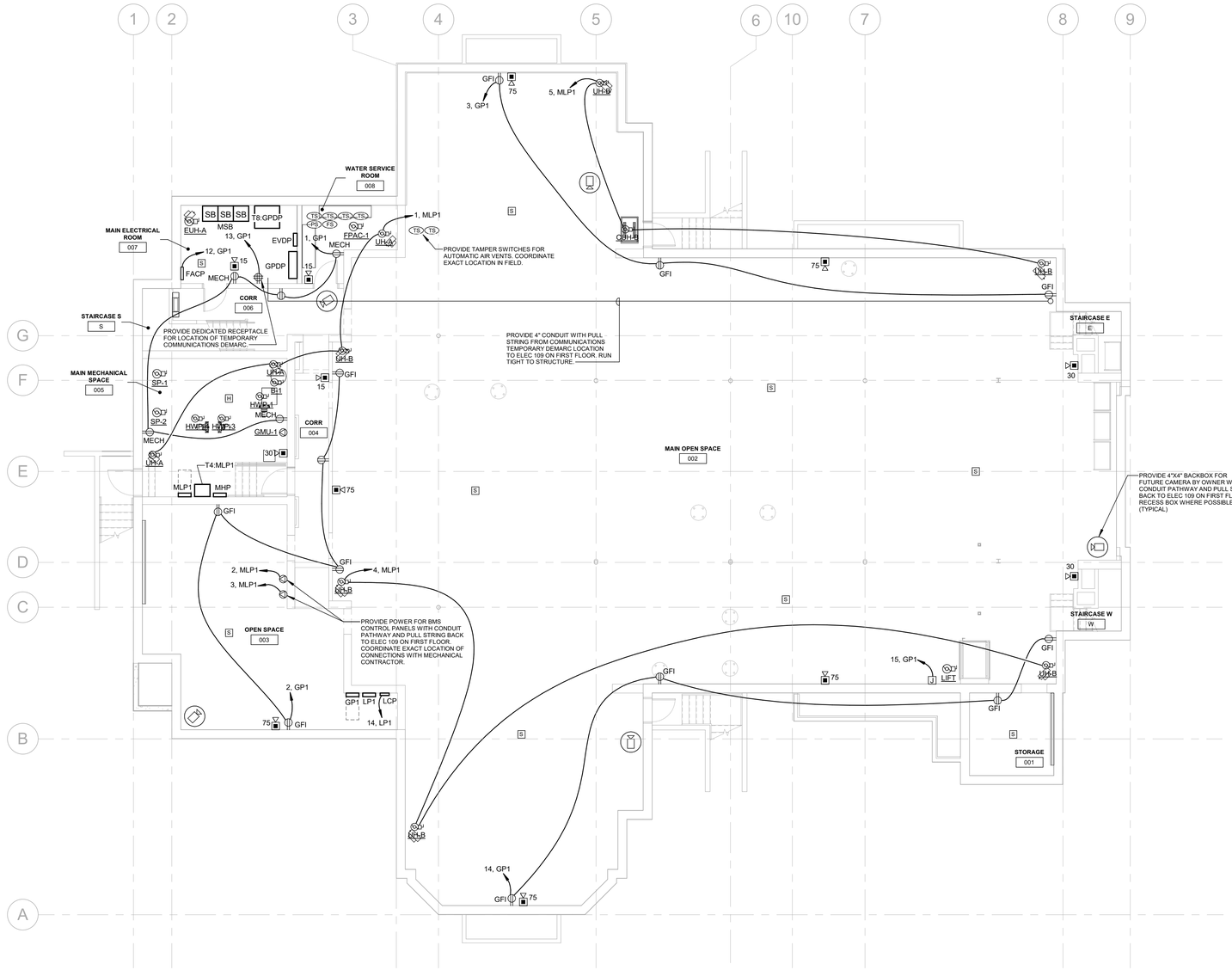

1 ELECTRICAL POWER LOWER FLOOR PLAN Pre-Fitout
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ELECTRICAL POWER LOWER FLOOR PLAN

DATE: 2026-0501
SCALE 1/8" = 1'-0"
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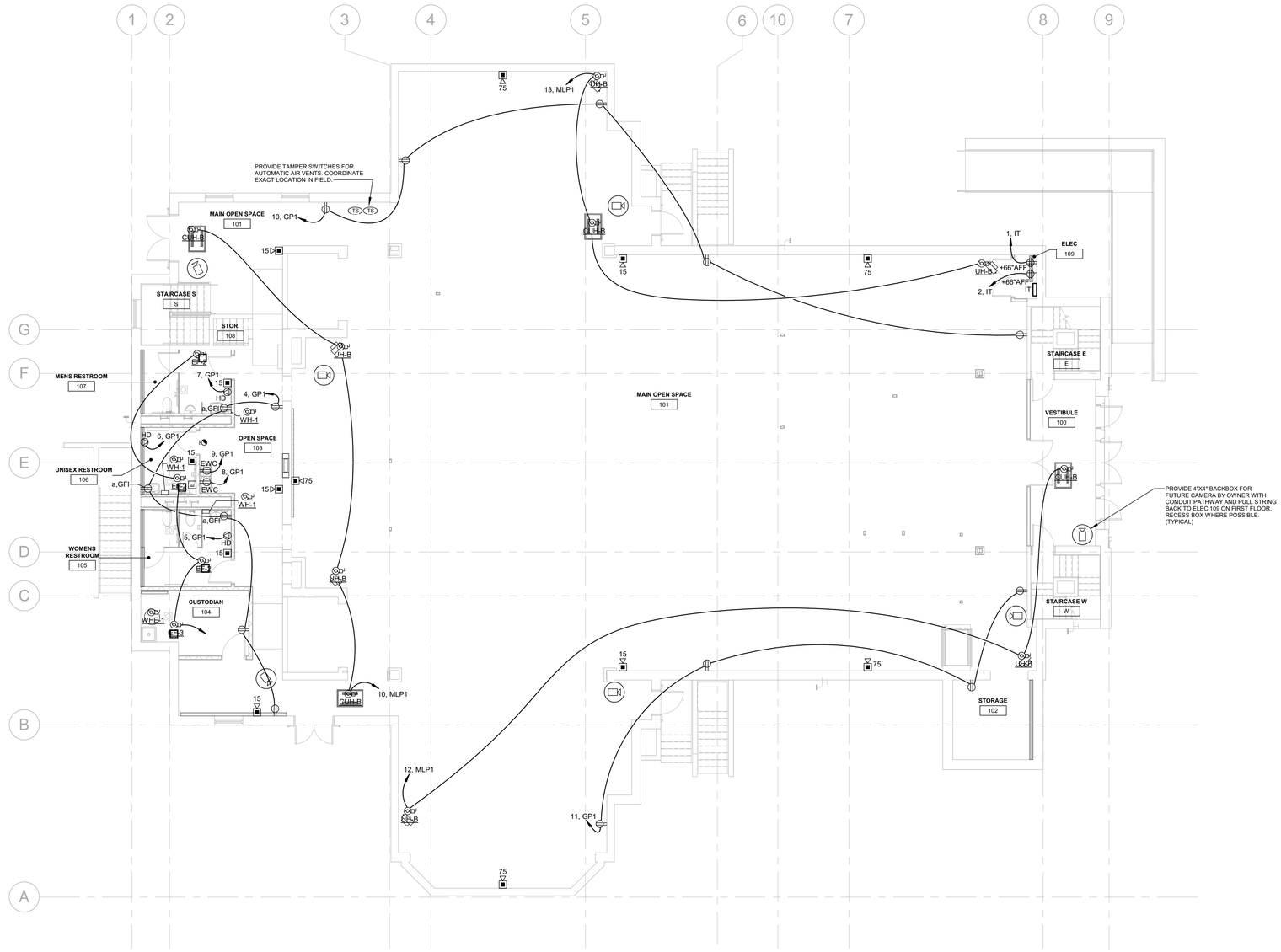
EP1.1



1 ELECTRICAL POWER FIRST FLOOR PLAN Pre-Fitout
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ELECTRICAL POWER FIRST FLOOR PLAN

DATE: 2026-0501
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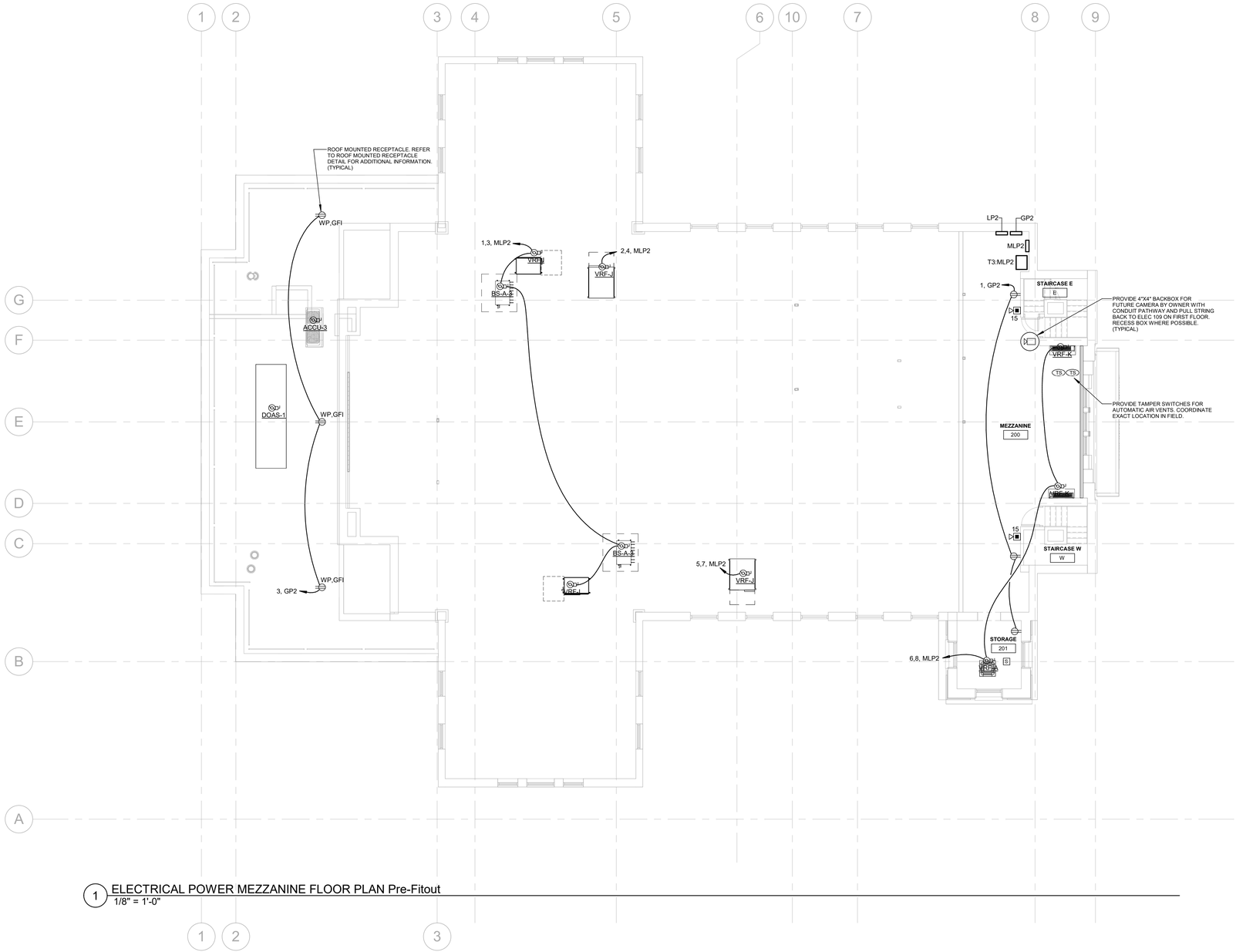
SHEET NO.

EP1.2



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ELECTRICAL POWER MEZZANINE FLOOR PLAN

DATE: 2026-0501
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PROJ. #: 2023-026B
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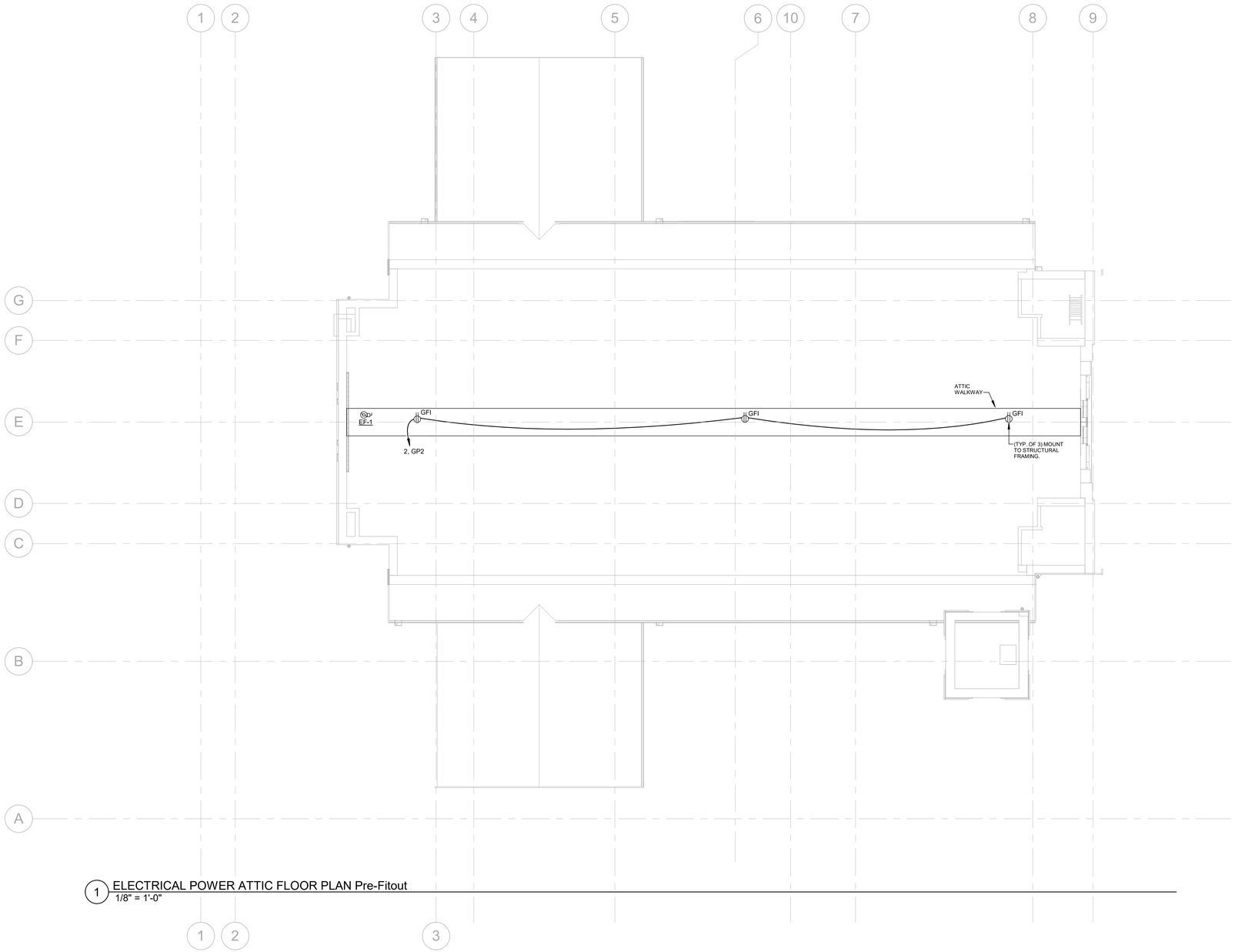
SHEET NO.

EP1.3



1 ELECTRICAL POWER ATTIC FLOOR PLAN Pre-Fitout
1/8" = 1'-0"

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ELECTRICAL POWER ATTIC FLOOR PLAN

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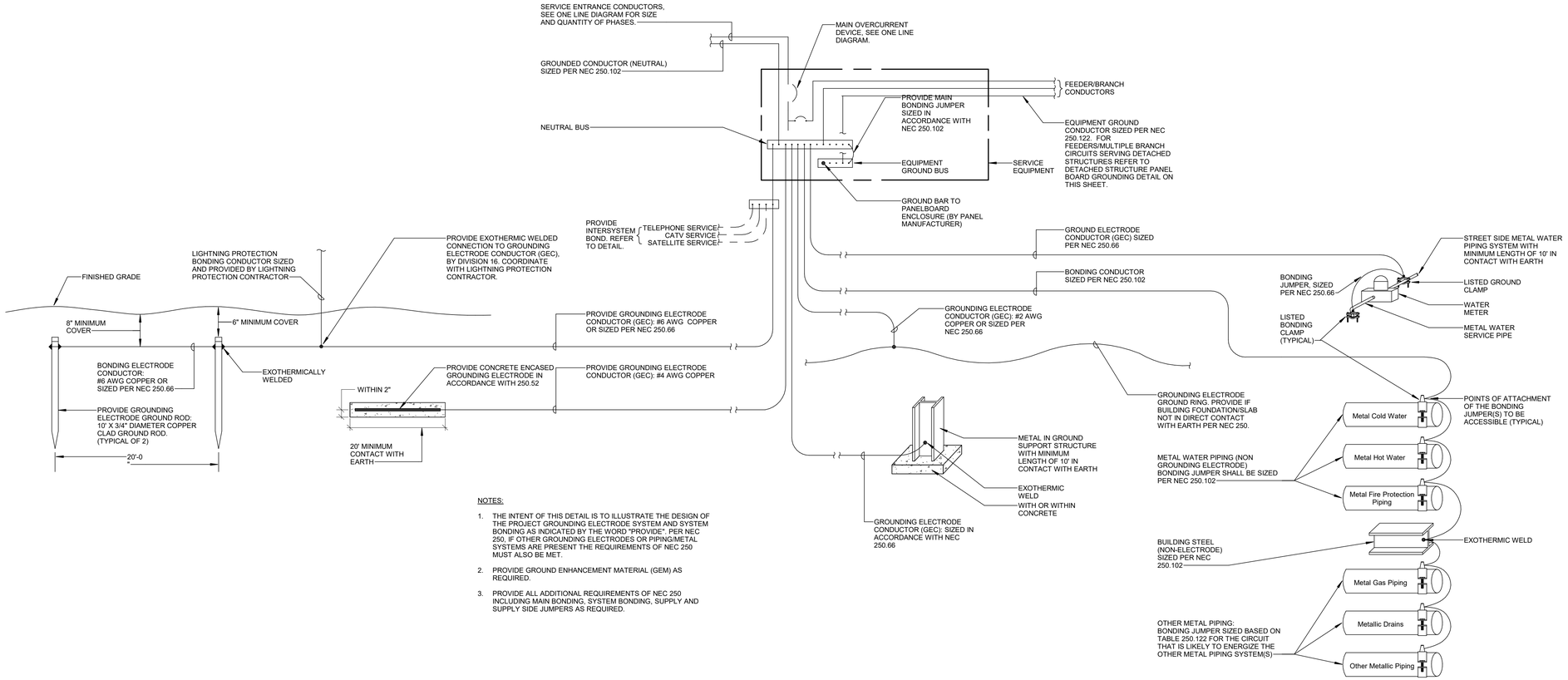
SHEET NO.

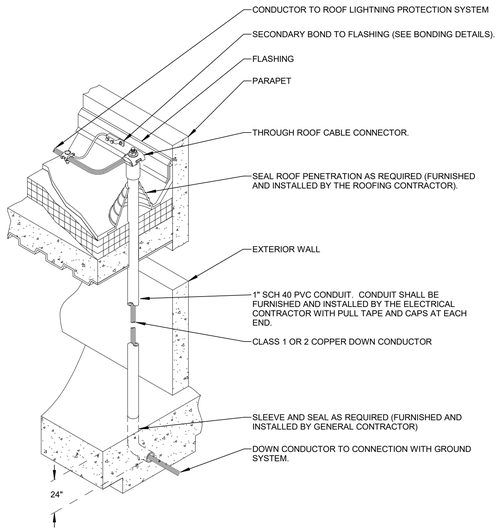
EP1.4



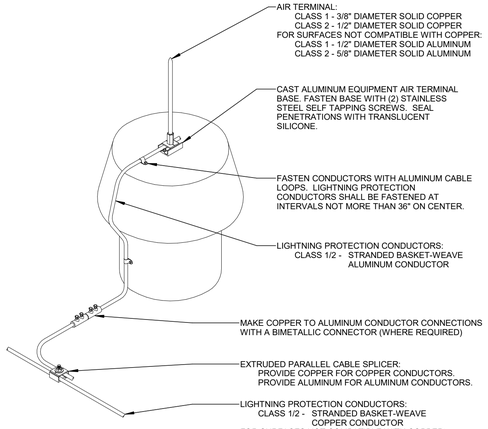
NOTES:

1. THE INTENT OF THIS DETAIL IS TO ILLUSTRATE THE DESIGN OF THE PROJECT GROUNDING ELECTRODE SYSTEM AND SYSTEM BONDING AS INDICATED BY THE WORD "PROVIDE". PER NEC 250, IF OTHER GROUNDING ELECTRODES OR PIPING/METAL SYSTEMS ARE PRESENT THE REQUIREMENTS OF NEC 250 MUST ALSO BE MET.
2. PROVIDE GROUND ENHANCEMENT MATERIAL (GEM) AS REQUIRED.
3. PROVIDE ALL ADDITIONAL REQUIREMENTS OF NEC 250 INCLUDING MAIN BONDING, SYSTEM BONDING, SUPPLY AND SUPPLY SIDE JUMPERS AS REQUIRED.

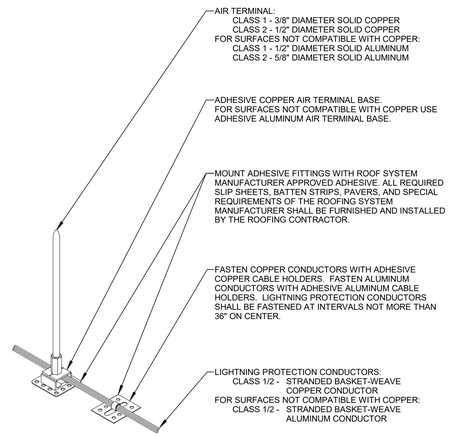
1 GROUNDING ELECTRODE SYSTEM AND BONDING DETAIL
NTS



2 CONCEALED DOWN CONDUCTOR LIGHTNING PROTECTION DETAIL
NTS



3 EXHAUST FAN AIR TERMINAL LIGHTNING PROTECTION DETAIL
NTS



GENERAL NOTES:
1. AIR TERMINAL SPACING SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.
2. MATERIAL COMPATIBILITY SHALL CONFORM TO NFPA 780 & 96A REQUIREMENTS.
3. MATERIAL CLASS SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.
4. AIR TERMINALS SHALL BE UL LISTED.

4 MID ROOF AIR TERMINAL LIGHTNING PROTECTION DETAIL
NTS

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ELECTRICAL DETAILS

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PROJ. #: 2023-026B
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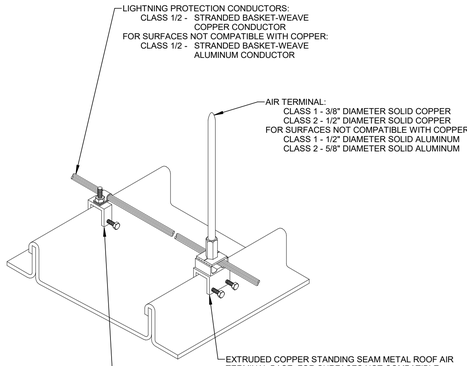
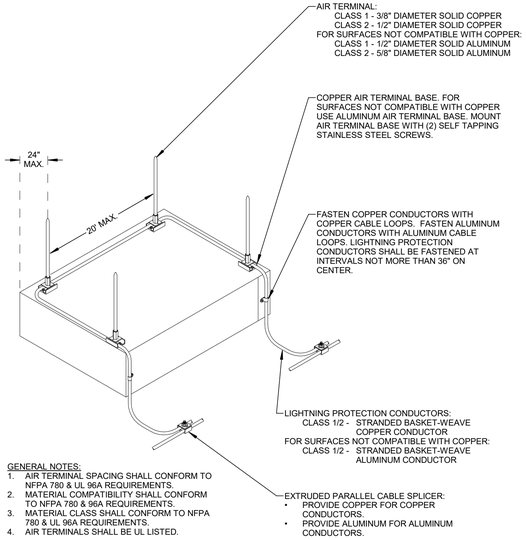
SHEET NO.
E5.0



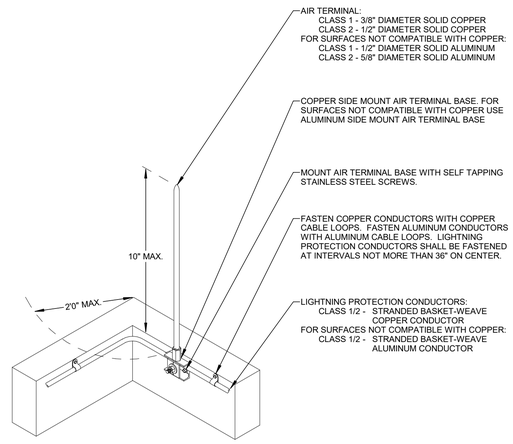
GENERAL NOTES:
1. AIR TERMINAL SPACING SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.
2. MATERIAL COMPATIBILITY SHALL CONFORM TO NFPA 780 & 96A REQUIREMENTS.
3. MATERIAL CLASS SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.
4. AIR TERMINALS SHALL BE UL LISTED.

3 STANDING SEAM ROOF AIR TERMINAL LIGHTNING PROTECTION DETAIL
NTS



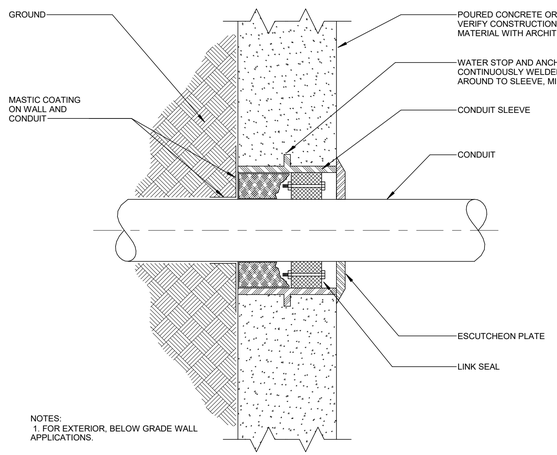
GENERAL NOTES:
1. AIR TERMINAL SPACING SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.
2. MATERIAL COMPATIBILITY SHALL CONFORM TO NFPA 780 & 96A REQUIREMENTS.
3. MATERIAL CLASS SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMNTS.
4. AIR TERMINALS SHALL BE UL LISTED.

2 ROOFTOP UNIT AIR TERMINAL LIGHTNING PROTECTION DETAIL
NTS



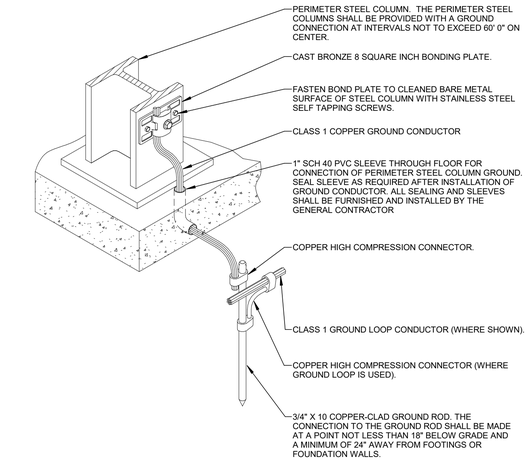
GENERAL NOTES:
1. AIR TERMINAL SPACING SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.
2. MATERIAL COMPATIBILITY SHALL CONFORM TO NFPA 780 & 96A REQUIREMENTS.
3. MATERIAL CLASS SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMNTS.
4. AIR TERMINALS SHALL BE UL LISTED.

1 PARAPET AIR TERMINAL LIGHTNING PROTECTION DETAIL
NTS



NOTES:
1. FOR EXTERIOR, BELOW GRADE WALL APPLICATIONS.

5 FOUNDATION WALL PENETRATION DETAIL
NTS



4 STRUCTURAL STEEL GROUNDING LIGHTNING PROTECTION DETAIL
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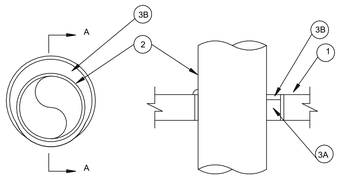
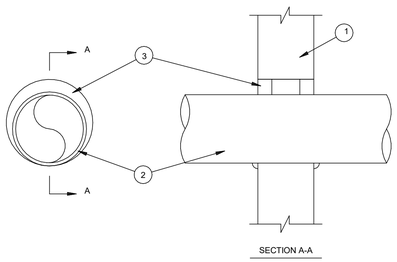


1. FLOOR ASSEMBLY — MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. MAX DIAMETER OF OPENING IS 31-7/8 IN.
2. THROUGH PENETRANTS — ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED CONCENTRICALLY WITHIN THE FIRESTOP DEVICE. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR ASSEMBLY.
3. FIRESTOP SYSTEM — THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
   A. PACKING MATERIAL — MIN 2 IN THICKNESS OF MIN 4 PCF MINERAL WOOL BATT INSULATION TIGHTLY PACKED INTO THE OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
   B. FILL, VOID OR CAVITY MATERIALS* - SEALANT MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR. AT POINT CONTACT, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/SLEEVE/PIPE INTERFACE ON TOP SURFACE OF FLOOR.

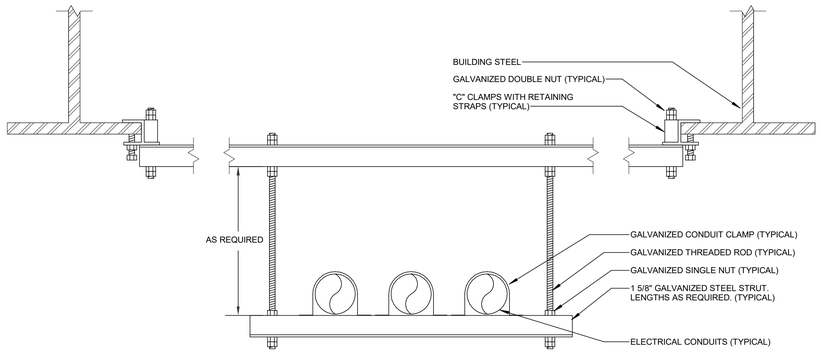
   SEALANT: HILTI FS-ONE OR APPROVED EQUAL.
   *BEARING THE UL CLASSIFICATION MARK



1. WALL ASSEMBLY - MIN 3-3/4 IN. AND 5 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS.
2. THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PIPE, CONDUIT OR TUBE MAY BE INSTALLED AT AN AN ANGLE NOT GREATER THAN 45 DEGREES FROM PERPENDICULAR. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.
3. FILL, VOID OR CAVITY MATERIAL* - MIN 5/8 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PIPE AND WALL, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE-WALL INTERFACE ON BOTH SURFACES OF WALL.

   SEALANT: FS-ONE SEALANT
   *BEARING THE UL CLASSIFICATION MARK
4. PROVIDE A BEAD OF NON-SHRINK, WP SILICON SEALANT AROUND EXTERIOR WALL PENETRATIONS.

7 UL LISTED CONDUIT SLEEVE FIRESTOPPING SPECIFICATIONS
NTS



NOTES:
1. PROVIDE ALL REQUIRED HARDWARE INCLUDING BUT NOT LIMITED TO THREADED ROD, WASHERS, BOLTS, BEAM CLAMPS, STRAPS, AND CHANNEL SPRING NUTS.
2. QUANTITIES AND SIZE OF CONDUITS VARY.

6 TYPICAL CONDUIT HANGING DETAIL
NTS

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architecture
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master planning
21 Talcott Notch Road
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friar.com
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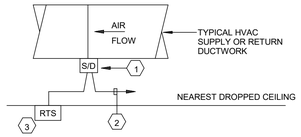
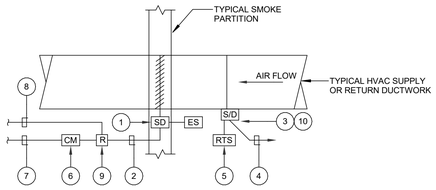


NOTES:

1. DUCT SMOKE DETECTOR SHALL BE FURNISHED BY DIVISION 28 AND INSTALLED BY DIVISION 23. WIRING BY DIV.28. DETECTOR SHALL BE INSTALLED WITHIN 60" OF AIR INLET SIDE OF DAMPER.
2. WIRE TO NEAREST FIRE ALARM INITIATION LOOP BY DIV.28.
3. REMOTE TEST SWITCH TO BE FURNISHED AND INSTALLED BY DIV.28. SWITCH SHALL BE FLUSHED INTO NEAREST ACCESSIBLE DROPPED CEILING. PROVIDE ALL WIRING TO DUCT SMOKE DETECTOR PER MANUFACTURER'S REQUIREMENTS.

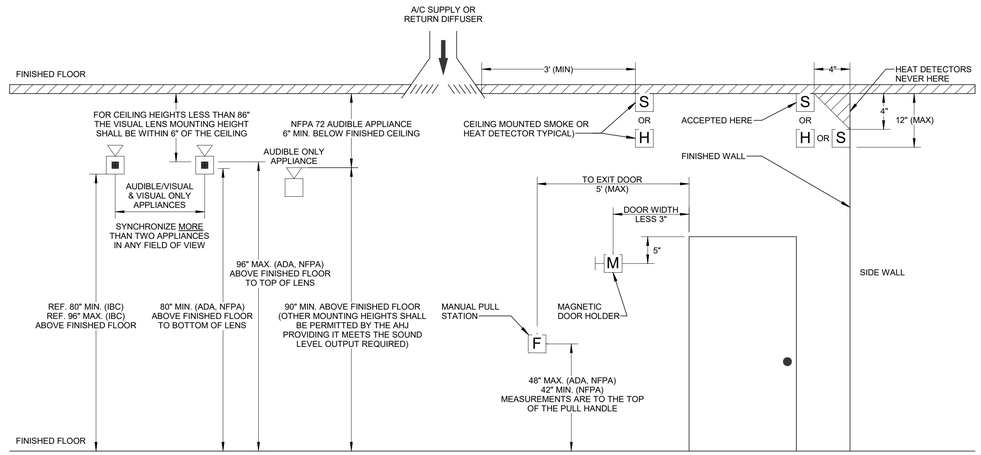
3 TYPICAL DUCT SMOKE DETECTOR DETAIL
NTS



NOTES:

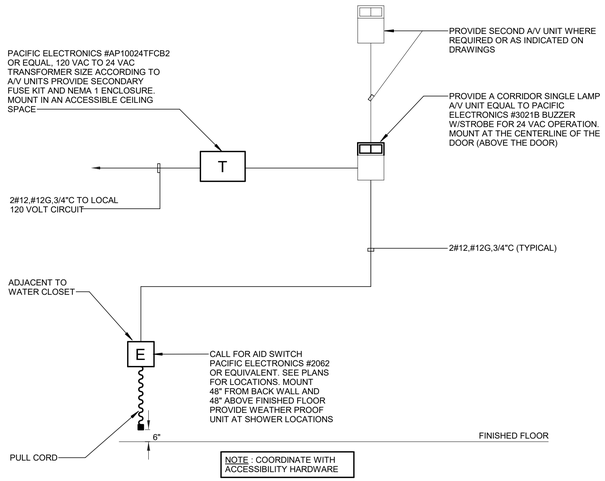
1. DUCT SMOKE DAMPER(S) AND END SWITCH(ES) SHALL BE FURNISHED BY DIV. 23. SMOKE DAMPER WIRED BY DIV. 26, END SWITCH WIRED BY DIV. 23.
2. ALL WIRING SHALL BE FURNISHED AND INSTALLED BY DIVISION 26 UNLESS OTHERWISE NOTED. ALL WIRING SHALL BE #12 THHN.
3. DUCT SMOKE DETECTOR SHALL BE FURNISHED BY DIVISION 28 AND INSTALLED BY DIVISION 23. PROVIDE SAMPLING TUBE CROSSING THE ENTIRE WIDTH OF THE DUCT.
4. FIRE ALARM ZONE WIRING PER MANUFACTURERS REQUIREMENTS. PROVIDED BY DIVISION 28.
5. REMOTE TEST/RESET KEY SWITCH AND ASSOCIATED WIRING PROVIDED BY DIV. 28.
6. FIRE ALARM CONTROL MODULE/RELAY MODULE PROVIDED BY DIV. 28. WIRED IN SERIES WITH BMS INPUT RELAY TO CLOSE DAMPER UPON ACTIVATION.
7. DIVISION 26 SHALL PROVIDE 2#12,1#12G,3/4"C FOR DAMPER POWER FROM LOCAL 120VAC OPTIONAL STANDBY SOURCE. SEE PLANS FOR ADDITIONAL INFORMATION.
8. LOW VOLTAGE COIL CONTROL WIRING FROM BUILDING MANAGEMENT SYSTEM, WIRING BY DIV. 23.
9. UL LISTED DPDT RELAY WITH LOW VOLTAGE COIL BY DIV. 26. COORDINATE COIL OPERATING VOLTAGE WITH DIV. 23.
10. LOCATE DUCT SMOKE DETECTORS WITHIN 5 FT. OF THE SMOKE DAMPER.

2 TYPICAL FIRE/SMOKE DAMPER DETAIL WITH DETECTOR
NTS

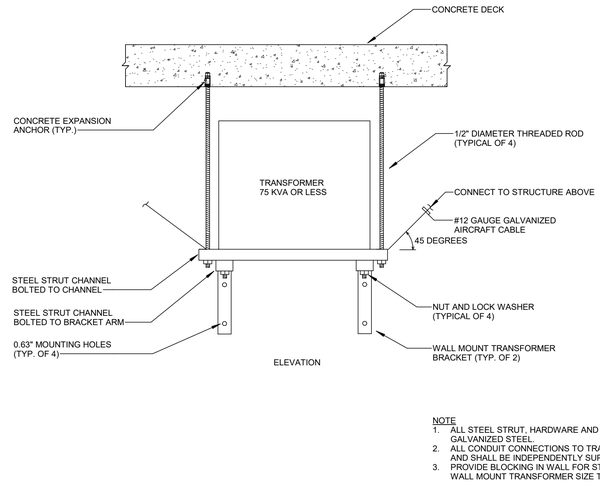


NOTE:
REFER TO THE PROPER DEVICE INSTALLATION INSTRUCTIONS FOR BACKBOX MOUNTING HEIGHT.

1 FIRE ALARM DEVICE MOUNTING HEIGHT REFERENCE DETAIL
NTS

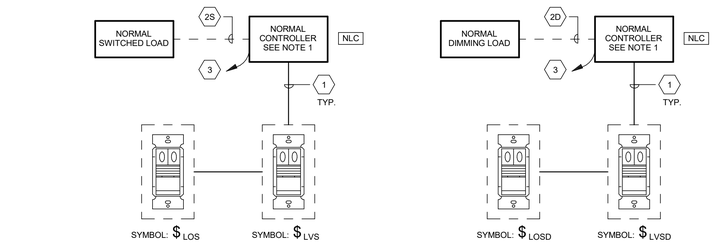


5 EMERGENCY CALL-FOR-AID SYSTEM SINGLE BATHROOM Pre-Fitout
NTS



NOTE
1. ALL STEEL STRUT, HARDWARE AND ACCESSORIES SHALL BE GALVANIZED STEEL.
2. ALL CONDUIT CONNECTIONS TO TRANSFORMER SHALL BE FLEXIBLE AND SHALL BE INDEPENDENTLY SUPPORTED.
3. PROVIDE BLOCKING IN WALL FOR STRUCTURAL SUPPORT. MAXIMUM WALL MOUNT TRANSFORMER SIZE TO BE 75 KVA.

4 WALL MOUNTED TRANSFORMER SUPPORT DETAIL
NTS



CABLE LEGEND

1. DATA LINE OR CONTROL CABLING PER MFR. REQ'S (SEE NOTE 1)
2S. SWITCHED WIRING 2#12+1#12G & 2#18 AWG
2D. SWITCHED AND 0-10V DIMMING WIRING 2#12+1#12G & 2#18 AWG
3. NORMAL 120/277VAC POWER SOURCE - REFER TO FLOOR PLANS FOR CIRCUITING

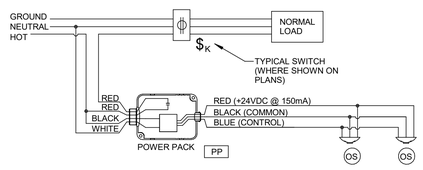
GENERAL NOTES:

1. DETAIL IS MANUFACTURER-AGNOSTIC. REFER TO SPECIFICATIONS FOR BASIS OF DESIGN LIGHTING CONTROL SYSTEM MANUFACTURER. SYSTEM TOPOLOGY AND ARCHITECTURE IS SHOWN DIAGRAMMATICALLY ON THIS DETAIL. FINAL CONNECTIONS, WIRING SCHEME, WIRE TYPE AND STYLE, AND OTHER SYSTEM COMPONENT CONFIGURATIONS SHALL BE AS REQUIRED BY APPROVED LIGHTING CONTROL MANUFACTURER. PROVIDE ADAPTERS, CONVERTERS AND OTHER SYSTEM COMPONENTS REQUIRED BY MANUFACTURER. SUBMIT FOR APPROVAL BY ENGINEER A WIRING DIAGRAM INDICATING ALL COMPONENTS AND CONNECTIONS.
2. PROVIDE FACTORY COMMISSIONING OF ALL SENSORS, PHOTOCELLS AND CONTROLS.
3. REFER TO FLOOR PLANS FOR EXACT LIGHTING FIXTURES ON EACH ZONE, AND QUANTITY AND LOCATION OF ALL DEVICES.
4. FINISHES AND COLORS OF ALL LIGHTING CONTROL DEVICES AND SWITCH PLATES SHALL BE SELECTED BY ARCHITECT

SEQUENCE OF OPERATIONS:

1. LOW VOLTAGE OCCUPANCY SENSOR SWITCHES (TAGGED "LOS" AND "LOSD") SHALL BE SET FOR AUTO ON. AUTO OFF OPERATION. TIMEOUT AFTER 20 MINUTES.
2. LOW VOLTAGE VACANCY SENSOR SWITCHES (TAGGED "LVS" AND "LVSD") SHALL BE SET FOR MANUAL ON, AUTO OFF OPERATION. TIMEOUT AFTER 20 MINUTES.
3. "LOS" AND "LVS" SWITCHES SHALL PROVIDE MANUAL ON/OFF CONTROL OF ALL LIGHTS IN ROOM SIMULTANEOUSLY.
4. "LOSD" AND "LVSD" SWITCHES SHALL PROVIDE MANUAL ON/OFF/RAISE/LOWER CONTROL OF ALL LIGHTS IN ROOM SIMULTANEOUSLY.

8 TYPICAL LOW VOLTAGE SENSOR SWITCH DETAIL
NTS

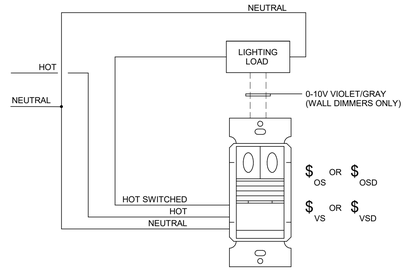


SEQUENCE OF OPERATIONS:

1. AUTO-ON WHEN OCCUPANCY IS DETECTED BY CEILING SENSOR(S). REFER TO FLOOR PLANS FOR QUANTITY AND LOCATIONS.
2. AUTO-OFF AFTER 20 MINUTES OF UNOCCUPIED SPACE.
3. MANUAL ON-OFF CONTROL OF ALL FIXTURES BY KEY SWITCHES, WHERE INDICATED ON PLANS.
4. REFER TO LIGHTING CONTROL SPECIFICATION FOR ADDITIONAL INFORMATION.

CEILING OCCUPANCY SENSOR WITH AUXILIARY RELAY

7 TYPICAL STANDALONE OCCUPANCY SENSOR DETAIL
NTS



TYPICAL WALL SENSOR SWITCH

NOTES:

1. REFER TO MANUFACTURERS WIRING DIAGRAM FOR EXACT WIRING DETAIL.
2. WIRE IN SERIES WITH THREE-WAY SWITCH, WHERE INDICATED ON PLANS.
3. PROVIDE 0-10V WIRING FROM WALL DIMMERS, WHERE INDICATED ON PLANS.
4. LIGHTING SHALL TIME OUT AFTER 20 MINUTES.
5. REFER TO LIGHTING CONTROL SPECIFICATION FOR ADDITIONAL INFORMATION.

TYPICAL SPECIFICATIONS:

1. "OS" OCCUPANCY SENSOR SWITCH: (SET TO AUTO-ON, AUTO-OFF MODE)
2. "OSD" OCCUPANCY SENSOR 0-10V DIMMER: (SET TO AUTO-ON, AUTO-OFF MODE)
3. "VS" VACANCY SENSOR SWITCH: (SET TO MANUAL-ON, AUTO-OFF MODE)
4. "VSD" VACANCY SENSOR 0-10V DIMMER: (SET TO MANUAL-ON, AUTO-OFF MODE)

6 TYPICAL LINE VOLTAGE SENSOR SWITCH DETAIL
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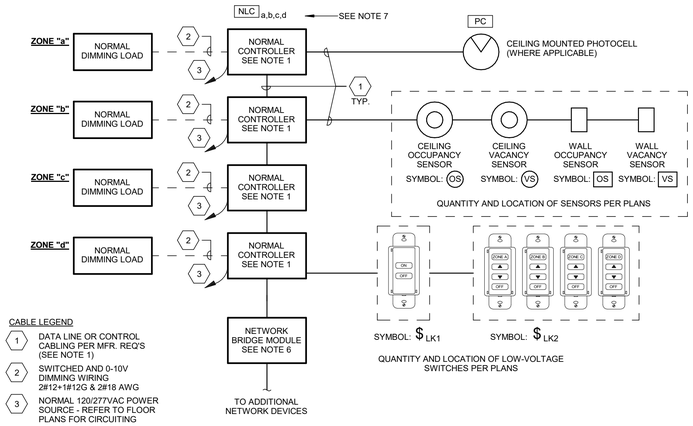


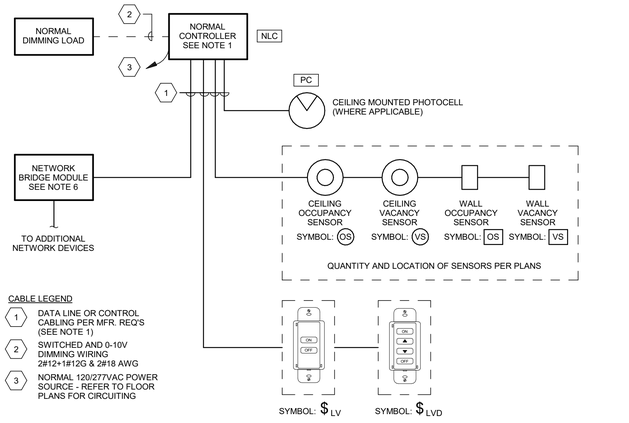
GENERAL NOTES:

1. DETAIL IS MANUFACTURER-AGNOSTIC. REFER TO SPECIFICATIONS FOR BASIS OF DESIGN LIGHTING CONTROL SYSTEM MANUFACTURER. SYSTEM TOPOLOGY AND ARCHITECTURE IS SHOWN DIAGRAMMATICALLY ON THIS DETAIL. FINAL CONNECTIONS, WIRING SCHEME, WIRE TYPE AND STYLE, AND OTHER SYSTEM COMPONENT CONFIGURATIONS SHALL BE AS REQUIRED BY APPROVED LIGHTING CONTROL MANUFACTURER. PROVIDE ADAPTERS, CONVERTERS AND OTHER SYSTEM COMPONENTS REQUIRED BY MANUFACTURER. SUBMIT FOR APPROVAL BY ENGINEER A WIRING DIAGRAM INDICATING ALL COMPONENTS AND CONNECTIONS.
2. PROVIDE FACTORY COMMISSIONING OF ALL SENSORS, PHOTOCELLS AND CONTROLS.
3. REFER TO FLOOR PLANS FOR EXACT LIGHTING FIXTURES ON EACH ZONE, AND QUANTITY AND LOCATION OF ALL DEVICES.
4. FINISHES AND COLORS OF ALL LIGHTING CONTROL DEVICES AND SWITCH PLATES SHALL BE SELECTED BY ARCHITECT
5. OCCUPANCY AND VACANCY SENSORS SHALL BE PROVIDED WITH AUXILIARY RELAY OPTION FOR CONNECTION TO BUILDING MANAGEMENT SYSTEM BY DIVISION 23 CONTRACTOR. IF SUBMITTED SENSORS DO NOT HAVE THIS ABILITY, PROVIDE ADDITIONAL INPUT/OUTPUT MODULES CAPABLE OF SUPPORTING RELAYED OUTPUT TO BMS.
6. SYSTEM SHALL BE PROVIDED WITH NETWORKED CONNECTIONS BETWEEN EACH CONTROLLER IN PROJECT, SO THAT EACH ROOM CAN BE SET UP AND CONFIGURED FROM A CENTRALLY OPERATED SYSTEM. PROVIDE BRIDGE MODULES AS REQUIRED BY MANUFACTURER TO SUPPORT THIS NETWORKING CAPABILITY.
7. NUMBER OF ZONES APPLICABLE TO A GIVEN ROOM IS INDICATED ON PLANS VIA ZONE TAGGING ON "NLC" AND "ELC" CONTROL SYMBOLS. DETAIL INDICATES A TYPICAL ROOM WITH ALL APPLICABLE ZONES. ROOMS WITHOUT A PARTICULAR ZONE WILL NOT HAVE THIS ZONE LETTER TAG ON "NLC" AND "ELC" SYMBOL.

SEQUENCE OF OPERATIONS:

1. SUGGESTED LABELING SHOWN. SUBMIT TO OWNER FOR APPROVAL PRIOR TO ORDERING.
2. ROOM OCCUPANCY SENSORS SHALL BE SET FOR AUTO ON, AUTO OFF OPERATION. TIMEOUT AFTER 20 MINUTES.
3. ROOM VACANCY SENSORS SHALL BE SET FOR MANUAL ON, AUTO OFF OPERATION. TIMEOUT AFTER 20 MINUTES.
4. "LK1" STATION SHALL CONSIST OF ONE KEYPAD TO PROVIDE MANUAL CONTROL OF LIGHTING:
   - "ON" = TURN ON ALL LIGHTING IN ROOM
   - "OFF" = TURN OFF ALL LIGHTING IN ROOM
5. "LK2" STATION SHALL CONSIST OF TWO KEYPADS TO PROVIDE MANUAL CONTROL OF LIGHTING:
   - KEYPAD #1 : "ZONE A": ON/OFF/RAISE/LOWER CONTROL OF ZONES "a"
   - KEYPAD #2 : "ZONE B": ON/OFF/RAISE/LOWER CONTROL OF ZONES "b"
   - KEYPAD #3 : "ZONE C": ON/OFF/RAISE/LOWER CONTROL OF ZONES "c"
   - KEYPAD #4 : "ZONE D": ON/OFF/RAISE/LOWER CONTROL OF ZONES "d"

2 TYPICAL OPEN SPACE LIGHTING CONTROL DETAIL
NTS



GENERAL NOTES:

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2. PROVIDE FACTORY COMMISSIONING OF ALL SENSORS, PHOTOCELLS AND CONTROLS.
3. REFER TO FLOOR PLANS FOR EXACT LIGHTING FIXTURES ON EACH ZONE, AND QUANTITY AND LOCATION OF ALL DEVICES.
4. FINISHES AND COLORS OF ALL LIGHTING CONTROL DEVICES AND SWITCH PLATES SHALL BE SELECTED BY ARCHITECT
5. OCCUPANCY AND VACANCY SENSORS SHALL BE PROVIDED WITH AUXILIARY RELAY OPTION FOR CONNECTION TO BUILDING MANAGEMENT SYSTEM BY DIVISION 23 CONTRACTOR. IF SUBMITTED SENSORS DO NOT HAVE THIS ABILITY, PROVIDE ADDITIONAL INPUT/OUTPUT MODULES CAPABLE OF SUPPORTING RELAYED OUTPUT TO BMS.
6. SYSTEM SHALL BE PROVIDED WITH NETWORKED CONNECTIONS BETWEEN EACH CONTROLLER IN PROJECT, SO THAT EACH ROOM CAN BE SET UP AND CONFIGURED FROM A CENTRALLY OPERATED SYSTEM. PROVIDE BRIDGE MODULES AS REQUIRED BY MANUFACTURER TO SUPPORT THIS NETWORKING CAPABILITY.

SEQUENCE OF OPERATIONS:

1. ROOM OCCUPANCY SENSORS SHALL BE SET FOR AUTO ON, AUTO OFF OPERATION. TIMEOUT AFTER 20 MINUTES.
2. ROOM VACANCY SENSORS SHALL BE SET FOR MANUAL ON, AUTO OFF OPERATION. TIMEOUT AFTER 20 MINUTES.
3. 4-BUTTON "LVD" KEYPAD(S) SHALL PROVIDE MANUAL CONTROL OF FIXTURES AS FOLLOWS:
   - BUTTON 1: "ON": TURN ALL LIGHTS ON
   - BUTTON 2: "▲": PRESS TO RAISE ALL LIGHTS
   - BUTTON 3: "▼": PRESS TO LOWER ALL LIGHTS
   - BUTTON 4: "OFF": TURN ALL LIGHTS OFF
4. 2-BUTTON "LV" KEYPAD(S) SHALL PROVIDE MANUAL CONTROL OF FIXTURES AS FOLLOWS:
   - BUTTON 1: "ON": TOGGLE ALL LIGHTS ON
   - BUTTON 2: "OFF": TOGGLE ALL LIGHTS OFF
5. WHERE PHOTOCELL IS INDICATED ON PLANS, ZONE SHALL HAVE AUTOMATIC DIMMING VIA PHOTOCELL AND SHALL CAP MAXIMUM LIGHT LEVEL OF 40 FOOT-CANDLES IN THIS ZONE.

1 TYPICAL 1-ZONE LIGHTING CONTROL DETAIL - NORMAL FIXTURES ONLY
NTS

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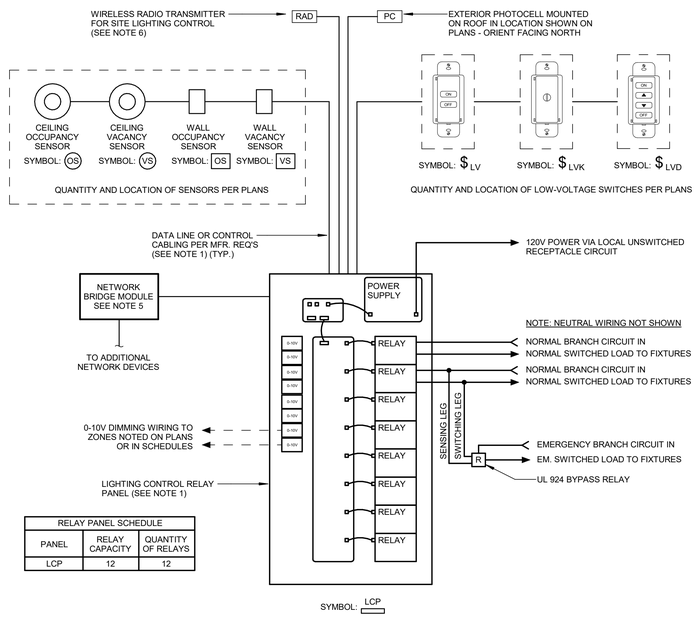
LIGHTING CONTROL RELAY PANEL SCHEDULE

RELAY PANEL	RELAY	LOAD	SOURCE PANEL	CONTROL	REMARKS
LCP	1	STAIR W EMERGENCY LIGHTING CONTROL ZONE 'w'	LP1	TIME CLOCK OS	RELAY GROUP FOR 50% OF EMERGENCY LIGHTING IN STAIRWELL, ALL ON DURING OCCUPIED HOURS. UNOCCUPIED HOURS LIGHTS SHALL TURN OFF AND OCCUPANCY SENSOR SHALL OVERRIDE TO ON. EMERGENCY RELAY AT PANEL.
	2	STAIR E EMERGENCY LIGHTING CONTROL ZONE 'e'	LP1	TIME CLOCK OS	RELAY GROUP FOR 50% OF EMERGENCY LIGHTING IN STAIRWELL, ALL ON DURING OCCUPIED HOURS. UNOCCUPIED HOURS LIGHTS SHALL TURN OFF AND OCCUPANCY SENSOR SHALL OVERRIDE TO ON. EMERGENCY RELAY AT PANEL.
	3	STAIR S EMERGENCY LIGHTING CONTROL ZONE 's'	LP1	TIME CLOCK OS	RELAY GROUP FOR 50% OF EMERGENCY LIGHTING IN STAIRWELL, ALL ON DURING OCCUPIED HOURS. UNOCCUPIED HOURS LIGHTS SHALL TURN OFF AND OCCUPANCY SENSOR SHALL OVERRIDE TO ON. EMERGENCY RELAY AT PANEL.
	4	SITE LIGHTING CIRCUIT 1	LP1	TIME CLOCK	RELAY GROUP CONTROLLED BY PHOTOCELL COORDINATE TIME SETTINGS WITH OWNER.
	5	SITE LIGHTING CIRCUIT 2	LP1	TIME CLOCK	RELAY GROUP CONTROLLED BY PHOTOCELL COORDINATE TIME SETTINGS WITH OWNER.
	6	SITE LIGHTING CIRCUIT 3	LP1	TIME CLOCK	RELAY GROUP CONTROLLED BY PHOTOCELL COORDINATE TIME SETTINGS WITH OWNER.
	7	BUILDING MOUNTED EXTERIOR LIGHTING - FRONT	LP1	TIME CLOCK	RELAY GROUP CONTROLLED BY PHOTOCELL COORDINATE TIME SETTINGS WITH OWNER.
	8	BUILDING MOUNTED EXTERIOR LIGHTING - BACK	LP1	TIME CLOCK	RELAY GROUP CONTROLLED BY PHOTOCELL COORDINATE TIME SETTINGS WITH OWNER.
	9	SPARE			
	10	SPARE			
	11	SPARE			
	12	SPARE			

NOTES:
1. DESCRIPTIONS LISTED ARE BASED ON DOUGLAS DIALOG SERIES LIGHTING RELAY PANELS AND CONTROLS. EQUAL PRODUCTS BY ACUITY BRANDS (NLIGHT)
2. PROVIDE UL 924 EMERGENCY LIGHTING RELAYS AT PANEL FOR EMERGENCY LIGHTING CIRCUITS.
3. TYPE LVX SWITCHES: FOUR BUTTON SWITCHES WITH INDICATOR LIGHTS AND ENGRAVED BUTTONS. PROVIDE MODEL BASED ON GANGED SWITCHES AT A GIVEN LOCATION. PROVIDE OFF BUTTONS ONLY WHERE INDICATED IN SCHEDULE.
4. TYPE LVX SWITCHES:EIGHT BUTTON SWITCHES WITH INDICATOR LIGHTS AND ENGRAVED BUTTONS. PROVIDE MODEL BASED ON GANGED SWITCHES AT A GIVEN LOCATION. PROVIDE OFF BUTTONS ONLY WHERE INDICATED IN SCHEDULE. AND HUBBELL LIGHTING CONTROL S WILL BE CONSIDERED.
5. COORDINATE PROGRAMMING OF ALL LIGHTING GROUPS/CHANNELS/ZONES WITH THE OWNER, INCLUDING BLINK WARNINGS AND TIME SCHEDULES.
6. 50% ON (HALF #1), DAYLIGHTING AND EMERGENCY ON BUTTONS TO EXTEND TIMER FOR 2 HOURS FOLLOWING BLINK WARNING.
7. ALL ON BUTTONS TO OVERRIDE TIMER UNTIL NEXT SCEDULED TIMED EVENT.
8. ALL ON BUTTONS SHALL BE GREEN WITH CUSTOM ENGRAVING. ALL OFF BUTTONS SHALL BE RED WITH CUSTOM ENGRAVING.
9. PROGRAM SYSTEM TO SWEEP ALL LIGHTS "OFF" WITH BLINK WARNING EVERY TWO HOURS AFTER A PROGRAM "OFF" EVENT UNTIL NEXT SCHEDULED TIMED "ON" EVENT.



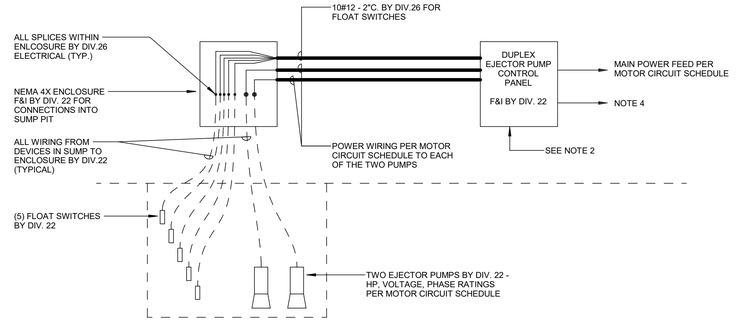
RELAY PANEL SCHEDULE		
PANEL	RELAY CAPACITY	QUANTITY OF RELAYS
LCP	12	12

GENERAL NOTES:
1. DETAIL IS MANUFACTURER-AGNOSTIC. REFER TO SPECIFICATIONS FOR BASIS OF DESIGN LIGHTING CONTROL SYSTEM MANUFACTURER. SYSTEM TOPOLOGY AND ARCHITECTURE IS SHOWN DIAGRAMMATICALLY ON THIS DETAIL. FINAL CONNECTIONS, WIRING SCHEME, WIRE TYPE AND STYLE, AND OTHER SYSTEM COMPONENT CONFIGURATIONS SHALL BE AS REQUIRED BY APPROVED LIGHTING CONTROL MANUFACTURER. PROVIDE ADAPTERS, CONVERTERS AND OTHER SYSTEM COMPONENTS REQUIRED BY MANUFACTURER. SUBMIT FOR APPROVAL BY ENGINEER A WIRING DIAGRAM INDICATING ALL COMPONENTS AND CONNECTIONS.
2. PROVIDE FACTORY COMMISSIONING OF ALL SENSORS, PHOTOCELLS AND CONTROLS.
3. REFER TO FLOOR PLANS FOR EXACT LIGHTING FIXTURES ON EACH ZONE, AND QUANTITY AND LOCATION OF ALL DEVICES.
4. FINISHES AND COLORS OF ALL LIGHTING CONTROL DEVICES AND SWITCH PLATES SHALL BE SELECTED BY ARCHITECT
5. SYSTEM SHALL BE PROVIDED WITH NETWORKED CONNECTIONS BETWEEN EACH RELAY PANEL IN PROJECT, SO THAT EACH PANEL CAN BE SET UP AND CONFIGURED FROM A CENTRALLY OPERATED SYSTEM. PROVIDE BRIDGE MODULES AS REQUIRED BY MANUFACTURER TO SUPPORT THIS NETWORKING CAPABILITY.
6. FOR EACH RELAY PANEL, PROVIDE WIRELESS RADIO TRANSMITTER TO COMMUNICATE WITH FIXTURES THAT HAVE INTERNAL WIRELESS COMMUNICATION CAPABILITY. IF NO FIXTURES HAVE THIS CAPABILITY, RADIO TRANSMITTER SHALL BE PROVIDED TO SUPPORT FUTURE INSTALLATIONS.
7. RELAY PANEL SHALL HAVE INTERNAL TIMECLOCK FUNCTIONALITY.

SEQUENCE OF OPERATIONS:
1. REFER TO PLANS FOR FIXTURES TO BE CONTROLLED BY RELAY PANEL. NOTATION IS SHOWN ON CIRCUIT HOMERUN TAG.
2. REFER TO PLANS FOR FIXTURES TO BE DIMMED THROUGH RELAY PANEL. NOTATION IS SHOWN ON CIRCUIT HOMERUN TAG.
3. TIME SCHEDULE SHALL BE SENT TO RELAY PANEL FROM LIGHTING CONTROL NETWORK. REFER TO NETWORK DETAIL FOR ADDITIONAL INFORMATION.
4. EXTERIOR LIGHTING CONNECTED TO RELAY PANEL (SHOWN ON PLANS) SHALL TURN ON/ OFF IN CONJUNCTION WITH TIME SCHEDULE RECEIVED FROM NETWORK. EXTERIOR FIXTURES WITH WIRELESS CONNECTIVITY SHALL TURN ON/ OFF IN CONJUNCTION WITH SAME TIME SCHEDULE.
5. INTERIOR LIGHTING CONTROLLED VIA RELAY PANEL IS INDICATED ON FLOOR PLANS (WHERE APPLICABLE) ASSOCIATED KEY SWITCHES/ OVERRIDE SWITCHES AND SENSORS ARE SHOWN WITH SAME ZONE TAGS AS FIXTURES. INTERIOR FIXTURES WITH WIRELESS CONNECTIVITY SHALL TURN ON/ OFF SIMULTANEOUSLY.
6. "LV" OVERRIDE SWITCHES SHALL BE 2-BUTTON KEYPADS WIRED TO RELAY PANEL AND SHALL PROVIDE MANUAL ON/OFF CONTROL OF ZONE INDICATED VIA TAGGING ON PLANS. LABEL "ON" AND "OFF".
7. "LVK" KEY SWITCHES SHALL BE LOW VOLTAGE KEY SWITCHES WIRED TO RELAY PANEL AND SHALL PROVIDE ON/OFF/AUTO CONTROL OF ZONE INDICATED VIA TAGGING ON PLANS. LABEL WITH ZONE CONTROLLED.
8. "LVD" DIMMING SWITCHES SHALL BE LOW VOLTAGE SWITCHES WIRED TO RELAY PANEL AND SHALL PROVIDE ON/OFF/RAISE/LOWER CONTROL OF ZONE INDICATED VIA TAGGING ON PLANS. LABEL WITH ZONE CONTROLLED. PROVIDE 0-10V WIRING TO FIXTURES ON THESE INDICATED ZONES.

EMERGENCY LIGHTING NOTE:
1. PROVIDE UL924 BYPASS RELAY FOR EACH EMERGENCY LIGHTING CIRCUIT, WIRED PER EMERGENCY RELAY DETAILS. LOCATE ALL BYPASS RELAYS ADJACENT TO RELAY PANEL.

1 LIGHTING CONTROL RELAY PANEL DETAIL
NTS



NOTES:
1. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF CONTROL PANEL, SUMP AND ASSOCIATED ENCLOSURE WITH DIV. 22 PUMP ASSEMBLY INSTALLER PRIOR TO ROUGH-IN.
2. CONTROL PANEL CONTAINS INTEGRAL MAIN DISCONNECT SWITCH, MOTOR STARTERS AND OVERLOAD PROTECTION FOR EACH PUMP. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO THE CONTROL PANEL PER MANUFACTURER RECOMMENDATIONS.
3. ALL WIRE SIZES LISTED ON THIS DRAWING ARE ANTICIPATED BASED ON SIZE OF EQUIPMENT. MANUFACTURER RECOMMENDATIONS SHALL SUPERSEDE ALL WIRE SIZES LISTED.
4. PROVIDE DRY CONTACT ALARM SIGNAL FROM CONTROL PANEL TO NEAREST SECURITY SYSTEM INPUT/OUTPUT MODULE. COORDINATE EXACT LOCATION OF NEAREST MODULE WITH SECURITY DRAWINGS. PROVIDE WIRING PER MFR. RECOMMENDATIONS ROUTED IN 3/4"C.

3 DUPLEX PUMP ASSEMBLY WIRING DIAGRAM Pre-Fitout
NTS

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ELECTRICAL DETAILS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
DRAWN: AJG
CHECKED: SAS
5/1/2026 1:53:24 PM

SHEET NO.
E5.4

LIGHTING FIXTURE SCHEDULE

TYPE	BASIS OF DESIGN MANUFACTURER / MODEL	VOLTAGE	SOURCE	FIXTURE DESCRIPTION - BASIS OF DESIGN
A2	COLUMBIA LIGHTING / LCAT 22 LCAT22-S-9-35L036G-ED1-U	UNV	3600LM, 28W 3500K LED	SHALLOW RECESSED 2' X 2' FIXTURE. WITH 0-10V 1% DIMMING, GRID LAY-IN, CURVED SHIELDING.
A2E	COLUMBIA LIGHTING / LCAT 22 LCAT22-S-9-35L036G-ED1-U-ELL14	UNV	3600LM, 28W 3500K LED	SAME AS TYPE "A2" EXCEPT WITH EMERGENCY BATTERY PACK.
D8	PRESCOLITE / LFR DOWNLIGHT LFR-4RDS-M-30L35K8-MD-DM1	UNV	3000LM, 29.1W 3500K LED	4" SHALLOW RECESSED DOWNLIGHT FIXTURE, 0-10V DIMMING, MEDIUM DISTRIBUTION
D8E	PRESCOLITE / LFR DOWNLIGHT LFR-4RDS-M-30L35K8-MD-DM1-EMR	UNV	3000LM, 29.1W 3500K LED	SAME AS TYPE "D4" EXCEPT WITH EMERGENCY BATTERY PACK.
H	ARANCIA LIGHTING / P82 SERIES P82-44-M-N-B-C-1-U-0-R7-10-XX-XX	UNV	6800LM, 73W (DIR) 1300LM, 20W (INDIR) 3500K LED	44" ROUND SUSPENDED DRUM FIXTURE WITH ALUMINUM FRAMING FOR EXTRUDED SHADE AND REFLECTOR. 0-10V DIMMING.
SB	B-K LIGHTING UO-42-LED-x139-2	UNV	1292LM, 20W 3500K LED	UNION BOLLARD, WIDE THROW, ALUMINUM MATERIAL
SL1A	BEACON BP-ST-1-36L-55-3K7-4W-UNV-XX-XX-BC-HSS-90-B	UNV	5500LM, 55W 3500K LED	LIGHT POLE, MICROSTRIKE OPTICAL PLATFORM, SIZE 1, 80 CRI, TYPE 4 WIDE DISTRIBUTION, HOUSE SIDE SHIELD, ARM MOUNT B3 DRILL PATTERN. MOUNTED ON 16FT POLE.
SL1B	BEACON VP-ST-1-36L-55-3K7-4F-UNV-XX-XX-BC-HSS-90-B	UNV	5500LM, 55W 3500K LED	SAME AS TYPE 'SL1A' EXCEPT WITH TYPE 4 FORWARD DISTRIBUTION.
SL4A	BEACON VP-ST-1-36L-55-3K7-4W-UNV-XX-XX	UNV	5500LM, 227.7W 3500K LED	SAME AS TYPE 'SL1A' EXCEPT WITHOUT HOUSE SIDE SHIELD AND WITH FOUR HEADS, EACH MOUNTED AT 90 DEGREES.
SP	BEGA LIGHTING B77120-K3	UNV	2654LM, 20.2W 3500K LED	ARCHITECTURAL POST TOP POLE MOUNTED FIXTURE. 0-10V DIMMIMG, LED LIFE 60000 HRS, MOUNTED AT 8FT POLE.
SR	BEGA LIGHTING B33053-K3	UNV	231LM, 6W LED	RECESSED WALL LUMINARE, 0-10V DIMMING, 3500K COLOR TEMP, MOUNTED 18IN AFG
SW	ECLIPSE LIGHTING / LIVERPOOL 2 V2-A-WS-LED40-35K-80CRI-UNV-BK	UNV	4275LM, 40W 3500K LED	BUILDING MOUNTED WALL PACK, DIRECT DOWNLIGHT, WIDE SPREAD DISTRIBUTION,
SWE	ECLIPSE LIGHTING / LIVERPOOL 2 LV2-A-WS-LED40-35K-80CRI-UNV-BK-ELL10WCW	UNV	4275LM, 40W 3500K LED	SAME AS TYPE "S1" EXCEPT WITH EMERGENCY BATTERY PACK.
U4	COLUMBIA LIGHTING / MPS LINEAR MPS-4-9-35-CW-E-U	UNV	4500LM, 26.7W 3500K LED	4' MULTIPURPOSE LED LINEAR, CODE-GAUGE STEEL HOUSING, HOUSING COMPONETS ACT AS HEAT SINK, 60,000 LUMEN HOUR RATED
U4E	COLUMBIA LIGHTING / MPS LINEAR MPS-4-9-35-CW-E-U-ELL14	UNV	4500LM, 26.7W 3500K LED	SAME AS TYPE 'U4' EXCEPT WITH EMERGENCY BATTERY PACK
U4W	COLUMBIA LIGHTING / MPS LINEAR MPS-4-9-35-CW-E-U	UNV	4500LM, 26.7W 3500K LED	SAME AS TYPE 'U4' EXCEPT WALL MOUNTED
U4WE	COLUMBIA LIGHTING / MPS LINEAR MPS-4-9-35-CW-E-U-ELL14	UNV	4500LM, 26.7W 3500K LED	SAME AS TYPE 'U4W' EXCEPT WITH EMERGENCY BATTERY PACK
EM	EVENLITE / TELESIS TCL-4-W-SD-PRWLED1-MV	UNV	LED	SELF-CONTAINED EMERGENCY LIGHTING UNIT. COMPACT LOW PROFILE CONTEMPORARY EMERGENCY LIGHT, HIGH IMPACT THERMOPLASTIC WHITE HOUSING, UL924 LISTED, REMOTE CAPABILITY, NICKEL CADMIUM BATTERIES.
X1	EVENLITE / TELESIS TEXZ-URC-AC-R-URC	UNV	LED	UNIVERSAL MOUNT, SINGLE FACE, ARCHITECTURAL EDGE-LIT EXIT SIGN WITH RED LETTERING, WHITE BACKGROUND, WHITE FINISH AND FIELD INSTALLED CHEVRONS.
X2	EVENLITE / TELESIS TEXZ-URC-AC-R-URC	UNV	LED	UNIVERSAL MOUNT, DOUBLE FACE, ARCHITECTURAL EDGE-LIT EXIT SIGN WITH RED LETTERING, WHITE BACKGROUND, WHITE FINISH AND FIELD INSTALLED CHEVRONS.
XH	EVENLITE / TELESIS TRE TRE-CT-AC-R-1W-W-W/SC	UNV	LED	UNIVERSAL MOUNT, SINGLE FACE, ARCHITECTURAL EDGE-LIT EXIT SIGN WITH RED LETTERING, WHITE BACKGROUND, WHITE FINISH AND FIELD INSTALLED CHEVRONS. INCLUDE CONNECTICUT CODE-COMPLIANT ACTIVE SYMBOL OF ACCESSIBILITY.

NOTES:
1. LIGHT FIXTURES IN THE SCHEDULE SHALL BE CONSIDERED BASIS OF DESIGN. EQUAL FIXTURE SUBSTITUTIONS ARE ACCEPTABLE FOR ALL FIXTURES IN THE LIGHTING FIXTURE SCHEDULE, UNLESS INDICATED OTHERWISE. EQUAL FIXTURE APPROVAL SHALL BE AS JUDGED BY THE ENGINEER AND THE ARCHITECT. IN ADDITION TO THE REQUIREMENTS LISTED IN THE LIGHTING FIXTURE SCHEDULE AND IN THE SPECIFICATIONS, THE PROPOSED EQUAL FIXTURES SHALL:
   A. BE THE SAME GENERAL SIZE, STYLE AND SHAPE, INCLUDING BUT NOT LIMITED TO LENS CONSTRUCTION AND SHADING.
   B. BE OF EQUAL QUALITY CONSTRUCTION AND FINISH.
   C. BE SUPPLIED WITH ALL REQUIRED ACCESSORIES TO MATCH THE SPECIFIED (BASIS OF DESIGN) FIXTURE.
   D. PROVIDE THE SAME DISTRIBUTION, EFFICACY AND SOURCE LUMEN OUTPUT.
   E. HAVE THE SAME LISTINGS AS THE BASIS OF DESIGN FIXTURE, INCLUDING DLC AND ENERGY STAR QUALIFICATIONS.
2. ALL FIXTURES SHALL BE UL LISTED.
3. ALL NECESSARY MOUNTING HARDWARE, HANGERS, BRACKETS, RAILS, YOKES, CANOPIES, STEMS, CHAINS, ROW JOINERS, ETC. SHALL BE FURNISHED AND INSTALLED.
4. REFER TO ARCHITECTURAL DRAWINGS FOR SPECIFIC DETAILS, ARRANGEMENT, MOUNTING HEIGHTS, SUSPENSION LENGTHS, CEILING CONSTRUCTION, ETC. ALL COLORS AND FINISHES SHALL BE SELECTED BY ARCHITECT.
5. FIXTURES SHALL BE SEISMICALLY SUPPORTED AS REQUIRED BY THE APPLICABLE BUILDING CODE. FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE AND SHALL BE INDEPENDENT OF DUCTS, PIPES, CEILINGS AND THEIR SUPPORTING MEMBERS. FIXTURES SHALL BE SUPPORTED WITH A MINIMUM OF 2 SUPPORTS.
6. WIRE EMERGENCY FIXTURES AND EXIT SIGNS AHEAD OF SWITCHED LEGS.
7. MINIMUM MOUNTING HEIGHT OF FIXTURES IN MECHANICAL AND ELECTRICAL SPACES IS 8'-6" AFF. COORDINATE MOUNTING HEIGHT IN FIELD WITH EQUIPMENT IN ROOM SUCH THAT LIGHTING IS NOT OBSTRUCTED BY DUCTWORK, PIPING AND CONDUIT. PROVIDE NECESSARY CHAIN-MOUNTING HARDWARE TO SUSPEND FIXTURES WHERE REQUIRED.
8. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
9. WHERE EXIT SIGNS ARE SHOWN AS WALL MOUNTED ABOVE A DOOR, MOUNT SUCH THAT THE BOTTOM OF THE SIGN IS NO MORE THAN 3" ABOVE THE DOOR FRAME, UNLESS INDICATED OTHERWISE ON PLANS.
10. UNLESS OTHERWISE NOTED, PENDANT FIXTURE MOUNTING HEIGHTS IN FINISHED SPACES SHALL BE AS FOLLOWS:
    A. CEILING HEIGHT 9'-0" OR LOWER: 7'-6" TO BOTTOM OF FIXTURE
    B. CEILING HEIGHT 9'-6" TO 11'-0": 8'-0" TO BOTTOM OF FIXTURE
    C. CEILING HEIGHT 11'-0" TO 12'-0": 9'-6" TO BOTTOM OF FIXTURE
    D. MINIMUM PENDANT LENGTH SHALL BE 1'-6"
    E. CONSULT WITH ARCHITECT AND ENGINEER FOR OTHER CEILING HEIGHTS.

MOTOR / EQUIPMENT CIRCUIT SCHEDULE

EQUIPMENT	OCPD	PANEL	LOAD					LOCAL DISC. SW	MOTOR STARTER			WIRING	REMARKS
			HP	MCA	W	PH	VOLT		SIZE	TYPE	LOCATION		
ACCU-3	40A-3P	MHP	-	35	-	3	480	60A-3P	-	SPC	AT UNIT	3#8, #10G, 1"C	
B-1	20A-1P	MLP1	-	15	-	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 7
BS-A-X	20A-2P	MLP2	-	0.6	-	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 1
FPAC-1	20A-3P	MLP1	5	-	-	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 9
CUH-A	20A-1P	MLP1	1/30	-	-	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 1
CUH-B	20A-1P	MLP1	1/30	-	-	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 1
DOAS-1	25A-3P	MHP	-	25	-	3	480	60A-3P	-	SPC	AT UNIT	3#10, #10G, 1"C	SEE REMARK 5
EF-1	15A-1P	MLP2	1	-	-	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	
EF-2	20A-1P	MLP1	-	0.26	-	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 1
EF-3	20A-1P	MLP1	-	0.19	-	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARK 1
EUH-A	20A-2P	MLP1	-	14.5	-	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	
GMU-1	20A-1P	MLP1	-	-	500	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	
HWP-1	20A-1P	MLP1	1/4	-	-	1	120	DIV 23	-	SPC	AT UNIT	2#12, #12G, 3/4"C	
HWP-3	20A-2P	MLP1	1	-	-	1	208	DIV 23	-	SPC	AT UNIT	2#12, #12G, 3/4"C	
HWP-4	20A-2P	MLP1	1	-	-	1	208	DIV 23	-	SPC	AT UNIT	2#12, #12G, 3/4"C	
LIFT	20A-1P	GP1	-	6	-	1	120	30A-1P	-	SPC	AT WALL	2#12, #12G, 3/4"C	COORDINATE WITH MANUFACTURER FOR ADDITIONAL POWER REQUIREMENTS.
SP-1	20A-3P	MHP	2, 3	-	-	3	480	30A-3P	-	SPC	AT UNIT	3#12, #12G, 3/4"C	SEE REMARK 8
SP-2	20A-3P	MHP	2, 3	-	-	3	480	30A-3P	-	SPC	AT UNIT	3#12, #12G, 3/4"C	SEE REMARK 8
UH-A	20A-1P	MLP1	-	0.8	16	1	120	30A-3P	-	SPC	AT UNIT	3#12, #12G, 3/4"C	SEE REMARK 1
UH-B	20A-1P	MLP1	-	0.8	16	1	120	30A-3P	-	SPC	AT UNIT	3#12, #12G, 3/4"C	SEE REMARK 1
VRF-A	20A-2P	MLP2	-	-	0.3	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARKS 1, 2
VRF-I	20A-2P	MLP2	-	-	1.8	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARKS 1, 2
VRF-J	20A-2P	MLP2	-	-	10.1	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARKS 1, 2
VRF-K	20A-2P	MLP2	-	-	0.4	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	SEE REMARKS 1, 2
WH-1	20A-2P	MLP1	-	20	-	1	208	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	(3) INSTANCES OF EQUIPMENT
WHE-1	20A-1P	MLP1	-	-	1.65	1	120	MAN	-	SPC	AT UNIT	2#12, #12G, 3/4"C	-

GENERAL NOTES:
1. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY TYPE AND SHALL BE LOCATED AT EQUIPMENT LOCATION UNLESS OTHERWISE NOTED.
2. ABBREVIATIONS:
   - MAN: MANRAL STARTER (TOGGLE SWITCH WITH THERMAL OVERLOADS)
   - FVNR: COMBINATION FULL VOLTAGE NON-REVERSING STARTER/ DISCONNECT SWITCH
   - VFD: VARIABLE FREQUENCY DRIVE, FURNISHED BY DIV. 23, WIRED BY DIV. 26. PROVIDE POWER WIRING FROM SOURCE PANELBOARD TO VFD AND FROM VFD TO MOTOR(S). COORDINATE EXACT LOCATION IN FIELD WITH DIV.23.
   - DIV.21: EQUIPMENT FURNISHED BY DIVISION 21 FIRE PROTECTION CONTRACTOR
   - DIV.22: EQUIPMENT FURNISHED BY DIVISION 22 PLUMBING CONTRACTOR
   - DIV.23: EQUIPMENT FURNISHED BY DIVISION 23 HVAC CONTRACTOR
   - SPC: SINGLE POINT CONNECTION (STARTERS INTEGRAL TO EQUIPMENT). COORDINATE EXACT POINT OF CONNECTION IN FIELD.
3. OVERCURRENT PROTECTION DEVICES (OCPD) SHALL BE MOLDED CASE CIRCUIT BREAKERS UNLESS NOTED WITH AN "F" FOR FUSE.
4. DISCONNECT SWITCHES AND STARTERS SHALL BE NEMA 3R RATED WHEN LOCATED OUTSIDE.
5. REFER TO PANEL SCHEDULES FOR SOURCE PANEL/ CIRCUIT INFORMATION.
6. REFER TO ELECTRICAL AND MECHANICAL PLANS FOR EXACT LOCATIONS OF EQUIPMENT.
7. STARTERS SHALL BE SQUARE D CLASS 8536 OR APPROVED EQUAL.

REFERENCED REMARKS:
1. REFER TO FLOOR PLANS FOR CIRCUITING. ALL UNITS INDICATED ON PLANS SHALL BE DAISY-CHAINED TOGETHER. PROVIDE SEPARATE DISCONNECT SWITCH FOR EACH UNIT ON CIRCUIT.
2. CONDENSATE PUMP FOR VRF UNIT SHALL BE FURNISHED/INSTALLED BY DIV.23. ELECTRICAL CONTRACTOR SHALL PROVIDE HARDWIRED CONNECTION TO PUMP VIA SAME CIRCUIT AS AC/ FAN COIL UNIT. PROVIDE MOTOR RATED TOGGLE SWITCH AT PUMP FOR DISCONNECTING MEANS.
3. CONDENSATE PUMP FOR AC UNIT SHALL BE FURNISHED/INSTALLED BY DIV.23. ELECTRICAL CONTRACTOR SHALL PROVIDE DUPLEX RECEPTACLE FOR PUMP, POWERED VIA LOCAL UNSWITCHED RECEPTACLE CIRCUIT. COORDINATE EXACT LOCATION WITH DIV.23.
4. PROVIDE POWER WIRING FROM SOURCE PANELBOARD TO OUTDOOR UNIT. PROVIDE INTERCONNECT WIRING IN 3/4"C. FROM OUTDOOR UNIT TO INDOOR UNIT. WIRE SIZE AND TYPE SHALL BE PER MANUFACTURER'S REQUIREMENTS. PROVIDE SEPARATE DISCONNECT SWITCH FOR EACH OF THE TWO UNITS.
5. PROVIDE SEPARATE 20A/120V/1PH CONNECTION TO UNIT FOR INTEGRAL LIGHTS AND RECEPTACLES. POWER VIA LOCAL RECEPTACLE CIRCUIT INDICATED ON PLANS.
6. UNIT IS LOCATED OUTSIDE BUILDING ON PAD. CIRCUIT SHALL RUN UNDER SLAB FROM PANEL TO UNIT LOCATION. COORDINATE EXACT STUB-UP LOCATION IN FIELD WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
7. POWER VIA EPO/ SHUTOFF SYSTEM AS SPECIFIED ON ELECTRICAL DETAILS.
8. DUPLEX PUMP ASSEMBLY - PROVIDE POWER WIRING TO CONTROL PANEL AND FROM CONTROL PANEL TO EACH OF THE TWO PUMPS.
9. OWNER PROVIDED COMPRESSOR AND VACUUM PUMP. LOADS ARE ESTIMATED AND CIRCUIT REQUIREMENTS SHALL BE COORDINATED WITH OWNER PRIOR TO INSTALLATION.

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

24 BRANCH STREET
WATERBURY, CT 06704

RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ELECTRICAL SCHEDULES

DATE: 2026-0501	SHEET NO.
SCALE NTS	
PROJ. #: 2023-026B	**E6.0**
DRAWN: AJG	
CHECKED: SAS	
5/1/2026 1:53:23 PM	

Switchboard: MSB

Location: MAIN ELECTRICAL ROOM 007 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 65,000
Supply From: | **Phases:** 3 | **Mains Type:** CU
Mounting: HOUSEKEEPING PAD | **Wires:** 4 | **Mains Rating:** 800 A
Enclosure: TYPE 1 | **MCB Rating:** 800 A

Notes:

CKT	Circuit Description	# of Poles	Trip Rating	Load	Remarks
1	T8:GPDP	3	400 A	11840 VA	
2	MHP	3	400 A	123332 VA	
3	LP1	3	60 A	7466 VA	
4	LP2	3	60 A	6071 VA	
5	SPARE	3	250 A	0 VA	
6	SPARE	3	250 A	0 VA	
7	SPARE	3	100 A	0 VA	
8	SPACE	3	--	--	
9	SPACE	3	--	--	
10	FUTURE PV SPACE	3	--	--	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
				148708 VA	
				178.9 A	

Legend:

Branch Panel: LP1

Location: OPEN SPACE 003 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 14,000
Supply From: MSB | **Phases:** 3 | **Bus Material:** CU
Mounting: SURFACE | **Wires:** 4 | **Bus Rating:** 60 A
Enclosure: TYPE 1 | **MCB Rating / MLO:** 60 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LTG - CORRIDOR 004, 006 & STAIR S	20 A	1	0.36	0.50					1	20 A	LTG - ROOM 003, 005, 007, 008	2
3	LTG - ROOM 003, 004	20 A	1			0.37	1.98			1	20 A	LTG - ROOM 001, 002	4
5	LTG - ROOM 104, 105, 106, 107, 108	20 A	1					0.40	1.92	1	20 A	LTG - MAIN OPEN SPACE 002	6
7	LTG - ROOM 100 & 102	20 A	1	0.38	0.17					1	20 A	LTG - STAIRCASE W	8
9	LTG - STAIRCASE E	20 A	1			0.17	0.34			1	20 A	LTG - EXTERIOR POST/PARKING	10
11	LTG - EXTERIOR PARKING	20 A	1					0.22	0.24	1	20 A	LTG - EXTERIOR LIGHTING	12
13	LTG - EXTERIOR LIGHTING	20 A	1	0.41	0.00					1	20 A	LTG CONTROL PANEL	14
15	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	16
17	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	18
19	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	20
21	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	22
23	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	24
25	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	26
27	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	28
29	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	30
		Phase Load:		1.82 kVA		2.87 kVA		2.78 kVA					
		Phase...		6.6 A		10.9 A		10.6 A					
		Total Load:		7.47 kVA									
Notes:		**Total Amps:**		8.98 A									

Branch Panel: LP2

Location: MEZZANINE 200 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 10,000
Supply From: MSB | **Phases:** 3 | **Bus Material:** CU
Mounting: SURFACE | **Wires:** 4 | **Bus Rating:** 60 A
Enclosure: TYPE 1 | **MCB Rating / MLO:** 60 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LTG - ATTIC	20 A	1	0.25	3.04					1	20 A	LTG - ROOM 101, 200, 201	2
3	LTG - MAIN OPEN SPACE 101	20 A	1			2.79	0.00			1	20 A	SPARE	4
5	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	6
7	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	8
9	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	10
11	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	12
		Phase Load:		3.28 kVA		2.79 kVA		0.00 kVA					
		Phase...		13.4 A		11.6 A		0 A					
		Total Load:		6.07 kVA									
Notes:		**Total Amps:**		7.3 A									

Branch Panel: GPDP

Location: MAIN ELECTRICAL ROO... | **Volts:** 120/208 Wye | **A.I.C. Rating:** 22,000
Supply From: T8:GPDP | **Phases:** 3 | **Bus Material:** CU
Mounting: SURFACE | **Wires:** 4 | **Bus Rating:** 800 A
Enclosure: TYPE 1 | **MCB Rating / MLO:** 800 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	EVDP	20 A	3	0.00	3.24					3	20 A	GP1	2
3	--	--	--			0.00	5.03			--	--	--	4
5	--	--	--					0.00	1.23	--	--	--	6
7	GP2	20 A	3	1.08	0.72					3	20 A	IT	8
9	--	--	--			0.54	0.00			--	--	--	10
11	--	--	--					0.00	0.00	--	--	--	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		Phase Load:		5.04 kVA		5.57 kVA		1.23 kVA					
		Phase...		46.9 A		51.3 A		10.3 A					
		Total Load:		11.84 kVA									
Notes:		**Total Amps:**		32.86 A									

Branch Panel: GP1

Location: OPEN SPACE 003 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 14,000
Supply From: GPDP | **Phases:** 3 | **Bus Material:** CU
Mounting: SURFACE | **Wires:** 4 | **Bus Rating:** 225 A
Enclosure: TYPE 1 | **MCB Rating / MLO:** 150 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT - ROOM 005, 007, 008	20 A	1	0.90	0.90					1	20 A	RCPT - ROOM 002, 003, 004	2
3	RCPT - ROOM 001 & 002	20 A	1			0.54	1.08			1	20 A	RCPT - ROOM 103, 104, 105, 106, 107	4
5	HAND DRYER - RESTROOM 105	20 A	1					0.18	0.18	1	20 A	HAND DRYER - RESTROOM 106	6
7	HAND DRYER - RESTROOM 107	20 A	1	0.18	0.18					1	20 A	EWC - OPEN SPACE 103	8
9	EWC - OPEN SPACE 103	20 A	1			0.18	0.90			1	20 A	RCPT - MAIN OPEN SPACE 101	10
11	RCPT - MAIN OPEN SPACE 101	20 A	1					0.72	0.15	1	20 A	FIRE ALARM CONTROL PANEL	12
13	TEMP COMM DEMARC	20 A	1	0.36	0.72					1	20 A	RCPT - ROOM 001 & 002	14
15	LIFT - ADD'L CIRCUIT	20 A	1			0.50	1.83			1	20 A	LIFT - MAIN DISCONNECT	16
17	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	18
19	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	20
21	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	22
23	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	24
25	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	26
27	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	28
29	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	30
31	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	32
33	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	34
35	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	36
37	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	38
39	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	40
41	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	42
43	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	44
45	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	46
47	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	48
49	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	50
51	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	52
53	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	54
		Phase Load:		3.24 kVA		5.03 kVA		1.23 kVA					
		Phase...		29.6 A		44.5 A		10.3 A					
		Total Load:		9.50 kVA									
Notes:		**Total Amps:**		26.37 A									

Branch Panel: GP2

Location: MEZZANINE 200 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: GPDP | **Phases:** 3 | **Bus Material:** CU
Mounting: SURFACE | **Wires:** 4 | **Bus Rating:** 225 A
Enclosure: TYPE 1 | **MCB Rating / MLO:** 100 A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT - ROOM 200 & 201	20 A	1	0.54	0.54					1	20 A	RCPT - ATTIC WALKWAY	2
3	RCPT - ROOFTOP	20 A	1			0.54	0.00			1	20 A	SPARE	4
5	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	6
7	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	8
9	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	10
11	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	12
13	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	14
15	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	16
17	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	18
19	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	20
21	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	22
23	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	24
25	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	26
27	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	28
29	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	30
		Phase Load:		1.08 kVA		0.54 kVA		0.00 kVA					
		Phase...		9.7 A		5.2 A		0 A					
		Total Load:		1.62 kVA									
Notes:		**Total Amps:**		4.5 A									

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ELECTRICAL PANEL SCHEDULES

DATE: 2026-0501
SCALE
PROJ. #: 2023-026B
DRAWN: AJG
CHECKED: SAS
5/1/2026 1:53:23 PM

SHEET NO.

E6.1

Branch Panel: EVDP

Location: MAIN ELECTRICAL ROO... **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: GPDP **Phases:** 3 **Bus Material:** CU
Mounting: SURFACE **Wires:** 4 **Bus Rating:** 300 A
Enclosure: TYPE 1 **MCB Rating / MLO:** 300 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	FUTURE EV CIRCUIT	40 A	2	0.00	0.00					2	40 A	FUTURE EV CIRCUIT	2
3	--	--	--			0.00	0.00			--	--	--	4
5	FUTURE EV CIRCUIT	40 A	2					0.00	0.00	2	40 A	FUTURE EV CIRCUIT	6
7	--	--	--	0.00	0.00					--	--	--	8
9	FUTURE EV CIRCUIT	40 A	2			0.00	0.00			2	40 A	FUTURE EV CIRCUIT	10
11	--	--	--					0.00	0.00	--	--	--	12
13	FUTURE EV CIRCUIT	40 A	2	0.00	0.00					2	40 A	FUTURE EV CIRCUIT	14
15	--	--	--			0.00	0.00			--	--	--	16
17	FUTURE EV CIRCUIT	40 A	2					0.00	0.00	2	40 A	FUTURE EV CIRCUIT	18
19	--	--	--	0.00	0.00					--	--	--	20
21	SPARE	40 A	2			0.00	0.00			2	40 A	SPARE	22
23	--	--	--					0.00	0.00	--	--	--	24
25	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	26
27	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	28
29	SPARE	40 A	1					0.00	0.00	1	20 A	SPARE	30
		Phase Load:		0.00 kVA		0.00 kVA		0.00 kVA					
		Phase...		0 A		0 A		0 A					
		Total Load:		0.00 kVA									
Notes:		**Total Amps:**		0 A									

Branch Panel: MHP

Location: MAIN MECHANICAL... **Volts:** 480/277 Wye **A.I.C. Rating:** 14,000
Supply From: MSB **Phases:** 3 **Bus Material:** CU
Mounting: SURFACE **Wires:** 4 **Bus Rating:** 400 A
Enclosure: TYPE 1 **MCB Rating / MLO:** 400A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	T4:MLP1	200 A	3	22.59	3.13					3	20 A	T3:MLP2	2
3	--	--	--			23.18	2.29			--	--	--	4
5	--	--	--					23.72	1.24	--	--	--	6
7	ACCU-3	20 A	3	7.86	6.93					3	35 A	DOAS-1 - ROOFTOP	8
9	--	--	--			7.86	6.93			--	--	--	10
11	--	--	--					7.86	6.93	--	--	--	12
13	SP-1 - MAIN MECH SPACE 049	20 A	3	0.48	0.48					3	20 A	SP2 - MAIN MECH SPACE 049	14
15	--	--	--			0.48	0.48			--	--	--	16
17	--	--	--					0.48	0.48	--	--	--	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		Phase Load:		41.45 kVA		41.18 kVA		40.70 kVA					
		Phase...		149.9 A		148.9 A		146.9 A					
		Total Load:		123.33 kVA									
Notes:		**Total Amps:**		148.35 A									

Branch Panel: MLP1

Location: MAIN MECHANICAL... **Volts:** 120/208 Wye **A.I.C. Rating:** 14,000
Supply From: T4:MLP1 **Phases:** 3 **Bus Material:** CU
Mounting: SURFACE **Wires:** 4 **Bus Rating:** 400 A
Enclosure: TYPE 1 **MCB Rating / MLO:** 400 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	UH-A, UH-B - ROOMS 002, 005, 008	20 A	1	0.05	0.18					1	20 A	BMS PANEL	2
3	BMS PANEL	20 A	1			0.18	0.00			1	20 A	UH-B'S - ROOM 002	4
5	CUH-B, UH-B'S - ROOM 002	20 A	1					0.75	0.72	2	20 A	EUH-A	6
7	GMU-1	20 A	1	0.18	0.72					--	--	--	8
9	FPAC-1	20 A	2			0.92	1.31			1	20 A	CUH-B, UH-B'S - ROOM 101	10
11	--	--	--					0.92	0.57	1	20 A	CUH-B, UH-B'S - ROOM 100, 101	12
13	CUH-B, UH-B'S - ROOM 101	20 A	1	0.57	10.39					2	20 A	WH-1- UNISEX RESTROOM 106	14
15	WH-1 - MENS RESTROOM 107	20 A	2			10.39	10.39			--	--	--	16
17	--	--	--					10.39	10.39	2	20 A	WH-1 - WOMENS RESTROOM 105	18
19	WHE-1	20 A	1	0.12	10.39					--	--	--	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
43	SPACE	--	1	--	--					1	--	SPACE	44
45	SPACE	--	1			--	--			1	--	SPACE	46
47	SPACE	--	1					--	--	1	--	SPACE	48
49	SPACE	--	1	--	--					1	--	SPACE	50
51	SPACE	--	1			--	--			1	--	SPACE	52
53	SPACE	--	1					--	--	1	--	SPACE	54
		Phase Load:		22.59 kVA		23.18 kVA		23.72 kVA					
		Phase...		188.2 A		193.9 A		198.4 A					
		Total Load:		69.49 kVA									
Notes:		**Total Amps:**		192.88 A									

Branch Panel: MLP2

Location: MEZZANINE 200 **Volts:** 120/208 Wye **A.I.C. Rating:** 10,000
Supply From: T3:MLP2 **Phases:** 3 **Bus Material:** CU
Mounting: SURFACE **Wires:** 4 **Bus Rating:** 125 A
Enclosure: TYPE 1 **MCB Rating / MLO:** 100 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	VRF - OPEN SPACE 101	20 A	2	0.78	1.11					2	15 A	VRF - OPEN SPACE 101	2
3	--	--	--			0.78	1.11			--	--	--	4
5	VRF - OPEN SPACE 101	15 A	2					1.11	0.14	2	20 A	VRF - MEZZANINE	6
7	--	--	--	1.11	0.14					--	--	--	8
9	EF-1 - ATTIC	20 A	1			0.47	--			1	--	SPACE	10
11	SPACE	--	1					--	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
		Phase Load:		3.13 kVA		2.29 kVA		1.24 kVA					
		Phase...		27.4 A		20.5 A		10.4 A					
		Total Load:		6.65 kVA									
Notes:		**Total Amps:**		18.46 A									

Branch Panel: IT

Location: ELEC 109 **Volts:** 120/208 Wye **A.I.C. Rating:** 14,000
Supply From: GPDP **Phases:** 3 **Bus Material:** CU
Mounting: SURFACE **Wires:** 4 **Bus Rating:** 60 A
Enclosure: TYPE 1 **MCB Rating / MLO:** 60 A MCB

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT - FUTURE RACK	20 A	1	0.36	0.36					1	20 A	RCPT - FUTURE RACK	2
3	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	4
5	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	6
7	SPARE	20 A	1	0.00	0.00					1	20 A	SPARE	8
9	SPARE	20 A	1			0.00	0.00			1	20 A	SPARE	10
11	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	12
		Phase Load:		0.72 kVA		0.00 kVA		0.00 kVA					
		Phase...		6 A		0 A		0 A					
		Total Load:		0.72 kVA									
Notes:		**Total Amps:**		2 A									

PANEL FOR POWERING TECHNOLOGY EQUIPMENT IN ELEC 109. TECHNOLOGY EQUIPMENT SHALL BE PROVIDED BY OWNER.

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ELECTRICAL PANEL SCHEDULES

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ELECTRICAL FEEDER SCHEDULE

COPPER CONDUCTORS

CIRCUIT SYMBOL	CONDUCTORS (1 PH, 2W) WITH GROUND	CONDUIT SIZE	CONDUCTORS (1 OR 3 PH, 3 WIRE) WITH GROUND	CONDUIT SIZE	CONDUCTORS (3 PH, 4 WIRE) WITH GROUND	CONDUIT SIZE	OVERCURRENT RATING
(1)	2#12 & 1#12G	3/4"	3#12 & 1#12G	3/4"	4#12 & 1#12G	3/4"	15A
(2)	2#12 & 1#12G	3/4"	3#12 & 1#12G	3/4"	4#12 & 1#12G	3/4"	20A
(2.5)	2#10 & 1#10G	3/4"	3#10 & 1#10G	3/4"	4#10 & 1#10G	3/4"	25A
(3)	2#10 & 1#10G	3/4"	3#10 & 1#10G	3/4"	4#10 & 1#10G	3/4"	30A
(3.5)	2#8 & 1#10G	1"	3#8 & 1#10G	1"	4#8 & 1#10G	1"	35A
(4)	2#8 & 1#10G	1"	3#8 & 1#10G	1"	4#8 & 1#10G	1"	40A
(4.5)	2#8 & 1#10G	1"	3#8 & 1#10G	1"	4#8 & 1#10G	1"	45A
(5)	2#8 & 1#10G	1"	3#8 & 1#10G	1"	4#8 & 1#10G	1"	50A
(6)	2#6 & 1#10G	1"	3#6 & 1#10G	1"	4#6 & 1#10G	1"	60A
(7)	2#4 & 1#8G	1 1/4"	3#4 & 1#8G	1 1/4"	4#4 & 1#8G	1 1/4"	70A
(8)	2#4 & 1#8G	1 1/4"	3#4 & 1#8G	1 1/4"	4#4 & 1#8G	1 1/4"	80A
(9)	2#3 & 1#8G	1 1/4"	3#3 & 1#8G	1 1/4"	4#3 & 1#8G	1 1/4"	90A
(10)	2#3 & 1#8G	1 1/4"	3#3 & 1#8G	1 1/4"	4#3 & 1#8G	1 1/4"	100A
(11)			3#2 & 1#6G	1 1/4"	4#2 & 1#6G	1 1/2"	110A
(12)			3#1 & 1#6G	1 1/2"	4#1 & 1#6G	2"	125A
(15)			3#1/0 & 1#6G	2"	4#1/0 & 1#6G	2"	150A
(17)			3#2/0 & 1#6G	2"	4#2/0 & 1#6G	2"	175A
(20)			3#3/0 & 1#6G	2"	4#3/0 & 1#6G	2 1/2"	200A
(22)			3#4/0 & 1#4G	2 1/2"	4#4/0 & 1#4G	2 1/2"	225A
(25)			3#250KCMIL & 1#4G	3"	4#250KCMIL & 1#4G	3"	250A
(30)			3#350KCMIL & 1#4G	3"	4#350KCMIL & 1#4G	4"	300A
(35)			3#500KCMIL & 1#3G	4"	4#500KCMIL & 1#3G	4"	350A
(40)			3#600KCMIL & 1#3G	4"	4#600KCMIL & 1#3G	4"	400A
(45)			(2)3#4/0 & 1#2G	(2) 2 1/2"	2 SETS OF 4#4/0 & 1#2G	(2) 2 1/2"	450A
(50)			(2)3#250KCMIL & 1#2G	(2) 3"	2 SETS OF 4#250KCMIL & 1#2G	(2) 3"	500A
(60)			(2)3#350KCMIL & 1#1G	(2) 3"	2 SETS OF 4#350KCMIL & 1#1G	(2) 4"	600A
(70)			(2)3#500KCMIL & 1#1/0G	(2) 4"	2 SETS OF 4#500KCMIL & 1#1/0G	(2) 4"	700A
(80)			(2)3#600KCMIL & 1#1/0G	(2) 4"	2 SETS OF 4#600KCMIL & 1#1/0G	(2) 4"	800A

NOTES:

1. CONDUIT SIZES ARE BASED ON THE NEC ANNEX C TABLES FOR EMT/SCH.40 WITH THHN/THWN CONDUCTORS. CONDUCTOR SIZES USED IN CONDUIT CALCULATION ARE BASED ON THE SIZE OF THE HOT CONDUCTORS OF CIRCUIT. EXAMPLE: 40A 3PH, 4W CONDUIT SIZE IS BASED ON 4#8 + 1#8G + 1#8 'SPACE'. FOR ACTUAL WIRE INSTALL USE QUANTITY AND SIZES WITHIN SCHEDULE.
2. UNLESS OTHERWISE INDICATED, CONDUCTOR SIZING SHALL MATCH THE SIZE INDICATED ABOVE FOR THE APPLICABLE OVERCURRENT DEVICE. PROVIDE LARGER CIRCUIT WHERE INDICATED.
3. PROVIDE MINIMUM SIZE CONDUIT INDICATED IN THE SPECIFICATIONS OR ON THE DRAWINGS.
4. FOR SINGLE PHASE FEEDERS, PROVIDE A 3-WIRE CIRCUIT UNLESS DEVICE SERVED DOES NOT HAVE PROVISIONS FOR A NEUTRAL. FOR THREE PHASE FEEDERS, PROVIDE A 4-WIRE CIRCUIT UNLESS DEVICE SERVED DOES NOT HAVE PROVISIONS FOR A NEUTRAL.
5. PROVIDE TYPE OF RACEWAY OR CABLE AS INDICATED IN THE SPECIFICATIONS OR ON THE DRAWINGS.
6. REFER TO PANELBOARD SCHEDULES AND ONE-LINE RISER DIAGRAM DRAWINGS FOR CONDUCTOR AND CONDUIT SIZE REQUIREMENTS.
7. ALL CONDUCTOR SIZES ARE BASED ON 75°C (167°F), ALL EQUIPMENT CONNECTED TO WIRES SHALL BE RATED OR 75°C (167°F)

ELECTRICAL RISER DIAGRAM KEY NOTES

- E1 PROVIDE CONCRETE PAD AND GROUNDING SYSTEM FOR UTILITY TRANSFORMER, PER UTILITY COMPANY REQUIREMENTS. PROVIDE PER ELECTRICAL DETAILS.
- E3 PROVIDE GROUNDING AS A SEPARATELY DERIVED SYSTEM IN ACCORDANCE WITH NEC. PROVIDE GROUNDING ELECTRODES AT GENERATOR PER NEC.
- E4 CONCRETE HOUSEKEEPING PAD BY DIVISION 03 CONTRACTOR. COORDINATE ALL REQUIREMENTS WITH DIVISION 03 CONTRACTOR.
- E5 PROVIDE SPECIALTY ELEVATOR DISCONNECT SWITCH WITH INTEGRAL SHUNT-TRIP AND VOLTAGE MONITORING CONTACTS, PER ELECTRICAL DETAILS.
- E6 PROVIDE CONTROL WIRING IN 1"C. PER MFR. REQUIREMENTS FROM ELEVATOR CONTROLLER TO **ATS-1** FOR GENERATOR POWER SWITCH-OVER SIGNAL.
- E7 LOCATE ON OPPOSITE SIDE OF BUS AS MAIN CIRCUIT BREAKER, PER NEC 690 REQUIREMENTS.
- E8 PROVIDE C.T.-RATED UTILITY METER SOCKET PER UTILITY COMPANY REQUIRMENTS. LOCATION SHOWN ON PLANS. PROVIDE 1-1/2"C. WITH NYLON PULLSTRING FROM METER TO SWITCHBOARD C.T. CABINET. COORDINATE METER AND C.T. CABINET PRODUCT AND INSTALLATION REQUIREMENTS WITH UTILITY COMPANY PRIOR TO INSTALLATION.
- E9 PROVIDE SIGNAGE AT THE SWITCHBOARD PER SPECIFICATIONS AND NEC FOR ARC FLASH AND FAULT CURRENT INDICATION. IN ADDITION, PROVIDE PERMANENT SIGNAGE INDICATING OTHER SOURCES OF POWER, WHERE APPLICABLE.
- E10 PROVIDE MULTI-METERING UNIT WITH CURRENT TRANSFORMERS AND CONNECTIONS TO EACH FEEDER INDICATED. PROVIDE SATEC MODEL #BFM-136 18-CHANNEL MULTI-METER ENERGY MONITORING PANEL OR APPROVED EQUAL. PROVIDE 1/2"C. WITH WIRING TO EACH CURRENT TRANSFORMER SHOWN.

FEEDER LINE TYPES

- FEEDER CONCEALED IN WALLS AND ABOVE CEILINGS
- FEEDER INSTALLED UNDERSLAB AND/OR UNDERGROUND

DRY TYPE TRANSFORMER SCHEDULE

COPPER CONDUCTORS

SIZE	KVA	PRIMARY AMPS	SECONDARY AMPS	480 VOLT OVERCURRENT	208 VOLT (NOTE 4) OVERCURRENT	480 VOLT FEEDER	208/120 VOLT FEEDER	GEC (NOTE 5)	SSBJ (NOTE 6)
T1	9	11	25	20A, 3P	30A, 3P	3#12 & 1#12G - 3/4"C	4#10 - 3/4"C	1#8 - 3/4"C	1#8
T2	15	18	42	30A, 3P	50A, 3P	3#10 & 1#10G - 3/4"C	4#8 - 1"C	1#8 - 3/4"C	1#8
T3	30	36	83	60A, 3P	100A, 3P	3#6 & 1#10G - 1"C	4#3 - 1 1/4"C	1#6 - 3/4"C	1#6
T4	45	54	125	90A, 3P	150A, 3P	3#3 & 1#8G - 1 1/4"C	4#1/0 - 2"C	1#6 - 3/4"C	1#6
T5	75	90	208	150A, 3P	250A, 3P	3#1/0 & 1#6G - 2"C	4#250 KCMIL - 3"C	1#2 - 3/4"C	1#2
T6	112.5	135	313	200A, 3P	400A, 3P	3#3/0 & 1#6G - 2"C	4#600 KCMIL - 4"C	1#1/0 - 3/4"C	1#1/0
T7	150	181	417	300A, 3P	500A, 3P	3#350 KCMIL & 1#4G - 3"C	(2) SETS OF: 4#250 KCMIL - (2) 3"C	1#1/0 - 3/4"C	1#1/0
T8	225	270	625	400A, 3P	800A, 3P	3#600 KCMIL & 1#3G - 4"C	(2) SETS OF: 4#600 KCMIL - (2) 4"C	1#3/0 - 3/4"C	1#3/0

TRANSFORMER NOTES:

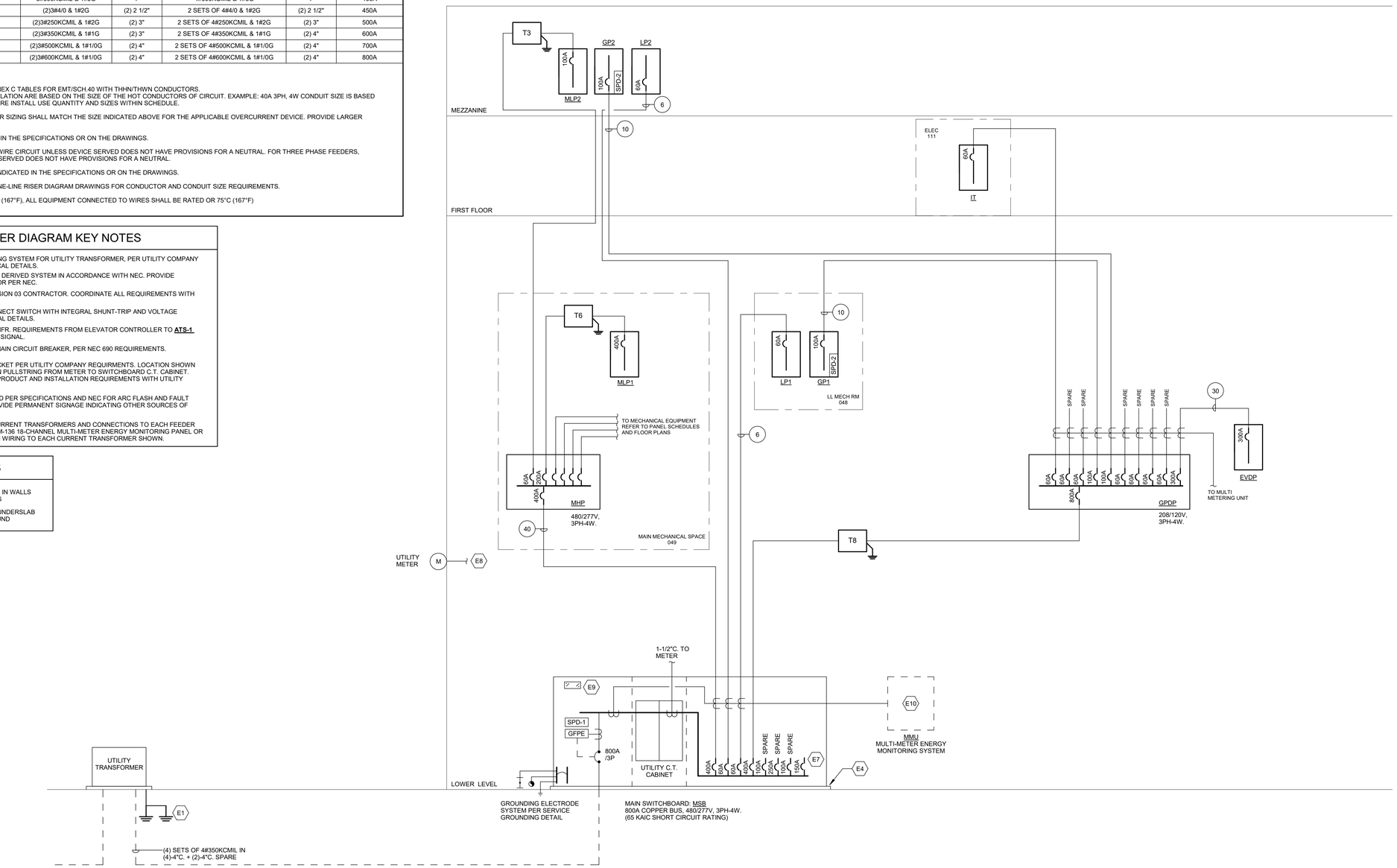
1. BOND NEUTRAL TRANSFORMER SECONDARY TO THE TRANSFORMER GROUND BAR AND CASE WITH SYSTEM BONDING JUMPER.
2. USE NEAREST AVAILABLE EFFECTIVELY GROUNDED WATER PIPE, STRUCTURAL STEEL AND/OR DRIVEN GROUND ROD IN ACCORDANCE WITH N.E.C. 250-81 AND 250-83 FOR THE SEPARATELY DERIVED SYSTEM GROUNDING ELECTRODE.
3. ALL CONDUCTOR SIZES ARE FOR COPPER CONDUCTORS. N.E.C. TABLE 310.15(B)(16).
4. SECONDARY OVERCURRENT PROTECTION SHALL BE LOCATED WITH IN (10) FEET OF THE TRANSFORMER SECONDARY TERMINALS EITHER IN A PANELBOARD (MAIN BREAKER), AN INDIVIDUALLY MOUNTED CIRCUIT BREAKER, OR A FUSIBLE DISCONNECT SWITCH.
5. GROUNDING ELECTRODE CONDUCTOR TO BE RUN FROM GROUND BAR IN TRANSFORMER TO THE GROUNDING ELECTRODE FOR THE SEPARATELY DERIVED SYSTEM.
6. SYSTEM BONDING JUMPER/SUPPLY SIDE BONDING JUMPER TO BE INSTALLED BETWEEN THE TRANSFORMER GROUND BAR AND CASE AND BETWEEN THE GROUND BAR IN THE FIRST SUPPLY SIDE DISCONNECTING MEANS (PANELBOARD, ENCLOSED CIRCUIT BREAKER OR FUSIBLE DISCONNECT SWITCH) AND TRANSFORMER GROUND BAR. INSTALL MULTIPLE SUPPLY SIDE BONDING JUMPERS OF THE SIZE LISTED. (1) IN EACH FEEDER RACEWAY.
7. 600 KCMIL CONDUCTORS SHALL BE PROVIDED WITH MAC ADAPTERS AS REQUIRED TO COORDINATE WITH BREAKER LUG SIZES.

SPD SCHEDULE

TYPE	VOLTAGE	PHASE	WIRES	SURGE CURRENT RATING (PER PHASE - A)	MOUNTING	MODES OF PROTECTION
SPD-1	480Y/277V	3	4	240,000	INTEGRAL	L-N; L-G; L-L
SPD-2	208Y/120V	3	4	100,000	INTEGRAL	L-N; L-G; L-L

NOTES:

1. SPD DEVICES SHALL BEAR THE UL MARK AND SHALL BE LISTED TO THE MOST RECENT EDITION OF UL1449.
2. SPD DEVICES SHALL BE UL LABELED WITH 20 KAI NOMINAL (In) FOR COMPLIANCE TO UL 96a LIGHTING PROTECTION MASTER LABEL AND NFPA 780.
3. SPD DEVICES SHALL BE UL LISTED AS TYPE 1 AND TYPE 2 DEVICES.
4. SPD DEVICES SHALL HAVE A SHORT CIRCUIT CURRENT RATING OF 200,000 A.
5. SPD DEVICES SHALL BE EQUIPPED WITH LED DIAGNOSTICS, SURGE COUNTER AND (1) SET OF NO/NC DRY CONTACTS.
6. SPD DEVICES SHALL INCLUDE EMI/RFI FILTERING -50 dB FROM 10kHz TO 100 MHz.



1 ELECTRICAL RISER DIAGRAM Pre-Fitout
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ELECTRICAL RISER DIAGRAM

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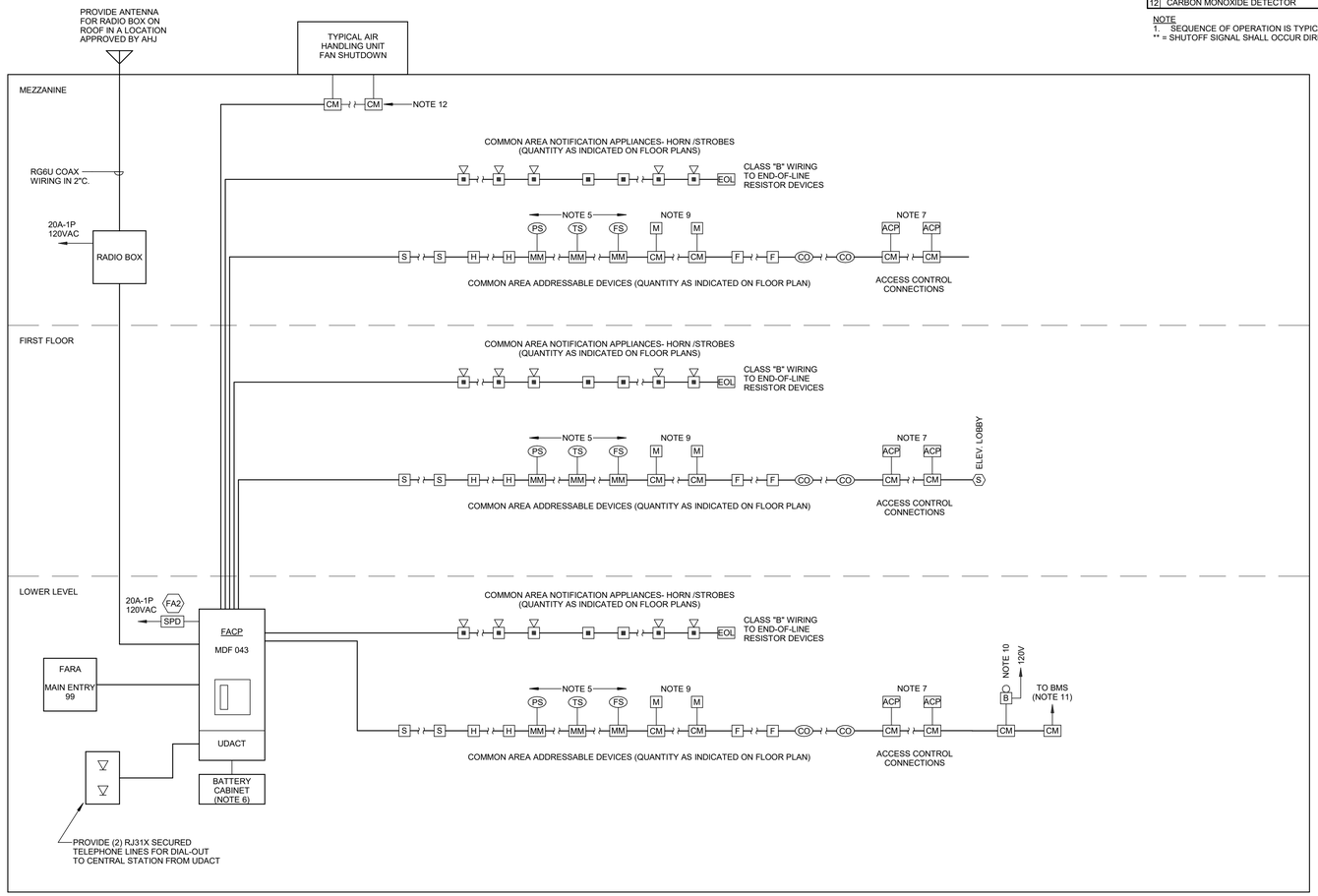
SEQUENCE OF OPERATION

	INITATION	ACTION: A OPERATE ALL NOTIFICATION APPLIANCES IN BUILDING	B TRANSMIT ALARM SIGNAL TO CENTRAL STATION, ACTIVATE BEACON	C TRANSMIT SUPERVISORY SIGNAL TO FIRE ALARM CONTROL PANEL	D ACTUATE AUDIBLE SUPERVISORY SIGNAL	E SEND DRY CONTACT SIGNAL TO BUILDING MANAGEMENT SYSTEM	F TURN ON FIRE PROTECTION BELL	G RECALL ELEVATOR TO FIRST FLOOR	H RECALL ELEVATOR TO SECOND FLOOR	J SEND WARNING TO ELEVATOR CAB / FIREMAN'S HAT	K SHUNT-TRIP SIGNAL TO ELEV. DISCONNECT SWITCH	L CLOSE ALL FIRE/SMOKE DAMPERS IN BUILDING	M ACTUATE HVAC FAN SHUT DOWN	N CUT POWER TO AND CLOSE MAGNETIC DOOR HOLDS	O SEND SIGNAL TO ACCESS CONTROL PANELS
1	MANUAL PULL STATION	X	X			X								X	X
2	SMOKE DETECTOR OR HEAT DETECTOR	X	X			X								X	X
3	DUCT SMOKE DETECTOR			X	X	X						X	X		
4	SMOKE DETECTOR - 1ST FLOOR ELEV. LANDING	X	X			X			X	X				X	X
5	SMOKE DETECTOR - OTHER ELEV. LANDING	X	X			X		X		X				X	X
6	SMOKE DETECTOR - ELEV. SHAFT	X	X			X		X		X				X	X
7	HEAT DETECTOR - ELEV. PIT OR SHAFT	X	X			X		X		X	X			X	X
8	LOSS OF ELEVATOR SHUNT TRIP SIGNAL			X	X										
9	SPRINKLER WATER FLOW	X	X			X	X							X	X
10	SPRINKLER VALVE TAMPER			X	X										
12	CARBON MONOXIDE DETECTOR			X	X										

NOTE
1. SEQUENCE OF OPERATION IS TYPICAL. REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
** = SHUTOFF SIGNAL SHALL OCCUR DIRECTLY THROUGH THE UTILITY CONTROLLER, NOT VIA FIRE ALARM SYSTEM.



1 FIRE ALARM RISER DIAGRAM Pre-Fitout
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FIRE ALARM GENERAL NOTES

1. REFER TO DRAWING **E0.0** FOR DESCRIPTION OF SYMBOLS, ABBREVIATIONS AND NOTES.
2. WIRE SIZES AND QUANTITIES SHALL BE AS RECOMMENDED BY MANUFACTURER. CABLES SHALL BE ROUTED ABOVE CEILING AND IN STUD WALLS WHENEVER POSSIBLE. FIRE ALARM MC CABLING IS ACCEPTABLE WHEN CABLING IS NOT EXPOSED. WHERE EXPOSED OR ROUTED IN CONCRETE, PROVIDE WIRE IN CONDUIT.
3. PROVIDE EXTRA POWER SUPPLIES AND TRANSPONDERS WHERE REQUIRED BY MANUFACTURER.
4. TYPICAL DEVICES SHOWN IN RISER. REFER TO FLOOR PLANS FOR DEVICE QUANTITIES AND LOCATIONS.
5. REFER TO FIRE PROTECTION DRAWINGS FOR LOCATIONS AND QUANTITIES OF TAMPER, FLOW AND PRESSURE SWITCHES.
6. CONTRACTOR IS RESPONSIBLE FOR SIZING BATTERY CABINET CAPABLE OF SUPPORTING BUILDING FIRE ALARM SYSTEM IN THE EVENT OF A POWER FAILURE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. PROVIDE FIRE ALARM CONTROL MODULE AND CONNECTIONS TO FIRE ALARM SYSTEM FOR EACH ACCESS CONTROL PANEL AND DOOR LOCK POWER SUPPLY IN PROJECT. REFER TO TECHNOLOGY/ SECURITY DRAWINGS FOR EXACT QUANTITY AND LOCATION REQUIRED.
8. REFER TO HVAC DRAWINGS FOR LOCATIONS AND QUANTITIES OF DUCT SMOKE DETECTORS AND SMOKE DAMPERS. REMOTE TEST SWITCHES SHALL BE FLUSHED IN CEILING DIRECTLY BELOW DUCT SMOKE DETECTOR (OR IN CLOSEST DROPPED CEILING TO DETECTOR), UNLESS OTHERWISE NOTED.
9. REFER TO ARCHITECTURAL CODE DRAWINGS FOR LOCATIONS AND QUANTITIES OF MAGNETIC-HOLD DEVICES FOR FIRE DOORS. MAG-HOLD DEVICES SHALL BE FURNISHED BY DIV. 8 HARDWARE CONTRACTOR, AND INSTALLED/ WIRED BY EC. REFER TO MAG-HOLD DETAIL FOR ADDITIONAL INFORMATION.
10. ELECTRIC SPRINKLER BELL FURNISHED BY DIV.21 FIRE PROTECTION CONTRACTOR AND INSTALLED/WIRED BY FIRE ALARM CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER TO ALARM BELL VIA LOCAL UNSWITCHED RECEPTACLE CIRCUIT.
11. PROVIDE FIRE ALARM CONTROL MODULE(S) AND CONNECTIONS TO BUILDING MANAGEMENT SYSTEM TO REPORT FIRE ALARM CONDITION. COORDINATE EXACT POINT OF CONNECTION AND QUANTITY OF CONNECTIONS REQUIRED WITH HVAC CONTRACTOR AND BUILDING MANAGEMENT SEQUENCE OF OPERATION PRIOR TO INSTALLATION.
12. FIRE ALARM CONTRACTOR SHALL PROVIDE CONTROL MODULE AND HARD WIRED CONNECTION TO EACH AIR HANDLING UNIT FOR SHUTDOWN. COORDINATE EXACT POINT OF CONNECTION WITH DIV. 23 ATC CONTROLS CONTRACTOR PRIOR TO INSTALLATION.

FIRE ALARM KEY NOTES

FA1 CONNECT TO FIRE ALARM PANEL AS SEPARATE SPEAKER CIRCUIT TO BE CONTROLLED VIA REMOTE EVAC MICROPHONE IN ASSOCIATED AREA OF ASSEMBLY.

FA2 PROVIDE DEDICATED 20A-1P, 120V CIRCUIT TO FIRE ALARM CONTROL PANEL. PROVIDE CIRCUIT BREAKER LOCKOUT KIT. PROVIDE 120V SURGE PROTECTIVE DEVICE FOR CIRCUIT, EQUAL TO SPACE AGE ELECTRONICS E120V-GT.

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FIRE ALARM RISER DIAGRAM

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SECTION 26 04 00 - GENERAL CONDITIONS FOR ELECTRICAL TRADES

A. DESCRIPTION
1. THIS PROJECT COMPRISES ALTERATIONS AND RENOVATIONS TO THE EXISTING BUILDING.
2. SCOPE OF WORK CONSISTS OF INSTALLATION OF MATERIALS TO BE FURNISHED UNDER THE CONTRACT DOCUMENTS AND WITHOUT LIMITING GENERALITY THEREOF CONSISTS OF FURNISHING LABOR, MATERIALS, EQUIPMENT, HOISTING, PLANT, TRANSPORTATION, RIGGING, STAGING, APPURTENANCES, AND SERVICES NECESSARY AND/OR INCIDENTAL TO PROPERLY COMPLETE ALL WORK AS SHOWN ON THE DRAWINGS AND AS DESCRIBED HEREIN.

B. DEFINITIONS:
1. FURNISH: THE TERM "FURNISH" MEANS TO "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."
2. INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."
3. PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
4. REMOVE: THE TERM REMOVE MEANS TO DISCONNECT FROM ITS PRESENT POSITION; REMOVE FROM THE PREMISES AND TO DISPOSE OF IN A LEGAL MANNER."
5. SUBSTITUTIONS: "SUBSTITUTIONS" ARE REQUESTS FOR OTHER PRODUCTS, MATERIALS AND METHODS OF CONSTRUCTION AS PROPOSED BY THE CONTRACTOR AFTER AWARD OF THE CONTRACT.

C. EQUIPMENT EQUIVALENTS AND SUBSTITUTIONS:
1. CERTAIN MANUFACTURERS OF MATERIAL, APPARATUS OR APPLIANCES ARE INDICATED IN THE DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT. THESE ITEMS HAVE BEEN USED AS THE BASIS OF DESIGN, AND AS A CONVENIENCE IN FIXING THE MINIMUM STANDARD OF WORKMANSHIP, FINISH AND DESIGN THAT IS REQUIRED. IF THE CONTRACTORS USE AN "APPROVED EQUAL" ALTERNATIVE TO THE BASIS OF DESIGN, AND IF THE FEATURES OF THAT ALTERNATIVE HAVE AN IMPACT ON OTHER COMPONENTS OF THE PROJECT, THE CONTRACTOR SHALL INCLUDE THE NECESSARY ADJUSTMENTS IN THOSE COMPONENTS, WHETHER FOR ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, FIRE PROTECTION, OR ANY OTHER ELEMENTS, PLUS ANY ADJUSTMENTS FOR DIFFERENCE IN PERFORMANCE.
2. EQUIPMENT, MATERIAL OR DEVICES SUBMITTED FOR REVIEW AS AN "EQUIVALENT" SHALL MEET THE FOLLOWING REQUIREMENTS:
A. THE EQUIVALENT SHALL HAVE THE SAME CONSTRUCTION FEATURES SUCH AS, BUT NOT LIMITED TO:
a. MATERIAL THICKNESS, GAUGE, WEIGHT, DENSITY, ETC.
b. WELDED, RIVETED, BOLTED, ETC., CONSTRUCTION
c. FINISH, UNDERCOATING, CORROSION PROTECTION
B. THE EQUIVALENT SHALL PERFORM WITH THE SAME OR BETTER OPERATING EFFICIENCY.
C. THE EQUIVALENT SHALL BE LOCALLY REPRESENTED BY THE MANUFACTURER FOR SERVICE, PARTS AND TECHNICAL INFORMATION.
D. THE EQUIVALENT SHALL BEAR THE SAME LABELS OF PERFORMANCE CERTIFICATION AS IS APPLICABLE TO THE SPECIFIED ITEM, SUCH AS UL OR NEMA LABELS OR DLC QUALIFICATIONS.

D. DRAWINGS:
1. PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THE WORK OUTLINED ON THESE CONTRACT DOCUMENTS. THE CONTRACTOR IS TO NOTE THAT THESE DOCUMENTS ARE DIAGRAMMATIC ONLY AND THAT FINAL PLACEMENT OF EQUIPMENT OR DEVICES IN THE FIELD MAY NOT DIRECTLY CORRESPOND TO THAT WHICH IS SHOWN ON THE DRAWINGS. IF A CONFLICT IN POSITIONING OCCURS THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY TO ASCERTAIN WHAT THE INTENT WAS BY THE DESIGN PROFESSIONAL.
2. WHERE VARIANCES OCCUR BETWEEN THE DRAWINGS AND SPECIFICATIONS OR WITHIN EITHER OF THE DOCUMENTS, THE ITEM OR ARRANGEMENT OF BETTER QUALITY, HIGHER RATING, OR HIGHER VALUE SHALL BE INCLUDED IN THE CONTRACT PRICE. THE OWNER AND ENGINEER SHALL DECIDE ON THE ITEM AND THE MANNER IN WHICH THE WORK SHALL BE INSTALLED.

E. SURVEY AND MEASUREMENTS:
1. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK TO BE PERFORMED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY IDENTIFIED BY EXPERIENCED OBSERVERS. INCLUDE IN THE BID ALL DEMOLITION WORK REQUIRED.
2. DO NOT SCALE DRAWINGS. SCALE INDICATED ON DRAWINGS IS FOR ESTABLISHING REFERENCE POINTS ONLY. ACTUAL FIELD CONDITIONS SHALL GOVERN ALL DIMENSIONS.
3. PRIOR TO ORDERING ANY MATERIALS AND EQUIPMENT, THOROUGHLY REVIEW THE SITE CONDITIONS TO DETERMINE IF ADEQUATE CLEARANCES AND ACCESS IS ALLOWED TO INSTALL THE COMPONENTS. ORDER EQUIPMENT BROKEN DOWN AS NECESSARY TO ALLOW FOR PROPER RIGGING THROUGH THE PROJECT AREA. PROVIDE ALL NECESSARY ALTERATIONS TO THE STRUCTURE OF THE BUILDING AS NECESSARY TO RIG THE EQUIPMENT IN PLACE.
4. ARRANGE INSTALLATION TO PROVIDE ACCESS TO EQUIPMENT FOR EASY MAINTENANCE AND REPAIR.

F. CODES AND STANDARDS: ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST RECENTLY ADOPTED EDITIONS OF THE FOLLOWING CODES AND STANDARDS, INCLUDING ALL JURISDICTIONAL REVISIONS:
1. STATE BUILDING CODE INCLUDING ALL SUPPLEMENTS.
2. STATE FIRE SAFETY CODE INCLUDING ALL SUPPLEMENTS.
3. STATE FIRE PREVENTION CODE INCLUDING ALL SUPPLEMENTS.
4. THE INTERNATIONAL BUILDING CODE.
5. THE INTERNATIONAL EXISTING BUILDING CODE
6. THE INTERNATIONAL FIRE CODE
7. THE INTERNATIONAL MECHANICAL CODE
8. THE INTERNATIONAL PLUMBING CODE
9. THE INTERNATIONAL ENERGY CONSERVATION CODE
10. NFPA 1: FIRE CODE
11. NFPA 70: NATIONAL ELECTRICAL CODE
12. NFPA 72: NATIONAL FIRE ALARM AND SIGNALING CODE
13. NECA 1: STANDARD FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION
14. NETA ATS.

G. PERMITS AND FEES:
1. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS; AND PAY ALL GOVERNMENT AND STATE SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS. FILE ALL NECESSARY DRAWINGS, PAYMENTS AND DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL AND STATE DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK, AND DELIVER A COPY TO THE OWNER AND ENGINEER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

H. SHOP DRAWINGS:
1. PROVIDE SHOP DRAWINGS FOR ALL DEVICES SPECIFIED UNDER EQUIPMENT SPECIFICATIONS FOR ALL SYSTEMS INCLUDING FIRE ALARM, SWITCHGEAR, CLOCK, LIGHTING, ETC., OR WHERE CALLED FOR ELSEWHERE IN THE SPECIFICATIONS, OR WHERE SCHEDULED ON THE DRAWINGS, OR WHERE CALLED OUT ON THE DRAWINGS. SHOP DRAWINGS SHALL INCLUDE MANUFACTURERS' NAMES, CATALOG NUMBERS, CUTS, DIAGRAMS, DIMENSIONS, IDENTIFICATION OF PRODUCTS AND MATERIALS INCLUDED, COMPLIANCE WITH SPECIFIED STANDARDS, NOTATION OF COORDINATION REQUIREMENTS, NOTATION OF DIMENSIONS ESTABLISHED BY FIELD MEASUREMENT AND OTHER SUCH DESCRIPTIVE DATA AS MAY BE REQUIRED TO IDENTIFY AND ACCEPT THE EQUIPMENT. A COMPLETE LIST IN EACH CATEGORY (EXAMPLE: ALL FIXTURES) OF ALL SHOP DRAWINGS, CATALOG CUTS, MATERIAL LISTS, ETC., SHALL BE SUBMITTED TO THE ENGINEER AT ONE TIME. NO CONSIDERATION WILL BE GIVEN TO A PARTIAL SHOP DRAWING SUBMITTAL.
2. SHOP DRAWINGS SHALL INCLUDE EQUIPMENT SUBMITTALS, FABRICATION AND INSTALLATION DRAWINGS, SETTING DIAGRAMS, SCHEDULES, PATTERNS, TEMPLATES AND SIMILAR DRAWINGS. INCLUDE THE FOLLOWING INFORMATION:
a. DIMENSIONS
b. WIRING DIAGRAMS AND RISER DIAGRAMS
c. CALCULATIONS
d. IDENTIFICATION OF PRODUCTS AND MATERIALS INCLUDED.
e. COMPLIANCE WITH SPECIFIED STANDARDS AND PERFORMANCE DATA AS INDICATED.
f. NOTATION OF COORDINATION REQUIREMENTS.
g. NOTATION OF DIMENSIONS ESTABLISHED BY FIELD MEASUREMENT.
h. DO NOT USE SHOP DRAWINGS WITHOUT AN APPROPRIATE FINAL STAMP INDICATING ACTION TAKEN IN CONNECTION WITH CONSTRUCTION.
i. DO NOT ORDER ANY MATERIALS OR EQUIPMENT PRIOR TO RECEIVING FINAL APPROVED SHOP DRAWINGS.
3. SHOP DRAWINGS SHALL BE IN PDF/OCR FORMAT. PHOTOCOPIES ARE NOT ACCEPTABLE.

I. COORDINATION DRAWINGS:
1. PREPARE COORDINATION DRAWINGS AT A SCALE TO MATCH THE CONTRACT DOCUMENT FLOOR PLANS, DETAILING MAJOR ELEMENTS, COMPONENTS, AND SYSTEMS OF ELECTRICAL EQUIPMENT AND MATERIALS IN RELATIONSHIP WITH OTHER SYSTEMS, INSTALLATIONS, AND BUILDING COMPONENTS. INDICATE LOCATIONS WHERE SPACE IS LIMITED FOR INSTALLATION AND ACCESS AND WHERE SEQUENCING AND COORDINATION OF INSTALLATIONS ARE OF IMPORTANCE TO THE EFFICIENT FLOW OF THE WORK, INCLUDING (BUT NOT NECESSARILY LIMITED TO) THE FOLLOWING:
a. INDICATE THE PROPOSED LOCATIONS OF LIGHT FIXTURES, PANELBOARDS, CONDUITS, CABINETS, ETC.
b. CLEARANCES FOR INSTALLING AND MAINTAINING INSULATION.
c. CLEARANCES FOR SERVICING AND MAINTAINING EQUIPMENT, INCLUDING NEC REQUIREMENTS AND SPACE FOR EQUIPMENT DISASSEMBLY REQUIRED FOR PERIODIC MAINTENANCE.
d. EQUIPMENT CONNECTIONS AND SUPPORT DETAILS.
e. EXTERIOR WALL AND FOUNDATION PENETRATIONS.
f. FIRE-RATED WALL AND FLOOR PENETRATIONS.
g. SIZES AND LOCATIONS OF REQUIRED CONCRETE PADS AND BASES.
2. INDICATE SCHEDULING, SEQUENCING, MOVEMENT, AND POSITIONING OF LARGE EQUIPMENT INTO THE BUILDING DURING CONSTRUCTION.
3. PREPARE FLOOR PLANS, ELEVATIONS, AND DETAILS TO INDICATE PENETRATIONS IN FLOORS, WALLS, AND CEILINGS AND THEIR RELATIONSHIP TO OTHER PENETRATIONS AND INSTALLATIONS.
4. PREPARE REFLECTED CEILING PLANS TO COORDINATE AND INTEGRATE INSTALLATIONS, AIR OUTLETS AND INLETS, LIGHT FIXTURES, COMMUNICATION SYSTEMS COMPONENTS, SPRINKLERS, AND OTHER CEILING-MOUNTED ITEMS.

J. AS-BUILT DRAWINGS:
1. PREPARE AS-BUILT DRAWINGS TO A SCALE TO MATCH THE CONTRACT DOCUMENT FLOOR PLANS; DETAILING THE ACTUAL INSTALLATION OF MAJOR ELEMENTS, COMPONENTS, AND SYSTEMS OF MECHANICAL EQUIPMENT AND MATERIALS. WHERE SHOP DRAWINGS ARE USED, RECORD A CROSS-REFERENCE AT THE CORRESPONDING LOCATION ON THE AS-BUILT DRAWINGS. GIVE PARTICULAR ATTENTION TO CONCEALED ELEMENTS THAT WOULD BE DIFFICULT TO MEASURE AND RECORD AT A LATER DATE.
2. MARK NEW INFORMATION THAT IS IMPORTANT TO THE OWNER, BUT WAS NOT SHOWN ON CONTRACT DRAWINGS OR SHOP DRAWINGS.
3. NOTE RELATED CHANGE ORDER NUMBERS WHERE APPLICABLE.
4. FINAL RECORD DOCUMENTS SHALL BE PREPARED IN THE LATEST AUTOCAD VERSION AND DIGITAL MEDIA FOR ALL DRAWINGS AND A CLEAN SET OF REPRODUCIBLE PAPER COPIES SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE WORK.

K. OPERATIONS AND MAINTENANCE MANUALS
1. THE CONTRACTOR SHALL PREPARE (1) PDF COPY AND (3) HARD COPIES OF A COMPLETE MAINTENANCE AND OPERATING INSTRUCTIONS MANUAL, BOUND IN BOOKLET FORM, ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA IN INDIVIDUAL HEAVY-DUTY, 3-RING, VINYL-COVERED BINDERS, WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER.
2. MANUAL SHALL INCLUDE THE FOLLOWING:
a. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF REPLACEMENT PARTS.
b. MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN, AND ROUTINE AND NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN, AND EMERGENCY INSTRUCTIONS; AND SUMMER AND WINTER OPERATING INSTRUCTIONS.
c. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING; DISASSEMBLY, REPAIR, AND REASSEMBLY; ALIGNING AND ADJUSTING INSTRUCTIONS.
d. SERVICING INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES.
e. EMERGENCY INSTRUCTIONS.
f. SPARE PARTS LIST.
g. COPIES OF WARRANTIES.
h. WIRING DIAGRAMS.
i. RECOMMENDED "TURN AROUND" CYCLES.
j. INSPECTION PROCEDURES.
k. APPROVED SHOP DRAWINGS AND PRODUCT DATA.
l. EQUIPMENT START-UP REPORTS.

L. WARRANTIES
1. ALL EQUIPMENT PROVIDED IN THIS PROJECT SHALL CARRY A MANUFACTURER'S WARRANTY FOR NO LESS THAN ONE (1) YEAR FROM DATE OF BENEFICIAL USE - UNLESS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.

M. MISCELLANEOUS REQUIREMENTS
1. THE CONTRACTOR SHALL COORDINATE ALL INTERRUPTIONS OF SERVICES AND LIMITATIONS OF ACCESS WITH THE OWNER NO LESS THAN (5) DAYS PRIOR TO THE INTERRUPTION.
2. OBTAIN IN OWNER'S NAME WRITTEN EQUIPMENT AND MATERIAL WARRANTIES OFFERED IN MANUFACTURER'S PUBLISHED PRODUCT DATA WITHOUT EXCLUSION OR LIMITATION.
3. GUARANTEE WORK OF THESE CONTRACT DOCUMENTS IN WRITING FOR NOT LESS THAN ONE (1) YEAR FROM DATE OF BENEFICIAL USE. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPT AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.
4. SUBMIT TO THE OWNER AN OFFICIAL CERTIFICATE OF INSURANCE FOR THEIR RECORDS.

N. ELECTRICAL ACCEPTANCE TESTING
1. TESTING SHALL BE PERFORMED ON ELECTRICAL EQUIPMENT AND SYSTEMS TO ASSURE THE EQUIPMENT AND SYSTEMS ARE OPERATIONAL AND WITHIN APPLICABLE STANDARDS AND MANUFACTURING TOLERANCES. TESTING SHOULD VERIFY THAT EQUIPMENT AND SYSTEMS ARE INSTALLED IN ACCORDANCE WITH DESIGN SPECIFICATIONS. ALL TESTING SHALL OCCUR AT THE BUILDING SITE.
2. QUALIFIED TECHNICIANS WHO ARE TRAINED AND REGULARLY EMPLOYED FOR TESTING SERVICES SHALL DO ALL THE TESTING.
3. THE TESTING ORGANIZATION SHALL CONFORM TO THE GENERAL GUIDELINES OF SECTION 5 OF THE LATEST NETA ACCEPTANCE TESTING SPECIFICATIONS. THIS INCLUDES THE FOLLOWING:
a. SAFETY AND PRECAUTIONS
b. SUITABILITY OF TEST EQUIPMENT
c. TEST INSTRUMENT CALIBRATION.
d. TEST REPORTS
4. NOTIFY THE ARCHITECT, ENGINEER AND OWNER AT LEAST SEVEN (7) DAYS IN ADVANCE OF ANY TESTING.
5. INSPECTION AND TESTING OF ALL APPLICABLE ELECTRICAL EQUIPMENT LISTED BELOW SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF NETA ATS.
a. SWITCHBOARDS AND SWITCHGEAR ASSEMBLIES.
b. TRANSFORMERS.
c. CABLES.
d. LOW VOLTAGE CIRCUIT BREAKERS.
e. EMERGENCY SYSTEMS - GENERATOR, AUTOMATIC TRANSFER SWITCHES, UNINTERRUPTIBLE POWER SUPPLIES.

SECTION 26 05 19 - ELECTRICAL POWER CONDUCTORS AND CABLES

A. COORDINATION:
1. COORDINATE SIZES OF RACEWAYS, BOXES, AND EQUIPMENT ENCLOSURES INSTALLED UNDER OTHER SECTIONS WITH THE ACTUAL CONDUCTORS TO BE INSTALLED, INCLUDING ADJUSTMENTS FOR CONDUCTOR SIZES INCREASED FOR VOLTAGE DROP.
2. COORDINATE WITH ELECTRICAL EQUIPMENT INSTALLED UNDER OTHER SECTIONS TO PROVIDE TERMINATIONS SUITABLE FOR USE WITH THE CONDUCTORS TO BE INSTALLED.

B. PROVIDE SINGLE CONDUCTOR BUILDING WIRE INSTALLED IN SUITABLE RACEWAY UNLESS OTHERWISE INDICATED, PERMITTED OR REQUIRED.

C. CONDUCTOR SIZES AND AMPACITIES SHOWN ARE BASED ON COPPER.

D. MINIMUM CONDUCTOR SIZES:
1. BRANCH CIRCUITS: 12 AWG
a. 20A, 120V CIRCUITS LONGER THAN 100 FEET - #10 AWG MINIMUM AND SIZED FOR VOLTAGE DROP.
b. 20A, 120V CIRCUITS LONGER THAN 165 FEET - #8 AWG MINIMUM AND SIZED FOR VOLTAGE DROP.
c. 20A, 277V CIRCUITS LONGER THAN 250 FEET - #10 AWG MINIMUM AND SIZED FOR VOLTAGE DROP.
2. CONTROL CIRCUITS: 14 AWG.

E. CONDUCTORS NO. 10 AWG AND SMALLER DIAMETER SHALL BE SOLID ANNEALED COPPER, EXCEPT THAT CONDUCTORS FOR REMOTE CONTROL, ALARM, AND SIGNAL CIRCUITS, CLASSES 1, 2 AND 3, SHALL BE STRANDED UNLESS SPECIFICALLY INDICATED OTHERWISE.

F. CONDUCTORS NO. 8 AWG AND LARGER DIAMETER SHALL BE STRANDED ANNEALED COPPER.

G. UNLESS SPECIFIED OR INDICATED OTHERWISE OR REQUIRED BY NFPA 70, POWER AND LIGHTING WIRES SHALL BE 600-VOLT, TYPE THWN-THWN-2 COPPER. CONTROL AND SIGNAL CIRCUITS SHALL BE TYPE TW, THW, OR TF ANNEALED COPPER. UNDERGROUND CONDUCTORS SHALL BE TYPE XHHW-2.

H. WHERE LIGHTING FIXTURES REQUIRE 90 DEGREES C CONDUCTORS, PROVIDE ONLY CONDUCTORS WITH 90 DEGREE C INSULATION OR BETTER.

I. MAKE ALL SPLICES IN ACCESSIBLE LOCATIONS. MAKE SPLICES IN CONDUCTORS NO. 10 AWG AND SMALLER DIAMETER WITH SOLDERLESS SPRING WIRE CONNECTORS WITH PLASTIC CAPS. MAKE SPLICES IN CONDUCTORS NO. 8 AWG AND LARGER DIAMETER WITH SOLDERLESS PRESSURE CONNECTORS WITH INSULATING COVERS. MAKE SPLICES IN CONDUCTORS NO. 6 AND LARGER WITH PRESSURE CONNECTORS WITH SPLIT BOLT CONNECTORS.

J. MAKE WIRE TERMINATIONS USING CRIMPED TERMINALS FOR CONDUCTORS NO. 10 AND SMALLER. MAKE WIRE TERMINATIONS FOR CONDUCTORS NO. 8 AND LARGER USING MECHANICAL OR PRESSURE CONNECTORS. PROVIDE SUITABLE REDUCERS WHERE OVERSIZED CONDUCTORS ARE LARGER THAN THE EQUIPMENT TERMINATION.

K. PHASE CONDUCTORS SHALL BE IDENTIFIED BY COLOR CODING. THE COLOR OF THE INSULATION ON PHASES A, B, AND C RESPECTIVELY (FOR THREE PHASE) OR PHASES A AND B RESPECTIVELY (FOR SINGLE PHASE) OF DIFFERENT VOLTAGE SYSTEMS SHALL BE AS FOLLOWS:
1. 120/208 VOLT, THREE PHASE: BLACK, RED, AND BLUE.
2. 277/480 VOLT, THREE PHASE: BROWN, ORANGE, AND YELLOW.

L. UNLESS OTHERWISE INDICATED, THE WIRING METHOD SHALL CONSIST OF THE INSTALLATION OF INSULATED CONDUCTORS INSTALLED IN ELECTRICAL METALLIC AND/OR WIREMOLD RACEWAY.

M. METALLIC-ARMORED TYPE MC CABLES, WHERE ALLOWED, SHALL INCLUDE 600V INSULATION RATING, TYPE THHN/THWN-2 COPPER CONDUCTORS, DEDICATED NEUTRAL CONDUCTOR AND STEEL INTERLOCKING ARMOR. USES PERMITTED:
1. WHERE CONCEALED ABOVE ACCESSIBLE CEILINGS FOR FINAL CONNECTIONS TO LUMINAIRES (MAXIMUM LENGTH 6 FEET).
2. WHERE CONCEALED IN HOLLOW STUD WALLS, ABOVE ACCESSIBLE CEILINGS, AND UNDER RAISED FLOOR FOR BRANCH CIRCUITS UP TO 20A.
3. EXCEPTION: PROVIDE SINGLE CONDUCTOR BUILDING WIRING IN RACEWAY FOR CIRCUIT HOMERUN FROM FIRST DEVICE IN SPACE TO PANELBOARD.

N. PROVIDE INSULATED, GREEN EQUIPMENT GROUNDING CONDUCTOR IN FEEDER AND BRANCH CIRCUITS, INSTALLED IN CONDUIT OR RACEWAYS, INCLUDING LIGHTING CIRCUITS. GROUNDING CONDUCTOR SHALL BE SEPARATE FROM ELECTRICAL SYSTEM NEUTRAL CONDUCTOR.

SECTION 26 05 26 - GROUNDING AND BONDING

A. GROUNDING SHALL BE COMPLETED IN ACCORDANCE WITH NFPA 70. GROUND EXPOSED, NON-CURRENT-CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAY SYSTEMS, GROUNDING CONDUCTOR IN METALLIC AND NONMETALLIC RACEWAYS, AND NEUTRAL CONDUCTOR OF WIRING SYSTEMS. WHERE GROUND FAULT PROTECTION IS EMPLOYED, ENSURE THAT CONNECTION OF GROUND AND NEUTRAL DOES NOT INTERFERE WITH CORRECT OPERATION OF FAULT PROTECTION.

B. EXISTING WORK: WHERE EXISTING GROUNDING AND BONDING SYSTEM COMPONENTS ARE INDICATED TO BE REUSED, THEY MAY BE REUSED ONLY WHERE THEY ARE FREE FROM CORROSION, INTEGRITY AND CONTINUITY ARE VERIFIED, AND WHERE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.

C. WHERE CONDUCTOR SIZE IS NOT INDICATED, SIZE TO COMPLY WITH NFPA 70.

D. USE INSULATED COPPER CONDUCTORS UNLESS OTHERWISE INDICATED. USE BARE COPPER CONDUCTORS WHERE INSTALLED UNDERGROUND OR ENCASED IN CONCRETE.

E. USE LISTED MECHANICAL CONNECTORS, COMPRESSION CONNECTORS OR EXOTHERMIC WELDED CONNECTIONS FOR ACCESSIBLE CONNECTIONS. USE EXOTHERMIC WELDED CONNECTIONS FOR UNDERGROUND, CONCEALED OR OTHERWISE INACCESSIBLE CONNECTIONS.

F. GROUNDING ELECTRODE SYSTEM: PROVIDE CONNECTION TO REQUIRED AND SUPPLEMENTAL GROUNDING ELECTRODES INDICATED TO FORM GROUNDING ELECTRODE SYSTEM. PROVIDE CONTINUOUS GROUNDING ELECTRODE CONDUCTORS WITHOUT SPLICE OR JOINT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN RACEWAY WHERE EXPOSED OR SUBJECT TO PHYSICAL DAMAGE. BOND GROUNDING ELECTRODE CONDUCTOR TO METALIC RACEWAY AT EACH END WITH BONDING JUMPER.

G. SERVICE-SUPPLIED SYSTEM GROUNDING: FOR EACH SERVICE DISCONNECT, PROVIDE GROUNDING ELECTRODE CONDUCTOR TO CONNECT NEUTRAL SERVICE CONDUCTOR TO GROUNDING ELECTRODE SYSTEM. UNLESS OTHERWISE INDICATED, MAKE CONNECTION AT NEUTRAL (GROUNDED) BUS IN SERVICE DISCONNECT ENCLOSURE

H. SEPARATELY DERIVED SYSTEM GROUNDING: PROVIDE GROUNDING ELECTRODE CONDUCTOR TO CONNECT DERIVED SYSTEM GROUNDED CONDUCTOR TO NEAREST EFFECTIVELY GROUNDED METAL BUILDING FRAME. PROVIDE SYSTEM BONDING JUMPER TO CONNECT SYSTEM GROUNDED CONDUCTOR TO EQUIPMENT GROUNDING BUS. MAKE CONNECTION AT SAME LOCATION AS GROUNDING ELECTRODE CONDUCTOR CONNECTION. WHERE GROUNDED METAL BUILDING FRAME DOES NOT EXIST, BOND TO METAL WATER PIPE AT POINT OF ENTRY TO BUILDING.

SECTION 26 05 29 - HANGERS AND SUPPORTS

1. PROVIDE ALL REQUIRED HANGERS, SUPPORTS, ANCHORS, FASTENERS, FITTINGS, ACCESSORIES AND HARDWARE NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL WORK.
2. HANGERS AND SUPPORTS SHALL MEET ASTM STANDARDS FOR COATINGS, NECA 1 STANDARDS FOR WORKMANSHIP, NFPA 70, AND UL 5B FOR STRUT-TYPE CHANNEL RACEWAY AND FITTINGS.
3. WHERE SUPPORT AND ATTACHMENT COMPONENT TYPES AND SIZES ARE NOT INDICATED, SELECT IN ACCORDANCE WITH MANUFACTURER'S APPLICATION CRITERIA AS REQUIRED FOR THE LOAD TO BE SUPPORTED.
4. STEEL COMPONENTS: USE CORROSION RESISTANT MATERIALS SUITABLE FOR THE ENVIRONMENT WHERE INSTALLED. USE ZINC-PLATED STEEL FOR INDOOR DRY LOCATIONS. USE GALVANIZED STEEL, STAINLESS STEEL, FIBERGLASS OR APPROVED EQUIVALENT FOR OUTDOOR, DAMP AND WET LOCATION INSTALLATIONS.
5. CONDUIT AND CABLE SUPPORTS:
a. CONDUIT STRAPS: ONE-HOLE OR TWO-HOLE, ZINC PLATED.
b. CONDUIT CLAMPS: BOLTED TYPE.
6. OUTLET BOX SUPPORTS: HANGERS AND BRACKETS SUITABLE FOR BOXES TO BE SUPPORTED.
7. METAL CHANNEL (STRUT) FRAMING SYSTEMS: FACTORY FABRICATED CONTINUOUS SLOTTED METAL CHANNEL AND ASSOCIATED FITTINGS, ACCESSORIES, AND HARDWARE FOR FIELD-ASSEMBLY OF SUPPORTS. ALL LOCATIONS: USE 12 GA. GALVANIZED STEEL.
8. HANGER RODS: CONTINUOUS THREADING, ZINC-PLATED STEEL.
9. USE OF POWER-ACTUATED FASTENERS REQUIRES APPROVAL OF ARCHITECT AND STRUCTURAL ENGINEER.
10. UNLESS SPECIFICALLY INDICATED, DO NOT SUPPORT ANY ELECTRICAL COMPONENT FROM THE ROOF DECK.
11. PLASTIC AND LEAD ANCHORS ARE NOT PERMITTED.

SECTION 26 05 33 - RACEWAY AND BOXES

A. PROVIDE A COMPLETE WIRING SYSTEM OF RACEWAYS AND BOXES LOCATED AS INDICATED ON DRAWINGS AND AT LOCATIONS AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS AND COMPLIANCE WITH REGULATORY REQUIREMENTS. LOCATIONS INDICATED ON DRAWINGS ARE APPROXIMATE UNLESS DIMENSIONED.

B. STANDARDS: MATERIALS SHALL COMPLY WITH ANSI C80. NEMA AND UL REQUIREMENTS AS APPLICABLE FOR TYPE AND MATERIAL.

C. MINIMUM CONDUIT SIZE, UNLESS OTHERWISE NOTED: INTERIOR - 3/4", EXTERIOR EXPOSED 3/4", EXTERIOR UNDERGROUND - 1".

D. CONDUIT APPLICATIONS:
1. UNDERGROUND:
a. UNDER SLAB ON GRADE - SCHEDULE 40 PVC CONDUIT WITH RIGID METAL CONDUIT SWEEPS.
b. EXTERIOR IN TRENCH - USE SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT WITH RIGID METAL CONDUIT SWEEPS.
c. EXTERIOR, CONCRETE ENCASED - USE TYPE EB RIGID PVC CONDUIT, TRANSITION TO RIGID METAL WHERE EMERGING FROM UNDERGROUND.
2. EMBEDDED WITHIN SLAB: FLOOR BOX SLAB-ON-GRADE APPLICATIONS ONLY.
3. CONCEALED IN MASONRY WALLS: USE EMT WITH FLUSH MOUNTED MASONRY BOXES.
4. CONCEALED IN HOLLOW STUD WALLS: USE EMT CONDUIT OR MC CABLE (WHERE ALLOWED). PROVIDE FLUSH SHEET-METAL BOXES.
5. INTERIOR DAMP OR WET LOCATIONS: USE RIGID METAL CONDUIT, INTERMEDIATE METAL CONDUIT OR SCHEDULE 40 PVC CONDUIT. PROVIDE CAST METAL OR NONMETALLIC OUTLET, JUNCTION AND PULL BOXES.
6. EXPOSED, INTERIOR DRY LOCATIONS: USE EMT CONDUIT.
7. EXPOSED FINISHED LOCATIONS: PROVIDE SURFACE METAL RACEWAY AND FITTINGS. UNLESS SPECIFIED ON DRAWINGS, REQUIRES DESIGN TEAM APPROVAL. COORDINATE ALL VERTICAL RUNS OF SURFACE RACEWAY WITH ARCHITECT PRIOR TO INSTALLATION.
8. CONNECTIONS TO LUMINAIRES ABOVE ACCESSIBLE CEILINGS: USE FLEXIBLE METAL CONDUIT, MAXIMUM LENGTH OF 6 FEET.
9. CONNECTIONS TO VIBRATING EQUIPMENT: DRY LOCATIONS - USE FLEXIBLE METAL CONDUIT OR MC CABLE: DAMP, WET OR CORROSIVE LOCATIONS - USE LIQUIDTIGHT FLEXIBLE METAL CONDUIT; MAXIMUM LENGTH 6 FEET.

E. FITTINGS:
1. EMT - COMPLY WITH NEMA FB 1 AND UL 514B. STEEL WITH COMPRESSION FITTINGS IN DAMP OR WET LOCATIONS. SET SCREW TYPE ELSEWHERE.
2. RIGID METAL CONDUIT - COMPLY WITH ANSI C80.1 AND UL 6. THREADED STEEL OR MALLEABLE IRON. USE FITTING LISTED AND LABELED AS COMPLYING WITH UL 514B IN HAZARDOUS LOCATIONS.
3. FLEXIBLE METAL CONDUIT - COMPLY WITH NEMA FB 1 AND UL 514B. USE STEEL FITTINGS.
4. LIQUIDTIGHT FLEXIBLE METAL CONDUIT - COMPLY WITH NEMA FB 1 AND UL 514B. USE STEEL FITTINGS.
5. SURFACE METAL RACEWAY - PROVIDE FITTINGS FROM SAME MANUFACTURER AS SURFACE RACEWAY. INCLUDE ALL REQUIRED ELBOWS, COUPLINGS MOUNTING CLIPS, COVERS, END FITTINGS AND DEVICE MOUNTING BRACKETS.

F. BOXES: WHERE A BOX SIZE IS NOT IND

SECTION 26 50 00 - LIGHTING FIXTURES

A. LUMINAIRE TYPES
   1. FURNISH PRODUCTS AS INDICATED IN LIGHTING FIXTURE SCHEDULE INCLUDED ON THE DRAWINGS. REFER TO NOTES ON LIGHTING FIXTURE SCHEDULE FOR SUBSTITUTION LIMITATIONS.
B. INTERIOR LUMINAIRES
   1. MANUFACTURERS:
      A. MANUFACTURERS REPRESENTED BY ILLUMINATE LIGHTING.
      B. MANUFACTURERS REPRESENTED BY LIGHTING AFFILIATES.
      C. MANUFACTURERS REPRESENTED BY APEX LIGHTING.
   2. PROVIDE PRODUCTS THAT COMPLY WITH REQUIREMENTS OF NFPA 70.
   3. PROVIDE PRODUCTS THAT ARE LISTED AND LABELED AS COMPLYING WITH UL 1598, WHERE APPLICABLE.
   4. UNLESS OTHERWISE INDICATED, PROVIDE COMPLETE LUMINAIRES INCLUDING LAMP(S) AND ALL SOCKETS, BALLASTS, DRIVERS, REFLECTORS, LENSES, HOUSINGS AND OTHER COMPONENTS REQUIRED TO POSITION, ENERGIZE AND PROTECT THE LAMP AND DISTRIBUTE THE LIGHT.
   5. UNLESS SPECIFICALLY INDICATED TO BE EXCLUDED, PROVIDE ALL REQUIRED CONDUIT, BOXES, WIRING, CONNECTORS, HARDWARE, SUPPORTS, TRIMS, ACCESSORIES, ETC. AS NECESSARY FOR A COMPLETE OPERATING SYSTEM.
   6. HAZARDOUS (CLASSIFIED) LOCATION LUMINAIRES: LISTED AND LABELED AS COMPLYING WITH UL 844 FOR THE CLASSIFICATION OF THE INSTALLED LOCATION.
   7. LUMINAIRES MOUNTED IN CONTINUOUS ROWS: PROVIDE QUANTITY OF UNITS REQUIRED FOR LENGTH INDICATED, WITH ALL ACCESSORIES REQUIRED FOR JOINING AND ALIGNING.
   8. PROVIDE ACCESSORY PLASTER FRAMES FOR LUMINAIRES RECESSED IN PLASTER CEILINGS.
   9. LUMINAIRES IN SPECIAL ENVIRONMENTS:
      A. SHOWERS: PROVIDE WITH NON-CONDUCTIVE TRIM.
      B. WET LOCATIONS: PROVIDE WITH SEALED AND GASKETED LENS.
      C. INFECTIOUS ENVIRONMENTS: PROVIDE WITH SEALED AND GASKETED LENS AND ANTI-MICROBIAL FINISH.
      D. CLEAN ROOMS: PROVIDE WITH SEALED AND GASKETED LENS, IP65 RATING AND CLEAN ROOM RATING AS INDICATED.
      E. MRI/IMAGING SUITES: PROVIDE WITH NON-FERROUS CONSTRUCTION; DC POWER SUPPLY; WIRING THROUGH RF-FILTER.
C. EXTERIOR LUMINAIRES; SHALL MEET REQUIREMENTS LISTED IN INTERIOR LUMINAIRES SECTION ABOVE, AND THE FOLLOWING:
   1. PROVIDE IESNA FULL CUT-OFF CLASSIFIED PRODUCTS UNLESS OTHERWISE INDICATED OR PROVIDE PRODUCTS WITH BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS AS INDICATED.
   2. PROVIDE PRODUCTS WITH IESNA LIGHT DISTRIBUTION AS INDICATED.
   3. PROVIDE PRODUCTS WITH INTERNAL/EXTERNAL HOUSE-SIDE SHIELDS AS INDICATED.
   4. POLES:
      A. MATERIAL AND FINISH: REFER TO LIGHTING FIXTURE SCHEDULE.
      B. SECTION SHAPE AND DIMENSIONS: **[ROUND] [TAPERED ROUND] [SQUARE] [ ]**.
      C. HEIGHT: AS INDICATED ON DRAWINGS OR AS SCHEDULED.
      D. BASE: NON BREAKAWAY.
      E. ACCESSORIES:
         a. HANDHOLE
         b. ANCHOR BOLTS.
         c. BASE COVER.
         d. DECORATIVE BASE.
         e. PRE-DRILLED FOR LUMINAIRE MOUNTING.
         f. BANNER ARMS.
      F. LOADING CAPACITY RATINGS:
         a. PROVIDE WITH EPA RATING SUITABLE FOR MAXIMUM WIND LOAD IN AREA, INCLUDING EPA FOR ATTACHED LUMINAIRES AND ALL REQUIRED ACCESSORIES.
         b. CONSULT WITH LOCAL AUTHORITIES FOR WIND LOADING REQUIREMENTS.
D. EMERGENCY LIGHTING UNITS
   1. PRODUCT DESCRIPTION: EMERGENCY LIGHTING UNITS COMPLYING WITH NFPA 101 AND ALL APPLICABLE STATE AND LOCAL CODES, AND LISTED AND LABELED AS COMPLYING WITH UL 924.
   2. BATTERY:
      A. SEALED MAINTENANCE FREE LEAD CALCIUM UNLESS OTHERWISE INDICATED.
      B. SIZE BATTERY TO SUPPLY ALL CONNECTED LAMPS/LED ARRAYS, INCLUDING EMERGENCY REMOTE HEADS WHERE INDICATED.
   3. SELF-DIAGNOSTICS: PROVIDE UNITS THAT SELF-MONITOR FUNCTIONALITY AND AUTOMATICALLY PERFORM TESTING REQUIRED BY NFPA 101 WHERE INDICATED; PROVIDE INDICATOR LIGHT(S) TO REPORT TEST AND DIAGNOSTIC STATUS.
E. EXIT SIGNS
   1. PRODUCT DESCRIPTION: INTERNALLY ILLUMINATED EXIT SIGNS WITH LEDS UNLESS OTHERWISE INDICATED; COMPLYING WITH NFPA 101 AND ALL APPLICABLE STATE AND LOCAL CODES, AND LISTED AND LABELED AS COMPLYING WITH UL 924. REFER TO LIGHTING FIXTURE SCHEDULE FOR FEATURES AND ADDITIONAL REQUIREMENTS.
   2. SELF-POWERED EXIT SIGNS:
      A. PRODUCT DESCRIPTION: UL 924 SELF-CONTAINED EMERGENCY LIGHTING UNIT.
      B. BATTERY: SEALED MAINTENANCE-FREE NICKEL CADMIUM UNLESS OTHERWISE INDICATED.
      C. SELF-DIAGNOSTICS: PROVIDE UNITS THAT SELF-MONITOR FUNCTIONALITY AND AUTOMATICALLY PERFORM TESTING REQUIRED BY NFPA 101 WHERE INDICATED; PROVIDE INDICATOR LIGHT(S) TO REPORT TEST AND DIAGNOSTIC STATUS.
   3. ACCESSORIES:
      A. PROVIDE COMPATIBLE ACCESSORY HIGH IMPACT POLYCARBONATE VANDAL SHIELDS WHERE INDICATED.
      B. PROVIDE COMPATIBLE ACCESSORY WIRE GUARDS WHERE INDICATED.
F. DRIVERS
   A. CONTROL INPUT
      a. 4-WIRE (0-10V DC VOLTAGE CONTROLLED) DIMMING DRIVERS: CONNECT TO DEVICES COMPATIBLE WITH 0 TO 10V ANALOG CONTROL PROTOCOL, CLASS 2, CAPABLE OF SINKING 0.6 MA PER DRIVER AT A LOW END OF 0.3V. LIMIT THE NUMBER OF DRIVERS ON EACH 0-10V CONTROL OUTPUT BASED ON VOLTAGE DROP AND CONTROL CAPACITY.
      b. DIGITAL MULTIPLEX (DMX LOW VOLTAGE CONTROLLED) DIMMING DRIVERS: MUST MEET DMX / RDM: USITT DMX512A AND ANSI E1.20 (EXPLORE & ADDRESS) AND SHALL BE CAPABLE OF SIGNAL INTERPOLATION AND SMOOTHING OF COLOR AND INTENSITY TRANSITIONS.
   B. DRIVER: APPROVED BY DIMMING SYSTEM MANUFACTURER AS SUITABLE FOR OPERATION WITH CONTROL UNIT AND SUITABLE FOR LED SOURCE TYPE AND QUANTITY SPECIFIED FOR LUMINAIRE.
G. LED DRIVER EMERGENCY POWER SUPPLY UNITS
   1. DESCRIPTION: SELF-CONTAINED EMERGENCY POWER SUPPLY UNITS SUITABLE FOR USE WITH INDICATED LUMINAIRES, COMPLYING WITH NFPA 101 AND ALL APPLICABLE STATE AND LOCAL CODES, AND LISTED AND LABELED AS COMPLYING WITH UL 924.
   2. BATTERY: SEALED MAINTENANCE-FREE HIGH-TEMPERATURE NICKEL CADMIUM UNLESS OTHERWISE INDICATED.
   3. EMERGENCY ILLUMINATION OUTPUT: REFER TO LIGHTING FIXTURE SCHEDULE.
   4. SELF-DIAGNOSTICS: PROVIDE UNITS THAT SELF-MONITOR FUNCTIONALITY AND AUTOMATICALLY PERFORM TESTING REQUIRED BY NFPA 101 WHERE INDICATED; PROVIDE INDICATOR LIGHT(S) TO REPORT TEST AND DIAGNOSTIC STATUS AND FIELD SELECTABLE AUDIBLE ALERT.
   5. OPERATING TEMPERATURE: FROM 32 DEGREES F (0 DEGREES C) TO 122 DEGREES F (50 DEGREES C) UNLESS OTHERWISE INDICATED OR REQUIRED FOR THE INSTALLED LOCATION.
   6. ACCESSORIES:
      A. WHERE NOT INTEGRAL TO FIXTURE, PROVIDE COMPATIBLE ACCESSORY REMOTE COMBINATION TEST SWITCH/INDICATOR LIGHT MOUNTED ON CEILING ADJACENT TO UNIT OR AS INDICATED ON DRAWINGS.

SECTION 26 20 00 -ELECTRICAL DISTRIBUTION

A. GENERAL REQUIREMENTS FOR EQUIPMENT UNDER THIS SECTION
   1. MANUFACTURERS:
      A. SQUARE D
      B. SIEMENS
      C. EATON
      D. ABB
   2. ENCLOSURE (UNLESS OTHERWISE INDICATED ON PLANS OR SCHEDULES):
      A. TYPE 1 (INDOOR, DRY LOCATIONS).
      B. TYPE 3R (OUTDOOR, WET LOCATIONS).
B. SERVICE-DISCONNECTING MEANS
   1. SERVICE-DISCONNECTING MEANS SHALL BE OF THE TYPE AS INDICATED WITH EXTERNAL HANDLE FOR MANUAL OPERATION AND LOCKABLE. WHEN SERVICE DISCONNECTING MEANS IS A PART OF AN ASSEMBLY, THE ASSEMBLY SHALL BE LISTED AS SUITABLE FOR SERVICE ENTRANCE EQUIPMENT.
   2. ENCLOSURES SHALL BE NEMA 1 (INTERIOR) OR NEMA 3R (EXTERIOR) WITH HINGED COVER FOR SURFACE MOUNTING UNLESS OTHERWISE INDICATED.
C. PANELBOARDS
   1. PRODUCT DESCRIPTION: NEMA PB 1, CIRCUIT BREAKER TYPE PANELBOARD, COMPLYING WITH UL 67.
   2. PANELBOARD BUS: COPPER CURRENT CARRYING COMPONENTS. RATINGS AS SHOWN ON DRAWINGS. FURNISH COPPER GROUND BUS IN EACH PANELBOARD.
   3. MINIMUM INTEGRATED SHORT CIRCUIT RATING: 10KAIC.
   4. MOLDED CASE CIRCUIT BREAKERS: NEMA AB 1, CIRCUIT BREAKERS WITH INTEGRAL THERMAL AND INSTANTANEOUS TRIP FUNCTION, BOLT-ON TYPE. PROVIDE ELECTRONIC TRIP CIRCUIT BREAKERS WHERE INDICATED.
   5. PROVIDE CIRCUIT BREAKERS WITH MAGNETIC TRIP IN EACH POLE.
   6. CIRCUIT BREAKERS RATED 1,000 AMPS OR MORE ON SOLIDLY GROUNDED 480V SYSTEMS SHALL INCLUDE GROUND FAULT PROTECTION.
   7. CIRCUIT BREAKERS RATED 1,200 AMPS OR MORE SHALL HAVE LONG TIME, SHORT TIME, INSTANTANEOUS, AND GROUND FAULT PROTECTION (LSI) FUNCTIONS. CIRCUIT BREAKERS SHALL HAVE ENERGY REDUCTION MAINTENANCE SETTING (ERMS) SYSTEM.
   8. ENCLOSURE: NEMA PB 1.
   9. CABINET FRONT: LOCKABLE HINGED DOOR, METAL DIRECTORY FRAME, FINISHED IN MANUFACTURER'S STANDARD GRAY ENAMEL.
D. DISCONNECT SWITCHES
   1. PRODUCT DESCRIPTION: HEAVY-DUTY, NEMA KS 1, ENCLOSED LOAD INTERRUPTER KNIFE SWITCH, HANDLE LOCKABLE IN "OFF" POSITION.
   2. ENCLOSURE: NEMA KS 1, TO MEET CONDITIONS. FABRICATE ENCLOSURE FROM STEEL FINISHED WITH MANUFACTURER'S STANDARD GRAY.
   3. PROVIDE WITH (2) SETS OF AUXILIARY CONTACTS.
   4. FURNISH SWITCHES WITH ENTIRELY COPPER CURRENT CARRYING PARTS.
   5. SWITCH VOLTAGE, PHASE AND AMPERAGE RATINGS AS INDICATED ON DRAWINGS.
   6. WHERE SPECIFIED AS FUSED DISCONNECT SWITCHES, PROVIDE WITH DUAL-ELEMENT, TIME DELAY, CLASS RK1 FUSES. FUSE RATINGS AND QUANTITIES AS INDICATED ON DRAWINGS. FUSES SHALL BE MANUFACTURED BY BUSSMAN, GOULD SHAWMUT OR LITTELFUSE. FURNISH (3) SPARE FUSES OF EACH TYPE.
E. PANELBOARD & DISCONNECT SWITCH INSTALLATION STANDARDS
   1. MOUNT PANELBOARDS, CIRCUIT BREAKERS (INCLUDING PROVISIONS FOR FUTURE BREAKERS), AND DISCONNECTING SWITCHES SO HEIGHT OF OPERATING HANDLE AT ITS HIGHEST POSITION IS MAXIMUM 78 INCHES ABOVE FLOOR.
   2. ARRANGE EQUIPMENT TO PROVIDE MINIMUM CLEARANCES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NFPA 70.
   3. INSTALL PANELBOARDS PLUMB. INSTALL FLUSH-MOUNTED PANELBOARDS SO THAT TRIMS FIT COMPLETELY FLUSH TO WALL WITH NO GAPS AND ROUGH OPENING COMPLETELY COVERED.
   4. INSTALL A PERMANENT LABEL INDICATING THE PANELBOARD OR TRANSFORMER WHERE THE POWER SUPPLY TO THE DEVICE ORIGINATES.
   5. PROVIDE FILLER PLATES TO COVER UNUSED SPACES IN PANELBOARDS.
   6. PROVIDE CIRCUIT BREAKER LOCK-ON DEVICES TO PREVENT UNAUTHORIZED PERSONNEL FROM DE-ENERGIZING ESSENTIAL LOADS AS INDICATED.
   7. PROVIDE WITH MANUFACTURER'S STANDARD ARC FLASH LABEL.
F. TRANSFORMERS
   1. PRODUCT DESCRIPTION: NEMA ST20, FACTORY-ASSEMBLED, AIR-COOLED, ENERGY STAR RATED, DRY-TYPE TRANSFORMER. RATINGS SHALL BE AS INDICATED ON DRAWINGS.
   2. EFFICIENCY: COMPLY WITH THE LATEST DEPARTMENT OF ENERGY EFFICIENCY STANDARDS FOR DRY-TYPE TRANSFORMERS
   3. INSULATION SYSTEM AND AVERAGE WINDING TEMPERATURE: CLASS 220 WITH 150°C RISE.
   4. CASE TEMPERATURE: DO NOT EXCEED 35 DEGREES C RISE ABOVE AMBIENT AT WARMEST POINT AT FULL LOAD.
   5. WINDING TAPS: NEMA ST 20.
   6. COIL CONDUCTORS: CONTINUOUS COPPER OR ALUMINUM WINDINGS WITH TERMINATIONS BRAZED OR WELDED.
   7. NEUTRAL BUS: SIZED TO ACCOMMODATE TWICE THE RATED SECONDARY CURRENT.
   8. ENCLOSURE: NEMA ST20. FURNISH LIFTING EYES OR BRACKETS.
   9. INSULATE CORE AND COIL FROM ENCLOSURE USING VIBRATION-ABSORBING MOUNTS.
   10. NAMEPLATE: INCLUDE TRANSFORMER CONNECTION DATA, RATINGS, WIRING DIAGRAMS, AND OVERLOAD CAPACITY BASED ON RATED WINDING TEMPERATURE RISE.
G. TRANSFORMER INSTALLATION STANDARDS
   1. INSTALL TRANSFORMERS IN ACCORDANCE WITH NECA 409 AND IEEE C57.94.
   2. USE FLEXIBLE CONDUIT, 2' MINIMUM LENGTH, FOR CONNECTIONS TO TRANSFORMER CASE. MAKE CONDUIT CONNECTIONS TO SIDE PANEL OF ENCLOSURE.
   3. ARRANGE EQUIPMENT TO PROVIDE MINIMUM CLEARANCES AS SPECIFIED ON TRANSFORMER NAMEPLATE AND IN ACCORDANCE WITH NFPA 70.
   4. MOUNT WALL-MOUNTED TRANSFORMERS USING INTEGRAL FLANGES OR ACCESSORY BRACKETS FURNISHED BY THE MANUFACTURER.
   5. MOUNT FLOOR-MOUNTED TRANSFORMERS ON PROPERLY SIZED 3" HIGH CONCRETE PAD IN ACCORDANCE WITH DIVISION 03, AS APPLICABLE. PROVIDE WITH VIBRATION ISOLATORS SUITABLE FOR ISOLATING TRANSFORMER NOISE FROM BUILDING STRUCTURE.
   6. PROVIDE GROUNDING AND BONDING IN ACCORDANCE WITH NFPA 70.
   7. REMOVE SHIPPING BRACES AND ADJUST BOLTS THAT ATTACH THE CORE AND COIL MOUNTING BRACKET TO THE ENCLOSURE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS IN ORDER TO REDUCE AUDIBLE NOISE TRANSMISSION.
   8. WHERE NOT FACTORY INSTALLED, INSTALL LUGS SIZED AS REQUIRED FOR TERMINATION OF CONDUCTORS AS SHOWN ON THE DRAWINGS.
   9. INSTALL A PERMANENT LABEL INDICATING THE PANELBOARD WHERE THE POWER SUPPLY TO THE TRANSFORMER ORIGINATES.
H. NEW CIRCUIT BREAKERS IN EXISTING PANELBOARDS SHALL MATCH EXISTING STYLE AND SHORT CIRCUIT/ AIC RATING.

SECTION 28 31 00 - FIRE DETECTION AND ALARM

A. SUMMARY
   1. THIS SECTION IDENTIFIES REQUIREMENTS FOR FURNISHING, INSTALLING, CONNECTING AND TESTING OF A MICROPROCESSOR CONTROLLED, INTELLIGENT ADDRESSABLE REPORTING FIRE ALARM SYSTEM. THE SYSTEM SHALL BE A COMPLETE FIRE ALARM PROTECTIVE SIGNALING SYSTEM FEATURING OCCUPANT NOTIFICATION (HORN OR VOICE/EVAC AS SPECIFIED HEREIN), THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, ALARM INITIATING DEVICES, ALARM NOTIFICATION APPLIANCES, FIRE ALARM CONTROL PANEL (FACP), AUXILIARY CONTROL DEVICES, REMOTE ANNUNCIATOR AND WIRING AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.
   2. THE FIRE ALARM SYSTEM SHALL COMMUNICATE ALL ALARMS TO THE DESIGNATED FIRE DEPARTMENT OR CENTRAL STATION MONITORING SERVICE USING THE PREFERRED PROTOCOL DESIGNATED BY THE ENGINEER OR AUTHORITY HAVING JURISDICTION AS FOLLOWS:
      1. VIA INTEGRAL UDACT DIGITAL ALARM COMMUNICATOR WITH DEDICATED POTS PHONE LINES.
      2. VIA RADIO MASTER BOX WIRELESS TRANSMISSION IN CONFORMANCE WITH LOCAL REQUIREMENTS.
      3. VIA GSM CELLULAR WIRELESS COMMUNICATOR.
      4. VIA LOCAL ENERGY MASTER BOX.
   3. INSTALLATION SHALL BE IN ACCORDANCE WITH THE NEC, NFPA 72, LOCAL AND STATE CODES, AS SHOWN ON THE DRAWINGS, AND AS RECOMMENDED BY THE FIRE ALARM EQUIPMENT MANUFACTURER.
B. ACCEPTABLE MANUFACTURERS
   1. NOTIFIER (BASIS OF DESIGN)
   2. EDWARDS
   3. SIEMENS
   4. JOHNSON CONTROLS / SIMPLEX
C. SUBMITTALS
   1. SUBMIT FIRE ALARM EQUIPMENT INCLUDING BUT NOT LIMITED TO A MAIN CONTROL PANEL, REMOTE ANNUNCIATOR, MANUAL PULL STATIONS, OCCUPANT NOTIFICATION DEVICES, CONDUIT AND RACEWAY, WIRING, NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLIES, ELECTRIC BELLS.
   2. SHOP DRAWINGS: INDICATE SYSTEM WIRING DIAGRAM SHOWING EACH DEVICE AND WIRING CONNECTION; INDICATE ANNUNCIATOR LAYOUT, AND DESIGN CALCULATIONS.
   3. SUBMIT COMPLETE FIRE ALARM BATTERY CALCULATIONS, TAKING ALL DEVICES WITHIN BUILDING INTO ACCOUNT.
D. WARRANTY AND MAINTENANCE REQUIREMENTS
   1. CONTRACTOR'S WARRANTY: WARRANTY THE INSTALLATION TO BE FREE OF DEFECT FOR A PERIOD OF TWO (2) YEARS.
   2. EQUIPMENT WARRANTY: EACH PIECE OF EQUIPMENT SHALL CARRY A TWO (2) YEAR MANUFACTURER'S WARRANTY.
   3. FURNISH SERVICE AND MAINTENANCE OF FIRE ALARM EQUIPMENT FOR ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
E. EXTRA MATERIALS
   1. PROVIDE (2) MANUAL FIRE ALARM PULLSTATIONS, COMPLETE WITH ALL LABOR, MATERIAL, WIRING AND PROGRAMMING, TO BE LOCATED IN THE FIELD AS DIRECTED BY THE ENGINEER OR LOCAL AUTHORITY HAVING JURISDICTION.
   2. PROVIDE (2) FIRE ALARM AUDIO/VISUAL APPLIANCES, COMPLETE WITH ALL LABOR, MATERIAL, WIRING AND PROGRAMMING, TO BE LOCATED IN THE FIELD AS DIRECTED BY THE ENGINEER OR LOCAL AUTHORITY HAVING JURISDICTION.
F. MAIN CONTROL PANEL
   1. PRODUCT DESCRIPTION: MODULAR FIRE ALARM CONTROL PANEL (FACP) WITH SURFACE WALL-MOUNTED ENCLOSURE AND SHALL CONTAIN A MICROPROCESSOR-BASED CENTRAL PROCESSING UNIT (CPU). THE CPU SHALL COMMUNICATE WITH AND CONTROL THE FOLLOWING TYPES OF EQUIPMENT USED TO MAKE UP THE SYSTEM: INTELLIGENT ADDRESSABLE SMOKE AND THERMAL (HEAT) DETECTORS, ADDRESSABLE MODULES, ANNUNCIATORS, AND OTHER SYSTEM CONTROLLED DEVICES.
   2. POWER SUPPLY: ADEQUATE TO SERVE CONTROL PANEL MODULES, REMOTE DETECTORS, REMOTE ANNUNCIATORS, RELAYS, AND ALARM SIGNALING DEVICES. INCLUDE BATTERY-OPERATED EMERGENCY POWER SUPPLY WITH CAPACITY FOR OPERATING SYSTEM IN STANDBY MODE FOR 24 [48] HOURS FOLLOWED BY ALARM MODE FOR 5 MINUTES.
G. INITIATING DEVICES
   1. MANUAL PULL STATION - PULL STATIONS SHALL BE MANUAL ADDRESSABLE NON-CODED SEMI-FLUSH MOUNTED DOUBLE-ACTION STATION WITH BREAK-GLASS ROD. STATIONS SHALL BE MOUNTED SEMI-FLUSH IN FINISHED SPACES AND SURFACE MOUNTED IN UNFINISHED SPACES.
   2. ADDRESSABLE HEAT DETECTOR – DETECTORS SHALL BE ADDRESSABLE COMBINATION RATE-OF-RISE AND FIXED TEMPERATURE SPOT TYPE HEAT DETECTORS WITH PLUG-IN BASE. TEMPERATURE RATING SHALL BE 135 OR 194 DEGREES F; RATE-OF-RISE SHALL BE 15 DEGREES F PER MINUTE. THE CHOICE OF ALARM REPORTING AS A FIXED TEMPERATURE DETECTOR OR A COMBINATION OF FIXED AND RATE OF RISE SHALL BE MADE IN THE SYSTEM SOFTWARE AND SHALL BE PROGRAMMABLE AT ANY TIME WITHOUT THE NECESSITY OF HARDWARE REPLACEMENT. THE DETECTORS FURNISHED SHALL HAVE A LISTED SPACING FOR COVERAGE UP TO 2,500 SQUARE FEET.
   3. ADDRESSABLE PHOTOELECTRIC CEILING SMOKE DETECTOR - ADDRESSABLE PHOTOELECTRIC TYPE CEILING SMOKE DETECTOR WITH ADJUSTABLE SENSITIVITY, PLUG-IN BASE, VISUAL INDICATION OF DETECTOR ACTUATION. THE SMOKE DETECTOR SHALL BE CAPABLE OF PROVIDING THREE DISTINCT OUTPUTS FROM THE CONTROL PANEL. THE OUTPUTS SHALL BE FROM AN INPUT OF SMOKE OBSCURATION, A THERMAL CONDITION OR A COMBINATION OF OBSCURATION AND THERMAL CONDITIONS.
   4. ADDRESSABLE DUCT SMOKE DETECTOR - ADDRESSABLE PHOTOELECTRIC TYPE DUCT MOUNTED SMOKE DETECTOR WITH DUCT SAMPLING TUBES EXTENDING THE WIDTH OF THE DUCT, DUCT-MOUNTED HOUSING, AUXILIARY SPDT RELAY CONTACTS, VISUAL INDICATION OF DETECTOR ACTUATION. FURNISH AND INSTALL A KEYED REMOTE TEST SWITCH FOR EACH DUCT SMOKE DETECTOR. FLUSH MOUNTED INTO THE NEAREST ACCESSIBLE CEILING OR WALL MOUNTED PER THE DIRECTION OF THE AHJ.
   5. ADDRESSABLE CARBON MONOXIDE DETECTOR – CARBON MONOXIDE DETECTORS SHALL MEET UL2034 AND UL2075. DETECTORS SHALL BE ADDRESSABLE AND SHALL BE CONNECTED AS A SEPARATE ZONE OR PROGRAMMED AS A SEPARATE ZONE. DETECTORS SHALL ONLY ACTIVATE A SUPERVISORY SIGNAL AT THE MAIN FIRE ALARM CONTROL PANEL AND AT THE REMOTE ANNUNCIATOR PANEL.
   6. ADDRESSABLE DRY CONTACT MONITOR MODULE - ADDRESSABLE MONITOR MODULES SHALL BE PROVIDED TO CONNECT ONE SUPERVISED IDC ZONE OF CONVENTIONAL ALARM INITIATING DEVICES (ANY N.O. DRY CONTACT DEVICE) TO ONE OF THE FIRE ALARM CONTROL PANEL ADDRESSABLE LOOPS.
   7. ADDRESSABLE CONTROL MODULE - ADDRESSABLE CONTROL MODULES SHALL BE PROVIDED TO SUPERVISE AND CONTROL THE OPERATION OF ONE CONVENTIONAL CIRCUIT OF COMPATIBLE 24 VDC POWERED POLARIZED AUDIO/VISUAL NOTIFICATION APPLIANCES. AUDIO/VISUAL POWER SHALL BE PROVIDED BY A SEPARATE SUPERVISED CIRCUIT FROM THE MAIN FIRE ALARM CONTROL PANEL OR FROM A SUPERVISED UL LISTED REMOTE SUPPLY.
G. NOTIFICATION APPLIANCES
   1. STROBES – SIGNALING STROBES SHALL MEET THE REQUIREMENTS OF ADA, UL STANDARD 1971 AND SHALL BE FULLY SYNCHRONIZED. THE STROBE SHALL CONSIST OF A XENON FLASH TUBE WITH ASSOCIATED LENS/REFLECTOR SYSTEM AND SHALL OPERATE ON EITHER 12V OR 24V. THE STROBE SHALL ALSO FEATURE SELECTABLE CANDELA OUTPUT, PROVIDING OPTIONS FOR 15, 30, 75, OR 110 CANDELA.
   2. HORNS – ANNUNCIATION HORNS SHALL BE LISTED TO UL 1480 FOR FIRE PROTECTIVE SIGNALING SYSTEMS. IT SHALL BE A DUAL-VOLTAGE TRANSFORMER HORN CAPABLE OF OPERATION AT 25.0 OR 70.7 NOMINAL VRMS. THE HORN SHALL HAVE A FREQUENCY RANGE OF 400 TO 4,000 HZ AND SHALL HAVE AN OPERATING TEMPERATURE BETWEEN 32°F AND 120° F. IT SHALL MOUNT TO A 4 X 4 X 2 1/8-INCH BACK BOX. THE HORN SHALL HAVE POWER TAPS (FROM ¼ WATT TO 2 WATTS) AND VOLTAGE THAT ARE SELECTED BY ROTARY SWITCHES. ALL MODELS SHALL HAVE A MAXIMUM SOUND OUTPUT OF 86 DB AT 10 FEET AND SHALL INCORPORATE OPEN BACK CONSTRUCTION.
   3. COMBINATION HORN/STROBE DEVICES SHALL MEET THE REQUIREMENTS SPECIFIED UNDER BOTH THE "STROBES" AND "HORNS" PARAGRAPHS ABOVE.
   4. CEILING MOUNTED ANNUNCIATING DEVICES SHALL BE CONSTRUCTED AND LISTED SPECIFICALLY FOR THE PURPOSE OF CEILING MOUNTING.
A. REMOTE ANNUNCIATOR PANEL
   1. SUPERVISED REMOTE ANNUNCIATOR INCLUDING AUDIBLE AND VISUAL INDICATION OF FIRE ALARM BY ZONE AND ZONE ADDRESS, AND AUDIBLE AND VISUAL INDICATION OF SYSTEM TROUBLE. THE ANNUNCIATOR SHALL COMMUNICATE TO THE FIRE ALARM CONTROL PANEL VIA AN EIA 485 (MULTI-DROP) TWO-WIRE COMMUNICATIONS LOOP. FULL FUNCTION REMOTE CONTROL CAPABILITIES FOR ACKNOWLEDGE, SILENCE, TEST AND RESET
I. WIRING
   1. FIRE ALARM CABLING SHALL BE WIRE IN CONDUIT, UNLESS METAL CLAD (MC) CABLE IS SPECIFICALLY PERMITTED TO BE INSTALLED BY THE AUTHORITY HAVING JURISDICTION, AND IS SPECIFIED AS AN ACCEPTABLE MEANS OF INSTALLATION ON THE DRAWINGS.
   2. ALL FIRE ALARM JUNCTION BOXES AND CONDUIT BODIES SHALL HAVE COVERS PAINTED RED AND RACEWAYS SHALL BE IDENTIFIED AND LABELED IN ACCORDANCE WITH SECTION 26 REQUIREMENTS.
   3. WIRING SHALL BE IN ACCORDANCE WITH LOCAL, STATE AND NATIONAL CODES (E.G., NEC ARTICLE 760) AND AS RECOMMENDED BY THE MANUFACTURER OF THE FIRE ALARM SYSTEM. NUMBER AND SIZE OF CONDUCTORS SHALL BE AS RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER, BUT NOT LESS THAN 18 AWG FOR INITIATING DEVICE CIRCUITS AND SIGNALING LINE CIRCUITS, AND 14 AWG FOR NOTIFICATION APPLIANCE CIRCUITS.
   4. ALL WIRING SHALL MATCH THE CLASS AND STYLE OF THE WIRING IN EXISTING BUILDING, WHERE APPLICABLE.

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WATERBURY COMMUNITY HEALTH RESOURCE CENTER

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RFP NO. 8801

REVISIONS

NO.	DATE	DESCRIPTION

CONTRACT DOCUMENTS

ELECTRICAL SPECIFCATIONS

DATE: 2026-0501
SCALE NTS
PROJ. #: 2023-026B
DRAWN: AJG
CHECKED: SAS
5/1/2026 1:53:26 PM

SHEET NO.

E9.1

RFP# 8801

ATTACHMENT A-1.1

GENERAL CONDITIONS

INTRODUCTORY NOTE:

These General Conditions supplement the provisions and requirements of Contract and modify all Contract Documents which follow it numerically, as set forth in Section 1.2 of the Contract. The General Conditions may be amended, revised or supplemented by the Special Conditions, which are project specific. The Contractor's attention is directed to the attached Special Conditions for any amendments, revisions or supplements to the General Conditions for this project. The terms used in these General Conditions which are defined in the Contract have the meanings assigned to them in said Contract.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project and all drawings, specifications and general provisions of the Contract apply to these General Conditions. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise in the Contract Documents, all costs associated with any work/services required or necessary under the General Conditions shall be considered as included in the Contract Amount (also referred to as Total Compensation). No separate or additional payment will be made for this work and/or services.

ARTICLE 1. PLANS AND SPECIFICATIONS AT THE SITE / AS-BUILTS

1.01 The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications, Schedules and Instructions, in good order. One copy is to be marked to record all changes made during construction. These shall always be available to the Project Engineer and the City or their authorized representatives. At the conclusion of construction, the Contractor is to turn one (1) corrected set of all documents over to the Project Engineer.

ARTICLE 2. CONSTRUCTION PROGRESS SCHEDULE

2.01 Within seven (7) consecutive calendar days of the written Notice to Proceed, and prior to commencement of any work on site, the Contractor shall prepare and submit for the approval of the City three (3) copies of a complete Construction Progress Schedule which shall be comprised of a critical path method network. (At the same time, the Contractor shall submit the Schedule of Values, Sedimentation and Erosion Control Measures, Water Control Plan and Environmental Protection Plan, as outlined in the various Articles of these General Conditions).

2.02 The critical path of the Project must be identified on the Construction Progress Schedule which shall provide a workable plan for monitoring the progress of all the elements of the Project, establish and clearly display the critical elements of the Work, on which each part or division of the Work is expected to be started and completed, forecast completion of the elements of the Project, and match the Contract duration in time. The Construction Progress Schedule shall also indicate the logic of the work for the major elements and components of work under the Contract, such as the planned mobilization of plant and

equipment, sequences of operations, procurement of materials and equipment, duration of activities, type of relationship, lag time (if any), and such other information as it is necessary to present a clear statement of the intended activities.

2.03 The Construction Progress Schedule shall, at a minimum, indicate the proposed scheduling of all major items of work and Project components. The schedule shall state the methods for doing each portion of the work and show the significant on-site construction activities with planned early/late start early/late completion dates and total float for each activity, including activities of the Contractor, subcontractors, fabricators, and suppliers to ensure adequate planning and communication. Activities shall include, the following items, as applicable: (a) milestone events; (b) seasonal weather limitations (c) the procurement and fabrication of materials, plant and equipment and any associated submittals; (d) the order in which the Contractor proposes to complete activities; (e) temporary structures or systems; (f) major construction or work zone traffic control stages; (g) activities assigned to Utilities, railroads and other parties; (h) activities assigned to the City and other State or municipal entities; (i) sampling and testing of materials; (j) settlement, surcharge or cure periods; (k) punch list work, (l) inspection activities assigned to the City, including final inspection and (m) all project closeout activities and requirements. The Contractor shall evaluate the status of the Project at least monthly, comparing it to the original schedule, which shall be revised as required herein. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the current schedule.

2.04 Upon approval of the initial Construction Progress Schedule by the Project Engineer, this schedule shall also be referred to as the "Baseline Construction Progress Schedule" or "Baseline Schedule."

2.05 The Contractor shall perform the work of this Contract to satisfy the approved Construction Progress Schedule; however, the Project Engineer and City reserve the right to amend and alter the Construction Progress Schedule, as approved, at any time and in a manner which the Project Engineer deems to be in the best interests of the City. The latest version of the Construction Progress Schedule, as amended and approved by the Project Engineer, shall also be referred to as the "Current Construction Progress Schedule" or "Current Schedule." The approval of the Construction Progress Schedule, or any revision thereof, shall in no way waive the requirements of the Contract nor shall it excuse the Contractor from any obligations under the Contract.

2.06 The Contractor shall be required to execute his work in accordance with the Construction Progress and in accordance with any additional requirements specified herein and/or revisions approved by the Project Engineer.

2.07 The Construction Progress Schedule shall forecast the times for doing each portion of the work. The Contractor shall arrange the work under this Contract to conform with the Construction Progress Schedule, as it may be revised by the Project Engineer from time to time, at no additional expense to the City.

2.08 Contractor shall provide, at a minimum, the following:

a. Monthly Updates: Each month, as of a calendar date mutually acceptable to the Contractor and to the Project Engineer, the Contractor shall deliver to the Engineer three (3) prints of all required schedule diagrams and tabulations. Until Final Completion of the work, Contractor shall continually evaluate the status of the Project, comparing it to the current Construction Progress Schedule, or approved revision thereof. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the Current Schedule, or any component thereof.

b. Biweekly Schedules: Each week, the Contractor shall be required to produce and submit to the Project Engineer a biweekly schedule showing all activities planned for the following two-week period. This short-term schedule may be handwritten; however, a two week "look ahead" filter from the Construction Progress Schedule is preferred. The biweekly schedule shall clearly indicate all work planned on a crew basis for the two-week period.

c. Recovery Schedules: If completion of any part of the work, delivery of equipment or materials, or submission of submittals or required documentation is behind the approved Construction Progress Schedule and will impact the end date of the work past the Contract completion dates (create negative float), the Contractor shall submit in writing, a revised Construction Project Schedule acceptable to the City for completing the work on or before the current Contract completion dates.

d. The revised Construction Project Schedule shall take some or all the following actions to demonstrate the manner in which an acceptable rate of progress will be regained, by the following methods:

i. Increase construction manpower in such quantities and crafts as shall substantially eliminate the backlog of work and meet the current Contract completion date.
ii. Increase the number of working hours per shift, the number of shifts per day, the number of workdays per week, or the amount of construction equipment, or any combination of the foregoing.
iii. Reschedule work items to achieve concurrent accomplishment of work activities.

e. Under no circumstances will the adding of equipment or construction forces, increasing the working hours, or employing any other method, manner, or procedure to return to the contractually required completion dates be a justification for additional compensation to the Contractor.

ARTICLE 3. ESTIMATED QUANTITIES

3.01 Any Estimated Quantities for the Project furnished by the City, including those provided on the Bid Form, are approximate only and are: a) for procurement related comparison purposes only, and b) given as a basis for the pricing and c) are not represented to be actual quantities for completion of the Work. Within the limits of available funds, the Contractor will be required to complete the Work at the unit prices provided in the Bid Form/or Price Proposal whether it involves quantities greater or lesser than the estimate. The Contractor will be compensated only for the actual quantity of authorized, and performed, and/or materials furnished.

ARTICLE 4. SCHEDULE OF VALUES; APPLICATION FOR PAYMENT

4.01 Within seven (7) consecutive calendar days after the Notice to Proceed, as a basis for estimating partial payments, the Contractor shall submit for the approval of the City a certified Schedule of Values, broken down into quantities and unit costs for the various parts of the work, divided as may be directed and aggregating the total sum of the Contract; and if required, he shall submit evidence supporting this schedule.

4.02 The Contractor's requisition for payment shall be submitted on forms supplied by the Contractor and approved by the City and shall be in such numbers of copies as may be designated by the City. Sample forms are included in the Bid Documents. Alternate payment application forms may be utilized provided they are approved by the City, in writing, prior to submission by the Contractor.

4.03 If the Project is funded by multiple funding sources, the Contractor may be required to submit separate requisitions for payment to each source, on the forms provided by each source and in accord with all requirements of each individual funding source.

4.04 For Lump Sum projects, the requirements for the Schedule of Values are further defined as follows: a) the Schedule of Values shall delineate the various tasks that comprise the lump sum items. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, when accepted by the Project Engineer, shall only be used as a basis for Contractor's periodic payment applications. No payment will be made to Contractor until such Schedule has been submitted and accepted by Project Engineer, and b) the lump sum item shall be broken down sufficiently to provide a convenient and realistic means for determining the amount of work done during various stages of progress.

ARTICLE 5. PARTIAL PAYMENTS

5.01 The City will review the Contractor's monthly requisitions for Partial Payments to arrive at what is, in its opinion, a fair and just estimate of the materials suitably stored on the site and the amount of work performed on the Contract. At its discretion, the City may allow to be included in the monthly requisitions those materials stored off-site. In the event the City allows the Contractor to include in its requisitions payments for materials stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored material and follow such other procedures as may be required by the City.

5.02 In making such Partial Payments for the Project, retainage shall be held in the amount of 5% of the value of work completed to date. The Retainage does not include additional sums that the City may withhold due to the Contractors failure to comply with construction plans, specifications etc. deemed provisions of this contract.

5.03 Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Project Engineer will estimate the value of work completed and will deduct some amount to arrive at a conservative value which will allow City to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Project Engineer's determinations.

ARTICLE 6. INSPECTION AND TESTS

6.01 All material and workmanship shall be subject to inspection, examination and testing by the City and/or Project Engineer (in addition to that required by the Specifications) all times during manufacture and/or construction and at all places where such manufacture and/or construction is carried on. Notice of the time of all tests to be made at the site shall be given to all interested parties.

6.02 Contractor must obtain the Engineer's approval of any sources of materials to be incorporated into the Project before beginning to use them for the Project.

6.03 If, at any time before final acceptance of the Project, the City and/or Project Engineer considers it necessary or advisable to examine any portion of the Project already completed by removing or testing out the same, the Contractor shall upon request furnish promptly all necessary facilities, labor and materials. If such work is found to be defective in any material respect because of a fault of the Contractor or any of its subcontractors, or if any.

work shall have been covered over without the approval or consent of the City (whether it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including labor, material, services of required consultants, additional supervision and administrative costs.

6.04 Unless expressly provided for otherwise, for Projects that include material testing to ensure compliance with the Technical Specifications, the Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

6.05 Without additional charge, the Contractor shall promptly furnish all reasonable facilities, labor and materials necessary to make tests safe and convenient. Special, full size and performance tests shall be as described in the Specifications.

ARTICLE 7. UTILITIES

7.01 The accuracy and completeness of the utility information shown on the Plans and/or otherwise provided by the City is not guaranteed. The Contractor shall make its own investigation of the extent and location of utilities and of the possibility of relocation work by the utility companies and shall plan its operations accordingly. No claim for any delays, damage or extra work occasioned thereby will be allowed.

7.02 The Contractor shall allow others access to the Project for the purpose of placing, relocating or maintaining utilities, and he shall cooperate in every way in the performance of this Project.

7.03 The Contractor shall notify the utility owners well in advance of the time the Contractor proposes to perform any work which would endanger utility installations, and the Contractor shall cooperate with the utility owners in relocating and/or protecting such installations during construction operations.

7.04 No payment will be made to the Contractor for locating, protecting and making arrangements for relocating public utilities or for any delays caused thereby. The Contractor shall include all the costs of this Project in the other scheduled items of the Contract.

ARTICLE 8. SEDIMENTATION AND EROSION CONTROL

8.01 All watercourses shall be protected from sedimentation, both during and after construction. The Contractor shall control erosion and sedimentation problems in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control prepared by the Connecticut Council on Soil and Water Conservation, dated 2002, as amended.

8.02 The Contractor shall submit the Sedimentation and Erosion Control Plan for the approval of the Project Engineer within seven (7) consecutive calendar days after the Notice to Proceed.

8.03 The Contractor shall be responsible for providing silt fences, staked haybales and other temporary erosion control measures which may be required to properly complete this Project. No extra compensation will be allowed, due to water or precipitation levels fluctuation.

ARTICLE 9. PROTECTION OF ENVIRONMENTAL RESOURCES

9.01 The environmental resources within the Project boundaries and those affected outside the limits of permanent work under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine its activities to areas defined by the Plans and Specifications. Environmental protection shall be as stated in the following subparagraphs:

a. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure or destroy land resources including trees, shrubs, vines, grasses, topsoil and landforms without special written permission from the property owner. No ropes, cables or guys shall be fastened or attached to any trees for anchorage unless specifically authorized in writing by the Project Engineer. Where such special emergency use is permitted, the Contractor shall always provide effective protection for land and vegetation resources as defined in the following subparagraphs.

b. Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under the Contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to its personnel the purpose of marking and/or protection of all necessary objects.

c. Trees, shrubs, vines, grasses, landforms and other landscape features indicated and defined on the Plans to be preserved shall be clearly identified by marking, fencing or wrapping with boards, or any other approved techniques.

d. Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earth work shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the City and/or Project Engineer.

e. Runoff from the construction site shall be controlled by the construction of diversion ditches, benches and berms to retard and divert runoff to protected drainage courses, and any measures required by area wide plans approved under Paragraph 208 of the Clean Water Act, as amended.

f. The Contractor shall construct or install all temporary erosion control features as indicated in the submitted Sedimentation and Erosion Control Plans or directed by the City and/or Project Engineer. Temporary erosion control measures such as berms, dikes, drains, grass and mulching shall be maintained until construction of the Project is completed.

g. The Contractor's field offices, staging areas, stockpile storage and temporary buildings shall be placed in areas designated on the submitted Plan. A temporary move or relocation of the Contractor's facilities shall be made only on approval by the City and/or Project Engineer.

h. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby watercourses.

i. Spoil areas shall be managed and controlled to limit spoil areas and to prevent erosion of soil or sediment from entering nearby watercourses. Spoil areas shall be developed in accordance with the grading plan indicated on the Plans.

ARTICLE 10. ENVIRONMENTAL PROTECTION PLAN

10.01 Within seven (7) consecutive calendar days after the Notice to Proceed, and prior to commencement of any work on site, the Contractor shall submit an Environmental Protection Plan for the approval of the City in accordance with the provisions herein specified. The plan shall include but not be limited to the following:

a. A list of Federal, State and Local laws and regulations concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws and regulations.

b. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and groundcover, landscape features, air and water quality, fish and wildlife, soil, historical, archeological and cultural resources.

c. Procedures to be implemented by the Contractor to provide the required environmental protection and to comply with applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the Environmental Protection Plan.

d. The location of the nearest suitable solid waste disposal area and a permit allowing the Contractor to use those facilities.

e. Drawing showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess' or spoil materials.

f. Environmental monitoring plans for the job site, including land, water, air and noise monitoring as necessary, and as required by the Project Engineer.

g. Environmental monitoring and management plans for the any endangered wildlife or plant species as determined by CT DEEP, City or Project Engineer.

h. Traffic control plan when necessary.

i. Methods of protecting surface and ground water during construction activities.

j. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan should include measures for marking the limits of use areas.

ARTICLE 11. TEMPORARY UTILITIES

11.01 Unless expressly otherwise provided for in the Contract Documents the Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities of any nature whatsoever needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 12. ABBREVIATIONS

12.01 Where one of the following abbreviations are used in the Contract Documents, it shall have the meaning set forth opposite each below:

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AGA American Gas Association

AIEE American Institute of Electrical Project Engineers

AISC American Institute of Steel Construction

API American Petroleum Institute

ANSI American National Standards Institute

ASCE American Society of Civil Engineers

ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers

ASME American Society of Mechanical Engineers

ASTM American Society of Testing and Materials

AWG American (or Brown and Sharpe) Wire Gauge

AWWA American Water Works Association

CONNDOT Connecticut Department of Transportation

DEP Department of Environmental Protection

EDR Equivalent Direct Radiation

EPA Environmental Protection Agency

FWQA Federal Water Quality Administration

IBR Institute of Radiator and Boiler Manufacturers

MCB Master Car Builders

NBS National Bureau of Standards

NEC National Electrical Code (latest edition)

NEMA National Electrical Manufacturers Association

NEWWA New England Water Works Association

NFPA National Fire Protection Agency

NPT National Pipe Thread

SMACNA Sheet Metal and Air Conditioning Association

OS&Y Outside Screw and Yoke

STLWG United States Steel Wire, Washburn and Moen, American Steel And Wire Companies and Roebling Gauge

USS GAUGE United States Standard Gauge

WOG Water, Oil, Gas

WSP Water Steam Pressure

"Federal Specification" means a Federal specification issued by the Federal Supply Services Administration, Washington, D.C.

ARTICLE 13. SUBSURFACE EXPLORATION

13.01 Where applicable, boring logs, probes and related information contain data regarding subsurface conditions at the dates and location indicated. This information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true or approximately true picture of the actual subsurface conditions to be encountered. The boring log data is contained within the Appendices of the Technical Specifications.

ARTICLE 14. CONTRACT AND CONTRACT DOCUMENTS

14.01 The City shall interpret its own requirements. In case of any conflict or inconsistency between the provisions of this signed portion of the Contract and those of the Specifications, the provisions of the signed portion of the Contract shall govern.

14.02 The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the priority of the documents shall be in accordance with Section 1.2 of the Contract.

ARTICLE 15. SHOP DRAWINGS, CATALOG CUTS AND SAMPLES

15.01 The Contractor shall promptly submit to the Project Engineer five copies of each submittal prepared in accordance with the approved schedule. After examination of such submittal by the Project Engineer and the return thereof, the Contractor shall make such corrections to the submittal as have been indicated and shall furnish the Project Engineer with five corrected copies. If requested by the Project Engineer, the Contractor must furnish additional copies. Regardless of corrections made on, or approvals given to, such submittal by the Project Engineer, the Contractor shall nevertheless be responsible for the accuracy of such submittal. The Contractor shall also be responsible for the submittal's conformity to the Submittal and Specifications unless the Contractor notifies the Project Engineer in writing of any deviations at the time of submission of the submittal.

15.02 Submittal of all fabricated work shall be submitted to the Project Engineer and no work shall be fabricated unless it is done at the Contractor's own risk until approval has been given by the Project Engineer and City.

15.03 The Contractor shall submit all submittals on dates sufficiently in advance of requirements to enable the Project Engineer and City to properly review them. This period shall include time to correct, resubmit and recheck, if necessary, and no claim for delay will be granted to the Contractor because of the Contractor's failure in this respect. The Project Engineer and City will be given a minimum of fourteen (14) consecutive calendar days for the initial review of each submitted submittal.

15.04 All submitted submittals must bear the approval stamp of the Contractor and reference conformance to the applicable provisions of the Specifications as evidence that the Contractor has checked the drawings. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for resubmission. If the submittals show variations from the requirements of the Contract Documents because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in the letter of submission to the Project Engineer. If the variation is acceptable to the Project Engineer and City, suitable action may be taken for proper adjustment. If not acceptable, the Contractor shall not be relieved from the responsibility for executing the work in accordance with the Contract Documents, although such submittals had been approved.

15.05 Where submittals are submitted by the Contractor that indicate a departure from the Contract Drawings which the Project Engineer deems to be a minor adjustment and in the City's interest and not involving a change in the Contract price or an extension in time, then the Project Engineer may approve the drawings. Such approval will contain, in substance the following:

The modification shown on the attached drawings is approved in the interest of the City to affect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time. The modification is generally subject to all Contract stipulations and covenants, and it is without prejudice to all rights of the City under the Contract.

The approval of submittals will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract nor of the responsibility for any errors that may exist.

15.06 The Contractor agrees to hold the Project Engineer and the City harmless and to defend them against damage or claims for damages arising out of injury to others or to property of third parties which result from errors on shop or working drawings, whether they have been approved by the Project Engineer and/or the City.

15.07 Working Drawings. When required by the Contract or when ordered to do so by the City Representative, the Contractor shall prepare and submit 4 copies of the working drawings to the City Representative for review. These drawings shall be submitted sufficiently (at least 15 consecutive calendar days) in advance of the proposed use, to allow for their review, and any necessary revisions, without delay of the Project. No work covered by these working drawings shall be done until the drawings have been submitted to the City Representative for review and the City Representative's comments have been appropriately taken into account and implemented. The furnishing of the working drawings shall not serve to relieve the Contractor of any part of its responsibilities under the Contract.

ARTICLE 16. CONTRACTOR'S TITLE TO MATERIALS

16.01 No material, supplies or equipment for the work shall be purchased by the Contractor, or by any Subcontractor, subject to any chattel mortgage or under any conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work. The Contractor further warrants that, upon completion of all work, he will deliver the premises, together with all improvements and appurtenances constructed thereon, to the City free of any claims, liens, charges or encumbrances. The Contractor further warrants that neither the Contractor nor any person, firm or corporation furnishing any material, labor or equipment for any work covered by this Contract shall have a right to lien upon the premises or any improvement or appurtenance thereon.

ARTICLE 17. "OR EQUAL" CLAUSES

17.01 Unless otherwise provided for in the Bid Documents, the Contract will be based on material and equipment described on the Bid Documents without consideration of possible substitute or "equal" items. However, after award of the Work, whenever a material or article required is specified or shown on the plans by using the name of a proprietary product or of a particular vendor or manufacturer, any materials or article which, in the sole discretion of the Project Engineer, is equal or superior to the specified item to material, may be considered an "equal." Requests for substitutions must be supported by evidence such as technical data, test results, or other pertinent information that demonstrates that the substitute offered is equal to or better than the specification's requirements. Such items shall not be purchased or installed without the written approval of the Project Engineer. In all cases, only new materials shall be used for the work.

ARTICLE 18. REPRESENTATIONS OF THE CONTRACTOR

18.01 The Contractor represents and warrants:

(a) That he is financially solvent and that he is experienced and competent to perform the type of work or to furnish the plant, material or equipment to be performed or furnished by him; and

(b) That he is familiar with all Federal, State and municipal laws, ordinances, orders and regulations which may in any way affect the work of those employed therein, including but not limited to any special acts relating to the work or to the project of which it is a part; and

(c) That such permanent and temporary work required by the Contract Documents to be done can be satisfactorily constructed and be used for the purpose for which it is intended, and that such construction will not injure any person nor damage any property; and

(d) That he has carefully examined the drawings, specifications and addendum (or addenda) if any, and the site of the work, and that, from his own investigations, he has satisfied himself as to the nature, quality and quantity of surface and subsurface materials likely to be encountered; of the character of equipment required for the work; of other facilities needed for the performance of the work; of the general and local conditions and of all other materials which in any way may affect the work and its performance; and

(e) That he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without injury to persons or property; and that he can provide the necessary equipment, labor and materials to complete the contract work within the specified contract duration.

ARTICLE 19. PROTECTION OF WORK AND PROPERTY (EMERGENCY)

19.01 The Contractor shall always safely guard and protect the City's property from injury or loss in connection with this contract. He shall always safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in the Contract or by the City or its duly authorized representatives.

19.02 In case of an emergency that threatens the loss or injury of property and/or safety of life, the Contractor will be allowed to act in a diligent manner without previous instructions from the City. He shall notify the City immediately thereafter.

19.03 Where the Contractor has not acted but has notified the City of an emergency threatening injury to persons or damage to the work or to any adjoining property, he shall act as instructed or as authorized by the City.

19.04 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided elsewhere in the Contract Documents.

ARTICLE 20. WEATHER CONDITIONS

20.01 In the event of temporary suspension of the work, or during inclement weather, or whenever the City shall direct, the Contractor shall carefully protect his work and materials against damage or injury from the weather. The Contractor shall cause all his subcontractors to provide the same protection for their portion of the work. If, in the opinion of the City, any work or material was damaged or injured by reason of failure on the part of the Contractor, or any of his subcontractors, so to protect his work, or otherwise damaged by the negligence of the Contractor or any of his subcontractors or their agents or servants, or is otherwise defective, such materials shall be removed and replaced at the expense of the Contractor.

20.02 For projects involving asphalt paving, all work shall be temporarily suspended, upon direction of the City, when the Contractor can no longer properly pave exposed areas in accordance with the plans and specifications during inclement weather or during winter months.

ARTICLE 21. SUBLETTING

21.01 The Contractor is not to assign, transfer or sublet the Contract in whole or in part to any other person or persons without written permission from the City. The Contractor cannot abridge the

terms of the Contract in any way without written permission of the City. The Contractor must keep the Contract in his name and control until all work is completed and finally accepted by the City. The Contractor shall likewise not assign any of the money payable under this Contract. Approval by the City of the subletting of any part of the work shall not, under any circumstances, relieve the Contractor or his Surety of any liabilities or obligations under the terms of the Contract Documents.

21.02 The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of the persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Should any subcontractor violate any of the terms of these specifications, the City may, at its option, require the Contractor to end and terminate such subcontract.

21.03 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract and the General Conditions and other provisions of the Contract Documents. This language is to be applicable insofar as necessary to the work and is to give the Contractor the same power over as regards terminating any subcontract as the City may exercise over the Contractor under any provisions of the Contract Documents.

21.04 Nothing contained in this Contract shall create any contractual relation between the City and any subcontractor.

ARTICLE 22. SUBSTITUTE BOND

22.01 If, at any time, the Contractor's Surety or Sureties, or the carriers of other insurance herein specified to be written, become insolvent or, in a reasonable judgment of the City, become unsafe or unsound then, upon five days written notice from the City to the Contractor, the Contractor shall substitute such Performance and Labor and Material Bond or insurance with such other Surety or carrier in such form as shall be acceptable to the City. Any additional premium caused by such a substitution shall be paid for by the Contractor. No further payments will be deemed due nor will be made until the new Surety or Sureties have furnished such an acceptable bond to the City.

ARTICLE 23. RIGHT TO WITHHOLD PAYMENTS

23.01 The City may withhold from the Contractor so much of any approved payments due as may in the judgment of the City be necessary to:

a. Assure the payment of any lien, stop notice or claim, filed with the City for work, labor, or materials done, performed or delivered and used in the prosecution of the work herein provided for (whether in strictly legal form or otherwise)

b. Protect the City from loss due to defective work not remedied or through any improper or defective machinery, implements or appliances used by the Contractor or for failure of the Contractor to fully comply with any requirements of the Contract.

c. Protect the City from loss due to injury to persons or damage to the work or property of other contractors, subcontractors or others caused by the act' or neglect of the Contactor or any subcontractors.

23.02 The City shall have the right, as agent for the Contractor, to apply any amounts so withheld in such manner as the City may deem proper to satisfy such claims or to secure such protection. Such applications of such money shall be deemed payments to the account of the Contractor.

23.03 Notwithstanding the above, the Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials furnished.

ARTICLE 24. PAYMENTS BY CONTRACTOR

24.01 The Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials.

ARTICLE 25. NOTICE OF WARNING

25.01 If the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work; or refuse or fail to supply enough properly skilled workmen or proper materials; or refuse or fail to prosecute the work or any part thereof in accordance with the Contract Documents or with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof); or fail to complete the work within said period; or refuse to regard laws ordinances, codes or instructions of the City then the City shall forward A Notice of Warning to the Contractor by registered mail at the address given in the Contract. In the event the Contractor fails to comply with said Notice of Warning within five (5) consecutive calendar days from receipt thereof, the City shall have the right to terminate the Contract.

ARTICLE 26. PROGRESS MEETINGS

26.01 Progress meetings will be held weekly at locations, dates and times selected by the City for the purpose of reviewing, scheduling and coordinating the Project's progress as well as other matters.

ARTICLE 27. PERMITS

27.01 The Contractor shall keep himself fully informed of all existing and current Municipal, State or Federal ordinances, regulations or laws in any way limiting or controlling the operations or actions of those engaged in the work or affecting the materials supplied to or by them. The Contractor shall always observe and comply with all such valid and binding ordinances, laws or regulations. The Contractor shall protect and indemnify the City and its representatives against any claims arising from, or based upon, any violation of the same.

ARTICLE 28. RIGHT TO USE THE WORK

28.01 The City may enter upon the use of the whole or of any portion of the work, which may be in condition to use, at any time before its final acceptance of the Project. Such use shall not constitute, or be evidence of, acceptance by the City or by the Project Engineer of the whole or any part of the material furnished, or work performed under the Contract.

ARTICLE 29. PROVISIONS REQUIRED BY LAW

29.01 Every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If, through mistake or otherwise, any such provision is not inserted, then, upon application of either party, the Contract shall forthwith be physically amended to make such insertion.

29.02 If this Contract contains any unlawful provisions not an essential part of the general structure of the Contract, and which shall not appear to have been a controlling or material inducement in the making thereof, the same shall be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 30. WAIVER

30.01 Neither the inspection by the City or Project Engineer or by any of their employees; nor any order, measurement or certificate by the Project Engineer; nor any order by the City for the payment of any money; nor any payment for or acceptance of the whole or any of the work by the Project Engineer for the City; nor any extension of time; nor any possession taken by the City or its employees shall operate as a waiver of any provision of this Contract or of any power herein reserved to the City; nor shall such action waive any right to damages herein provided. Nor shall any waiver of any breach of the Contract constitute a waiver of any other or subsequent breach. Any remedy provided in this Contract shall be construed as cumulative - i.e., in addition to each and every other remedy herein provided.

ARTICLE 31. USE OF PREMISES AND REMOVAL OF DEBRIS

31.01 The Contractor expressly undertakes at his/her own expense:

a. To take every precaution against injuries to persons or damage to property;

b. To store apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of the work or the work of any other contractor;

c. To place upon the work or any portion thereof only such loads as are consistent with the safety of that portion of the work;

d. To frequently clean up all refuse, rubbish, scrap materials and debris caused by the Contractor's operations to the end that at all times the site of the work shall present a neat, orderly and work manlike appearance;

e. To remove all surplus material; falsework; temporary structures including foundations thereof; plant of any description and debris of any nature resulting from the Contractor's operations before final payment is made;

f. To put the site in a neat orderly condition, to remove all clean-up materials, to remove such materials from the construction site, and to deposit them in a refuse disposal site at his/her expense; and

g. To affect all cutting, fitting or patching of work required to make the same conform to the Drawings and Specifications and, except with the consent of the City, not to cut or otherwise alter the work of any other contractor.

ARTICLE 32. RIGHT-OF-WAY AND SUSPENSION OF WORK

32.01 Land and rights-of-way for the purposes of this Contract will be furnished by the City to the extent shown on the Drawings. The City will use diligence in acquiring said land and rights-of-way as speedily as possible. However, it is possible that not all land and rights-of-way will be obtained as herein contemplated before construction commences. In such case the Contractor shall begin the work upon such land and rights of-way as the City may have previously acquired. No claim for damages whatsoever will be allowed by reasons of the delay in obtaining the remaining lands and/or rights-of-way. Should the City be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of litigation or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to withdraw from the Contract because of these occurrences. In the event of any of the above occurrences, the time for completion of the work may be extended in the manner provided elsewhere in the Contract Documents.

ARTICLE 33. CONSTRUCTION EQUIPMENT AND MACHINERY

33.01 The Contractor shall furnish and maintain, at its own cost and risk, all tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and all other similar work or material necessary to insure speed, convenience and safety in the execution of its Contract. All such items shall be subject to approval of the City, upon the Project Engineer's recommendation, as to general stability, type and location, but the responsibility for proper design, strength and safety shall remain with the Contractor. All such items shall comply with OSHA regulations and all other applicable codes, statutes, rules and regulations.

33.02 The Contractor shall provide all drains, drainage, ditches and pumping apparatus (including power and attendance for same) that may be necessary to keep all excavations and sub-grade work free from water.

33.03 All machines, equipment, trucks and vehicles used in the prosecution of the work, or in connection therewith, shall always be in proper working condition. Only gasoline, electric or diesel engines shall be used for the power in operating equipment.

33.04 The Contractor shall be responsible for curtailing noise, smoke, fumes or other nuisances resulting from the operations. Contractor shall, upon written notification from the City or Project Engineer, make any repairs, replacements, adjustments or additions and furnish mufflers when necessary to fulfill requirements. No oil tanks for fueling equipment shall be stored less than one hundred (100) feet from any watercourse.

33.05 All costs involved in complying with the stipulations outlined shall be included in the various prices set in the proposal.

ARTICLE 34. CONTRACTOR'S GENERAL WARRANTY PERIOD

34.01 The One Year General Warranty Period shall commence on the date of the written notice of final acceptance of the Project by the City and during such time Contractor shall guarantee his work is free from faulty materials and lack of workmanship. Within the One Year General Warranty Period, if any portion of the Work in the City's opinion require repairing, replacing or rebuilding, the Contractor shall start such repairs within five (5) consecutive calendar days after receipt of notice from the City. If the Contractor fails to or neglects to start the repairs within five consecutive calendar days, the City may employ such other person or persons as it may deem proper to make such repairs. The City will charge the Contractor the cost thereby incurred. Nothing herein provided shall limit the liability of the Contractor or Surety to the City for non-performance of the Contractor's obligations at any time.

34.02 The Payment and Performance Bonds, and Material Bond, if required, shall remain in full force and effect through the one-year General Warranty Period.

34.03 Deficiencies in the Work discovered after the date of the written notice of final acceptance of the Project by the City shall be deemed General Warranty Work. Such deficiencies shall be corrected by Contractor under this Article.

34.04 The Contractor shall remedy any defects due to faulty materials or workmanship within thirty (30) consecutive calendar days of receiving notice thereof by the City. Should the Contractor fail to correct the deficiency within thirty (30) consecutive calendar days, the City may perform the corrective work and Contractor shall be responsible for all reasonable costs incurred by the City in performing such correction.

ARTICLE 35. PROCEDURE IN CONSTRUCTION

35.01 The Contractor shall start work and carry it on at such point or points and in such order of precedence and at times and seasons as may be determined by the City. The Contractor shall complete the various portions of the work in accordance with the schedule approved by the City.

35.02 Complete organization, complement of equipment and ample materials shall be on hand before actual work commences. The Contractor shall arrange his/her organization, plant, equipment and materials so that construction operations will be carried on continuously. The Contractor will not be permitted to reduce the force of workers or remove any equipment from the work if such reduction or removal impairs the progress of the work.

35.03 If the City awards more than one contract to the Contractor, the Contractor shall be required to prosecute the work on each contract simultaneously. The Contractor will be required to maintain a separate and independent organization and staff, labor forces and machinery on each contract to complete the work within the time set forth for the respective contracts.

ARTICLE 36. APPRENTICES

36.01 Apprentices shall be permitted to work only under a bona fide apprenticeship program registered either with the State Apprenticeship Council or with the Bureau of Apprenticeship, United States Department of Labor.

ARTICLE 37. CONTROL OF WORK

37.01 The Contractor shall abide by all orders, directions and requirements of the Project Engineer in the performance of the work.

37.02 In the event the Contractor is not personally present at the project site, he/she shall have a superintendent present at the site that possesses more than adequate communication skills. The superintendent must have proper knowledge of all applicable project requirements and conditions and must have authority to fully represent the Contractor with power to act and to be the recipient of orders and to obey all the instructions of the Project Engineer and/or the City. If proper provision for the carrying out of this stipulation is not made, then the Contractor shall be held responsible for the execution of such orders and instructions which the Project Engineer and/or City may deem necessary to issue to any employee regarding the work. The City or Project Engineer may order the work stopped until a duly authorized representative of the Contractor appears and receives instructions; no claims for damages or for an extension time in which to complete the work because of such delay will be allowed by the Contractor.

37.03 In all cases, the Project Engineer shall determine classifications, quantities, quality, acceptability and fitness of the several kinds of work that are to be paid for under the Contract. The Project Engineer and/or City shall interpret the Plans and Specifications and any extra work orders and shall determine all questions in relation to said work and to the construction thereof.

37.04 The Contractor shall not employ any plant, equipment, material, methods or workers to which the City objects. The Contractor shall not remove any plant, materials, equipment or other facilities from the site of the work without the City's permission.

ARTICLE 38. CITY'S CONTROL NOT LIMITED

38.01 The enumeration in this Contract of particular instances in which the opinion, judgment, discretion or determination of the City shall control, and in which work shall be performed to the City’s satisfaction and approval or inspection, shall not imply that only matters similar to those enumerated shall be so governed; without exception all the work shall be so governed and performed.

ARTICLE 39. AUTHORITY AND DUTIES OF INSPECTORS

39.01 Inspectors shall be authorized to inspect all work done and all materials furnished. Such an inspection may extend to all parts of the work and to the preparation or manufacture of the materials to be used. In the case of any dispute arising between the Contractor and an Inspector as to materials furnished, or as to the manner of performing the work, the Inspector shall have the authority to reject material or to suspend the work until the question at issue can be referred to, and decided by, the City.

39.02 The Inspector shall not be authorized to revoke, enlarge, relax or release any requirements of these Specifications nor to approve or accept any of the provisions of the Contract Documents. The Inspector shall in no case act as a foreman or perform other duties for the Contractor. The Inspector shall not interfere with the management of the work by the Contractor. Any advice which the Inspector may give the Contractor shall not be binding on the City or the Project Engineer in any way. Such advice will not release the Contractor from the fulfillment of the terms of the Contract.

ARTICLE 40. INSPECTION AND CORRECTION OF WORK

40.01 All material furnished and work done will be inspected by the Project Engineer. The Project Engineer shall condemn any work or materials not in accordance with the Contract Documents. All condemned work and materials shall be removed, and other work and materials furnished in accordance therewith. All materials rejected by the Project Engineer as being unfit for the clause in the Specifications to which they refer shall be removed from the site. Removal shall be within twenty-four (24) hours or shorter if the Project Engineer so directs. Should the Contractor refuse to remove the work and materials as ordered, then the Project Engineer may stop the Contractor from proceeding with the work. The City may supply workers and materials to remove the condemned work and materials at the expense of the Contractor.

40.02 Failure on the part of the Project Engineer, or any authorized Inspectors, to detect inferior work or materials, and to condemn the same, shall not be construed to imply an acceptance of such work or materials. Such failure shall not be construed as barring the City, at any subsequent time, from the recovery of such sum of money from the Contractor which may be required to construct or to build anew all portions of the work in which fraud was practiced, improper work executed, or improper material furnished and built into the work. The Contractor shall furnish all necessary facilities should it be desirable at any time to make an examination of the work already completed.

40.03 If any work is found defective in any respect, the expense of the examination must be borne by the Contractor. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided for elsewhere in the Contract Documents. If all work is found satisfactory, the expense of the examination will be paid for as Extra Work.

40.04 If, in the opinion of the City, it is undesirable to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the Contractor's compensation hereunder shall be reduced by such amount as may be equitable under all circumstances.

ARTICLE 41. CONTRACTOR'S OBLIGATIONS

41.01 The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and material, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by this Contract. All to be accomplished within the time specified; in accordance with the provisions of this Contract and Specifications; in accordance with the Plans and Drawings pertaining to this Contract; in accordance with any and all supplemental Plans and Specifications and in accordance with the directions of the City as given from time to time during the progress of the work. The Contractor shall furnish, erect, maintain and remove such construction plant and such temporary work as may be required. The Contractor alone shall be responsible for the safety, efficiency and adequacy of the plant, appliances and methods. The Contractor shall be responsible for any damage, which may result from their failure or from their improper construction, maintenance or operation. The Contractor shall observe, comply with and be subject to all terms, conditions, requirements and limitations of the Contract and the Specifications. The Contractor shall do, carry on and complete the entire work to the satisfaction of the City.

41.02 The Contractor shall be solely responsible for all the work and shall provide all precautionary measures necessary for preventing injury to persons or damage to property. All injury or damage, of whatever nature, resulting from the work, or resulting to persons, from whatever cause, shall be the responsibility of, and shall be borne and sustained by, the Contractor. The Contractor shall hold the City and Project Engineer, or their agents, harmless and shall defend and indemnify the City and Project Engineer, or their agents, against damages, or claims for damages, due to injury to

.persons or to property arising out of the execution of work and for damages to material furnished for the work; for infringement of inventions, patents and patent rights used in doing the work; for damages arising out of the use of any improper material, equipment or labor used in the work and for any act of omission by any subcontractors therein. The Contractor shall bear all losses including, but not limited to, losses sustained on account of the character, quality or quantity of any part or all of th e work, or because the nature of the land in or on which the work is done being different from what may have been estimated or indicated, or on account of the weather, elements or other causes, except for acts beyond the reasonable control of the Contractor.

ARTICLE 42. TOILET ACCOMMODATIONS AND DRINKING WATER

42.01 The Contractor shall provide necessary sanitary toilet accommodations and drinking water for the workers. Separate facilities shall be provided for female workers.

ARTICLE 43. SAFETY AND HEALTH REGULATIONS

43.01 These documents, and the joint and several phases of construction hereby contemplated are to be always governed by applicable provisions of the Federal law(s), including, but not limited to, the latest amendments of the following:

a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956.

b. Part 1910 - Occupational Safety and Health Standards; Chapter XVII of Title 29, Code of Federal Regulations.

c. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

43.02 This project is subject to all the Safety and Health Regulations (see 29 CFR 1926m as amended) as promulgated by the U. S. Department of Labor on June 24, 1974. The Contractor shall thoroughly familiarize him/herself with the requirements of these regulations.

ARTICLE 44. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

44.01 Subsequent to award of the contract, except for the Contractor's executed set, all drawings and specifications are the property of the City. The City shall furnish one (1) paper and one electronic set, in PDF Format, of the construction drawings and specifications to the Contractor without charge. No additional sets will be furnished by the City. Such drawings and specifications are not to be used in other work.

ARTICLE 45. RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

45.01 Except to the extent prohibited by Federal or State statute, the Contractor shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

Section 2(b) each contract for any such project covered by this section under the supervision of the State or any of its agents shall contain the following provision:

"In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the State who are and, continuously for at least six months

prior to the date hereof, have been residents of the State, and if no such person is available, then to residents of other states."

ARTICLE 46. LISTING OF EMPLOYMENT OPENING

46.01 This Contract is executed subject to the Governor's Executive Orders No. 3 and No. 17, which are hereby made a part of this agreement. The Governor's Executive Order No, 17 requires, inter alia, that all contractors and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area in which the work is to be performed or where the services are to be rendered. Failure of the Contractor to conform to the requirements of the Governor's Executive Orders No. 3 and No. 17, and any orders, rules, or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the City.

ARTICLE 47. SERVICE OF PROCESS

47.01 The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoint(s) the Secretary of State of the State of Connecticut, and successors in office, agent for service of process. Such service, as arising out of, or because of, this Contract. Such appointment shall in effect throughout the life of this Contract and for a period of six (6) years thereafter.

ARTICLE 48. CITY OF WATERBURY ORDINANCE CHAPTER 34

48.01 For projects subject to the City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34), the provisions thereof are in addition to any requirements of these General Conditions, and to any requirements of other funding sources for the Project, but only to the extent permitted by federal and state law.

ARTICLE 49. WAGE RATES

49.01 The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein, contracted to be done shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. The amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund (as defined in Section 31-53 of the Connecticut General Statutes) shall also be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. If the Contractor is not obligated by agreement to make such payment or contribution on behalf of such employees to any such welfare fund, the Contractor shall pay to each employee the amount of payment of contribution for his classification on each payday as part of his wages.

49.02 For Prevailing Wage Rate projects, the Contractor shall furnish to the Project Engineer certified copies of payrolls showing the names of its employees working on the Project, the specific days and hours and number of hours that each of them has spent in doing so, and the amount paid to each person for said work.

ARTICLE 50. SCHEDULE AND POSTING OF MINIMUM WAGE RATES

50.01 Where applicable, the Contractor, and every subcontractor, shall post a legible copy of the Minimum Wage Rates and Classifications included in the Contract Documents. This posting shall

be in a prominent and accessible place at the site of the work (See ARTICLE 49). The schedule shall show all determined minimum wage rates for the various classes of laborers and mechanics to be engaged to work on the project. The schedule shall also show all deductions, if any, required by law to be made from wages earned by the laborers and mechanics so engaged.

50.02 The rates established by each schedule are the minimum and all employees shall be paid no less than the established rate for each trade or occupation. In the case of a conflict between schedules in anyone trade or occupation, the higher rate listed shall control and such higher rate shall be the minimum.

50.03 State: Where applicable, the minimum rates of wages and schedule of supplements to be provided for the various trades shall be in accordance with the Prevailing Wage rate Schedule included herein. The rate of wages and schedule of supplements for any trade not appearing or mentioned in this schedule shall be in accordance with the prevailing rates established for that trade by the Connecticut Department of Labor or by the Comptroller or other analogous officer of the City of Waterbury. The minimum wages required to be paid shall include supplements for hospital, surgical, medical or other benefits as determined by all applicable sections of the General Statutes of the State of Connecticut. The Contractor shall file a Wage Certification Form with the Labor Department of the State of Connecticut prior to beginning work on the site.

50.04 If for any reason and at any time, the Federal Government, the State of Connecticut, or the City of Waterbury, shall in any way supplement, change or amend the Prevailing Wage Rates Schedule, then the Contractor or subcontractor shall follow such Schedule as supplemented, changed or amended. In no case shall the Contractor or subcontractor be entitled to any additions, compensations or extras because of any supplement, change, amendment or predetermination of the Prevailing Wage Rate Schedule.

50.05 Federal Wage Rates, where applicable, shall be applied in any case where they exceed the State of Connecticut Minimum Wage rates or in any case where a rate has not been established by the State.

ARTICLE 51. COMPUTATION OF WAGES AND OVERTIME COMPENSATION

51.01 The Contractor and each subcontractor shall comply with all applicable Federal, State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project. The Contractor and all subcontractors shall also comply with all applicable Federal, State and local ordinances with respect to compensation for overtime hours worked by laborers and mechanics engaged in work on the project.

ARTICLE 52. WAGE UNDERPAYMENTS AND ADJUSTMENTS

52.01 In addition to any applicable Federal or State regulations, the City may, in the case of underpayment of wages to any worker on the project under this Contract by the Contractor or by any subcontractor, withhold an amount from payments due the Contractor. Said amount to be sufficient to pay such worker the difference between the wages required to be paid the worker under this Contract and the amount actually paid the worker for the total number of hours worked. The City will disburse the amount so withheld by it for, and on behalf of, the Contractor to the employee to whom the amount is due. Such monies withheld pursuant to this article will be in addition to percentages to be retained pursuant to other provisions of the Contract.

ARTICLE 53. CONFORMANCE OF WORK

53.01 The work, during its progress and at its completion, shall conform to the work as shown on the drawings and to the directions given by the Project Engineer from time to time. The work shall be subject to such modifications or additions as the Project Engineer may deem necessary during the execution of the work. In no case will any work be paid for which is performed in excess of such requirements. The work shall also be accomplished in accordance with the Specifications.

ARTICLE 54. DIMENSIONS AND SCHEDULES

54.01 The Contractor will be required to check all dimensions and quantities shown on the drawings or schedules given to him by the Project Engineer. The Contractor shall notify the Project Engineer of all errors therein which he may discover by examining and checking the same. The Contractor shall not take advantage of any error or omission in these specifications, drawings and schedules. The Project Engineer will furnish all instructions should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

ARTICLE 55. PROTECTION FROM STORM

55.01 Should storm warnings be issued, the Contractor shall take every practicable precaution to minimize danger to persons, to the work and to adjacent property. These precautions shall include closing all openings; removing all loose materials, tools and/or equipment from exposed locations; and removing or securing scaffolding and other temporary work.

55.02 The Contractor shall provide measures to prevent stormwater runoff from entering excavation areas.

ARTICLE 56. PROTECTION OF WORK AND MATERIALS

56.01 The Contractor shall assume full responsibility for the protection of the work and materials during the progress of construction, and until final acceptance of the Project by the City, against loss or damage by any cause or agency. The Contractor shall, at his own expense, provide efficient means for such protection.

ARTICLE 57. FURTHER SAFEGUARDS

57.01 In case the City or the Project Engineer shall at any time be dissatisfied with the means provided by the Contractor for any aforesaid protection of the work or of any other properties, the City or the Project Engineer may order additional measures and precautions for that purpose. The Contractor, at his own expense, shall immediately comply with such orders and carry them out.

ARTICLE 58. FIRST AID TO INJURED

58.01 The Contractor shall keep on site, ready for immediate use, all articles necessary for giving first aid to injured employees. He shall also provide arrangements for the immediate removal and hospital treatment of any injured employee who may require such treatment.

ARTICLE 59. CONFORMANCE WITH DIRECTIONS

59.01 The Project Engineer may make alterations in the lines, grades, forms, dimensions or materials to be used in the project, or any part thereof, either before or after the commencement of construction. If such alterations diminish the quantity included in any item of work to be done and paid for at a unit price, the Contractor shall have no claim for damages or for anticipated profits on the work thus dispensed with. If the changes increase the quantity included in any such item, such an increase shall be paid for at the stipulated unit price.

ARTICLE 60. COMPETENT HELP TO BE EMPLOYED

60.1 The Contractor shall employ an experienced foreman, craftsmen and other workmen competent in the work in which they are to be engaged. All work shall be accomplished by able, skilled and competent personnel. If any person employed on the work by the Contractor appears to be incompetent or unreliable in any way, he shall be discharged immediately upon the request of the Project Engineer and shall not be employed again upon the work.

ARTICLE 61. STREETS AND SIDEWALKS TO BE KEPT OPEN

61.01 The Contractor shall keep the street and sidewalks in which he may be always working open to pedestrian and vehicular traffic. If, in the opinion of the City or the Project Engineer, the interest of abutters and the public requires it, the Contractor shall bridge or construct plank crossings over trenches at street crossings, roads or private ways. The Contractor shall conduct his work for this project in such manner as the City or the Project Engineer may direct from time to time. No sidewalk shall be obstructed where it is possible to avoid it. No additional payment shall be made to the Contractor for such work.

61.02 The Contractor shall provide all necessary fire crossings at principal intersections or ways usually traveled by fire apparatus. The Contractor shall make provision for the passage of fire apparatus to the work area, including along the line of pipeline installations.

61.03 All work shall be conducted in such a manner as to create minimum interference with existing businesses and commercial establishments. Such establishments shall be allowed to always conduct business during the construction.

61.04 The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the streets free of the accumulation of sand and other similar materials.

ARTICLE 62. LIGHTS, BARRIERS, FENCES, WATCHMEN AND INDEMNITY

62.01 The Contractor shall put up and maintain such barriers, fences, lighting, and warning lights, danger warning signals and signs as will prevent accidents during the construction. The Contractor will protect the work and will always ensure the safety of the personnel and of the public and places. The Contractor shall defend, indemnify and save harmless the City and its agents in every respect from any injury or damage whatsoever caused by any act, omission or neglect of the Contractor or his subcontractors, or their servants or agents. Such indemnification shall also include any claims arising out of failure to erect and maintain sufficient railing or fencing as required by Section 13a-111 of the Connecticut General Statutes. The fact that the City may retain control of the premises, or that the City, or its agents, may take action to erect or maintain railings or fencing shall not relieve the Contractor's obligations hereunder.

62.02 The Contractor shall furnish, maintain and use all necessary safety devices; follow all such safety practices in the prosecution of the work and shall adopt, follow and maintain such additional safety measures as, in the opinion of the Project Engineer, are conducive to safe operation by the Contractor. The Contractor shall cause his subcontractor(s) to also adopt, follow and maintain these measures. All of this shall be done at the Contractor's or subcontractor's own expense. The City shall have the right to order any or all work suspended where, in the opinion of the City, such work is not being carried out in a safe and proper manner or where persons or property are not being properly protected or safeguarded. Such work shall not be resumed until the City's requirements have been met and the City or Project Engineer has directed that work be resumed. Any work so suspended shall be at the Contractor's expense.

62.03 In addition to the above, when as is necessary or when required by the City and/or the Project Engineer, the Contractor shall post signs and shall employ watchmen or flagmen for the direction of the traffic at the site and to always exclude unauthorized persons from the site. The Contractor will not be paid additional compensation for this work.

62.04 At all times the Contractor shall be responsible for excluding all persons from land within easement areas and all persons not directly connected with the work or authorized by the City and/or the Project Engineer to be within the project limits.

ARTICLE 63. WORK OUTSIDE REGULAR HOURS

63.01 Night work or work on Saturdays, Sundays or legal holidays requiring the presence of the City, Project Engineer or an Inspector will not be permissible except in the case of emergency and then only upon approval of the Project Engineer. Should it be desired or required for by the City or Project Engineer to operate an organization for continuous night work, the lighting, safety and other facilities that are deemed necessary for performing such night work shall be provided by the Contractor. For night work on Saturdays, Sundays or legal holidays, if any be performed, the Contractor will receive no extra payment. Compensation for such work shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.

ARTICLE 64. BUS LINE INTERFERENCE

64.01 Whenever it may be necessary to interfere with any bus lines, notice shall be given to the corporation or agency owning the same. A reasonable amount of time shall be given to said organization to rearrange their schedule(s) as may be necessary.

ARTICLE 65. COLD WEATHER WORK

65.01 The Project Engineer will determine when low temperature conditions are unfavorable for work and may order the work, or any portions of it, suspended whenever, in his opinion, the conditions are not such as will ensure first class work.

65.02 All methods and materials used in the performance and for the protection of the work in cold weather shall be subject to the approval of the Project Engineer. The Contractor shall take the necessary precautions to protect the work from damage and to remove ice and frost from materials. The removal shall include all necessary heating and the additional removal of any resultant water. The Contractor shall also supply any required sand and/or coarse aggregate required to prevent slipping on ice.

65.03 Except for specific work for which the City has issued a Certificate of Partial Acceptance, the Contractor shall be responsible for maintaining the project roadways, sidewalks, ramps, driveway aprons and asphalt pathways from the time of contract signing until final acceptance of the Project by the City. This responsibility will include snow and ice removal, sanding and mechanical sweeping, and patching with materials approved by the Project Engineer for all roadways, sidewalks, ramps, driveway aprons and asphalt pathways, etc. within the project limits.

65.04 The Contractor shall not continue road excavation after bituminous concrete plants have shut down for the winter. At that time, the Contractor shall request a "winter shutdown". The Contractor shall receive no extra payment for any labor, apparatus, tools or materials necessary to comply with the above requirements, but compensation shall be construed items of work as listed in the bid proposal/form.

ARTICLE 66. BLASTING AND EXPLOSIVES

66.01 No blasting shall be allowed without the Contractor securing a permit and permission from the office of the Waterbury Fire Marshall. The Marshall's office is located at 185 South Main Street, Garden Level, (1 Jefferson Square), Waterbury, CT 06702 Phone: (203) 597-3452. The Marshall's office must be advised between 7:00 AM and 10:30 AM of each day's blasting schedule.

66.02 Explosives for blasting shall be stored, handled and used in accordance with the laws, ordinances and regulations of the State of Connecticut; with all local regulations and with such other additional regulations as the City Representative may require. Blasting shall be conducted so as not to endanger persons or property. The Contractor shall be responsible for and shall make good any damages of whatever nature caused by blasting or accidental explosions.

66.03 The Contractor shall also adhere to any additional conditions imposed by the Fire Marshall's office.

Additionally, the Contractor shall have a pre-blast survey conducted of the adjacent area(s) at no cost to the City.

66.04 Steel or rubber matting shall be used at all blast sites where required by the Bureau of Fire Prevention. Any blast or shot involving more than 99 pounds of explosives must be monitored using seismographs. All seismographs are at the expense of the Contractor. Wire and debris must be cleared from all areas.

66.05 The Contractor shall notify each utility with facilities in proximity to the site of such blasting operations, and any other individuals and entities that may be affected thereby of the Contractor's intention to use explosives; and such notice shall be given sufficiently in advance of any blasting to enable such affected parties to take steps to prevent such blasting from injuring persons or property. Such notice shall not relieve the Contractor of responsibility for damage resulting from its blasting operations.

66.06 Where blasting is required after commencement of construction, insurance, as required by the City’s Risk Manager, shall be obtained by the Contractor and approved by the City’s Risk Manager.

ARTICLE 67. TUNNELING

67.01 Tunneling will not be permitted without the express written consent of the City.

ARTICLE 68. RESERVED MATERIALS/EXCAVATED MATERIALS

68.01 Materials excavated from trenches and excavations and those used in the construction of the work shall be deposited in such a manner so that they do not endanger persons or the work. Materials shall also be deposited in such a manner that free access may be had at any time to all hydrants and gates near the work. The materials shall be kept trimmed-up so to be of as little inconvenience as possible to public travel or to adjoining tenants. All excavated materials not approved for backfill and/or fill; all surplus material; all rock and all boulders resulting from excavations shall be removed and satisfactorily disposed of off the site by the Contractor at no additional cost to the City.

68.02 Any excavated material not used in the installation of contracted items shall be removed from the site and legally disposed of by the contractor.

ARTICLE 69. OBSTRUCTIONS AND CROSSOVERS

69.01 Whenever any trench or other excavation obstructs pedestrian and/or vehicular traffic in or to any public street, private driveway or property entrance or to private property, the Contractor shall employ such means as may be necessary to maintain pedestrian and vehicular traffic and access. The Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway or property in question as specified or as directed. These crossings shall be maintained for as long as it is not expedient to backfill the excavation or until such time as sufficient, supportive backfill may be placed. No additional payment will be made for this work.

69.02 Movement of construction equipment and all other vehicles and loads over and adjacent to any slotted drainpipe shall be done at the Contractor's risk. Any pipe or backfill which becomes damaged or disturbed through any cause shall be replaced or repaired as directed by the City Representative at the expense of the Contractor and at no cost to the State. Suitable temporary crossovers consisting of steel plate or other materials approved by the City Representative shall be employed for a minimum of 7 consecutive calendar days following concrete backfill operations in all areas where vehicular traffic must be maintained or until such time as the pipe installation will withstand loading without damage. All concrete surfaces shall receive a protective coating. End cap installation shall be as recommended by the manufacturer.

ARTICLE 70. DIRECTIONAL SIGNS AND LIGHTS

70.01 Suitable signs, lights and such required items for direct traffic shall be furnished and maintained by the Contractor. No additional payment shall be made for this work.

ARTICLE 71. MAINTENANCE OF WORKPLACE

71.01 The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials. The City or Project Engineer may, at any time, order all equipment, materials and surplus from excavations to be removed from the work area. Debris and all other materials lying outside of the working area shall be promptly removed. Should the Contractor fail to remove such material within 24 hours of notice to remove it, the City or Project Engineer may cause any or all of said materials to be removed by others. The cost of this removal shall be deducted from any monies, which may be, or may become, due to the Contractor under the Contract. In special cases, the City or Project Engineer may cause such materials to be removed without prior notice.

ARTICLE 72. OPERATIONS AT SEVERAL POINTS

72.01 The Contractor may carry on the work simultaneously at more than on point only if, in the opinion of the City or Project Engineer, such action is acceptable and is necessary to insure completion of the work within the specified time.

72.02 The Contractor‘s Construction Progress Schedule shall be adjusted to provide for work being simultaneously conducted at more than one point (location) at the site or sites.

ARTICLE 73. INTERFERENCE WITH EXISTING STRUCTURES

73.01 Whenever it may be necessary to cross or to interfere with existing culverts, drains, sewers, water pipes or fixtures, guard rails, fences, gas pipes or fixtures or other structures needing special care, due notice shall be given to the City or Project Engineer. Work involving these items shall be done according to the City’s or Project Engineer’s directions. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it. Any damage that may occur shall be thoroughly repaired. If so directed by the City or Project Engineer, the location of any existing work shall be changed to meet the requirements of the proposed work, if necessary, to leave all in good working order. The entire work shall be the responsibility of the Contractor and the work shall be done at no additional expense to the City.

73.02 The Contractor shall be responsible for repairing all broken or damaged mains or utilities, property markers, monitoring wells, and other existing structures to remain, or outside the Limit of Work, during the progress of the Work. The Contractor shall repair and shall be responsible for all damages to existing utilities and structures with no additional expense to the City. The Contractor shall contact the proper utility or authority to correct or make any changes due to utility or other obstructions during the prosecution of the work, but the entire responsibility and expense shall be with the Contractor.

73.03 All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the City and/or utility at no additional expense to the City.

ARTICLE 74. TURF, TOPSOIL AND OTHER REPLACEMENT ITEMS

74.01 Where the construction runs through cultivated or sodded lands, the Contractor shall stockpile the turf and topsoil separately and replace the same after the excavation is filled. The Contractor shall leave the land as nearly as possible in its original condition. Trees, fences, walls, walkways and other items must not be damaged.

ARTICLE 75. MATERIALS

75.01 All materials furnished and used in the completed work shall be new, of the best quality, workmanship, and design and shall be recognized as standard in good construction practices. Whenever a specification number or reference is given, the subsequent amendments (if any) shall be included. The standards set forth in the selection of materials and supplies are intended to conform to those standards adopted by the City. Preference to manufacture shall be given to familiarize the Contractor with the requirements of the Project Engineer when the occasion or choice of materials or supplies so demands.

ARTICLE 76. DEFECTIVE MATERIALS

76.01 No materials shall be laid, installed or used which are known to be, or which may be found to be, in any way defective. Notice shall be given to the Project Engineer of any defective or imperfect material. Defective or unfit material found to have been laid, installed or used shall be removed and replaced by the Contractor with unobjectionable material. This removal and replacement shall be done without additional expense to the City.

ARTICLE 77. INSPECTION AND TESTING OF FURNISHED MATERIALS

77.01 Unless herein provided otherwise, all materials furnished by the Contractor are subject to thorough inspections and tests by the Project Engineer. Any materials condemned or rejected by the Project Engineer as not conforming to the specifications may be branded or otherwise marked. Branded or marked material shall be, on demand, at once removed by the Contractor to a satisfactory distance from the site. Removed materials shall not again be brought upon or near to the work.

ARTICLE 78. SAMPLES AND ORDERING LISTS

78.01 Unless herein provided otherwise, the Contractor shall submit samples of the various materials used on the contract as required by the specifications for testing purposes. All ordering lists shall be submitted by the Contractor to the Project Engineer for approval and must be approved before the ordering of the materials.

ARTICLE 79. SANITARY CONVENIENCES

79.01 Adequate sanitary conveniences, properly secluded from public observation, for the use of workmen on the premises shall be provided and maintained by the Contractor in accordance with the requirements of local and State health authorities. These conveniences shall be maintained in such manner and at such points as shall be approved and their use shall be strictly enforced. Sanitary waste shall be treated and disposed of in a manner satisfactory to, and as directed by, the City and/or the local and State health authorities. Under no circumstances shall sanitary waste be allowed to flow on the surface of the ground or in the work area.

79.02 The cost of sanitary conveniences and the maintenance of same will not be paid for separately, but compensation will be included in the prices stipulated for the items of work as listed in the bid form.

ARTICLE 80. FINISHING AND CLEANING UP

80.01 In completing any backfilling operation, the Contractor shall replace all surface material to the satisfaction of the City. The Contractor shall then immediately remove all surplus material, all tools, and other property belonging to him. The Contractor shall leave the entire street or surrounding area free and clean, in good order and at no additional expense to the City. Backfilling and removal of surplus materials shall follow closely upon the completion of the work. The Contractor shall exercise special care in keeping rights-of-way and private and public lands, upon which work is being performed, clean and free of debris at all times. The Contractor will remove tools and other property belonging to him when they are not being used.

80.02 In case the Contractor shall fail or neglect to promptly remove all surplus materials, tools and other incidentals after backfilling, or shall neglect to do required paving promptly, the City or Project Engineer may, after 24 hours' notice, cause the work to be done and the cost thereof shall be deducted from any monies then or thereafter due the Contractor.

ARTICLE 81. RIGHTS OF ACCESS

81.01 Nothing herein contained or shown in the drawings shall be construed as giving the Contractor exclusive occupancy of the work area involved. The City or any other Contractor employed by the City, the various utility companies, contractors or sub-contractors employed by Federal, State or local government agencies involved in the general project or upon public rights-of-way, may enter upon or cross the area of work or occupy portions of it as directed or permitted. When the territory of one contract is the convenient means of access to the other, each contractor shall arrange his work in such a manner as to permit such access and to prevent unnecessary delays in the work as a whole. Said access rights shall also include all Federal and State agencies and their representatives that have an interest in said project.

ARTICLE 82. WORK BY OTHERS

82.01 The City reserves the right to do any other work which may connect with, or become a part of, or be adjacent to the work embraced by this Contract, at any time, by contract work or otherwise. The Contractor shall not interfere with, nor obstruct in any way, the work of such other persons as the City may employ. The Contractor shall execute his own work in such a manner as to aid in the execution of work by others as may be required. No excavations or backfilling will be permitted if other work by the City is affected.

ARTICLE 83. WORK WITHIN THE LIMITS OF PRIVATE PROPERTY

83.01 Particular attention is hereby directed to the fact that some of the work included under this Contract may have to be done within the limits of properties that are publicly or privately owned. The City, where necessary has, or will have, secured the necessary easements to these properties for construction purposes. The Contractor will be permitted to utilize the areas of the City's easements, subject to all of the conditions and requirements as they may affect the Contractor's operations. The Contractor shall conduct his operations and activities in the performance of the work with all such conditions and requirements as may be imposed by the City or Project Engineer.

83.02 All means and rights of ingress and egress to the work areas and all other areas required for workspace, in addition to the City's easements, shall be the entire responsibility of the Contractor, All costs in connection therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

83.03 The Contractor shall neither use nor occupy public or private lands outside the limits of the City's easements and rights-of-way unless written permission from the owner of the public or private lands has first been obtained. Copies of the written agreements shall be submitted to the Project Engineer prior to entering upon such lands. The Contractor shall be responsible for cooperating with, and for coordinating the prosecution of, the work of this Contract with the public and private property owner. Any abuse to the lands of the public and private property owner shall be immediately corrected by the Contractor, at the Contractor's expense, to the complete satisfaction of the property owner. The Contractor shall take such precautionary measures, as required by the City, to prevent further nuisances, interference or inconvenience to abutting property owners.

83.04 It shall be the Contractor's full responsibility to be familiar with the limitations imposed upon the work of construction within the various properties of public or private ownership and rights-of-way by existing occupancy or use. The Contractor will be required to make every effort to protect trees, shrubs, lawns, gardens, fences, walks, driveways, structures and all and any other appurtenances of the property owners fully and satisfactorily.

83.05 The Contractor shall provide adequate access to all walks, driveways, yards or structures: shall protect all work by the erection or placement of safety guards or barriers, lights and such other incidentals; and where required, shall construct temporary plank crossings or timbers to always permit full use of private facilities. All these actions are to be performed at no additional expense to the City. All other applicable provisions for control of work within the areas of public travel set forth elsewhere herein shall also apply to work within the limits of private ownership.

83.06 The Contractor shall cooperate with the public and private property owners and shall also contact the City and Project Engineer for additional information regarding the requested (or required) length of time needed as a notice to be given to the public or private property owner before the Contractor enters their property to start the construction. In some cases, a certain time to start the work and a certain limited length of time may be required to complete the work on public and private property owners. Furthermore, the Contactor may be required to shutdown construction operations as necessary to prevent undo interference with the operation of private and public business within the project area.

83.07 Before proceeding with construction operations, the Contractor shall provide suitable and substantial gates or other approved forms of closing gap devices in every fence within the limits of the owner's easements through which the Contractor intends to move or pass equipment and materials. It is the responsibility of the Contractor to negotiate with the owner of each fence all of that owner's requirements, in addition to those specified above. It shall also be the responsibility of the Contractor to comply with all requirements as specified herein and as agreed to with the owner in a manner satisfactory to the owner.

83.08 No separate payment will be made for the requirements specified under **"WORK WITHIN THE LIMITS OF PRIVATE PROPERTY"** and all costs in conjunction therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 84. LOADING

84.01 No part of the structures involved in this Contract shall be loaded during construction with a load greater than that calculated for the safety of the structure. Should any accidents or damage occur through any violation of this requirement, the Contractor will be held responsible. If necessary, the Contractor shall request, in writing, the allowable loading from the Project Engineer.

ARTICLE 85. COMPLETION OF WORK

85.01 In addition to the specified or described portions, all other work and all materials, equipment and labor of whatever description which are necessary or required to complete the work, or for carrying out the full intent of the drawings and specifications, as interpreted by the Project Engineer, shall be provided by the Contractor. Payment therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 86. DUST AND SPILLAGE CONTROL

86.01 The Contractor shall exercise every precaution to prevent and to control dust arising out of all construction operations from becoming a nuisance. Water shall be provided and applied as required or as ordered by the Project Engineer to allay dust conditions. Pavements adjoining excavations shall be kept swept and/or washed clean of excess excavated material wherever and whenever directed. Earth piles adjacent to excavations, earth stockpiles and surfaces of refilled excavations shall be always kept moist as directed. No extra payment will be made for providing the dust control measures and for conforming to the requirements specified above. Compensation therefore shall be considered included in the prices stipulated for the appropriate items of work as listed in the bid form.

86.02 The Contractor shall take appropriate measures to control the generation of dust from its activities. Water shall be provided and applied as required or as ordered by the Project Engineer to allay dust conditions.

86.03 All vehicles utilized by the Contractor for delivery or removal of materials shall have appropriate covers to prevent spillage of material during transit.

ARTICLE 87. CARE OF THE WORK

87.01 The Contractor shall be responsible for all damage to persons or property that occurs because of the Contractor's fault or negligence concerning the prosecution of the work. The Contractor shall also be responsible for the proper care and protection of all material delivered and of all work performed until completion and final acceptance of the Project by the City, whether the same has been covered by partial payments authorized by the Project Engineer.

ARTICLE 88. EMERGENCY WORK

88.01 The Contractor shall file, with the City Engineer and the Project Engineer, if any, the name number of a person authorized by him who may be contacted regarding emergency work at the job site that may be required during non-working hours for reasons of public safety. This person shall be readily available and shall have full Authority to deal with any emergency that may occur.

ARTICLE 89. FIRE PREVENTION AND PROTECTION

89.01. All Federal laws (Occupational Safety and Health Act) and all state and municipal rules and regulations with respect to fire prevention, fire-resistant construction and fire protection shall be strictly adhered to by the Contractor. All work and facilities necessary therefore shall be provided and maintained by the Contractor in an approved manner.

89.02. All fire protection equipment (as per 89.01 above) shall be provided by the Contractor for the protection of the contract work including temporary work and adjacent property. Personnel experienced in the operation of the fire protection equipment and apparatus shall be available whenever work is in progress and at such other times as may be necessary for the safety of the public and of the work.

89.03. Open fires will not be permitted.

ARTICLE 90. PLANIMETER

90.01 For estimating quantities, where the computations of areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas, as utilized by an engineer.

ARTICLE 91. SUPERINTENDENT

91.01 During the entire duration of the project, the Contractor shall employ a competent superintendent in personal charge of the work. The superintendent shall be present during all phases of construction and shall have full authority to act for the Contractor. The superintendent shall continue in this capacity full time for this project, unless: (1) the person ceases to be on the Contractor's payroll; or (2) the person proves to be unacceptable to the City or Project Engineer. Instructions given to the superintendent and/or supervisory subordinates shall be considered as given to the Contractor. A chain-of-command listing shall be submitted by the Contractor to the City and Project Engineer and shall be adhered to in the temporary absence of the superintendent.

ARTICLE 92. CONTRACT ADMINISTRATION COSTS - OUTSIDE REGULAR HOURS

92.01 The working schedule shall be confined to a five (5) day week ending on Friday. The working day shall be any eight-hour period beginning no earlier than 7:00 AM and ending no later than 7:00 PM. Whenever the Contractor elects to perform work on Saturdays, Sundays or legal holidays observed by the City or to work more than the normal working hours stated above, the Contractor shall pay to the City the extra cost incurred by the City due to the increased cost of contract administration. Payment shall include all cost of inspection and administration for such Saturday, Sunday or legal holiday work or for work more than the normal working day, which the City is obligated to incur and for the extra expense involved in overtime work resulting from the performance of work on these days.

92.02 No work outside regular hours or overtime work shall be planned or executed without the approval of the City.

ARTICLE 93. DAILY REPORTS

93.01 The Contractor shall submit daily activity reports on an approved form for the duration of the project. The report shall indicate all personnel currently employed on the work, including each trade and every sub-contractor; all equipment and whether that equipment was idle for the day; a general description of all work accomplished and any authorized extra work (time and material reports shall be submitted on separate forms).

ARTICLE 94. MATERIAL AND WORKMANSHIP

94.01 All materials and workmanship incorporated in the work covered by this Contract are to be of the highest grade of their respective kinds for the purpose intended. The Contractor shall furnish to the Project Engineer for approval the name of the manufacturer of machinery and mechanical or other equipment that the Contractor contemplates incorporating in the project together with their respective performance capacities and other pertinent information.

94.02 When required by the Specifications, or when called for by the City or Project Engineer, the Contractor shall furnish the required information for approval of all material that the Contractor

contemplates incorporating in the work. Samples of material shall be submitted for approval to the Project Engineer when and as directed. Machinery, equipment and material installed or used without approval shall be at the risk of subsequent rejection.

ARTICLE 95. TEMPORARY WATER SUPPLY

95.01 In the event temporary water supply work is required, it shall be provided in accordance with the requirements of the Waterbury Water Bureau and all local and state health authorities. The Contractor shall provide and maintain facilities for an adequate supply of water suitable for use for construction purposes and for domestic use as required for the work of this Contract. The cost of all work, materials, equipment, appurtenances and accessories necessary for providing supplies of water at the site, including the cost of all water consumed, shall be borne by the Contractor.

95.02 Upon completion to the work of this Contract, and before final acceptance of the Project, the Contractor shall remove all temporary piping and appurtenant work used for the temporary water supply.

ARTICLE 96. FITTING AND COORDINATION OF WORK

96.01 The Contractor shall be responsible for the proper fitting of all work and for the coordination of operations of all trades, subcontractors or material suppliers engaged in the work. The Contractor shall be prepared to guarantee to each of his subcontractors the dimensions for which they may require for the fitting of their work to all surrounding work. The Contractor shall do, or shall cause his agents to do, all cutting, fitting, adjusting and patching necessary to make the several parts of the work come together satisfactorily and properly and to fit the work to receive, or to be received by, the work of other contractors.

ARTICLE 97. ARCHEOLOGICAL FINDS

97.01 During the life of this Contract, if any articles such as "charcoal", "bone", "shell", "cultural objects", "fire-cracked stones", "stone flaking material." or any other such related items of historical significance are discovered on the project, the Contractor is required to notify:

(1) The City; and
(2) Project Engineer or Inspector.

ARTICLE 98. EXCAVATIONS NEAR UNDERGROUND UTILITIES

98.01 In conformance with Section 16-345 of the Regulations of the Department of Public Utility Control, the Contractor shall not start any excavation and/or blasting of rock activity without first having ascertained the location of all such utilities in the area. The Contractor shall notify the Public Utilities Regulatory Authority (PURA) "CALL BEFORE YOU DIG" (Toll Free 1- 800-922-4455) at least two (2) full days in advance (excluding Saturday, Sunday and legal holidays), but no more than thirty (30) days before starting any such work. Such notice shall include the name, address and telephone number of the persons/agency performing the work, the date, location and type of excavation.

98.02 The PURA should immediately transmit such information to the utility companies whose facilities may be affected. Utility companies receiving notice should mark up the locations of their facilities on the work site. If they have no facilities in the area, they shall so inform the Contractor.

If the Contractor does not receive any information or marked-up locations on the work sites, the Contractor shall contact PURA again to verify that the utility companies have responded to the initial call. Under no circumstances will the Contractor be allowed to start any excavation and/or blasting work prior to obtaining all necessary information regarding the location of underground utilities at the site. It is the Contractor's responsibility to have all utilities marked on the work sites prior to starting the work.

ARTICLE 99. WATER QUALITY OF WELLS

99.01 The Contractor shall perform all tests required by the State Health Department on all water supply wells and reservoirs as directed by the City or Project Engineer before and after construction. All labor, materials and testing shall be paid by the Contractor at no cost to the City.

ARTICLE 100. WORK IN STATE HIGHWAYS

100.01 If any of the work under this Contract is in a state highway the Contractor shall obtain all required permits at his own expense. The Contractor shall perform the work in accordance with the terms and conditions stipulated by the Connecticut Department of Transportation (CONNDOT) and/or as required by CONNDOT inspectors. The Contractor must provide such bonds, security and insurance as may be required to obtain such permits.

100.02 In the event the City, or the City and the Contractor jointly, are required to obtain any permits, including detour permits, the Contractor shall be familiar with the conditions of the permits and shall be held responsible for compliance with all the requirements of the permits and all specifications attached thereto, as if the permits were held solely by the Contractor.

100.03 Whenever State inspectors, flagmen or other costs are incurred as a condition to obtaining permits, the Contractor shall be responsible for payment of these costs with no reimbursement from the City.

100.04 The Contractor shall conform to all CONNDOT requirements for materials and construction methods for all work within state highways. Sheeting or an adequate trench box may be required in all trenching operations to confine trench widths and to protect State facilities. Additional pavement replacement may be required to properly restore the roadway surface.

100.05 The cost of all labor, materials and equipment necessary to conform to CONNDOT requirements for work in, or adjacent to, state highways, including work not specifically stated in the Contract Plans and Specifications, shall be the sole responsibility of the Contractor and shall not be reimbursed by the City. Therefore, the Contractor is informed to evaluate all CONNDOT requirements for the project prior to submitting the Bid for the project and to include these costs in his bid prices.

ARTICLE 101. EXISTING INSPECTION REPORTS

101.01 Any existing inspection reports concerning the project which have been prepared by or for the City or Project Engineer will be made available for the Contractor's information.

ARTICLE 102. TEST REPORTS; CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS

102.01 Except where expressly provided otherwise in the Contract Documents, the Contractor shall furnish to the Project Engineer the material manufacturer's notarized test reports and methods of

testing by an approved independent laboratory in order to show compliance of all materials furnished with all specification requirements, the reports shall also contain manufacturer's notarized certificates of conformance stating that all materials furnished under these Specifications conform with all specification requirements; that each shipment of materials shall be accompanied by the manufacturer's notarized certificate of conformance and that a shipping list itemizing the amounts of each shipment shall accompany each shipment.

ARTICLE 103. CLEANING FINISHED WORK

103.01 After the work is completed, the sewers, manholes and structures shall be carefully cleaned free of dirt, broken masonry, mortar, construction and other debris and shall be left in first class condition, ready for use. All temporary or excess material shall be disposed of and the work left broom-clean to the satisfaction of the Project Engineer.

ARTICLE 104. COMPLIANCE TO ACTS AND EXECUTIVE ORDERS

104.01 If this Contract is federally assisted and the Contractor must comply with all applicable statutes, acts, executive orders and regulations, including without limitation:

(a) TITLE VI, CIVIL RIGHTS ACT OF 1964, which provides that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity, receiving Federal financial assistance.

(b) SECTION 3, HUD ACT OF 1968, which provides that, to the greatest extent feasible, opportunities for training and employment shall be given to lower income residents of HUD-assisted project areas, and that contracts for work in connection with such projects be awarded to business concerns which are located in or are owned in substantial part by persons residing in the area of the project.

(c) LABOR STANDARDS compliance with Davis Bacon Act, as amended (40 U.S.C. 267a-5) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) 13.0.

ARTICLE 105 SEMI-FINAL INSPECTION / SUBSTANTIAL COMPLETION

105.1 Contractor shall notify the Project Engineer when it believes the work (or a portion thereof) is Substantially Complete and shall file with the City a written, notarized "Contractor's Affidavit of Substantial Completion" and request a Semi- Final Inspection of the work.

105.2 Contractor, prior to requesting Semi-Final Inspection, shall complete and submit the following, listing known exceptions in its Affidavit of Substantial Completion:

i. Include supporting documentation for Substantial Completion as indicated in these Contract Documents;

ii. Advise City of outstanding permit closure requirements. Submit certificates of inspections conducted, reports, and other documentation required by local or state authorities;

iii. Where required, submit photographs, specific warranties, final certifications, and similar documents; and

iv. Provide Partial Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers may be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

105.3 After the City's receipt of Contractor's Affidavit of Substantial Completion, the Project Engineer will either proceed with Semi-Final Inspection or advise Contractor of prerequisites not fulfilled.

105.4 Following Semi-Final Inspection, Project Engineer will either inform the City to prepare a Certificate of Substantial Completion or advise Contractor of work that must be performed prior to issuance of said certificate and repeat the inspection when requested and assured that the work has been substantially completed in accordance with the Contract Documents.

105.5 Contractor's payment requisition coincident with, or first following the date claimed as Substantially Complete, shall be processed in the same manner as a partial payment requisition and shall show either 100% completion for the work claimed as Substantially Complete, and/or list incomplete items, value of incompletion, and reasons for being incomplete.

ARTICLE 106. CITY'S CERTIFICATE OF SUBSTANTIAL COMPLETION

106.1 For the portion of the work determined to be Substantially Complete, the City shall issue "City's Certificate of Substantial Completion" which shall establish the date of Substantial Completion by the Contractor.

106.2 Concurrently, the Project Engineer shall prepare a list (the "punch list") of remaining items of work to be completed and/or deficiencies to be addressed.

106.3 Prior to Final Inspection, the Contractor shall address and complete all "punch list" items.

ARTICLE 107. FINAL INSPECTION / FINAL COMPLETION

107.1 The Contractor shall notify the Project Engineer when it believes the Work is Finally Complete and shall file with the City a written, notarized "Contractor's Affidavit of Final Completion" and request a Final Inspection of the work by the Project Engineer.

107.2 After receipt of Contractor's Affidavit of Final Completion, Project Engineer will either proceed with Final Inspection or advise Contractor of prerequisites not fulfilled.

107.3 At the time of submission of its Affidavit of Final Completion, Contractor, as required by the Contract Documents and/or required for completion of the Project as determined by the City, shall also provide and/or submit the following, listing known exceptions (if any), in its Affidavit of Final Completion:

a. Supporting documentation not previously submitted and accepted;

b. Discontinue and remove, as appropriate, temporary facilities and services, along with construction tools and facilities, and similar elements;

c. Evidence of final, continuing insurance coverage complying with insurance requirements, including certificates of insurance for products and completed operations where required;

d. Reports and forms required by Federal and/or State funding sources, as required thereby;

e. A copy of City's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by City Representative;

f. Any final documents requested by City Representative;

g. If applicable, submit final liquidated damages settlement statement, acceptable to City;

h. Photographs, specific warranties, final certifications, and similar documents;

i. All required As-Builts, Record Drawings and Documents and Surveys, in number and formats specified; and

j. Provide Final Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers shall be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

107.4 Following Final Inspection, Project Engineer will either inform the City to a prepare the "City's Certificate of Final Completion" or advise Contractor of work that must be performed prior to issuance of said certificate and repeat the inspection when requested and assured that the work has been finally completed in accordance with the Contract Documents.

ARTICLE 108. CITY'S CERTIFICATE OF FINAL COMPLETION

108.1 If, following final inspection, the work is not determined to be Finally Complete, the City Representative will advise the Contractor accordingly, in writing, and the process will be repeated when Final Inspection is again requested by Contractor.

108.2 Upon determination that the work is Finally Complete, the City shall issue the "City's Certificate of Final Completion" that shall establish the date of Final Completion by the Contractor.

ARTICLE 109. SEMI-FINAL PAYMENT APPLICATION

109.01 After the issuance of the City's Certificate of Final Completion, the Contractor shall prepare a Semi- Final Payment Application showing the final estimate of quantities, as confirmed by the Project Engineer. Should the final estimate of quantities show either an increase or decrease from the approximate estimate of quantities, then such variations will be computed at the contract unit prices and reflected in the Final Estimate by adding or deducting said amounts from the Contract amount.

109.02 If use of the Owner Controlled Contingency Allowance or any other allowance(s) is required for this Semi-Final Payment Application, all required paperwork shall be processed prior to execution of the Semi-Final Payment Application.

109.03 All certificates of payments and estimates, upon which partial payments may have been made being merely estimates, shall be subject to correction in the Semi-Final Payment Application.

109.04 The Semi-Final Payment Application shall be processed in the same manner as a partial payment requisition.

ARTICLE 110. FINAL ACCEPTANCE OF PROJECT

110. Final Acceptance of the Project shall occur when:

(a) All Project work has been completed to the satisfaction of the City and the following have been submitted to the satisfaction of the Project Engineer and the City:

i. All documentation and supporting information required by the Contract Documents; including but not limited to: Final Waiver of Lien from each Subcontractor, supplier and the Contractor;

ii. Reports and forms required on all Federal Aid Projects;

iii. Warranties, guarantees, final operation and maintenance manuals, and documentation to the effect that training, and start-up support required by the Contract have been completed;

iv. After Final Inspection has been held, all required additional work and final cleaning-up have been completed, and all the Contractor's equipment and construction signs have been removed from the Project site;

(b) City has issued Semi-Final Payment to the Contractor; and

(c) Upon delivery to the Contractor by City of its written notice of Final Acceptance of the Project.

ARTICLE 111. FINAL ESTIMATE

111.01 Subsequent to Final Acceptance of the Project, the Project Engineer shall prepare a Final Estimate which shall state the final Contract amount, any liquidated damage amounts, all City payments to Contractor, the final amount of any holdback(s) by the City, plus any other credits from Contractor to the City as well as retainage to be released to Contractor with Final Payment. The Final Estimate shall be signed by the Contractor and by the Project Engineer.

ARTICLE 112. CERTIFICATION OF FINAL PAYMENT

112.01 Based on amounts set forth in the Final Estimate, the Contractor shall prepare and submit its Final Payment Application.

112.02 Final Payment to the Contractor shall be based on City's Certification of Contractor's Final Payment Application.

ARTICLE 113. ACCEPTANCE OF FINAL PAYMENT

113.01 The acceptance by the Contractor, or by anyone claiming by or through the Contractor, of Final Payment shall constitute and operate as a release for the City from any and all claims of any liability to the Contractor for anything, theretofore done or furnished for or relating to or arising out of the work done thereunder, and for any prior act of neglect, default on the part of the City or any of its officers, agents, or employees unless the Contactor serves a detailed and verified statement of claim upon the City not later than forty (40) consecutive calendar days after mailing of such Final Payment. Such a statement shall specify the items claimed. Should the Contractor refuse to accept the Final Payment as tendered, it shall constitute a waiver of any right of interest thereon.

END OF SECTION

RFP NO. 8801

ATTACHMENT A-1.2

SPECIAL CONDITIONS

INDEX TO SPECIAL CONDITIONS

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SPECIAL CONDITIONS

ARTICLE 1. SPECIAL NOTE

These Special Conditions shall be subject to all requirements of the Contract, amend or supplement the General Conditions, and modify all Contract Documents which follow them numerically, as set forth in Section 1.2 of the Contract. The terms used in these Special Conditions which are defined in the Contract or General Conditions have the meanings assigned to them in said documents. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project; and to all the Contract Documents. All Contract Documents apply to this Section. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided otherwise, the costs associated with all work and/or services required under the Special Conditions shall be included in the Contract Amount (also referred to as Contract Total Compensation amount). No separate or additional payment will be made for this work and/or services.

ARTICLE 2. PERMITS

The Contractor shall obtain all applicable Federal, State and local permits and registrations necessary to complete the project at no additional cost to the City. The cost of obtaining and maintaining the permits shall be included in the Contract Amount.

Exception: Local Permit Fess: **Local permit fees will be waived by the City**. Pursuant to City Code Section 110.12, the City portion of all local permit fees will be waived. However, the Contractor will be responsible for the applicable State and Federal portions of all local permit fees. All applicable Federal and State fees associated with local permits shall be paid for by the Contractor to the City, who will submit the fee(s) to the appropriate governmental entity.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

ARTICLE 3. DEWATERING AND WATER CONTROL

The Contractor shall be responsible for all dewatering required to complete the Contract including, but not limited to, pumping, well points, trenches, excavations, water control structures and cofferdams, which may be required to properly complete this Project. Particular attention is called for regarding fluctuation in water levels due to precipitation. No extra compensation will be allowed due to water level fluctuation. Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 4. SITE RESTORATION

The Contractor will blend the new work into the existing ground surface and replace any adjacent disturbed materials that may have been damaged or irregular do to construction and/or new installations.

ARTICLE 5. CITY NOTIFICATION - BACKFILLING

Before backfilling any excavated area and after an improvement has been installed the contractor shall notify the City when a backfill operation is to occur. A City representative will make one observation for each excavated area.

ARTICLE 6. LENGTH OF WORK TO BE EXCAVATED

The length of trench to be opened at any time, from the point where ground is being broken to completed backfill, shall not exceed 200 feet. Additionally, the amount of space in streets and public and private lands occupied by equipment, trenches and supplies shall not exceed the length or space considered reasonably necessary and expedient by the Engineer. In determining the length of open trench or of spaces for equipment, materials, supplies and other necessities, the Engineer will consider the nature of the lands or streets where the work is being done; types and methods of construction; the equipment being used; possible inconvenience to the public and/or private parties; possible dangers and other proper matters. All work must be constructed with a minimum of inconvenience and danger to the public and to all other parties concerned. No additional payment will be made for this work.

ARTICLE 7. WINTER EROSION CONTROL MEASURES

Seeding and planting shall be performed March 15 to June 15 or August 15 to October 15. The Contractor shall submit a Winter Erosion Control Plan to the Project Engineer for approval prior to the start of construction. This plan shall indicate, in sufficient detail, the methods and materials which shall be used during the winter months to prevent erosion, scour and general deterioration of the Project and adjacent flora and fauna.

ARTICLE 8 PUBLIC USE OF EXISTING PUBLIC FACILITIES

The Contractor shall limit his work area to the site of the construction and its immediate vicinity. No equipment or construction activities are allowed on the existing public facilities, such as athletic fields, without prior written approval by the City. No equipment or storage is allowed outside of the designated construction area without prior written approval by the City. The number and location(s) of storage containers shall be approved by the City.

ARTICLE 9. ACCESS TO PRIVATE & PUBLIC PROPERTY

Throughout the duration of Construction, the Contractor shall maintain access to all businesses, places of worship, schools and private residences, etc. in the project area. Particular attention is paid for funeral processions, wedding processions, and other similar activities. Where required by the City, Contractor shall also conduct regular coordination meetings with Owners and

Operators of businesses and other operations to coordinate active work periods.

ARTICLE 10. INTENT OF DRAWINGS – CTDEEP

The drawings are intended to show general conformance with the **State of Connecticut Department of Energy and Environmental Protection (DEEP)** permitting requirements and may not show all elements necessary to meet all applicable codes.

ARTICLE 11. GENERAL INTENT OF DRAWINGS

It is the intent of the Solicitation Documents and the Contract Documents, including but not limited to the Drawings and Specifications, to call for finished, completed work. Any material or work not shown on the Drawings but mentioned in the Specifications, or vice versa, or any incidental accessories necessary to make the work complete and perfect in all respects, even if not particularly specified, shall be furnished, delivered and installed without additional expense to the City. Where discrepancies or variances occur between the Drawings and Specifications or within either of the Documents, or with any of the Contract Documents, the item or arrangement of better quality, greater quantity or higher cost shall be included in the Contract Amount. The City shall decide on the item(s) and the way the item(s) and/or work shall be performed or installed.

ARTICLE 12. ADDENDUM TO GENERAL CONDITION 31

Reference is made to General Condition Article 31 – Use of Premises and Removal of Debris. During the progress of the work, the Contractor shall keep the construction areas in a neat condition, free from accumulations of waste materials and rubbish. Lunch papers, bottles, lumber cut-offs, drinking cups and rubbish shall be removed from the site daily. No alcoholic beverages will be permitted at the construction site(s).

On or before the completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the site and adjacent property all surplus and discarded materials, rubbish, and temporary structures and restore, in an acceptable manner, all property and leave the whole area in a neat and presentable condition.

ARTICLE 13. SUBSURFACE EXPLORATION

Boring logs, probes, etc., and related information appended to the Solicitation Documents contain data regarding subsurface conditions for the dates and locations indicated. The information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true picture of the actual subsurface conditions to be encountered.

ARTICLE 14. ADJUSTMENT OF EXISTING UTILITIES

The contactor shall raise or lower as necessary the top of all utility valve boxes, gas service curb boxes, handholds, parking meter kiosks, cleanouts, traffic boxes, and any other utility access structures within the work area to match the finished grade. No extra compensation will be allowed, for adjustment of existing utilities.

ARTICLE 15. WINTER SHUTDOWN

No ‘winter shutdown’ will be permitted for this Project.

ARTICLE 16. ADDENDUM TO GENERAL CONDITION 2

Reference is made to General Condition Article 2 – Construction Progress Schedule. For this project, Contractor shall not be required to provide a Water Control Plan or Environmental Protection Plan as may be outlined or referenced in the General Conditions. However, the Contractor shall be responsible for any such requirements set forth in the Technical Specifications or elsewhere in the Solicitation Documents.

ARTICLE 17 ADDENDUM TO GENERAL CONDITION 10

Reference is made to General Condition Article 10 – Environmental Protection Plan. An Environmental Protection Plan in accordance with General Conditions Article 10 will not be required for this Project. However, the Contractor shall be responsible for any such requirements set forth in the Technical Specifications or elsewhere in the Bid Documents. Additionally, the Contractor shall be responsible for protecting the Environmental Resources as described in General Condition Article 9

ARTICLE 18. ADDENDUM TO GENERAL CONDITIONS ARTICLE 92

Reference is made to General Condition Article 92 – Contract Administration Costs – Outside Regular Hours. Compensation to the City for the extra cost incurred when the Contractor elects to perform work more than the normal working hours set forth in General Conditions Article 92 shall at the rate of $150 per hour and shall be deducted from the amount due the Contractor.

ARTICLE 19. ADDENDUM TO GENERAL CONDITION ARTICLE 4 – PARTIAL PAYMENTS

Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Engineer will estimate the value of work completed and will deduct some amount to arrive at a conservative value which will allow Owner to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Engineer’s determinations.

ARTICLE 20. ADDENDUM TO GENERAL CONDITION 5 – INSPECTION AND TESTS

Reference is made to General Condition Article 5 – Inspection and Tests. The Project includes a variety of materials testing to ensure compliance with the Technical Specifications and disposal facilities to be identified by the Contractor. The Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

ARTICLE 21. ADDENDUM TO GENERAL CONDITION ARTICLE 39 – RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

Reference is made to General Condition Article 39 – Residents' Preference in Work on Other Public Facilities. In addition to the requirements of the State laws and regulations, the

Contractor shall comply with the City of Waterbury Ordinance Chapter 34.

ARTICLE 22. ADDENDUM TO GENERAL CONDITION ARTICLE 40 – LISTING OF EMPLOYMENT OPENINGS

Reference is made to General Condition Article 40 – Listing of Employment Openings. In addition to the requirements of the Governor's Executive Order, the Contractor shall comply with the City of Waterbury Ordinance Chapter 34.

ARTICLE 23. PREVAILING WAGES

Davis Bacon and State Prevailing wage rates apply to this Project. The minimum rates to be paid labor of the various classifications shall be in accordance with the prevailing rate of wages established by the Connecticut Department of Labor. Because of the application of state wage laws to this Project, the Contractor should be aware that the Contractor will be obligated to certify payrolls and issue compliance statements in accordance with both state procedural requirements. Furthermore, the Contractor and all Subcontractors shall be responsible for paying the applicable state prevailing wages.

ARTICLE 24. WEEKLY PROGRESS MEETING MINUTES

There will be weekly job meetings at a location to be determined. The contractor will be responsible for preparing an agenda, submittal log, RFI log, and two-week look ahead. The contractor will be responsible for preparing and distribution the weekly job meeting minutes. A format of the minutes to be approved by WDC prior to the first set of meeting minutes

ARTICLE 25. CHANGES TO THE WORK

The cost and/or payment calculations for changes to the work shall be either on a firm proposal agreed to by the City or based on the provisions set forth herein.

Any changes in the work agreed to by the parties, or as directed by the Project Engineer, shall be evidenced by a Change Order authorized in accordance with Section 27 of the Contract and this Article. In no instance shall payments made pursuant to this Article result in an increase in the Contract Total Compensation or extension of Contract Time. Any increase above the Contract Total Compensation or Contract Time resulting from utilization of this Article must be by a duly authorized and executed Contract amendment in accordance with Section 27 of the Contract.

A. Differing Site Conditions

(1) During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and the Contractor shall thereafter wait for written instructions from the Project Engineer before proceeding with regard to such conditions.

(2) Upon written notification from the Contractor, the Project Engineer will investigate the conditions to determine if differing conditions exist. The Project Engineer will notify the Contractor of his/her determination whether differing conditions exist. If it is determined that the conditions materially differ and cause an increase in the Total Compensation or Contract Time required for performance of any work under the Contract, the City, with the Project Engineer's recommendation, will make an adjustment (excluding anticipated profits) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether an adjustment of the Contract is warranted.

(3) No use of this Article will be allowed unless the Contractor has provided the required written notice.

B. Suspension of Work Ordered by the Project Engineer.

(1) If the performance of all or any portion of the work is suspended or delayed by the Project Engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the Contractor believes that additional compensation and/or Contract Time is due as a result of such suspension or delay, the Contractor shall submit to the Project Engineer in writing a request for adjustment within seven (7) calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

(2) Upon receipt, the Project Engineer will evaluate the Contractor's request. If the Project Engineer agrees that the cost and/or Contract Time required for the performance of the Contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the City, with the Project Engineer's recommendation, will make an adjustment (excluding profit) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether an adjustment of the Contract is warranted.

(3) No Contract adjustment will be allowed unless the Contractor has submitted the request for adjustment within the time prescribed.

(4) No Contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this Contract.

C. Significant Change in the Character of Work

(1) The Project Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the Project. Such changes in quantities and alterations shall not invalidate the Contract nor release the surety, and the Contractor agrees to perform the work as altered.

(2) If the alterations or changes in quantities significantly change the character of the work under the Contract, whether changed by any such different quantities or alterations, the cost for changes to the work shall be either on a firm proposal agreed to by the City or as calculated herein, and such costs shall not include loss of anticipated profits. If a cost cannot be agreed upon, then the cost calculation shall be in such amount as the Project Engineer may determine to be fair and equitable.

(3) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the cost calculations for the altered work will be at the prices bid.

(4) The term "significant change" shall be construed to apply:

(a) when the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or

(b) when an item of work, as defined elsewhere in the Contract, is increased in excess of 125% or decreased below 75% of the original Contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125% of original Contract item quantity, or in case of a decrease below 75%, to the actual amount of work performed.

D. Extra Work

Unforeseen work made necessary by the Project Engineer's changes as previously described, or work that is necessary for completion of the Project, but for which no price is provided in the Contract, shall be done in accordance with the requirements of the specifications and as directed by the Project Engineer. The Project Engineer shall notify the Contractor of the necessity for such extra work, stipulating its character and extent, and shall notify the Contractor as to whether the Project Engineer wants the Contractor to propose a unit price or, instead, a lump sum, for the extra work. Within 5 calendar days of receipt of such notification, the Contractor shall advise the Project Engineer, in writing, of the proposed compensation (as a unit price or lump sum, whichever has been requested by the Project Engineer) that the Contractor requests as compensation for the required extra work. The Contractor's request shall be itemized and reasonably detailed and shall include all known or anticipated direct and indirect costs of the work, including but not limited to, the costs of all safety and other equipment, small tools, labor, subcontractor quotes, consumables, field office overhead, home office overhead, insurance, bonding, and profit. The character and extent of the extra work, together with the basis of compensation, shall be communicated in a letter to the Contractor by the Project Engineer. If the Contractor objects to any portion of the defined extra work and/or basis of compensation, and if the Contractor is not willing to agree to the extra work, the Contractor must, within 15 calendar days of its receipt of said letter, respond in writing describing specifically what portions of the extra work the Contractor finds objectionable, the nature of its objections, and the basis for its objections. If the Contractor does not do so, it shall be deemed to have accepted the terms of the extra work as set forth in the Project Engineer's letter.

E. Cost Plus Work

The Contractor's compensation for all work done on a cost-plus basis shall be determined in accordance with the following:

(a) Labor:

(1) For all labor, payment calculations shall be based on the wage rate actually paid by Contractor as shown by its certified payroll, which shall be at least the minimum rate established for the Project by the State Labor Department or the U.S. Department of Labor. For all foremen in direct charge of Project work, payment calculations shall be based the actual wage paid by Contractor to the foremen as shown on the Contractor's certified payroll.

(2) The payment calculations shall the actual costs paid to, or on behalf of, workers by reason of allowances, health and welfare benefits, pension fund benefits and other such benefits, when such amounts are required by a collective bargaining agreement or another employment contract generally applicable to the classes of labor employed on the Project. The Contractor shall certify all such costs.

(3) For property damage, bonding, liability and workmen's compensation insurance premiums, unemployment insurance contributions and social security taxes on Project cost-plus work, the payment calculations shall include Contractor's actual Project costs. The Contractor shall provide to the Project Engineer documentation satisfactory to the Project Engineer in form and substance, of all such costs.

(4) The payment calculations shall also include an amount equal to 20% (15% for overhead, 5% for profit) of the total sums described in (a) (1) through (3) above.

No part of the salary or expenses of anyone connected with the Contractor's forces above the grade of foreman, who provides general supervision of Project work, will be included in the above cost calculations, except when the Contractor's organization is entirely occupied with cost-plus work, in which case the salary of a superintendent may be included in said labor item when the nature of the pertinent Project work is such that, in the opinion of the Project Engineer, a superintendent is required for that work. The allowable rate of pay for such superintendent shall be agreed upon before the Contractor begins the pertinent work. If no agreement on the rate can be reached, the Project Engineer will decide such rate as he deems reasonable.

The Project Engineer reserves the right to determine the number and type of personnel to be employed for the cost-plus Project work.

(b) Specialized Work: When the Project Engineer directs the Contractor to perform specialized work requiring skills, tools and equipment substantially unlike those ordinarily used by the Contractor or its authorized Project subcontractors, the payment calculations for such work shall include the cost for the use of a specialist to perform the specialized work. For such specialized services, including materials incorporated into the Project, the payment calculations for such work shall include Contractor's actual costs, plus additional compensation in accordance with subparagraph (e) below. Prior to performing such specialized work, the Contractor shall obtain and submit to the Project Engineer a minimum of three price quotes for the work, if requested by the Project Engineer.

(c) Materials: For all materials necessary for cost-plus Project work, the payment calculations shall include Contractor's actual cost for such materials as delivered to the Project site, including delivery charges as shown by original receipted bills, plus 15% of the sum of said cost and charges. In lieu of receipted bills for materials used which were not specifically purchased for the Project, but were taken from the Contractor's stock, the Contractor shall provide to the Project Engineer an affidavit certifying that such materials were not purchased for the Project, that the materials were taken from the Contractor's stock, that the quantity claimed to have been used on the Project was so used, and that the payment calculations shall not include any penalty or charge incurred due to the Contractor's late or delayed payment for the pertinent materials.

(d) Equipment: All equipment used for cost-plus Project work must, in the judgment of the

Project Engineer, be in good working condition and suitable for the purpose intended; and the Project Engineer reserves the right to determine the size and number of units of equipment to be used for such work. The manufacturer's ratings shall be the basis for all Rental Rate Blue Book classifications used for payment purposes. ("Rental Rate Blue Book" as used in these specifications refers to the current edition of the Rental Rate Blue Book, considering all current Rate Adjustment Tables, and amendments thereof, which is published by K III Directory Corporation of San Jose, California, including all current Rate Adjustment Tables and amendments thereof.) Trucks will be classified by cubic-yard capacity.

Amounts claimed by the Contractor based on equipment rental rates shall not include any percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be included in the payment calculation in connection with amounts claimed by the Contractor based on equipment rental rates.

The payment calculations shall not include rental rates for small tools needed to complete the cost-plus Project work.

For payment calculations purposes, estimated operating costs per hour from the Rental Rate Blue Book will apply only to the actual time during which the equipment is actively being used to perform cost-plus Project work.

For equipment that is also being used for non-cost-plus Project work, the payment calculations shall include the applicable hourly rate only for the actual time that the equipment is assigned to cost-plus Project work. The applicable period of assignment for each piece of equipment shall start when the equipment commences to be used for cost-plus Project work ordered by the Project Engineer and shall end at the time designated by the Project Engineer.

For equipment brought to the Project site exclusively for cost-plus work, the payment calculations shall include Contractor's loading and unloading costs and costs of transporting such equipment to and from the Project site; provided, however, that cost claimed for return transportation from the Project site shall not exceed the cost of moving the equipment to that site. If such a piece of equipment is self-propelled and is driven to the Project site under its own power, then the payment calculation shall include only operating costs and labor costs for its transport to and from the Project site. The payment calculations will not, however, include any loading, unloading and transportation costs if the equipment is used for any Project work on the site other than cost-plus work.

1) Owned Equipment: The payment calculation shall include the applicable rental rate set forth in the Rental Rate Blue Book for any equipment (1) which the Contractor uses, with the Project Engineer's authorization, to perform cost-plus Project work, and (2) which is owned by the Contractor or a subsidiary, affiliate, or parent company of the Contractor (no matter how far up or down the chain of ownership from the Contractor).

The maximum hourly rate to be used in payment calculations for Contractor-owned equipment assigned to cost-plus work shall be the applicable monthly rate in the Rental Rate Blue Book, divided by 176 (176 working hours per month).

Should the proper completion of the cost-plus Project work require equipment of a type not covered by the Rental Rate Blue Book, the Project Engineer will determine, and the payment calculation shall include a reasonable rental rate based on rates prevailing in the area of the Project. If practicable, such rates shall be determined by the Project Engineer before the affected work begins. If the Contractor proposes that the Project Engineer use a particular rate in such an instance, the Contractor must disclose to the Project Engineer the specific sources of, or support for, said rate.

If a piece of equipment owned by the Contractor is assigned to cost-plus Project work but remains idle for some portion of the period of the cost-plus work, the payment calculation, shall include for that idle time 50% of the applicable rental rate (exclusive of operating costs) in the Rental Rate Blue Book.

For payment calculation purposes, the period of equipment usage shall be deemed to start when the Contractor begins to use the equipment for cost-plus Project work and shall be deemed to end when the equipment is released by the Project Engineer from use for such work. Any hours during which the equipment is used for work other than cost-plus Project work will be deducted from the payment calculation. For any piece of Contractor-owned equipment assigned to cost-plus Project work, the payment calculation shall include aggregate minimum of 8 hours (of use time, idle time, or a combination thereof) in each 24-hour day (measured from one midnight to the following midnight) during the assignment period. The payment calculation shall not include Saturdays, Sundays and legal holidays during which the Contractor does no Project work, or for any other day on which the Project Engineer orders the Contractor to do no Project work. If the equipment is used to perform cost-plus Project work for more than 8 hours in a day, the payment calculation shall include the applicable hourly rate computed on a monthly basis for the actual time of use; however, the payment calculation shall not include any claim for more than 8 hours of idle time for a piece of equipment during a given day.

The City shall have the right to limit its aggregate payment calculations for idle time for a given piece of equipment to the replacement value of that equipment.

(2) Rented Equipment: If the Project Engineer determines that to perform the cost-plus Project work the Contractor must rent certain machinery, trucks or other equipment not owned by the Contractor or a subsidiary, affiliate, or parent company

of the Contractor (no matter how far up or down the chain of ownership from the Contractor), the Contractor shall inform the Project Engineer, in advance of such rental, (a) of the specific nature of the rental(s), (b) the reasons for its need for such rental(s), (c) the anticipated or proposed rental rate(s), and (d) the estimated duration for the use of the equipment. Rates for such rented equipment must be provided based on the following:

— A daily rate per hour when the equipment is to be specifically assigned to Project work by the Project Engineer for a period of 7 consecutive calendar days or less.

— A weekly rate per hour when such assigned time exceeds 7 consecutive calendar days but does not exceed 21 consecutive calendar days.

— A monthly rate per hour when such assigned time exceeds 21 consecutive calendar days.

The applicable daily, weekly, or monthly rate will be determined at the expiration of 21 calendar days or upon release of the equipment by the Project Engineer, whichever occurs first. Interruptions of the rental period, when equipment is used on other than assigned cost-plus

work, will not entitle the Contractor to payment at a rental rate that would be applicable to the shorter periods arguably occasioned by such interruptions.

Prior to renting such equipment, the Contractor shall obtain and submit to the Project Engineer a minimum of three quotes, if requested by the Project Engineer.

The payment calculation shall include such rental rates actually paid by the Contractor, provided that the given use and rental rate are acceptable to the Project Engineer. For any such costs to be considered, the Contractor must provide the Project Engineer with a copy of the original receipted bill for the rental expenses incurred.

(e) Administrative Expense: When extra work on a cost-plus basis is performed by an authorized subcontractor, the payment calculation shall include an additional 7.5% for that work; and such amount will be in addition to the percentage payments described in (a), (b), (c) and (d) above, as a reimbursement for the Contractor's administrative expense in connection with such work. Approval of such additional amounts will be given only after the Contractor provides the Project Engineer receipted invoices for all relevant costs.

(f) Bonding Costs: For bonding on the total cost of the cost-plus work including administrative expenses as outlined in (e) above, the payment calculation shall include Contractor‘s actual cost. The Contractor shall provide the Project Engineer documentation satisfactory to the Project Engineer in form and substance, of all such costs.

(g) Miscellaneous: Any compensation associated with (a), (b), (c), (d) and (e) above shall be deemed to be payment in full for the extra work and shall be deemed as full compensation for same, including costs of superintendence, use of small tools, equipment for which no rental is allowed, safety equipment, consumables, field office overhead, home office overhead, bonding, other insurance, and profit. The Contractor's representative and the Project Engineer shall compare their respective

records of the extra work done on a cost-plus basis at the end of each day. Copies of these records shall be signed by both the Project Engineer and the Contractor's representative. The Project Engineer will then forward a copy of same to the Contractor and to any affected subcontractor in accordance with City procedures. Upon payment of such costs by the Contractor, the Contractor shall immediately furnish the Project Engineer with original receipted bills covering the costs, including transportation charges, for all materials used for such work.

ARTICLE 26. AS-BUILT IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY

Upon completion of all work and prior to final payment the Contractor shall provide an As-Built Improvement Location and Topographical Survey of all above ground and below ground improvements within the Limit of work. The survey shall include property lines, dimensions, stretch distances, vertical certification or datum and should be an A2 as built completed by a licensed land surveyor. Said survey(ies) shall be signed and sealed by a State of Connecticut Licensed Surveyor and shall be in accordance with the requirements of Connecticut General Statues, Section 20- 300b. The contractor shall provide one stamped mylar copy and one electronic AutoCAD copy of the As-Built Improvement Location and Topographical Survey. All AutoCAD submissions to the City shall be made in the version required by the City’s Public Works Department. No separate payment shall be made for an As-Built Improvement Location Survey, as the cost for such shall be included in the general cost of the project. Final payment will not be made to the Contractor until the As-Built Improvement Location and

Topographical Survey is spot checked and approved by the City. Corrections, if any, shall be made to the AutoCAD, and to the mylar reproducible.

The Contractor will make video documentation of all new mechanical equipment showing the basic operation of the equipment and maintenance of the equipment.

ARTICLE 27. SBE/MBE SET-ASIDES/CHRO COMPLIANCE REQUIREMENTS (THIS DOES NOT APPLY)

The SBE/MBE set-aside and contract compliance requirements under the Connecticut General statutes **do apply** to this project.

ARTICLE 28. CITY OF WATERBURY ORDINANCE CHAPTER 34

The City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34) applies to "Covered Projects" as defined in the ordinance and the requirements set forth therein are in addition to any requirements of other funding sources for the Project. The bidder's attention is directed to the attached copy of the ordinance and to Sections 14.1 and 14.2 of the attached Sample Construction Contract for additional information regarding the requirements and application of the City's GOOD JOBS ORDINANCE.

"Covered Projects" are City projects with a value of $500,000.00 or greater.

The City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34) **does** apply to this Project.

ARTICLE 29. PHOTOGRAPHIC AND VIDEO DOCUMENTATION

Drawings and general provisions of the Contract, including General and Special Conditions apply to this Section.

This Section includes administrative and procedural requirements for a professional photographer to perform the following services:

1. Preconstruction Video;
2. Periodic construction photographs; and
3. Final completion construction photographs.

Qualification Data: For firms and people to demonstrate their capabilities and experience. Submit lists of completed projects with project names, contract value and addresses, names and addresses of engineers and owners with work performed.

Preconstruction Video-Within 14 days following the award of the Contract the Contractor's approved Photographer shall document the entire Project existing site conditions, in the presence of the Engineer's Representative, by use of a video camcorder. Camcorder shall, as a minimum, be Sony Handy Cam HDR-XR160- camcorder-hard disc drive- flash card or approved equal with 1920x1080 Full HD video and sound. The Photographer shall always clearly identify the location of the video as it progresses and document the condition and site

features of the existing road and elements and all adjacent and affected properties. Aerial angles shall be included to record the location of the existing pole mounted overhead wire and facilities.

The Contractor shall submit two (2) copies of the video no later than 14 days prior to the start of construction so it can be reviewed for clarity and content. Any areas that are missing, incomplete or unclear shall be repeated and re-submitted to the satisfaction of the Engineer.

Periodic Construction Photographs- Once a month, and at regular intervals designated by the Engineer, the Contractor's Photographer shall provide a maximum of twenty-four (24) digital photographs.

Final Completion Photographs- Take a minimum of 48 photographs after the date of substantial completion for submission with Project Record Documents. The Engineer will direct the photographer for desired vantage points. Submit two (2) copies of final completion photographs.

Measurement and Payment- The work under this section will not be measured for payment. The Contractor's cost in connection therewith will be considered incidental to, and included in, the general cost of the Contract.

ARTICLE 30. LAYDOWN AREAS / MATERIAL STORAGE

A Laydown Area shall not impede traffic flow within the City streets. The Contractor may use these areas during construction and shall be required to restore any disturbed areas to a condition as good as or better than existing conditions.

Contractor shall also be required to clean up, restore, and make safe and usable all Laydown Areas as directed by the Engineer. This may include removing equipment, materials, tools, etc., from the Laydown Area for a period to be determined by the City of Waterbury.

The City will not provide any staging area for Construction. The Contractor shall provide its own staging/storage area. Lay-down areas within the project's limits are allowed but require pre-approval from the City (see also General Conditions Article 31). In all cases, the Contractor shall be responsible for the protection of all materials, tools, etc. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public, adjacent property owners and tenants or the City.

The Contractor shall provide its own storage facilities and in all cases be responsible for the protection of all materials, tools, etc. The number and location(s) of storage containers shall be approved by the City. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public or the City or City's employees or tenants. All deliveries of material, equipment, etc., shall be made to the Contractor and accepted only by him/her and only during working hours. City personnel will not receive or accept any materials or equipment, etc. at any time.

ARTICLE 31. PROJECT RECORDS.

Records. Contractor shall keep full and detailed records and exercise such controls as may be

necessary for proper management under this Agreement including but not limited to drawings, specifications, reports, maps, correspondence, instructions, books, receipts, trade contracts, purchase orders, vouchers, memoranda and other data relating to this Agreement. Accounting systems shall be capable of demonstrating satisfactory financial controls to the City.

Access to Records. The City or its designee shall be afforded access to Contractor's records, during normal working hours, for the purpose of inspection and audit, whether such records are held on-site or at Contractor's branch and home offices.

Records Retention and Preservation. Prior to final payment, Contractor shall furnish the City with a detailed inventory of the records maintained and thereafter shall preserve these records for a minimum of four (4) years after the final payment for the Work or for such longer period as may be required by law. If, after the end of this period, Contractor wishes to destroy or dispose of said records, the City shall be given the option to take possession of such records prior to destruction or disposal.

Public Access to Documentation. Contractor shall allow Governmental Entities access to Project documentation and accounting records as required by Law.

ARTICLE 32. SOLICITATION DOCUMENTS REFERENCES

All references in the General and/or Special Conditions to "Invitation to Bid," "ITB," "Bid Documents" or words/terms of similar import shall, for the purposes of this solicitation, mean "Request for Proposal" and/or "ITB" as the context so requires.

All references in the General and/or Special Conditions to "Bid" or "Bid Form" shall mean "Price Proposal "as the context so requires.

All references in the General and/or Special Conditions to "Contractor", Vendor" and/or "Consultant" shall mean "Proposer" or "Successful Proposer" as the context so requires.

ARTICLE 33. OFF-SITE WASTE STORAGE AREAS

The City does not provide offsite Waste Storage Areas ("WSA") locations for City projects. All WSA's shall be located within project limits and/or at properly permitted locations. Additionally, all WSA's and all associated activities, including testing, transportation and disposal, are to be the sole responsibility of the Contractor. No separate or additional payment will be made for this work, services and/or activities.

ARTICLE 34. PROJECT ENGINEERING CONSULTANT/OWNER'S REPRESENTATIVE

Friar Architecture is the Project Architect Consultant and **WDC** is the Owner's Representative for the Project.

ARTICLE 34. ADDENDUM TO GENERAL CONDITIONS 11 and 95

Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The City shall provide and maintain, at no cost to the Contractor, temporary power services to the building and the City's storage trailers, but not to Contractor's field office trailers. Contractor shall be responsible for determining and supplying at no cost to the City

any other temporary utilities needed to maintain utility service to all adjacent property owners/tenants.

ARTICLE 36. AS-BUILT IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY

Upon completion of all work and prior to final payment the Contractor shall provide an As-Built Improvement Location and Topographical Survey of all above ground and below ground improvements within the Limit of work. The survey shall include property lines, dimensions, stretch distances, vertical certification or datum and should be an A2 as built completed by a licensed land surveyor. Said survey(ies) shall be signed and sealed by a State of Connecticut Licensed Surveyor and shall be in accordance with the requirements of Connecticut General Statues, Section 20- 300b. The contractor shall provide one stamped mylar copy and one electronic AutoCAD copy of the As-Built Improvement Location and Topographical Survey. All AutoCAD submissions to the City shall be made in the version required by the City's Public Works Department. No separate payment shall be made for an As-Built Improvement Location Survey, as the cost for such shall be included in the general cost of the project. Final payment will not be made to the Contractor until the As-Built Improvement Location and Topographical Survey is spot checked and approved by the City. Corrections, if any, shall be made to the AutoCAD, and to the mylar reproducible.

ARTICLE 37. ADDENDUM TO GENERAL CONDITION 1

Reference is made to General Condition Article 1 – Plans and Specifications at the Site; Record Documents.

a. The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings and other supplemental drawings, Change Orders, Change Directives, Addenda, Submittals, etc. and other modifications, schedules and instructions in good order.

b. One copy of all documents is to be marked daily to record all approved changes made during construction, including, but not limited to, field changes. At the conclusion of construction, the Contractor shall turn one (1) complete set of As-Built Documents over to the Project Engineer. Both sets shall always be available to the Project Engineer and the City or their authorized representatives.

c. Every sheet of the Plans and Specifications which differs from the actual construction shall be marked, and sheets so changed shall be noted on the title sheets of the Plans and Specifications.

d. Where supplementary drawings are used, including, but not limited to, Change Order Drawings Working Drawings, Shop Drawings or Coordination Drawings, the Contractor shall create an appendix to the As-Built Plans and record a cross-reference to the appendix at the corresponding location on the Plans.

e. As-Built Plan sheets shall document as-built details for the plans, profiles, cross-sections and shall note exact dimensions and actual locations of all elements changed or modified during construction.

f. As-Built Documents shall also reflect details of changes or additional information,

including, but not limited to, fabrication, erection, installation, sizing, material, and dimensions, etc. and, for underground utilities and improvements shall also show exact elevations, grade modifications, materials used and related information on piping utilities, earthwork, etc.

g. The Contractor shall mark the As-Built Documents with red erasable pencil, or where directed by the Project Engineer As-Built Documents shall be recorded with three base colors using a standard legend: RED = deleted items, GREEN = added items, BLUE = special information or details.

h. The Contractor shall also maintain one binder of all miscellaneous records such as diaries, field books, manufacturer startup reports, test reports, and Building and Fire Code inspection reports required by other Contract Provisions. The miscellaneous records shall be arranged systematically according to the organization of the Contract provisions.

ARTICLE 38. CONSTRUCTION STAKE OUT

The City will not provide control points, benchmarks or construction stake out. The Contractor shall be solely responsible for the actual construction stakeout. The work shall be included in the Contract Amount. No separate or additional payment will be made for this work and/or services.

ARTICLE 39. SALVING CITY ITEMS

The City shall identify, remove, and take possession of all items designated for salvage prior to issuing the Notice to Proceed.

END OF SECTION

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202 6)
Persons or Entities Conducting Business with the City

I. Outstanding Purchase Orders of Contracts with the City

A. Contracts

No Contracts with the City ☐

WATERBURY WATER SYSTEM PUMP STATIONS UPGRADES 7977
(Service or Commodity Covered by Contract)

545 days
(Term of Contract)

One Exchange Place Tenant Fit Out 8558
(Service or Commodity Covered by Contract)

160 days
(Term of Contract)

One Exchange Place Elevator Replacement 8293
(Service or Commodity Covered by Contract)

429 days
(Term of Contract)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 2026)
Persons or Entities Conducting Business with the City

B. Purchase Order(s).

No Purchase Order(s) with the City [X]

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 2026)
Persons or Entities Conducting Business with the City

II. Financial Interest Disclosure

(Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City)

No Officials, Employees or Board and Commission Members with Financial Interest [X]

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc...)

Interest Held By:
Self [ ] Spouse [ ] Joint [ ] Child [ ]

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc...)

Interest Held By:
Self [ ] Spouse [ ] Joint [ ] Child [ ]

1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

2. I understand that if I fail to file an Annual Statement (or amendment thereto) or an inaccurate Statement I will be in violation with Chapter 39 of the Code of Ordinance and, thereby, subject to the remedies set forth in §§38.71 and 39.101 of said Code.

3. I understand that I must file with the City Clerk, within fifteen (15) days following any reportable occurrence, any amendments to the Annual Statement.

I have read and agree to the above certification.

J.A. Rosa Construction, LLC
(Name of Company, if applicable)

Signature of Individual (or Authorized Signatory) Date 7/9/26

John A. Rosa, Managing Member
Print or Type Name and Title (if applicable)

DELIVERED | By Mail ☐ Hand-Delivered ☒

City of Waterbury Certification
Regarding
Debarment, Suspension, Ineligibility and Exclusion

If the transaction is Federally funded, in whole or in part (including pass through grants to state and/or municipal government), this certification is required by the regulations implementing one or more Presidential Executive Orders. If this transaction is funded by the State of Connecticut, in whole or in part, this certification is required in accordance with one or more State of Connecticut general statutes.

1. By signing and submitting the attached proposal and/or this document, the prospective lower tier participant, vendor, or contractor is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant, vendor, or contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal , State, or City government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant, vendor or contractor shall provide immediate written notice to the person to which the attached proposal and/or this document is submitted if at any time the prospective lower tier participant, vendor or contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used herein, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 and/or State of Connecticut statutes and regulations. You may contact the person to which this proposal and/or this document is submitted for assistance in obtaining a copy of the foregoing.
5. The prospective lower tier participant, vendor or contractor agrees by submitting the attached proposal and/or this document that, should the proposed covered transaction be entered into, it shall not knowingly enter into any covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant, vendor or contractor further agrees by submitting the attached proposal and/or this document that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions", without modification, in all covered transaction and in all solicitations for covered transactions.
7. A participant in a covered transaction may rely upon the certification of a prospective participant in a covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to, check the Non-procurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required herein. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 herein, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal, State or Municipal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

(1) The prospective recipient of monies hereby certifies, by submission of its attached proposal and/or by execution of this document, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, disqualified, or voluntarily excluded from bidding or participation in the proposed transaction by any Federal, State, or Municipal department or agency or by the statutes, regulations or ordinances of the foregoing departments and agencies.

(2) Where the prospective recipient of monies is unable to certify to any of the statements in this certification, such prospective participant shall attach a written explanation hereto.

Full Legal Name and address of Recipient, Vendor, or Contractor: J.A. Rosa Construction, LLC
17 Town Line Rd. Wolcott, Ct 06716

Print Name and Title of Authorized Representative: John A. Rosa, Managing Member

Signature of Authorized Representative:

Date: 7/9/26

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

For the purposes of this Disclosure of Outstanding Financial Obligations, the following definitions apply:

(a) "Contract" means any Public Contract as defined below.

(b) "Person" means one (1) or more individuals, partnerships, corporations, associations, or joint ventures.

(c) "Public Contract" means any agreement or formal commitment entered into by the city to expend funds in return for work, labor, services, supplies, equipment, materials or any combination of the foregoing, or any lease, lease by way of concession, concession agreement, permit, or per agreement whereby the city leases, grants or demises property belonging to the city, or otherwise grants a right of privilege to occupy or to use said property of the city.

(d) "City" means any official agency, board, authority, department office, or other subdivision of the City of Waterbury.

State of Connecticut

SS.: Wolcott

County of New Haven

John A. Rosa, being first duly sworn, deposes and says that:

1. I am the ***owner, partner, officer, representative, agent or*** Managing Member of J.A. Rosa Construction, LLC (Contractor's Name), the Contractor that has submitted the attached agreement.

2. I am fully informed respecting the preparation and contents of the attached Agreement and of all pertinent circumstances respecting such Agreement;

3. That as a person desiring to contract with the City (check all that apply):

____ The Contractor and each owner, partner, officer, representative, agent or affiliate of the Contractor has filed a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

X Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor are required to file a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

X Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, owes back taxes to the City of Waterbury

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

X Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, has any other outstanding obligations to the City of Waterbury

4. The following list is a list of the names of all persons affiliated with the business of the Contractor, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1		none		
2				
3				
4				

5. That as a person desiring to contract with the City:

(a) The Contractor or an owner, partner, officer, representative, agent or affiliate of the Contractor provides, or has provided, services or materials to the City within one (1) year prior to the date of this disclosure, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1		none		
2				
3				
4				

(b) The Contractor possesses an ownership interest in the following business organizations, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized) :

Organization Name	Address	Type of Ownership
1 none		
2		
3		
4		

(c) The following persons possess an ownership interest in the Contractor. If the Contractor is a corporation, list all of the officers of the corporation and the names of each stockholder whose shares exceed twenty-five

(25) percent of the outstanding stock, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

	Name	Title	DOB	Stock %
1	none			
2				
3				
4				

(d) Of the following of the affiliates, individuals or business entities identified in this affidavit, list each that owns, owned, or within one (1) year prior to the date of this disclosure has owned, taxable property situated in the City of Waterbury, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

	Name	Title	Affiliated Company (if none state NONE)	Address	DOB
1			none		
2					
3					
4					

(e) If the Contractor conducts business under a trade name, the following additional information is required: the place where such entity is incorporated or is registered to conduct such business; and the address of its principal place of business, if none, state none:

	TRADE NAME	PLACE OF INCORPORATION/REGISTRY	PRINCIPAL PLACE OF BUSINESS
1	none		
2			
3			
4			

I hereby certify that the statements set forth above are true and complete, and I understand that any incorrect information or omission of information from this affidavit may result in the immediate termination of the Contractor's agreement with the City of Waterbury.

For Partnership/Sole Proprietor

In presence of:

_____ n/a
Witness Name of Partnership/Business

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

By: n/a
Name of General Partner/ Sole Proprietor

Address of Business

State of _____)
Wolcott) SS
County of _____)

_____ being duly sworn,

Deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202_.

(Notary Public)

My Commission Expires: _____

For Corporation

Witness Pete Cippellino

John A. Rosa
Name of Corporate Signatory

17 Town Line Rd. Wolcott, Ct 06716
Address of Business

Affix Corporate Seal

By: _____
John A. Rosa

Its: Managing Member
Title

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

State of Connecticut)

Wolcott) SS

County of New Haven)

John A. Rosa being duly sworn,

deposes and says that he/she is Managing Member of J.A. Rosa Construction, LLC and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this 9th day of July 2026.

(Notary Public)

My Commission Expires: October 31, 2030

BRETT ROBERTS
Notary Public
Connecticut
My Commission Expires Oct 31, 2030

THE CITY OF WATERBURY
CONNECTICUT

MEMORANDUM

Date: 09/10/2026

From: **Delinquent Tax Office**

To: **Richard Dowd- Project Manager**
Waterbury Development Corporation

Subject: **Tax Clearance Verification**

As of the date of this letter, the records of the Tax Collector's Office indicate that the following ***are not*** delinquent in the payment of property taxes, water charges, or parking tickets.

J. A. Rosa Construction, LLC
John A. Rosa
17 Town Line Rd.
Wolcott, CT 06716

If you have any questions or require additional information regarding this matter, please do not hesitate to call our office at (203) 574-6810.

Respectfully,

Heidi Barbieri. CCMC
Deputy Tax Collector
City of Waterbury

HB/wf

DEPARTMENT OF POLICE SERVICES

255 EAST MAIN STREET
WATERBURY, CONNECTICUT 06702

Fernando C. Spagnolo, Jr.
Chief of Police

Michael Ponzillo
Deputy Chief of Police

Robert Davis
Deputy Chief of Police

Nadine Amatruda
Deputy Chief of Police

DATE: September 22, 2026

TO: Michael DiGiovancarlo,
President, Board of Alderman

Honorable Members of the Board of Aldermen

FROM: Nadine Amatruda, Deputy Chief of Police

RE: Public Hearing request for Automated Traffic Enforcement Safety Device Plan (ATESD) & Board of Aldermen approval

I am requesting that this Honorable Board of Aldermen set a **Public Hearing** date to receive public input and thereafter **approve** the attached final Automated Traffic Enforcement Safety Device Layout and Deployment Plan for OSTA review and approval. Developed in coordination with RedSpeed USA, utilizing federal and state safe-streets guidelines, the comprehensive safety strategy targets extensive non-compliance regarding speeding and red-light running. Per state directives, the program guarantees a mandatory 30-day public written warning phase at each newly active location to foster community awareness before moving into full regulatory enforcement.

The data-driven site-selection phase explicitly targets locations with documented traffic safety concerns while considering existing infrastructure, and socioeconomic vulnerabilities. Ultimately, nineteen specialized enforcement zones have been verified citywide, split between nine red-light violation camera intersections and ten designated automated speed camera zones. Key red-light camera locations include major high-volume avenues such as Chase Avenue at Cooke Street and East Main Street at Brass Mill Drive. Speed enforcement cameras will be deployed along critical commuter and pedestrian safety segments, including the 600-900 block of Thomaston Avenue, Cooke Street at Farmington Avenue, and Watertown Avenue at Media Avenue. This ATESD Plan systematically deters severe traffic infractions while proactively reducing overall roadway safety risks.

Thank you for your kind consideration.

AUTOMATIC TRAFFIC ENFORCEMENT SAFETY DEVICE (ATESD) IN WATERBURY, CT

BL Companies

Architecture
Engineering
Environmental
Land Surveying

Submitted June 2026

BL COMPANIES 355 Research Parkway, Meriden, CT 06450





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- NVCOG VISION ZERO ACTION REPORT
- NVCOG REGIONAL TRANSPORTATION SAFETY PLAN
- ATESD MUNICIPAL SELF-CERTIFICATION
- TRAFFIC DATA
- SITE PLAN
- ENFORCEMENT DATA





Introduction

In October 2023, the CT State Legislature and Governor Ned Lamont enacted Public Act Number 23-116 ("Public Act"), allowing the use of Automated Traffic Enforcement Safety Devices (ATESDs), which granted the City of Waterbury authority to install Automated Red Light and Speed Cameras to deter Red Light running and Speeding. The legislation allows municipalities to install ATESDs at: Traffic Control Signals, for Red Light running; and Speed cameras in School zones, Pedestrian Safety Zones and other locations for Speeding.

The legislation also grants municipalities responsibility for establishing ordinances allowing installation of ATESDs, site selection for device installations, and establishing protocols for maintenance and enforcement. More importantly, the legislation requires municipalities to submit an ATESD Plan ("Plan") to the Connecticut Department of Transportation's (CTDOT) Office of State Traffic Administration (OSTA) for review and approval before implementation.

This report provides a detailed overview of Waterbury's Plan, identifying the ATESD locations including selection criteria and justification considerations in alignment with OSTA guidelines issued in January 2024, updated April 24, 2026, and the Public Act. This report also summarizes the legislative process to develop enabling ordinance, stakeholder engagement and authorizing the final device locations.

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Site Selection

Selection considerations	Red Light Camera	Speed Camera
Traffic considerations	• Number of Red Light Violation Crashes, including the minimum number of crashes • Ongoing or planned signal upgrade projects (within the 12-month period) • Age and Condition of Signal and Controller	• Speed and AADT data • Allowance in type of Zone: School zones, Pedestrian and Other locations. Note: All Speed camera devices are proposed in other locations
Equity considerations	• Concentration of sites city-wide • Qualified Census Tracts (QCT) and Number of allowable devices in a QCT, depending on the size of the Census tract	
Other City considerations	• Total number of Crashes, including Fatal and Serious injury crashes • Motor Vehicle stops for Red Light running • Field evaluations • Real-world, near-miss Red Light running data	• Major land uses - 0.25 mile buffer radius • Total number of Crashes • Speeding-related crashes • Motor Vehicle stops for Speeding. • Roadway Geometry

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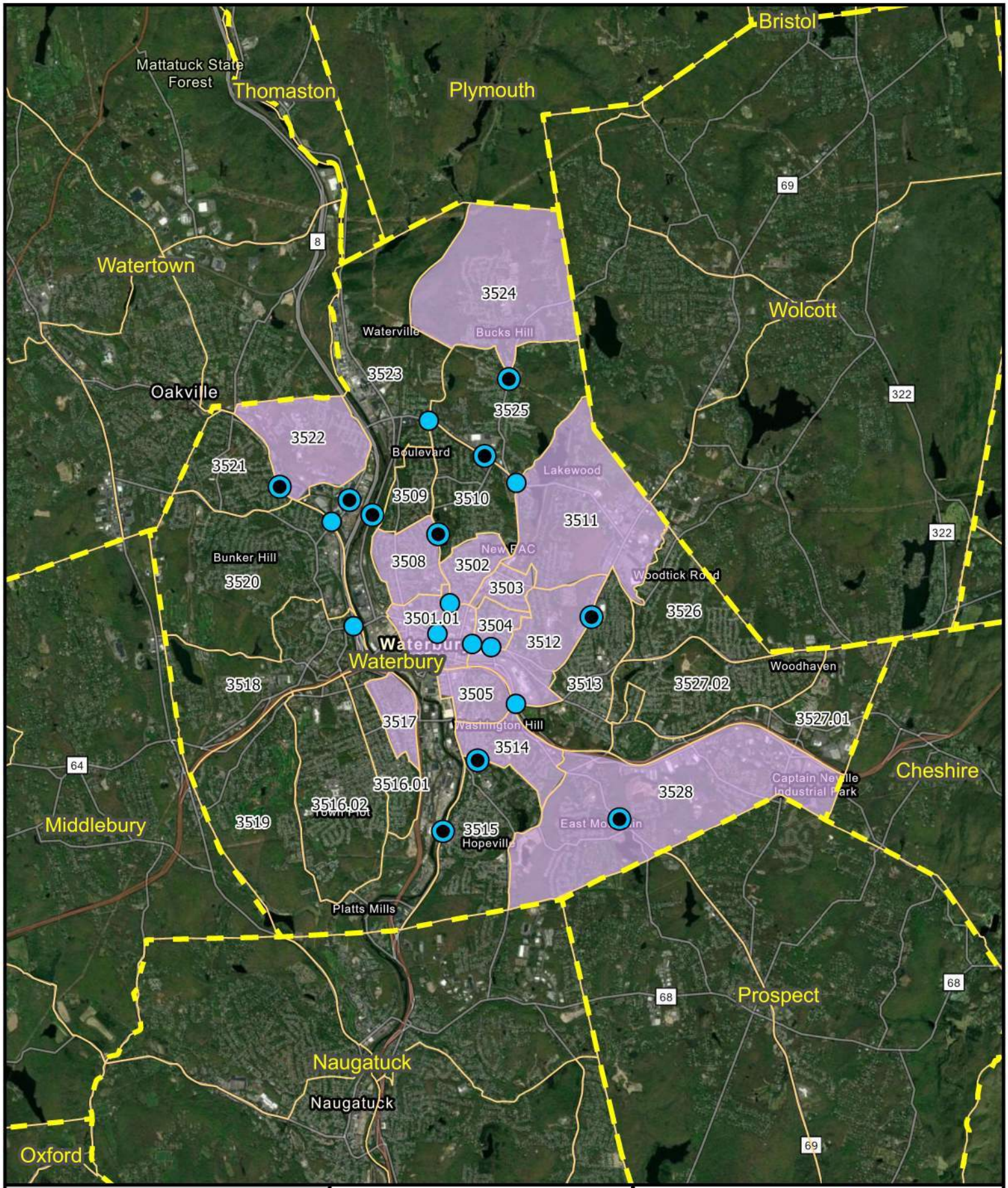
Approved ATESD Locations

ATESD Type	Locations	Device Census Tract #	QCT (Y/N)
Red Light	1. Chase Ave at Cooke St	3523	No
	2. E Main St at Baldwin St	**3504**	**Yes**
	3. N Main St at Lakewood	3511	No
	4. E Main St at Brass Mill Dr	**3512**	**Yes**
	5. Hamilton Ave at Silver St Expy	**3514**	**Yes**
	6. Cooke St at Grove St	**3502**	**Yes**
	7. E Aurora St at Rudy St (Route 73)	3520	No
	8. Watertown Ave at W Main St	3518	No
	9. W Main St at E Main St	**3501.01**	**Yes**
Speed	1. 600-900 Block of Thomaston Ave	3523	No
	2. Baldwin St South of Madison St	3514	No
	3. Cooke St at Farmington Ave	**3508**	**Yes**
	4. Prospect Rd at E Mountain Ave	3528	No
	5. 2060 S Main St	3517	No
	6. 300 Chase Ave	3510	No
	7. 580 Wolcott St	3512	No
	8. Watertown Ave at Media Ave	**3522**	**Yes**
	9. E Aurora St at Gear St	3523	No
	10. N Main St at Bucks Hill Rd	**3524**	**Yes**

Government Documents	**Date of Document**
Ordinance Authorizing ATESDs	
NVCOG Vision Zero Action Report	December 2025
NVCOG Regional Transportation Safety Plan	2022
Public Hearing Notice	
Approval Minutes	
ATESD Municipal Self-Certification	
Backup documentation has been attached to this document.	


Bristol
Mattatuck State Forest
Thomaston
Plymouth
Watertown
Wolcott
Oakville
Waterville
Bucks Hill
Boulevard
Lakewood
New FAC
Bunker Hill
Woodtick Road
Waterbury
Woodhaven
Washington Hill
Captain Neville Industrial Park
Cheshire
Middlebury
East Mountain
Hopeville
Platts Mills
Prospect
Naugatuck
Oxford
3524
3523
3525
3522
3521
3509
3510
3511
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3501.01
3504
3512
3526
3518
3505
3513
3527.02
3517
3527.01
3514
3516.01
3528
3516.02
3519
3515
8
69
322
64
68
Legend
Red Light Camera
Speed Camera
City Boundaries
Non-Qualified Census Tracts
Qualified Census Tracts (2026)
N
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Feet
Automated Traffic Enforcement Safety Device (ATESD)
Waterbury, Connecticut
Project No. 2503024
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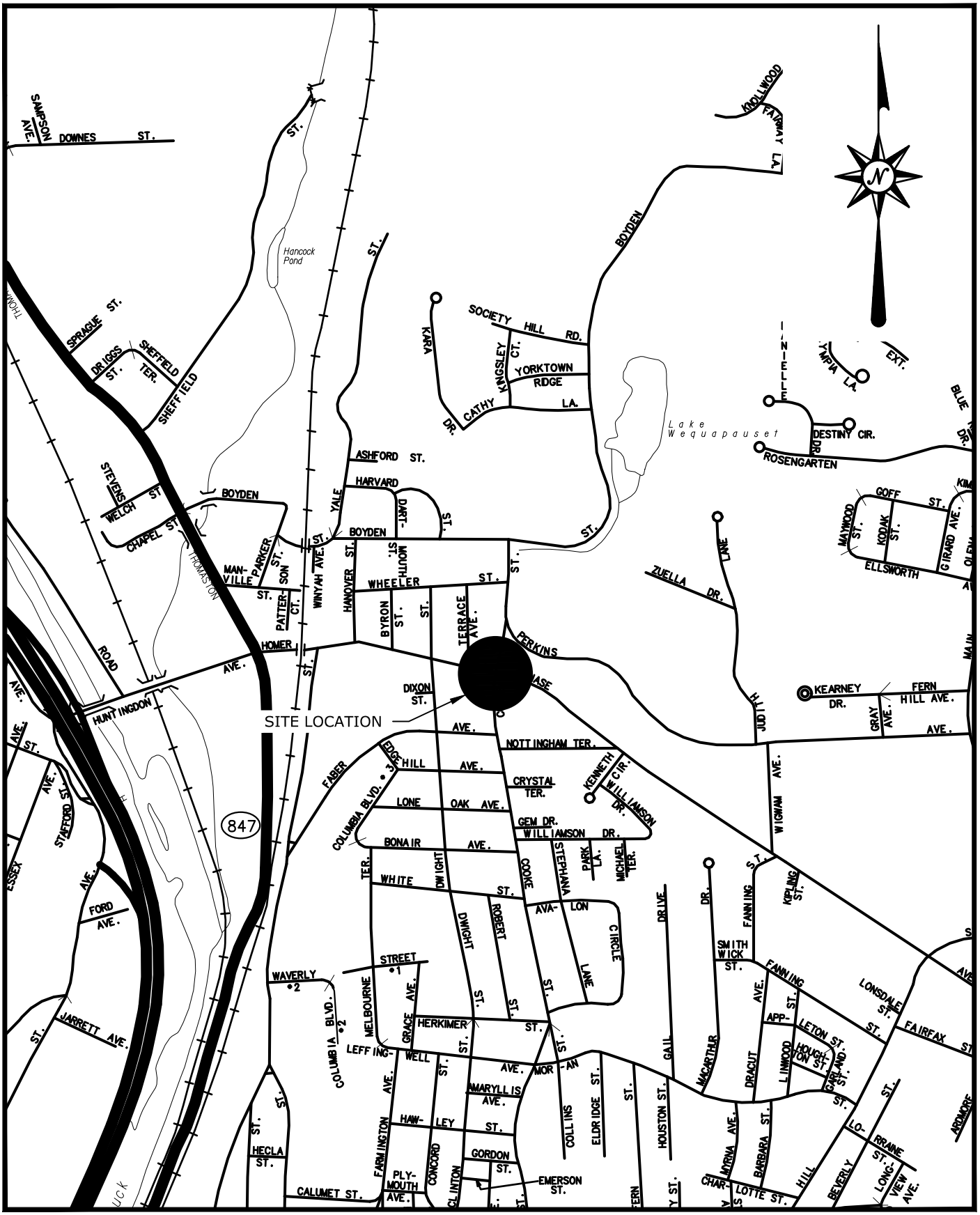
Qualified Census Tracts



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CHASE AVENUE AT HOMER STREET & COOKE STREET

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 1

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

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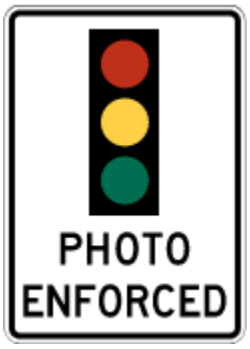
TRAFFIC LAWS
PHOTO ENFORCED

Red Light Violation Camera Locations



1. Chase Avenue at Cooke Street

Traffic Control Signal

Traffic Data	Approach	Source
85th Percentile Speed[1], mph	46.1 (Homer Street)	WATB-338
	33.8 (Cooke Street)	WATB-661
ADT (Average Daily Traffic)[1], vpd	26000 (Homer Street)	WATB-338
	6700 (Cooke Street)	WATB-661

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	13

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3523	
	Poverty Rate	Households w/ Vehicles
Citywide	25.9%	80.5%
Census Tract	30.2%	97.3%

Roadway Geometry and Location Description:

The Homer Street/Chase Avenue and Cooke Street intersection is a four-legged intersection in Waterbury, CT, with a posted speed limit of 25 mph on all approaches. The eastbound Homer Street approach consists of two 11-ft through lanes, an 11-ft protected/permitted left-turn lane, and a 2-ft right shoulder, with sidewalk along the north side and a gradual positive slope toward the intersection. The westbound Chase Avenue approach includes two 11-ft through lanes, an 11-ft protected/permitted left-turn lane, and a 2-ft right shoulder, with sidewalks on both sides and a gradual negative slope toward the intersection. The northbound Cooke Street approach has an 11-ft through/right lane and an 11-ft protected/permitted left-turn lane, sidewalk along the east side, a posted "No Turn on Red" restriction, and a steep downgrade toward the intersection. The southbound Cooke Street approach includes an 11-ft through/right lane and an 11-ft left-turn lane, with sidewalk along the west side and a similarly steep downgrade toward the intersection.

Justification:

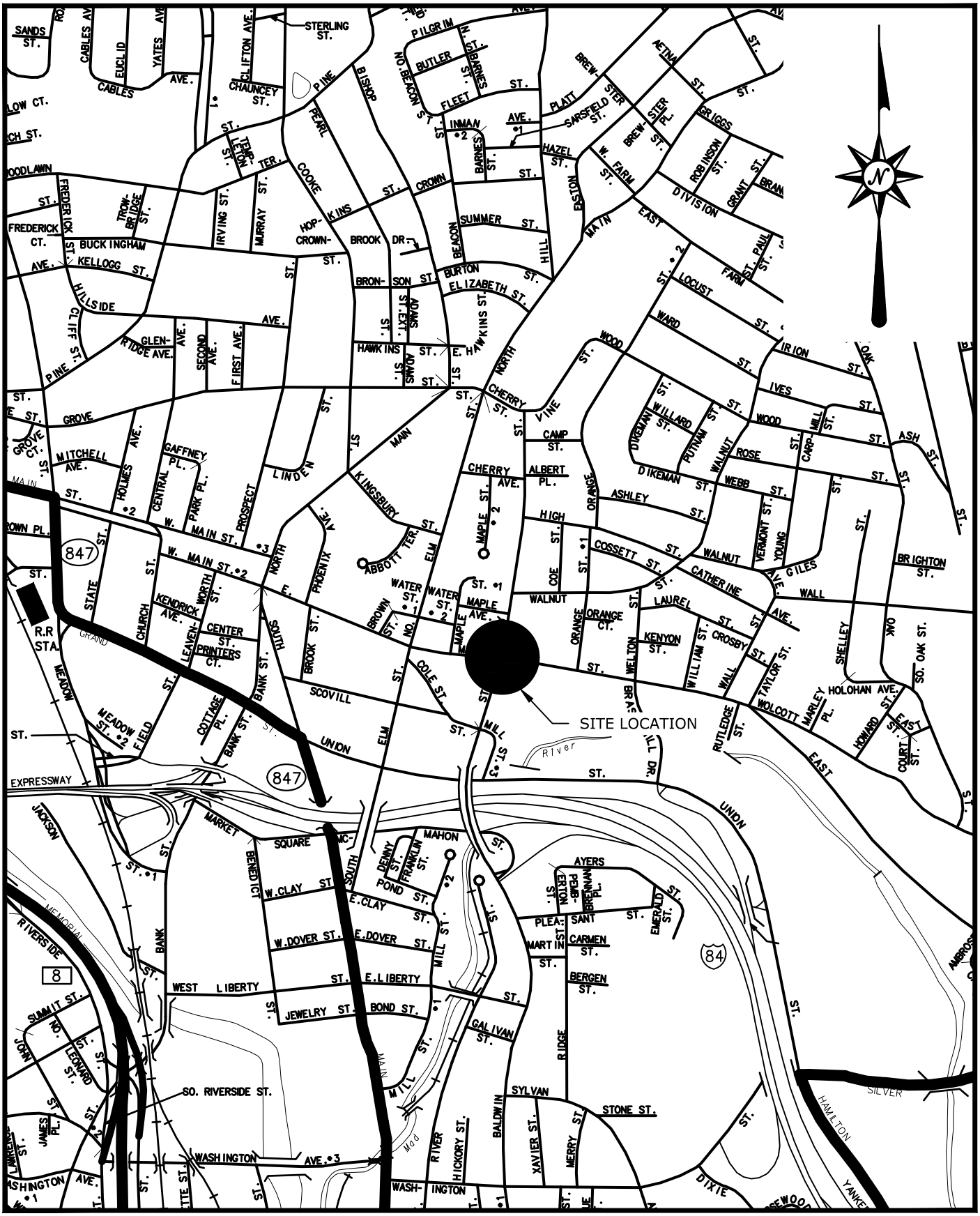
More than 41 crashes were recorded at the intersection between 2020 and 2023, including 13 red-light-running crashes, which represent approximately 32% of the total. Existing roadway geometry, alignment characteristics, and traffic conditions likely contribute to unsafe driving behavior. The eastbound and westbound Homer Street/Chase Avenue approaches each provide three lanes at the intersection, with wide 12-ft lanes and traffic volumes exceeding 26,000 vehicles per day. These conditions, when combined with a downhill roadway grade, peak-period congestion, off-peak speeding, and driver behavioral factors such as distraction or impairment, exacerbate red-light-compliance issues. The straight roadway alignment further encourages speeding and increases the likelihood of red-light running. The No Turn On Reds are consistently violated in both directions. During a recent field visit, violations were occurring while on-site. The limited sight distance makes this very dangerous.

The intersection spans three Census tracts (3510, 3523, and 3525). Census Tract 3523 has a high poverty rate of approximately 30.2%. Traffic safety risks at the intersection therefore



impose a disproportionate burden on low-income residents, many of whom rely on walking, transit, or other alternative modes due to limited access to reliable transportation.

In summary, installation of a red-light camera at the intersection of Chase Avenue and Cooke Street would improve overall roadway safety and directly address documented red-light-running concerns driven by roadway conditions and driver behavior.



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E MAIN ST AT BALDWIN ST

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 2

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

2. East Main Street at Baldwin St/Cherry Street

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	33.5 (Cherry Street)	WATB-602
	25.8 (E Main Street)	WATB-202
ADT (Average Daily Traffic)[1], vpd	12700 (Baldwin Street)	WATB-381
	10600 (E Main Street)	WATB-202

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	14

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3504	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**38.0%**	**71.2%**

Roadway Geometry and Location Description:

The East Main Street and Baldwin Street/Cherry Street intersection is a signalized intersection in Waterbury, CT, with a posted speed limit of 25 mph on all approaches. The eastbound East Main Street approach consists of a 12-ft travel lane and a 12-ft parking lane, with a gradual downhill grade toward the intersection and a bus stop along the approach. The westbound East Main Street approach includes a 12-ft through lane, a 12-ft

right-turn lane, and a 12-ft protected/permitted left-turn lane, with a gradual uphill grade toward the intersection and a bus stop present.

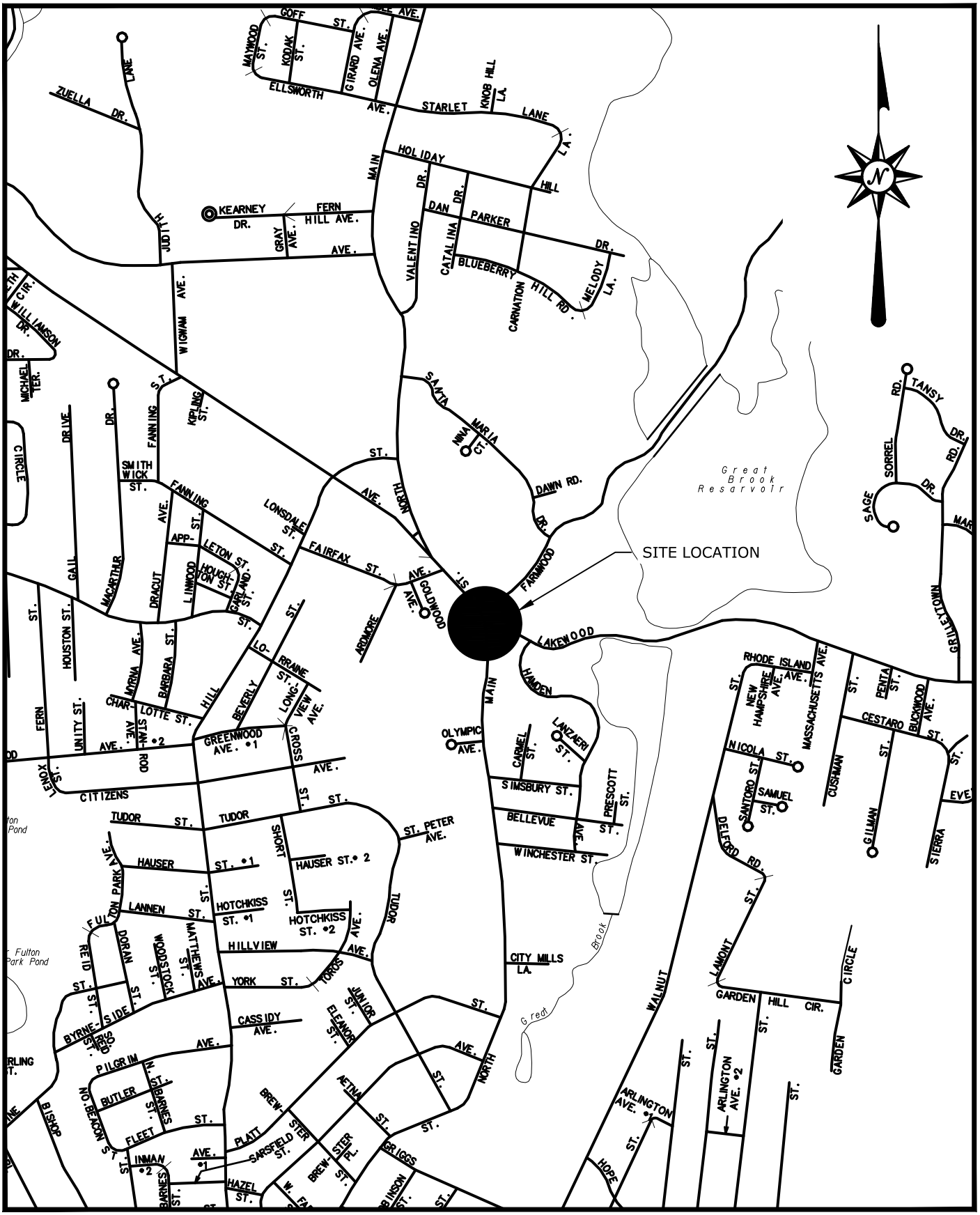
The northbound Baldwin Street approach has a 12-ft through lane, a 12-ft right-turn lane, and a 12-ft protected/permitted left-turn lane, with a gradual grade toward the intersection. The southbound Cherry Street approach consists of a 12-ft shared through/right lane and a 12-ft protected/permitted left-turn lane, with a gradual grade away from the intersection. Sidewalks are present along all approaches. The posted speed limit throughout the intersection is 25 mph.

Justification:

More than 52 crashes were recorded at the intersection between 2020 and 2023, including 14 red-light-running crashes, which account for approximately 27% of the total. Existing roadway geometry, alignment characteristics, and traffic conditions likely contribute to unsafe driving behavior. The intersection carries more than 12,000 vehicles per day and includes approaches with downhill grades. When combined with peak-period congestion, off-peak speeding, and driver-related factors such as distraction, impairment, and inattentiveness, these conditions further intensify red-light-compliance issues.

The intersection spans three Census tracts (3501.01, 3504, and 3512). Census Tract 3504 has a high poverty rate of approximately 38%. Traffic safety risks therefore disproportionately impact low-income residents in this area, many of whom lack access to reliable personal vehicles. In this tract, more than one in four residents (28.8%) do not own a vehicle and rely on walking, bicycling, and transit to access essential services such as employment, medical care, and shopping.

In summary, installation of a red-light camera at the intersection of East Main Street and Baldwin Street/Cherry Street would improve overall roadway safety and address documented red-light-running concerns driven by roadway conditions and driver behavior.



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N MAIN ST AT LAKEWOOD

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 3

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

3. North Main Street at Lakewood Road

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	43.2 (N Main St)	WATB-403
	37.1 (Lakewood Road)	WATB-340
ADT (Average Daily Traffic)[1], vpd	11300 (N Main St)	WATB-403
	16900 (Lakewood Road)	WATB-340

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	1

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3511	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**14.1%**	**78.5%**

Roadway Geometry and Location Description:

The North Main Street at Farmwood Road and Retail Drive intersection is a five-legged intersection in Waterbury, CT, with a posted speed limit of 25 mph on all public approaches. The westbound Lakewood Road approach consists of a 10-ft protected left-turn lane, a 10-ft through lane, and a 10-ft shared through/right lane, with a gradual

downhill grade toward the intersection. The westbound Farmwood Road approach includes a single 16-ft lane, no sidewalks on either side, and a steep downhill grade toward the intersection.

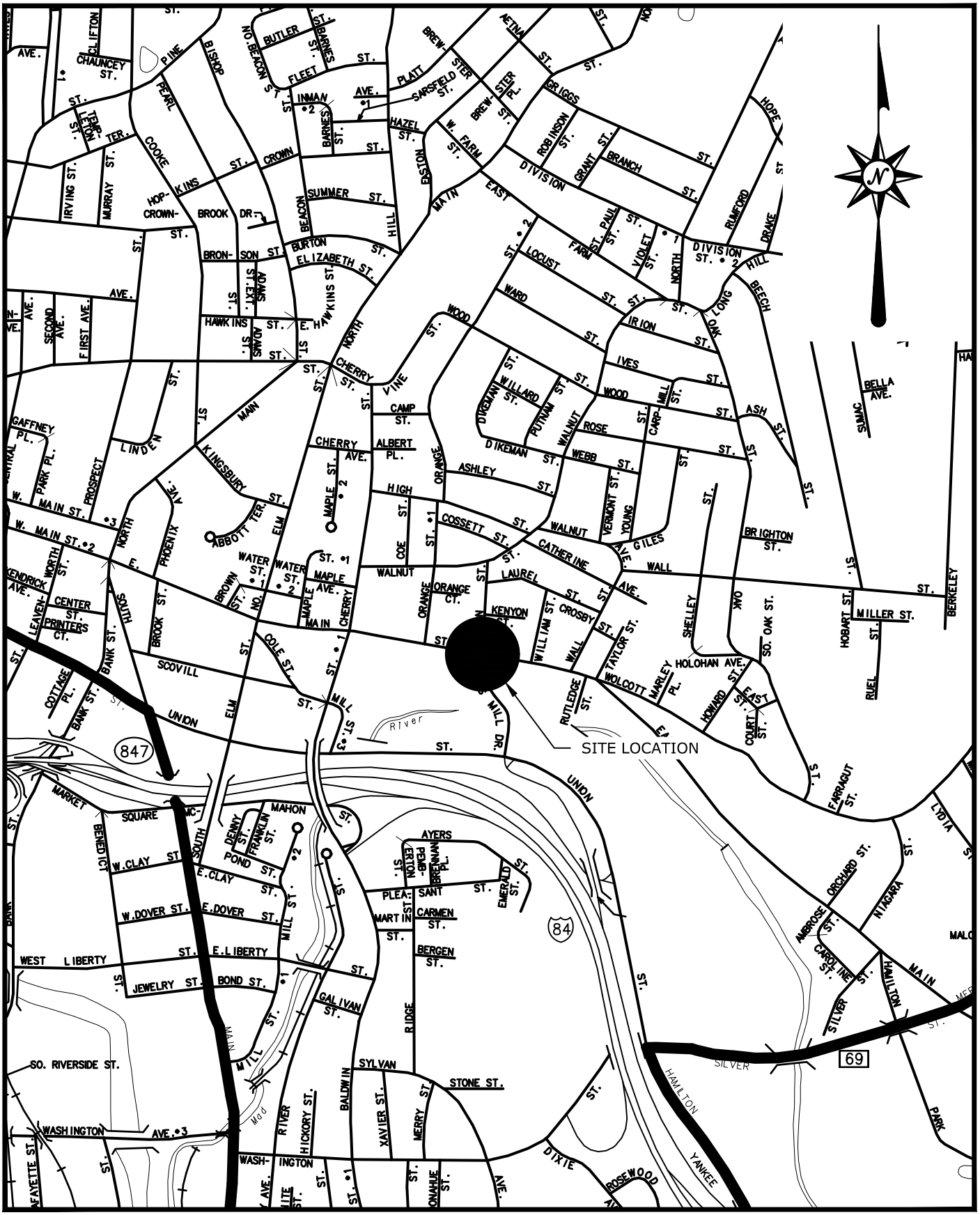
The northbound North Main Street approach includes two 12-ft through lanes and a 20-ft channelized right-turn lane, with sidewalks on both sides and a gradual downhill grade toward the intersection. The southbound North Main Street approach consists of a 12-ft protected/permitted left-turn lane and a 12-ft right-turn lane, with a gradual downhill grade toward the intersection. Sidewalks are present throughout the intersection except along the Farmwood Road approach.

Justification:

While there was only 1 Red Light crash according to CT-REDV, the CTDOT Crash data shows that there were 10 angle crashes at this intersection from 2023-2025. The data from the UConn Crash Data Repository has been added to the **Appendix**. This indicates that there are issues with Red Light running at this intersection.

Existing roadway geometry, alignment characteristics, and traffic conditions may contribute to unsafe driving behavior at the intersection, which carries more than 17,000 vehicles per day.

In summary, installation of a red-light camera at the intersection of North Main Street and Lakewood Road would improve overall roadway safety and address neighborhood concerns related to red-light running associated with driver behavior and prevailing roadway conditions.



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E MAIN ST AT BRASS MILL DR

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 4

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

4. East Main St at Brass Mill Dr and Welton Street

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	40.2 (E Main Street)	WATB-252
	35.5 (Brass Mill Dr)	WATB-728
	28.0 (Welton Street)	WATB-473
ADT (Average Daily Traffic)[1], vpd	17100 (E Main Street)	WATB-252
	10500 (Brass Mill Dr)	WATB-728
	5600 (Welton Street)	WATB-473

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	15

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3512	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**21.2%**	**81.0%**

Roadway Geometry and Location Description:

The East Main Street and Brass Mill Drive/Welton Street intersection is a four-legged intersection in Waterbury, CT, with a posted speed limit of 25 mph on all approaches. The

eastbound East Main Street approach consists of a 12-ft left-turn lane, a 12-ft through lane, and two 12-ft right-turn lanes, with level grade and a bus stop located along the north side. The westbound East Main Street approach includes a 12-ft shared through/right lane and a 12-ft permitted left-turn lane, sidewalks on both sides, and a gradual downhill grade toward the intersection.

The northbound Brass Mill Drive approach has a 12-ft shared through/right lane and a 12-ft permitted left-turn lane, with sidewalks on both sides, a gradual uphill grade toward the intersection, and a bus stop along the west side. The southbound Welton Street approach consists of a 12-ft shared left/through/right lane, sidewalks on both sides, and a gradual downhill grade toward the intersection.

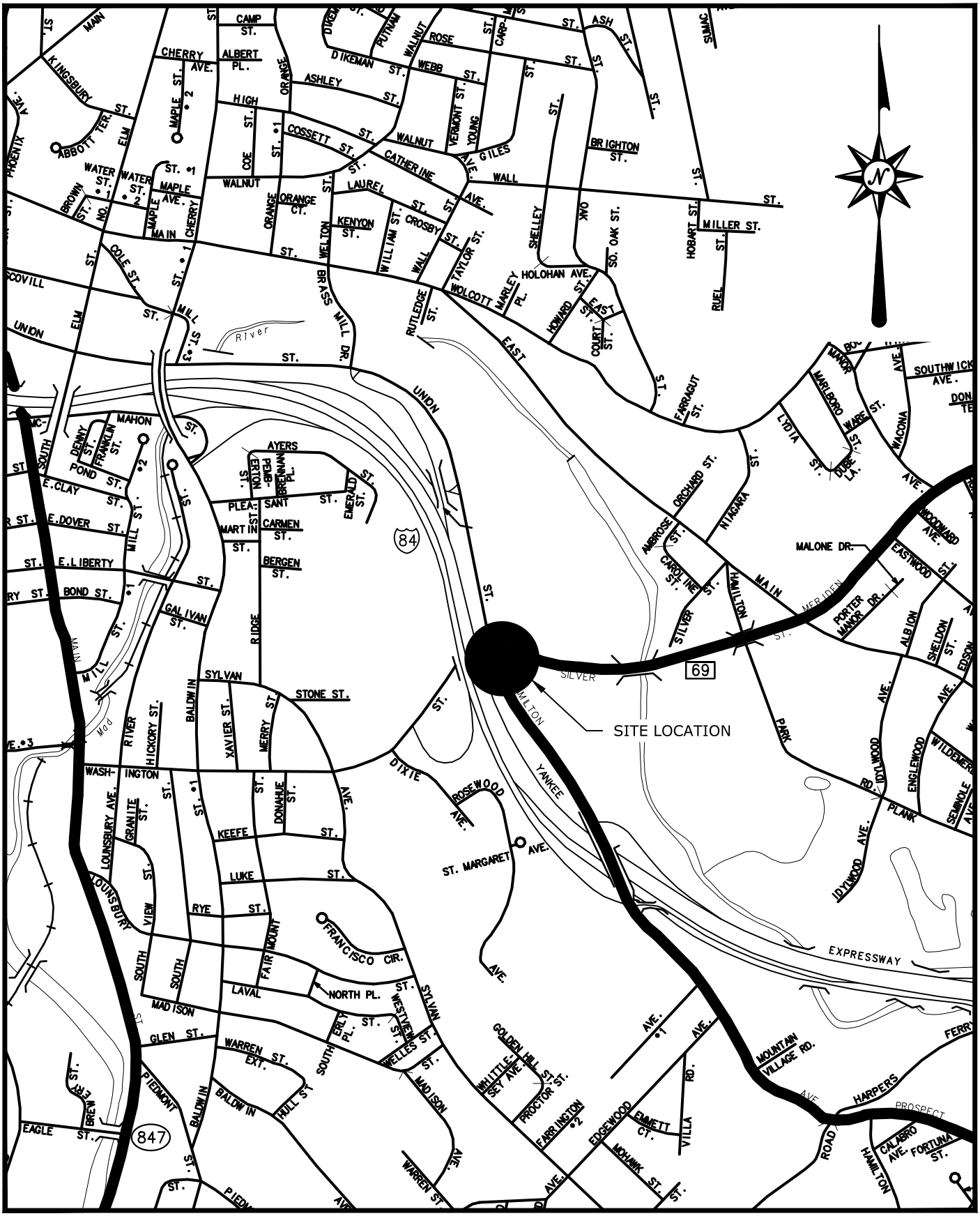
Justification:

There were significant number of crashes (more than 45) recorded at the intersection between 2020 and 2023. Of the total crashes, 15 were Red Light running related (33%).

Existing roadway geometry, alignment characteristics, and traffic conditions may contribute to unsafe driving behavior at the intersection. Eastbound East Main Street approaches the intersection with four travel lanes and carries more than 17,000 vehicles per day. The straight roadway alignment encourages speeding and increases the likelihood of red-light running. In addition, the transition from a higher-speed, highway-oriented environment to a dense urban setting negatively affects overall safety, particularly for vulnerable road users.

The intersection spans two Census tracts (3512 and 3504). In Census Tract 3512, nearly one in five residents (19%) do not own a vehicle and rely on walking, bicycling, and transit to access essential services such as employment, medical care, and shopping.

In summary, installation of a red-light camera at the intersection of East Main Street and Brass Mill Drive/Welton Street would improve overall roadway safety and address neighborhood concerns related to red-light running influenced by driver behavior and roadway conditions. Due to building obstructions, the northbound side will be excluded from this installation.



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HAMILTON AVE AT SILVER ST EXPY

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 5

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

5. Washington Avenue at Union Street, Hamilton Avenue and Silver Street Expressway

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	49.6 (Hamilton Ave)	WATB-090
	51.6 (Silver St Expressway)	WATB-701
ADT (Average Daily Traffic)[1], vpd	12200 (Hamilton Ave)	WATB-090
	16200 (Silver St Expressway)	WATB-701

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	9

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3514	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**20.0%**	**75.5%**

Roadway Geometry and Location Description:

The Hamilton Avenue/Union Street and Washington Street/Silver Street Expressway intersection is a signalized intersection in Waterbury, CT, with a posted speed limit of 35 mph on all approaches. The eastbound Washington Street approach consists of two 12-ft

protected left-turn lanes, a 12-ft through lane, and a 12-ft shared through/right lane, with sidewalk along the north side and a steep uphill grade toward the intersection.

The westbound Silver Street Expressway approach includes a 12-ft protected left-turn lane, a 12-ft through lane, two 12-ft right-turn lanes, and a 2-ft right shoulder, with sidewalk along the north side and a gradual downhill grade toward the intersection. The northbound Hamilton Avenue approach consists of a 12-ft protected left-turn lane, a 12-ft through lane, and a 12-ft shared through/right lane, sidewalk along the east side, and a gradual grade toward the intersection.

The southbound Union Street approach includes a 12-ft shared through/right lane and a 12-ft protected left-turn lane, with sidewalk along the east side and a steep downhill grade toward the intersection.

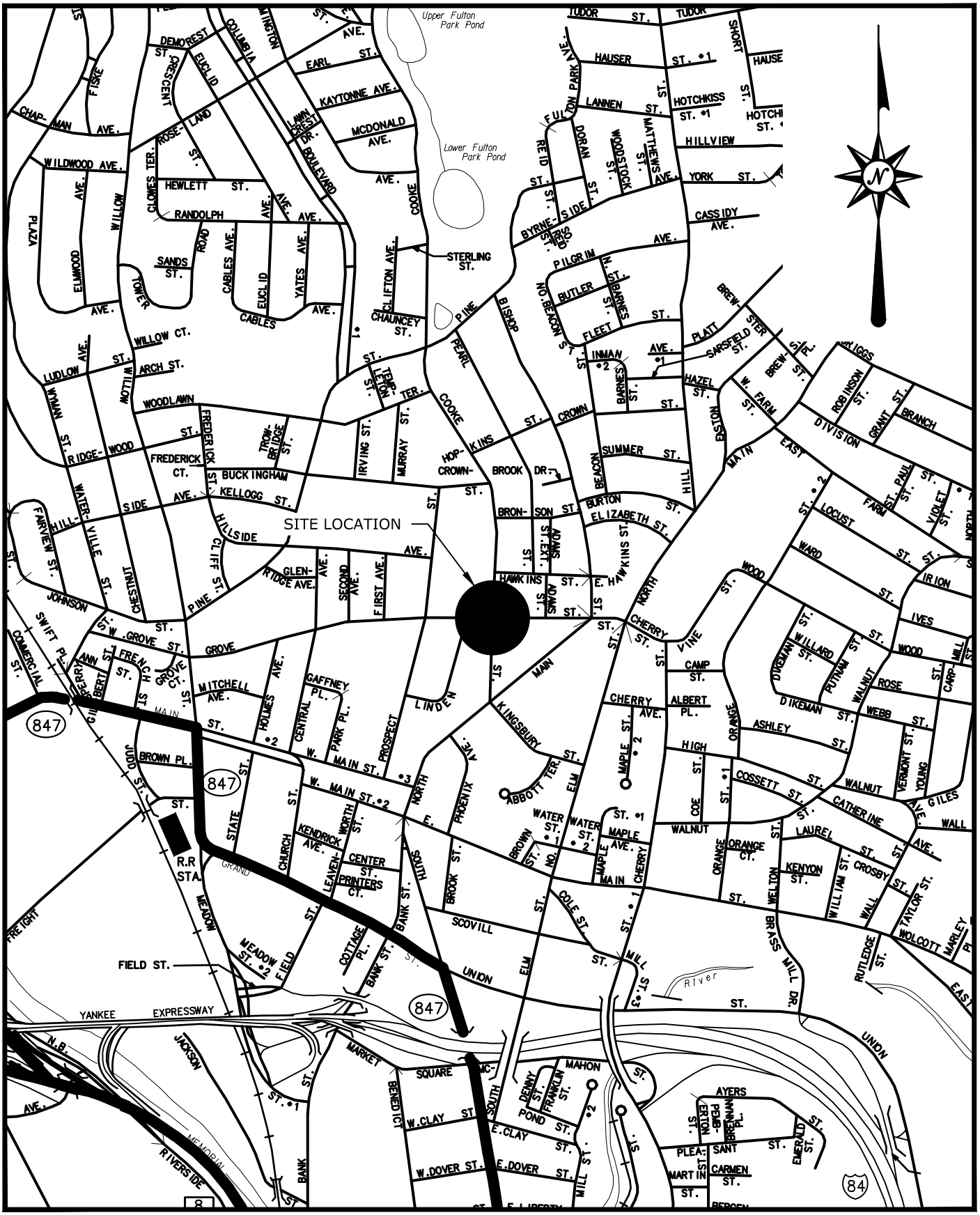
Justification:

There were significant number of crashes (more than 53) recorded at the intersection between 2020 and 2023. Of the total crashes, 9 were Red Light running related (17%).

Existing roadway geometry, alignment characteristics, and traffic conditions likely contribute to unsafe driving behavior at the intersection. The eastbound Washington Street approach includes four travel lanes with wide, 12-ft lane widths and carries more than 16,000 vehicles per day. The straight roadway alignment encourages higher operating speeds and increases the likelihood of red-light running. In addition, the transition from a higher-speed, highway-oriented environment to a dense urban setting adversely affects overall safety, particularly for vulnerable road users.

The intersection spans four Census tracts. In Census Tract 3504, nearly one in four residents (24.5%) do not own a vehicle and rely on walking, bicycling, and transit to access essential services such as employment, medical care, and shopping.

In summary, installation of a red-light camera at the intersection of Hamilton Avenue/Union Street and Washington Street/Silver Street Expressway would improve overall roadway safety and address documented neighborhood concerns related to red-light running driven by roadway conditions and driver behavior.



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COOKE ST AT GROVE ST

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 6

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

6. Cooke Street at Grove Street

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	34.6 (Grove St), 35.2 (Cooke St)	WATB-660, WATB-397
ADT (Average Daily Traffic)[1], vpd	5100 (Grove St), 5900 (Cooke St)	WATB-660, WATB-397

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	5

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3501.01	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**60.9%**	**25.8%**

Roadway Geometry and Location Description:

The Grove Street and Cooke Street intersection is a four-legged intersection in Waterbury, CT, with a posted speed limit of 25 mph on all approaches and sidewalks provided throughout. The eastbound Grove Street approach consists of a 15-ft shared left/through/right lane, sidewalks on both sides, a bus stop, and a gradual downhill grade toward the intersection. The westbound Grove Street approach includes an 11-ft shared left/through lane and an 11-ft right-turn lane, with sidewalks on both sides and a gradual uphill grade toward the intersection.

The northbound Cooke Street approach has an 11-ft shared left/through lane and an 11-ft right-turn lane, with sidewalks on both sides and a gradual grade toward the intersection. The southbound Cooke Street approach also includes an 11-ft shared left/through lane and an 11-ft right-turn lane, sidewalks on both sides, a bus stop, and a gradual grade away from the intersection.

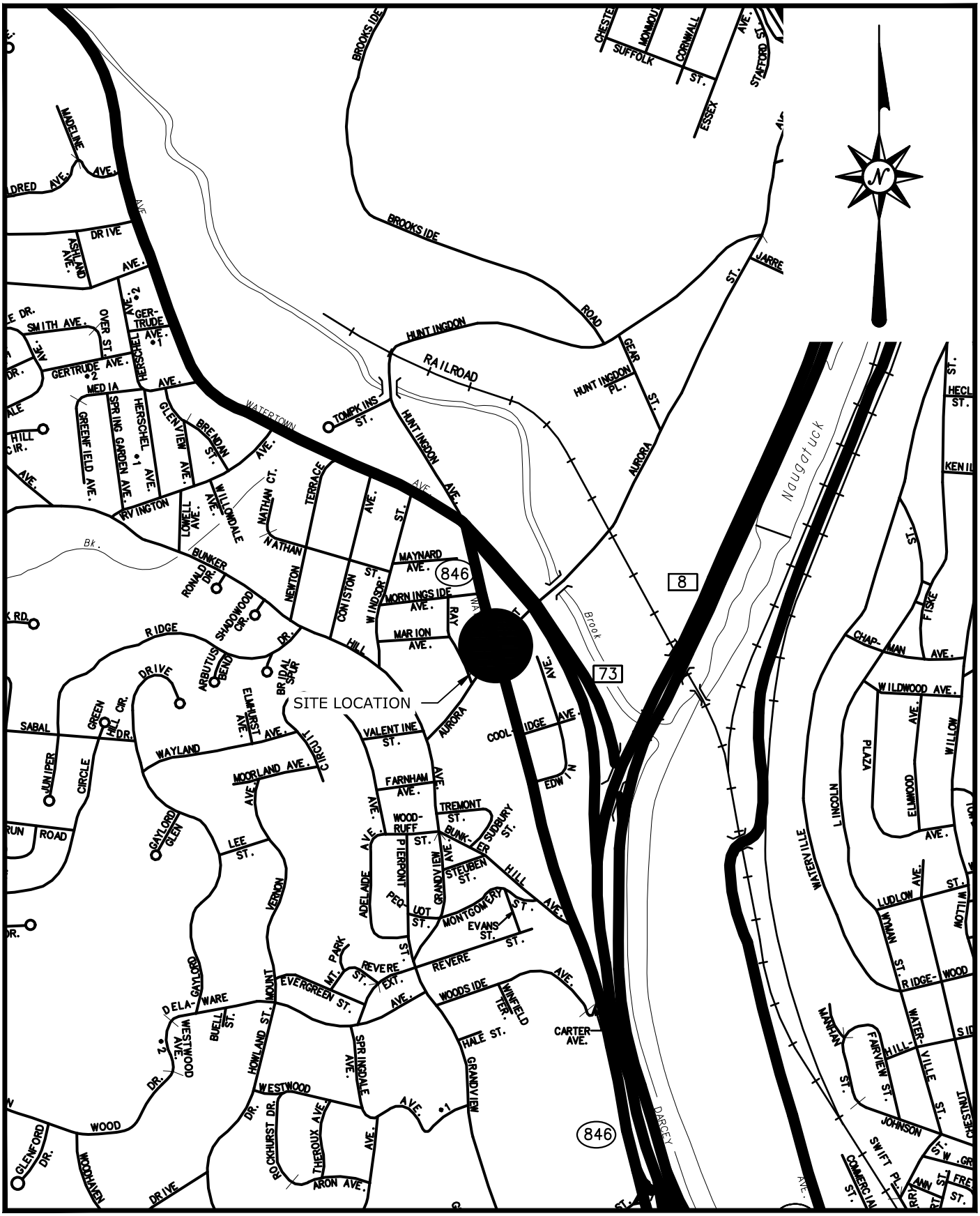
Justification:

There were significant number of crashes (more than 19) recorded at the intersection between 2020 and 2023. Of the total crashes, five (5) were Red Light running related (26%).

Existing roadway geometry, alignment characteristics, and traffic conditions may contribute to unsafe driving behavior at the intersection, which carries more than 5,900 vehicles per day. Downhill roadway grades, peak-period congestion, off-peak speeding, and driver-related factors such as distraction, impairment, and inattentiveness further exacerbate red-light-compliance issues. The straight roadway alignment also encourages higher speeds and increases the likelihood of red-light running.

The intersection is located within Census Tracts 3501.01 and 3502. Census Tract 3501.01 experiences a high poverty rate of approximately 61%. Traffic safety risks therefore disproportionately affect low-income residents in this area, many of whom lack access to reliable personal vehicles. In this tract, nearly three in four residents (74%) do not own a vehicle and rely on walking, bicycling, and transit to access essential services such as employment, medical care, and shopping.

In summary, installation of a red-light camera at the intersection of West Main Street/East Main Street and South Main Street/North Main Street would improve overall roadway safety and address documented neighborhood concerns related to red-light running influenced by roadway conditions and driver behavior.



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E AURORA ST AT
RUDY ST (ROUTE 73)

RED LIGHT CAMERA INSTALLATION
WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024
Date May, 2026

FIGURE 7

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

7. East Aurora St at Rudy St (Route 73)

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	52.3 (Rudy Street)	WATB-731
	41.6 (Aurora St)	WATB-433
ADT (Average Daily Traffic)[1], vpd	24800 (Rudy Street)	WATB-731
	7900 (Aurora St)	WATB-433

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	7

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**CTDOT**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3520	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**7.7%**	**92.2%**

Roadway Geometry and Location Description:

The East Aurora Street and Rudy Avenue intersection is a four-legged intersection in Waterbury, CT. The eastbound East Aurora Street approach consists of a 12-ft shared left/through lane and a 12-ft right-turn lane, with sidewalks on both sides, a steep downhill grade toward the intersection, and a posted speed limit of 25 mph. The westbound East Aurora Street approach includes a 12-ft shared through/right lane and a 12-ft

protected/permitted left-turn lane, sidewalks on both sides, a relatively level roadway grade, a posted speed limit of 25 mph, and a “No Turn on Red” restriction.

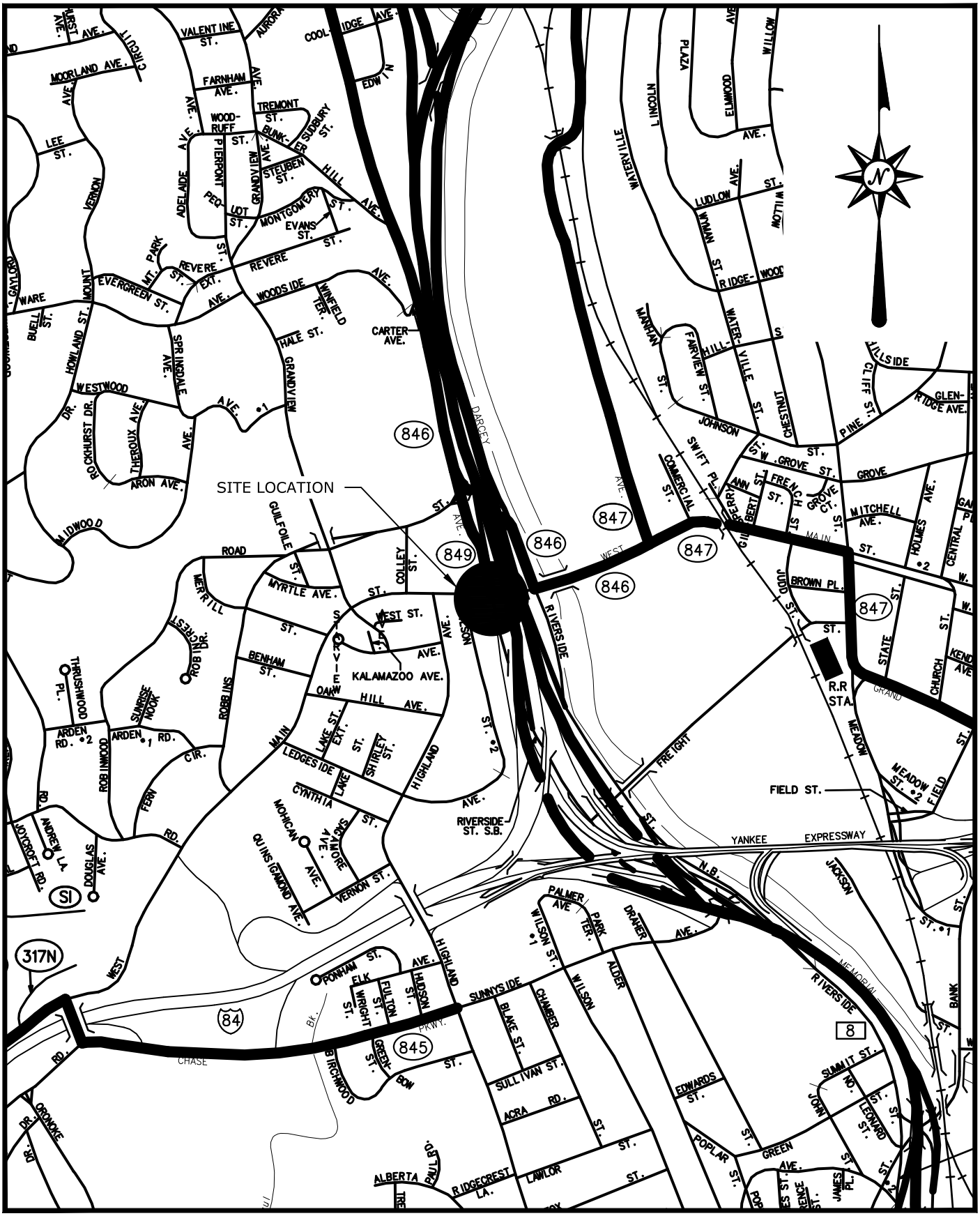
The northbound Rudy Avenue approach consists of a 12-ft protected left-turn lane, two 12-ft through lanes, and a 12-ft right-turn lane, with no sidewalks present and a gradual grade toward the intersection. This approach has a posted speed limit of 35 mph and serves as a transition zone from the Route 8 northbound Exit 31 off-ramp. The southbound Rudy Avenue approach includes the same lane configuration, no sidewalks, a gradual grade toward the intersection, and a posted speed limit of 35 mph.

Justification:

More than 20 crashes were recorded at the intersection between 2020 and 2023, including seven red-light-running crashes, which account for approximately 27% of the total.

Existing roadway geometry, alignment characteristics, and traffic conditions likely contribute to unsafe driving behavior. The northbound and southbound Rudy Avenue approaches each provide four travel lanes with wide 12-ft lane widths and carry more than 24,800 vehicles per day. The straight roadway alignment encourages higher operating speeds and increases the likelihood of red-light running. Additionally, the transition from a high-speed, highway-oriented environment to a dense urban setting adversely affects overall safety, particularly for vulnerable road users.

In summary, installation of a red-light camera at the intersection of East Aurora Street and Rudy Avenue would improve overall roadway safety and address documented concerns related to red-light running driven by roadway conditions and driver behavior.



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WATERTOWN AVE AT W MAIN ST

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 8

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

8. West Main St at Watertown Avenue and Route 8 SB Exit 31 Off Ramp

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	41.1 (Watertown Ave)	WATB-116
	28.7 (W Main St)	WATB-732
	N/A	WATB-812
ADT (Average Daily Traffic)[1], vpd	5700 (Watertown Ave)	WATB-116
	17700 (W Main St)	WATB-732
	2700	WATB-812

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	7

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3518	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**9.7%**	**88.6%**

Roadway Geometry and Location Description:

The West Main Street and Watertown Avenue intersection is a five-legged intersection in Waterbury, CT. The eastbound West Main Street approach consists of two 11-ft through

lanes and a right-turn slip ramp, with sidewalks on both sides, a bus stop along the north side, and a steep downhill grade toward the intersection. The westbound West Main Street approach includes two 12-ft through lanes, a 12-ft protected/permitted left-turn lane, and a 12-ft right shoulder, with sidewalks on both sides.

The southbound Watertown Avenue and Route 8 off-ramp approaches operate under split phasing. The Route 8 off-ramp includes a 12-ft left-turn lane and a 12-ft shared through/right lane and does not provide sidewalks. The southbound Watertown Avenue approach consists of a 12-ft left-turn lane and a 12-ft shared through/right lane, with sidewalk along the west side and a gradual downhill grade toward the intersection.

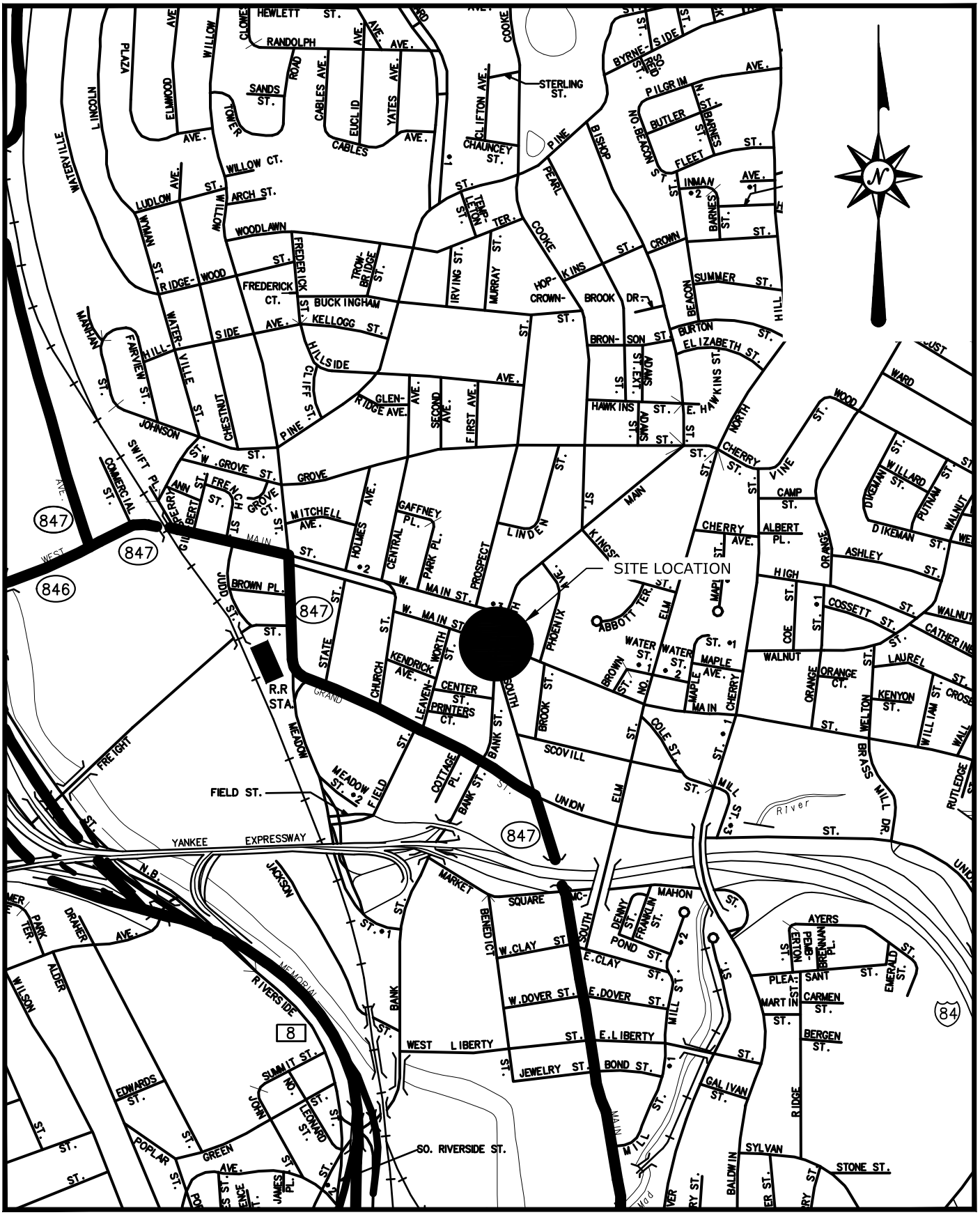
Sidewalks are provided on all approaches, and the posted speed limit on all streets is 25 mph.

Justification:

More than 33 crashes were recorded at the intersection between 2020 and 2023, including seven red-light-running crashes, which represent approximately 21% of the total.

Existing roadway geometry, alignment characteristics, and traffic conditions likely contribute to unsafe driving behavior. West Main Street carries more than 17,700 vehicles per day, and the steep downhill grade on the eastbound approach, combined with a maximum green time of approximately 40 seconds, further exacerbates red-light-compliance issues. The straight roadway alignment, coupled with steep grades, encourages higher operating speeds and increases the likelihood of red-light running. In addition, the transition from a high-speed, highway-oriented environment to a dense urban setting negatively affects overall safety, particularly for vulnerable road users.

In summary, installation of a red-light camera at the intersection of West Main Street and Watertown Avenue would improve overall roadway safety and address neighborhood concerns related to red-light running associated with driver behavior and prevailing roadway conditions.



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W MAIN ST AT E MAIN ST

RED LIGHT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date May, 2026

FIGURE 9

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

9. North Main Street/ South Main Street at West Main St/East Main St

Traffic Control Signal

Traffic Data		Source
85th Percentile Speed[1], mph	27.8 (S Main St)	WATB-257
	30.8 (E Main Street)	WATB-255
ADT (Average Daily Traffic)[1], vpd	3800 (S Main St)	WATB-257
	8400 (E Main Street)	WATB-255
	11300 (N Main St)	WATB-403

[1]Speed and ADT data are for both directions unless otherwise noted

Crash History	
Number of Red Light Crashes Via CT-REDV	4

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
Is there a traffic signal plan available?	◉	○
Who owns the traffic signal?	**City of Waterbury**	
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3501.01	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**59.3%**	**25.8%**

Roadway Geometry and Location Description:

The West Main Street/East Main Street and South Main Street/North Main Street intersection is a four-legged intersection in Waterbury, CT, with a posted speed limit of 25 mph on all approaches and sidewalks provided throughout. The eastbound West Main Street approach consists of two 12-ft through lanes and a 12-ft right-turn lane, with posted

"No Left Turn" and "No Turn on Red" restrictions, a bus stop, and a gradual downhill grade toward the intersection.

The westbound East Main Street approach includes an 11-ft through lane and an 11-ft bus lane, with posted "No Left Turn" and "No Right Turn" signs, a bus stop, and a gradual uphill grade toward the intersection. The northbound South Main Street approach consists of an 11-ft through lane and a 20-ft through lane, with "No Left Turn" and "No Right Turn" signs and a gradual grade toward the intersection.

The southbound North Main Street approach includes an 11-ft through lane, a 15-ft through lane, and a 15-ft bus lane, with posted "No Left Turn" and "No Right Turn" signs and a gradual grade away from the intersection.

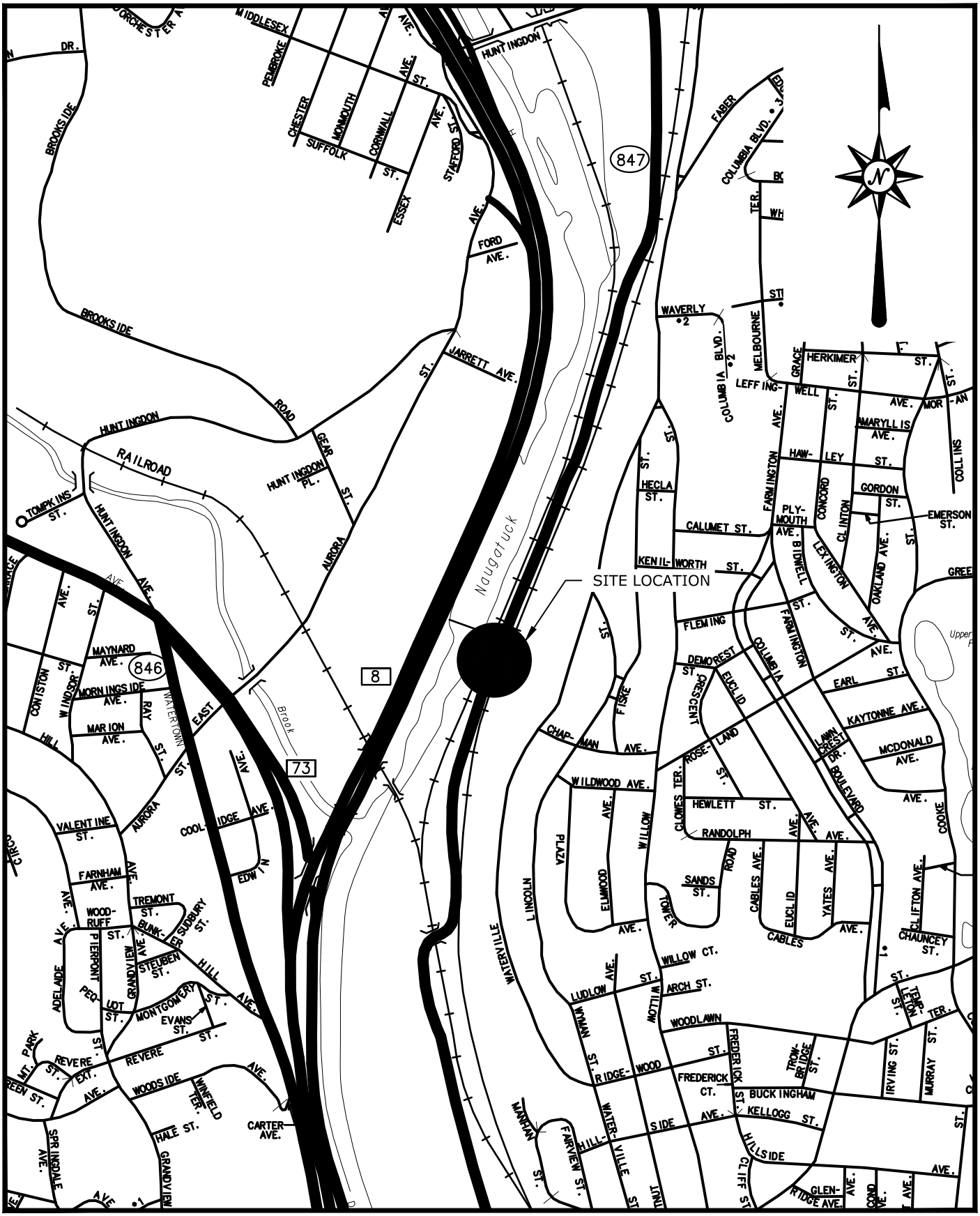
Justification:

More than 16 crashes were recorded at the intersection between 2020 and 2023, including four red-light-running crashes, which account for approximately 25% of the total.

Existing roadway geometry, alignment characteristics, and traffic conditions likely contribute to unsafe driving behavior. North Main Street carries more than 11,300 vehicles per day, and the intersection is located within a dense urban environment with closely spaced signalized intersections on all approaches. These conditions contribute to increased delay, driver impatience, and a higher likelihood of red-light running.

The intersection is located in Census Tract 3501.01, which experiences a high poverty rate of nearly 60%. Traffic safety risks therefore disproportionately impact low-income residents in this area, many of whom lack access to reliable personal vehicles. In this tract, nearly three in four residents (74%) do not own a vehicle and rely on walking, bicycling, and transit to access essential services such as employment, medical care, and shopping.

In summary, installation of a red-light camera at the intersection of West Main Street/East Main Street and South Main Street/North Main Street would improve overall roadway safety and address documented neighborhood concerns related to red-light running driven by roadway conditions and driver behavior.



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600-900 BLOCK THOMASTON AVE

SPEED LIMIT CAMERA INSTALLATION
WATERBURY, CT
SCALE 1" : 1000'

Project No. 2503024
Date JUNE, 2026

FIGURE 10

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

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Speed Camera Locations



1. 600-900 Block of Thomaston Avenue

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	51.6	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	7,900	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	○	◉
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	◉	○
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3523	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**30.2%**	**97.1%**

Roadway Geometry and Location Description:

Thomaston Avenue is characterized by rolling terrain in both directions. The roadway consists of a single 11-ft northbound travel lane with a 3-ft right shoulder in both directions. No pedestrian facilities are provided within the project limits. The posted speed limit is 35 mph.





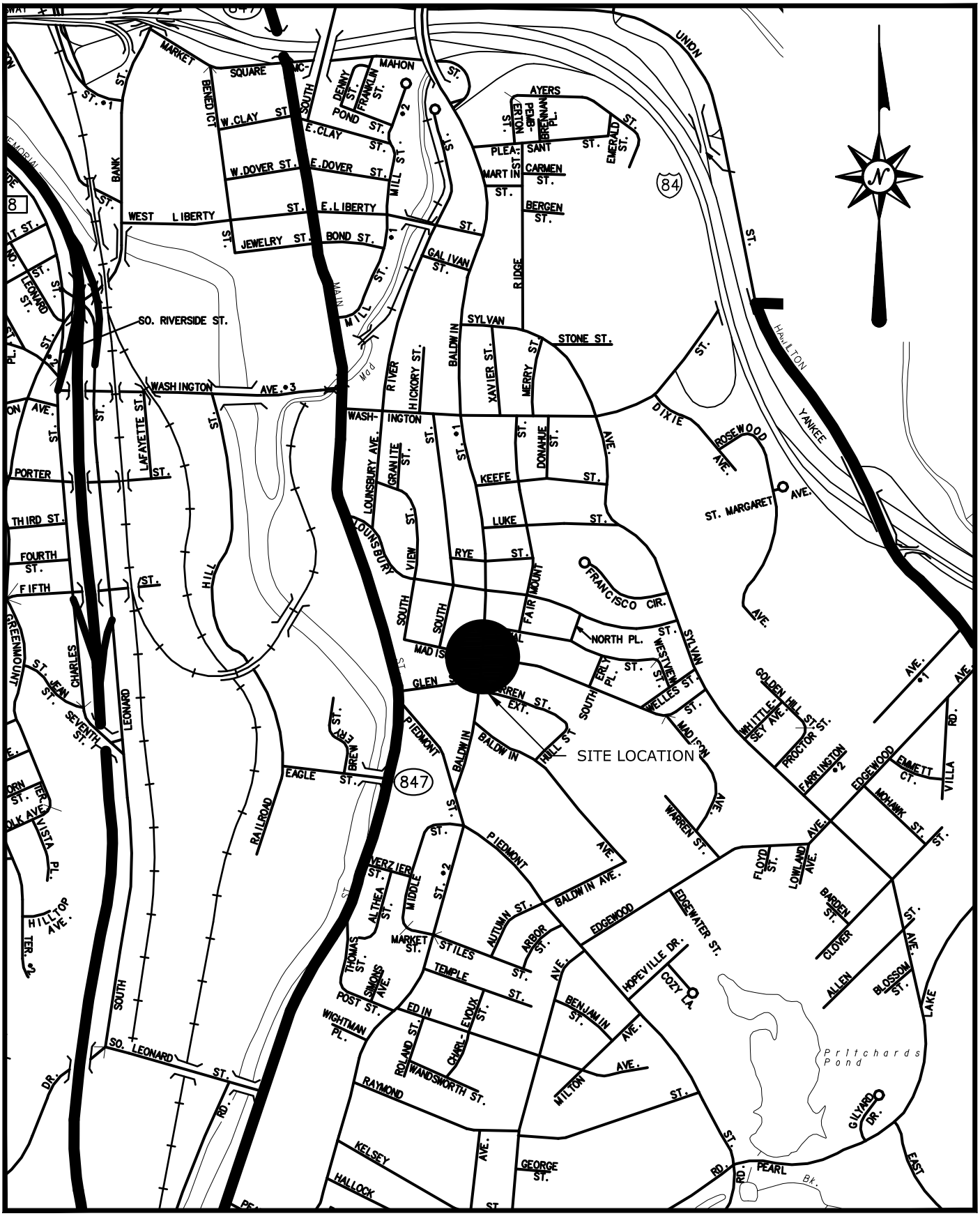
Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic control, flat grade with unobstructed mainline sight lines, inadequate streetlighting and streetscaping and no traffic calming. All these contribute significantly to the speeding problem along the roadway.

In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

Although Thomaston Avenue has a posted speed limit of 35 mph, City-collected speed data indicate widespread noncompliance. In the northbound direction, more than 66% of vehicles per day (approximately 2,600 vehicles) were observed traveling above the posted speed limit, including nearly 400 vehicles per day (10%) traveling at least 10 mph over the limit. In the southbound direction, nearly 52% of vehicles per day (approximately 2,100 vehicles) exceeded 35 mph, with approximately 260 vehicles per day (6%) traveling 10 mph or more over the posted speed limit.

In summary, the installation of Speed Cameras along Thomaston Ave will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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BALDWIN ST SOUTH OF MADISON ST

SPEED LIMIT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date JUNE, 2026

FIGURE 11

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations



2. Baldwin Street South of Madison Street

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	29.6	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	6,700	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	◉	○
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3514	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**20.0%**	**75.5%**

Roadway Geometry and Location Description:

Baldwin Street is a rolling terrain in both directions. It has one lane in both directions with parking available. There are sidewalks on both sides of Baldwin St with painted crosswalks and pedestrian crossing signs throughout the corridor. There is a digital speed feedback display on the northbound side of Baldwin Street just north of Madison St. The posted speed limit is 25 mph.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic signals and wide lanes with unobstructed mainline sight lines. The SB direction has a steep downward slope. All these contribute significantly to the speeding problem along the roadway.



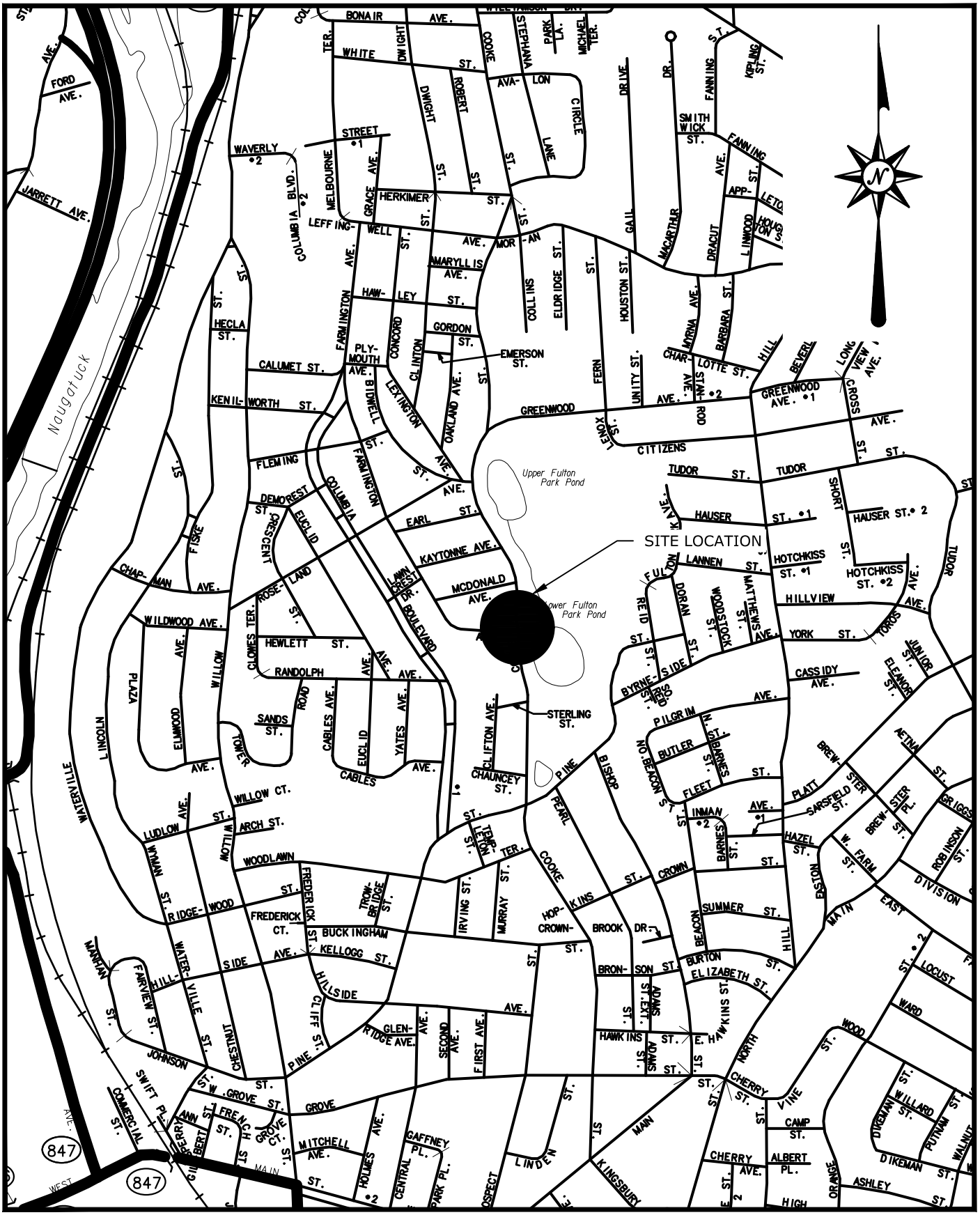


In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

Baldwin Street has a posted speed limit of 25 mph. However, City-collected speed data indicate a high level of noncompliance in both directions. In the northbound direction, more than 46% of vehicles per day (approximately 1,620 vehicles) were observed traveling above the posted speed limit, including more than 100 vehicles per day traveling at least 10 mph over the limit. In the southbound direction, nearly 48% of vehicles per day (approximately 1,540 vehicles) exceeded 25 mph, with approximately 160 vehicles per day (5%) traveling 10 mph or more above the speed limit.

Although the 85th-percentile speed is less than 10 mph above the posted speed limit, the volume of speed violations—particularly in the southbound direction—indicates a persistent speeding concern at this location. A fatality occurred in the past along this stretch of roadway and street racing is a problem as mentioned by the police.

In summary, the installation of Speed Cameras along Baldwin Street will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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COOKE ST AT FARMINGTON AVE

SPEED LIMIT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date JUNE, 2026

FIGURE 12

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

3. Cooke Street at Farmington Avenue

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	33.2	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	6,500	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3508	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**33.2%**	**70.3%**

Roadway Geometry and Location Description:

Cooke Street is a rolling terrain in both directions. It has 11' lanes with 7' parking lanes in both directions. There are sidewalks on both sides of Baldwin St with painted crosswalks and pedestrian crossing signs within the vicinity of the location. The posted speed limit is 25 mph.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has few traffic controls, wide lanes with unobstructed mainline sight lines, inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.



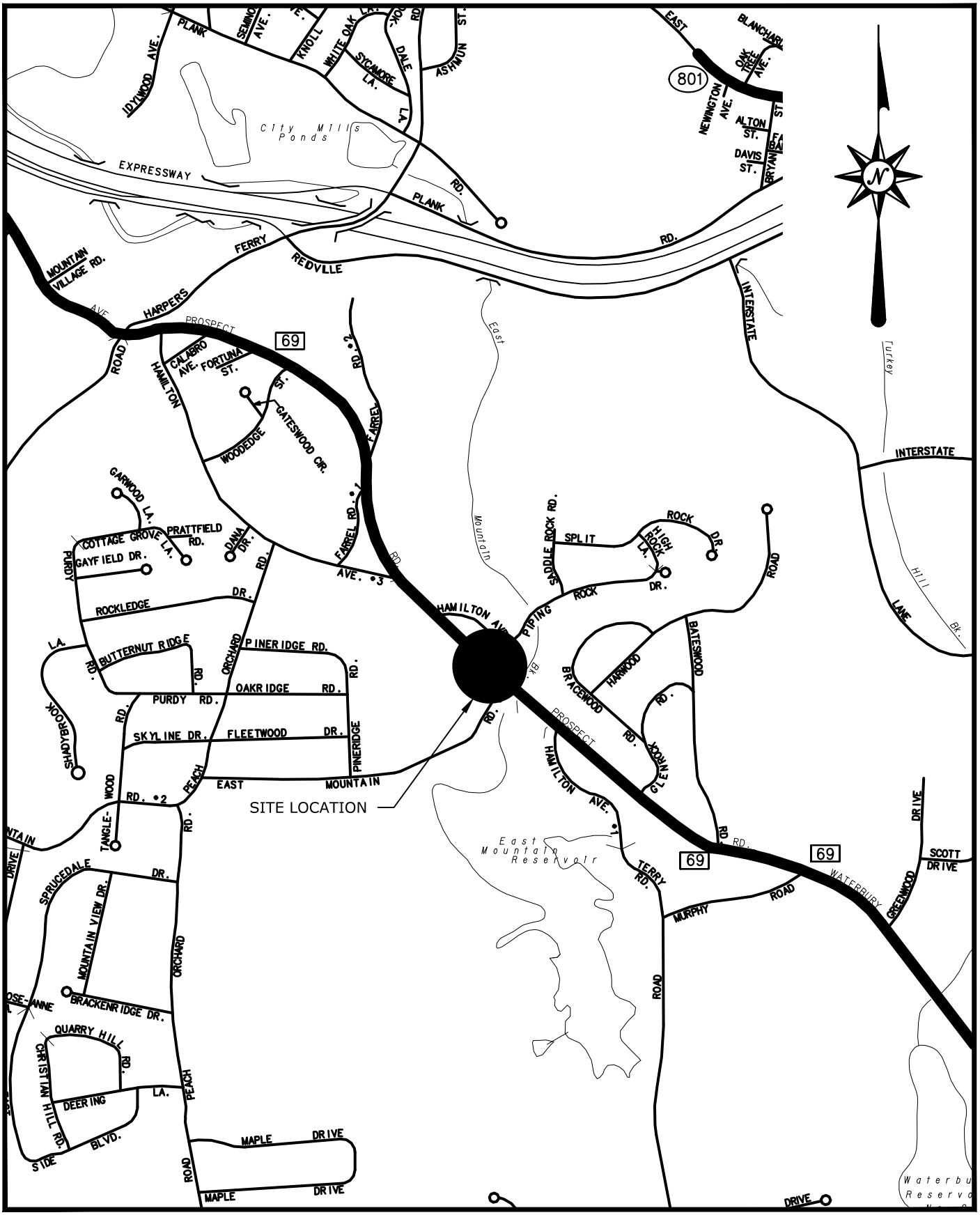


In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

The project area encompasses Census Tract # 3508. Residents in this census area experience high poverty rates with nearly 1 out of 3 (33.2 %) residents living below the poverty level. Exposure to high speeds creates disproportionate impacts on low-income communities that do not have access to reliable transportation and need to depend on using alternative modes of transportation for safe access.

Cooke Street has a posted speed limit of 25 mph. However, City-collected speed data indicate substantial noncompliance in both directions. In the northbound direction, more than 79% of vehicles per day (approximately 2,700 vehicles) were observed traveling above the posted speed limit, including nearly 400 vehicles per day (11%) traveling at least 10 mph over the limit. Similarly, in the southbound direction, nearly 80% of vehicles per day (approximately 2,450 vehicles) exceeded 25 mph, with approximately 360 vehicles per day (12%) traveling 10 mph or more above the posted speed limit. Although the 85th-percentile speed is less than 10 mph above the posted speed limit, the volume and severity of speeding violations indicate a persistent and significant safety concern at this location.

In summary, the installation of Speed Cameras along Cooke Street will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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PROSPECT RD AT E MOUNTAIN RD

SPEED LIMIT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date JUNE, 2026

FIGURE 13

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations



4. Prospect Road at East Mountain Road

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	51.8	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	7,200	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3528	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**24.9%**	**86.3%**

Roadway Geometry and Location Description:

Prospect Road is a rolling 7% grade in both directions. It has 1-11' northbound lane with a 6' right shoulder and 2-11' southbound lanes with a 6' right shoulder. There are no pedestrian facilities present at the project location. The posted speed limit is 35 mph.

Justification:

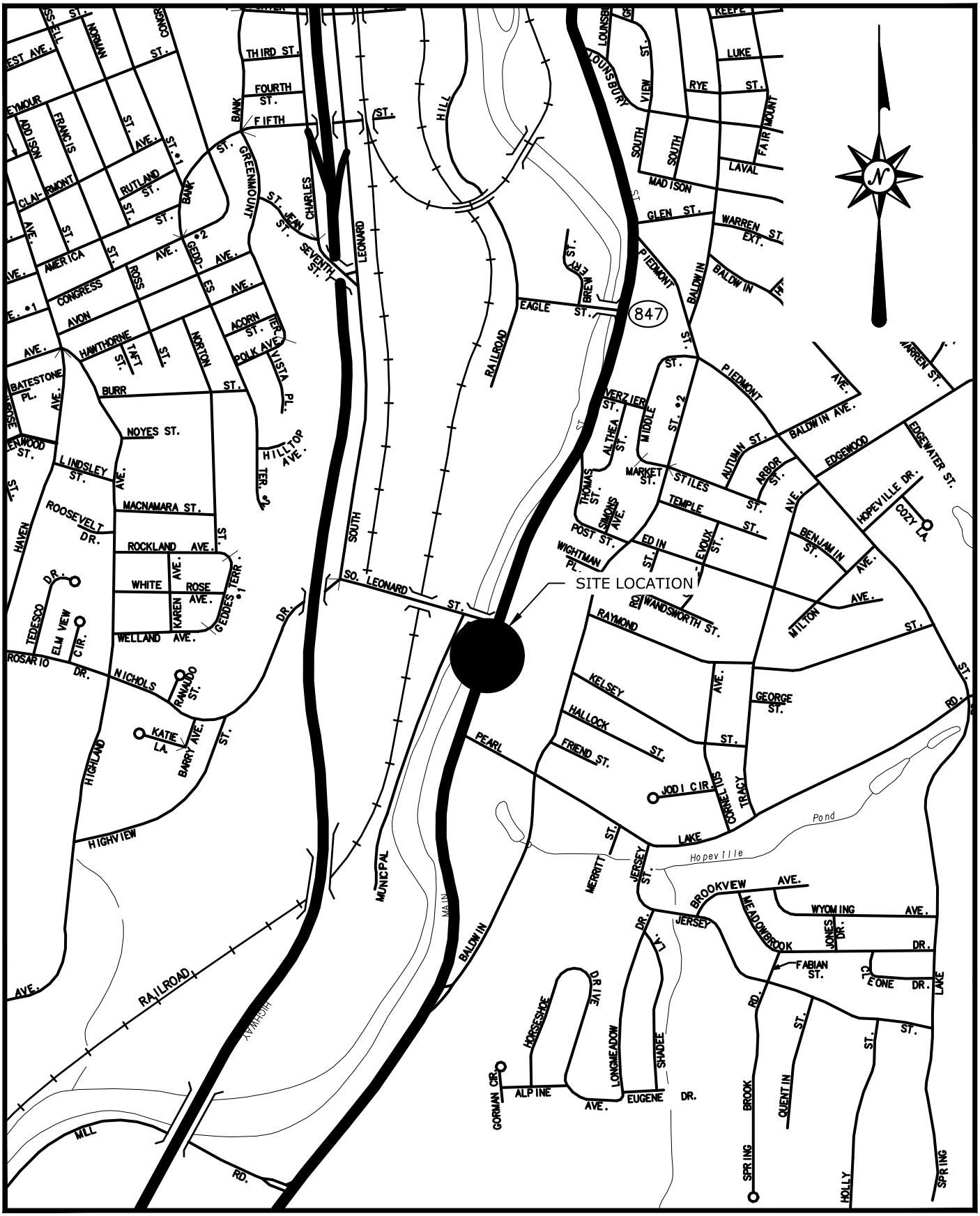
Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has limited traffic control, unobstructed mainline sight lines, a constant incline on the northbound side of Prospect Road, inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.



In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

Prospect Road has a posted speed limit of 35 mph; however, City-collected speed data indicate widespread noncompliance in both directions. In the northbound direction, more than 88% of vehicles per day (approximately 4,300 vehicles) were observed traveling above the posted speed limit, including nearly 920 vehicles per day (19%) traveling at least 10 mph over the limit. In the southbound direction, nearly 83% of vehicles per day (approximately 2,000 vehicles) exceeded 35 mph, with approximately 750 vehicles per day (31%) traveling 10 mph or more above the posted speed limit. The high frequency and severity of speeding violations indicate a persistent traffic safety concern along Prospect Road.

In summary, the installation of Speed Cameras along Prospect Road will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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LAND SURVEYING

BL Companies

2060 S MAIN ST

SPEED LIMIT CAMERA INSTALLATION
WATERBURY, CT
SCALE 1" : 1000'

Project No. 2503024
Date JUNE, 2026

FIGURE 14

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

5. 2060 South Main Street

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	41 (NB)	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	8,300	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3517	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**24.5%**	**76.3%**

Roadway Geometry and Location Description:

South Main Street is a flat terrain in both directions. It has 1-12' northbound lane with an 8' right shoulder, a 15' center left-turn lane, and 1-12' southbound lane with a 14' right shoulder. There are no pedestrian facilities present at the project location. The posted speed limit is 35 mph. The road is relatively level.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic signals, flat grade with unobstructed mainline sight lines, inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.

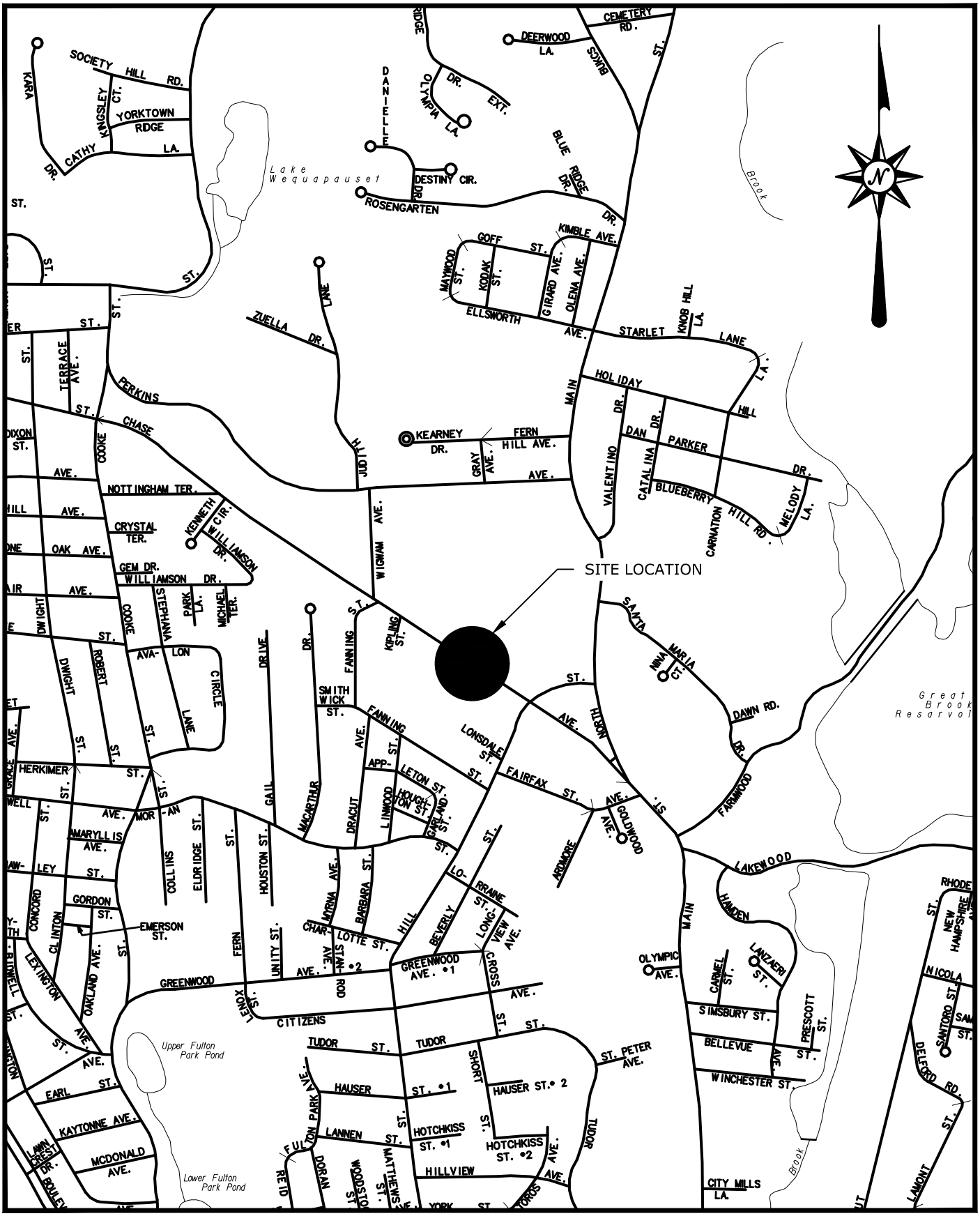




In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

South Main Street has a posted speed limit of 35 mph. However, City-collected speed data indicate notable noncompliance, particularly in the southbound direction. In the northbound direction, more than 27% of vehicles per day (approximately 1,050 vehicles) were observed traveling above the posted speed limit. In the southbound direction, nearly 39% of vehicles per day (approximately 1,800 vehicles) exceeded 35 mph, including approximately 399 vehicles per day (%) traveling at least 10 mph over the speed limit. Although the 85th-percentile speed is less than 10 mph above the posted speed limit, the volume of violations, especially in the southbound direction, indicates a persistent speeding concern at this location.

In summary, the installation of Speed Cameras along South Main Street will reduce speeds, improve compliance and increase overall traffic safety. The installation will be only along the southbound side due to the transition to a higher speed just south of this location. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



300 CHASE AVE

SPEED LIMIT CAMERA INSTALLATION
WATERBURY, CT

SCALE 1" : 1000'

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ENVIRONMENTAL
LAND SURVEYING

BL Companies

Project No. 2503024
Date JUNE, 2026

FIGURE 15

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations





6. 300 Chase Avenue

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	37.6	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	17,300	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3510	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**18.9%**	**85.3%**

Roadway Geometry and Location Description:

Chase Avenue has a gradual positive grade in the westbound direction. There is 2-11' travel lanes in both directions. A left turn lane is also present in the eastbound direction. The speed limit is 25 mph and there are sidewalks along both sides of the roadway.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has a constant with unobstructed mainline sight lines and inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.

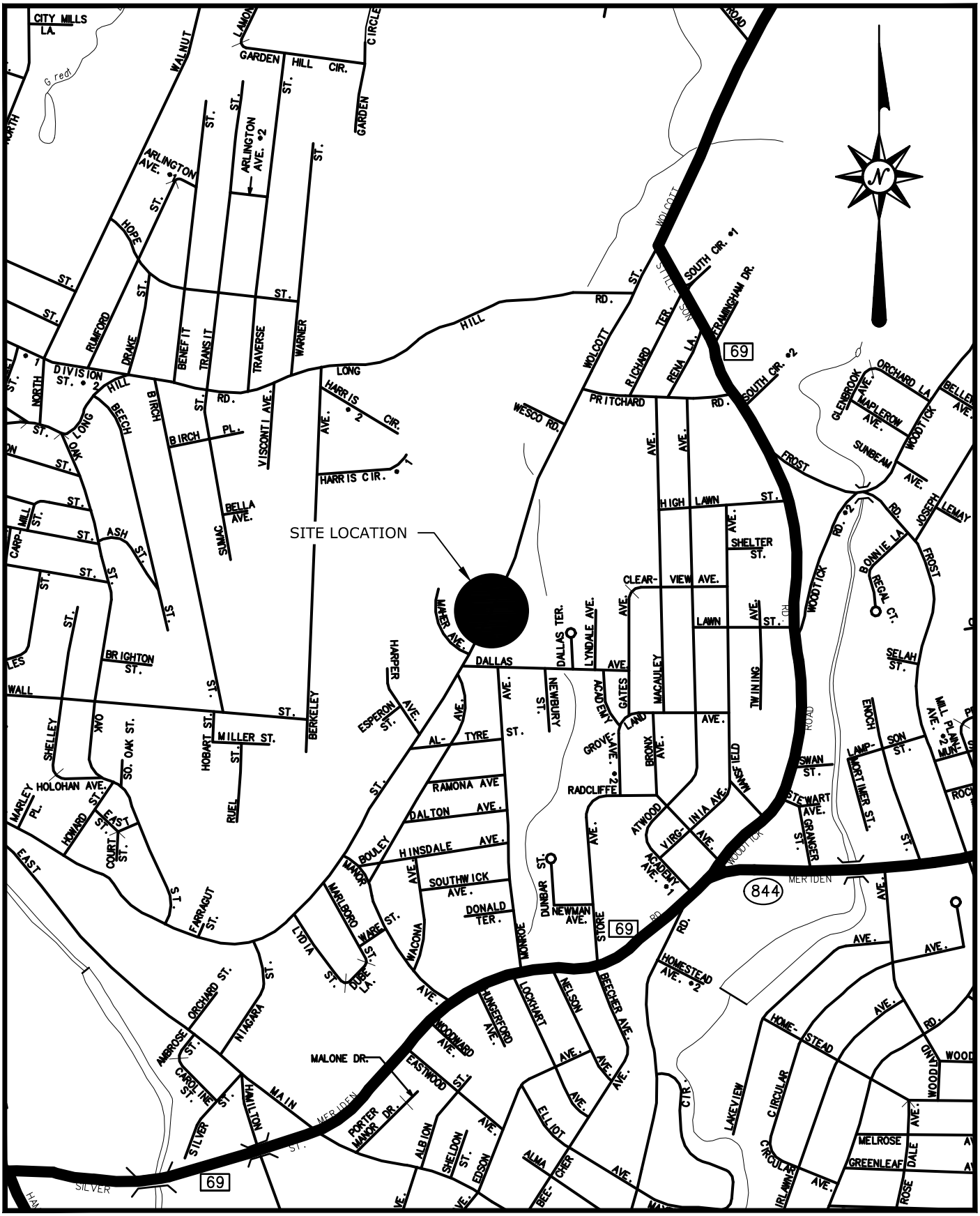
In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant



progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

Chase Avenue has a posted speed limit of 25 mph; however, City-collected speed data indicate widespread noncompliance in both directions. In the eastbound direction, more than 83% of vehicles per day (approximately 7,700 vehicles) were observed traveling above the posted speed limit, including nearly 2,650 vehicles per day (29%) traveling at least 10 mph over the limit. In the westbound direction, nearly 88% of vehicles per day (approximately 7,000 vehicles) exceeded 25 mph, with approximately 2,500 vehicles per day (3%) traveling 10 mph or more above the posted speed limit. The frequency and severity of speeding violations in both directions indicate a significant and ongoing traffic safety concern along Chase Avenue.

In summary, the installation of Speed Cameras along Chase Avenue will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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580 WOLCOTT ST

SPEED LIMIT CAMERA INSTALLATION
WATERBURY, CT
SCALE 1" : 1000'

Project No. 2503024
Date JUNE, 2026

FIGURE 16

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

7. 580 Wolcott Street

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	40.8	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	12,600	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3512	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**21.2%**	**81.0%**

Roadway Geometry and Location Description:

Wolcott Street is a rolling terrain in both directions. It has 2-11' northbound lanes and 2-11' southbound lanes. There are sidewalks on both sides of the roadway present at the project location. The posted speed limit is 35 mph.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic signals, flat grade with unobstructed mainline sight lines, inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.

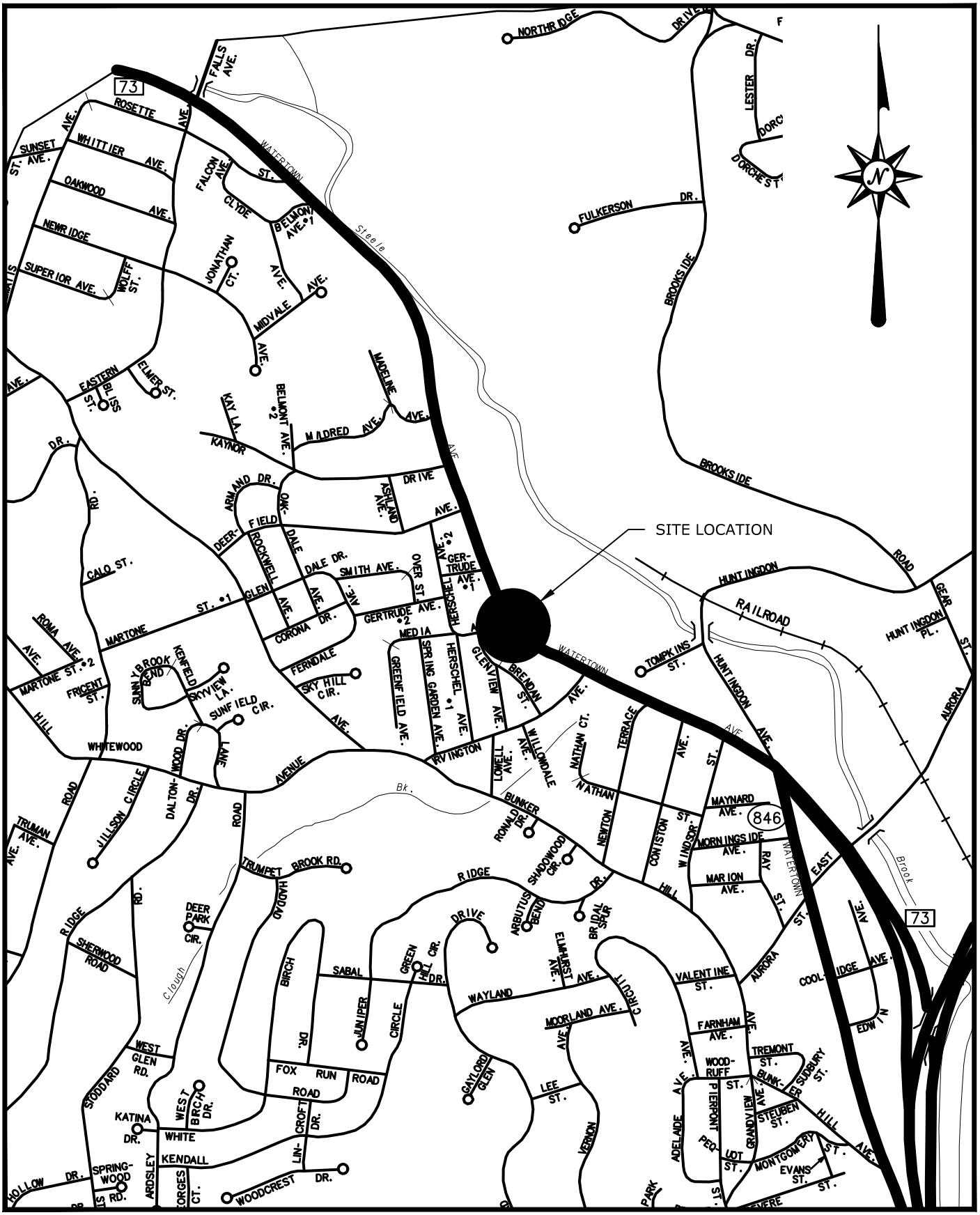
In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable



constraints due to limited resources and competing needs such as preventing crime that take priority.

Wolcott Street has a speed limit of 35 mph. However, based on data collected by the City, in the northbound direction, more than 51% of vehicles per day (nearly 2,750 vpd) were measured traveling over 35 mph. More importantly, nearly 290 vehicles per day (5%) were measured to be traveling 10 miles over 35 mph limit. In the southbound direction, nearly 53% of vehicles per day (nearly 3,850 vpd) were measured traveling over the 35 mph speed limit. On an average day, in this opposite direction, nearly 550 vehicles per day (8%) were measured to be traveling 10 miles over the 35 mph speed limit. Although the 85th percentile speed is less than 10 mph over the speed limit, there is still a significant number of violations at this location.

In summary, the installation of Speed Cameras along Wolcott Street will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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WATERTOWN AVE AT MEDIA AVE

SPEED LIMIT CAMERA INSTALLATION

WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024

Date JUNE, 2026

FIGURE 17

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

8. Watertown Avenue at Media Avenue

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	41.2	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	18,400	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3522	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**28.6%**	**83.4%**

Roadway Geometry and Location Description:

Watertown Avenue is a flat terrain in both directions. It has 2-12' northbound lanes that transition to 1-12' lane within the project location. It also has 1-12' southbound lane with a 12' right shoulder. There are no pedestrian accommodations present at the project location. The posted speed limit is 35 mph. The W.F. Kaynor Technical High School is located on the northbound side of Watertown Avenue.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic signals, flat grade with unobstructed mainline sight lines, inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.

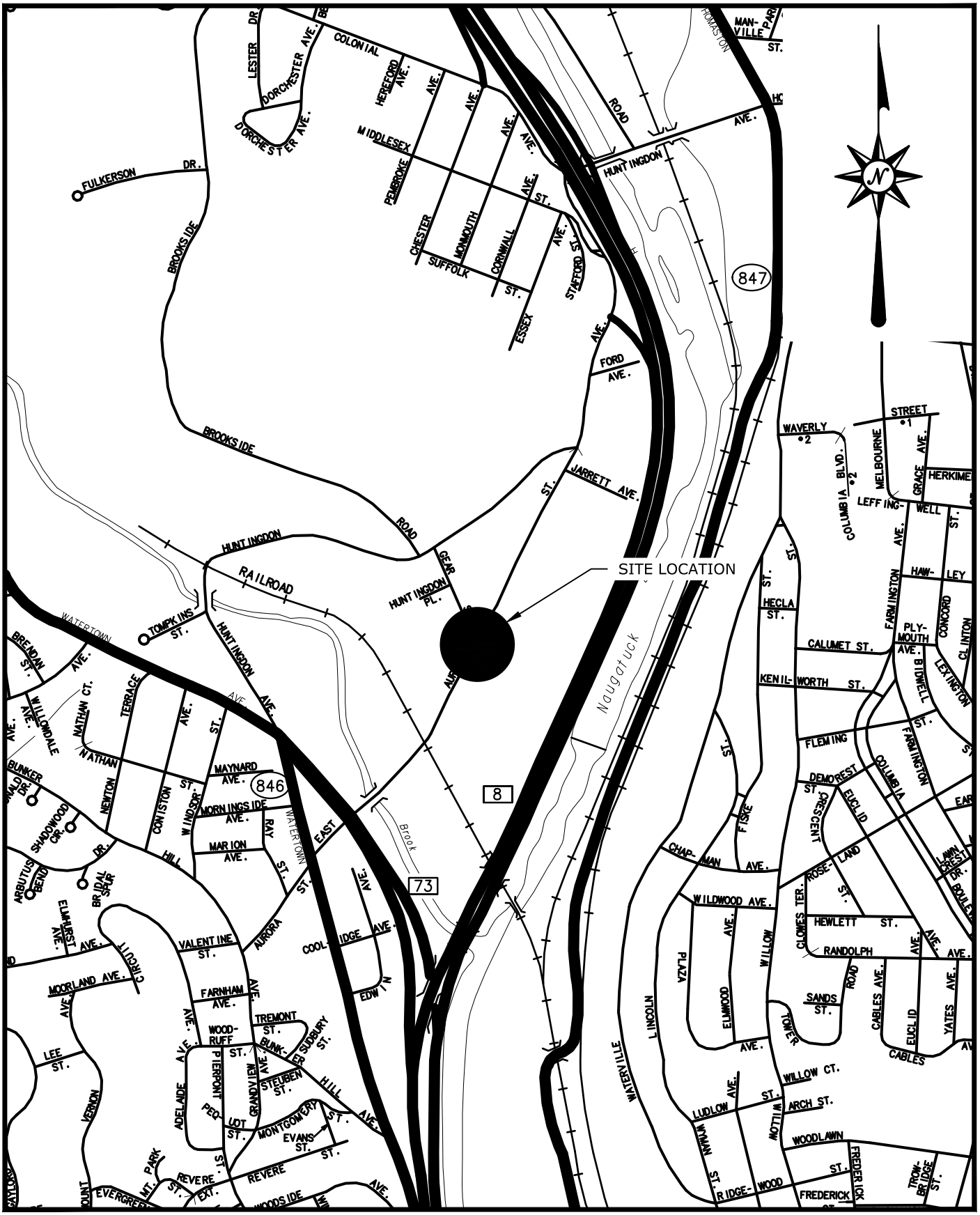




In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

Watertown Avenue has a posted speed limit of 35 mph; however, City-collected speed data indicate substantial noncompliance in both directions. In the northbound direction, more than 67% of vehicles per day (approximately 6,900 vehicles) were observed traveling above the posted speed limit, including nearly 1,200 vehicles per day (1%) traveling at least 10 mph over the limit. In the southbound direction, nearly 59% of vehicles per day (approximately 4,800 vehicles) exceeded 35 mph, with approximately 250 vehicles per day (3%) traveling 10 mph or more above the posted speed limit. Although the 85th-percentile speed is less than 10 mph above the posted speed limit, the frequency and severity of speeding violations indicate a persistent safety concern along Watertown Avenue.

In summary, the installation of Speed Cameras along Watertown Avenue will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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E AURORA ST AT GEAR ST

SPEED LIMIT CAMERA INSTALLATION
WATERBURY, CT

SCALE 1" : 1000'

Project No. 2503024
Date JUNE, 2026

FIGURE 18

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

9. East Aurora Street at Gear Street

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	36.3	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	8,500	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3523	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**30.2%**	**97.1%**

Roadway Geometry and Location Description:

East Aurora Street is a rolling terrain in both directions. It has a 12' travel with a 4' shoulder in both directions. There are no pedestrian accommodations present at the project location. The posted speed limit is 25 mph. The area is industrial in nature with numerous access driveways.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic signals, rolling grade with unobstructed mainline sight lines, and inadequate streetscaping. All these contribute significantly to the speeding problem along the roadway.

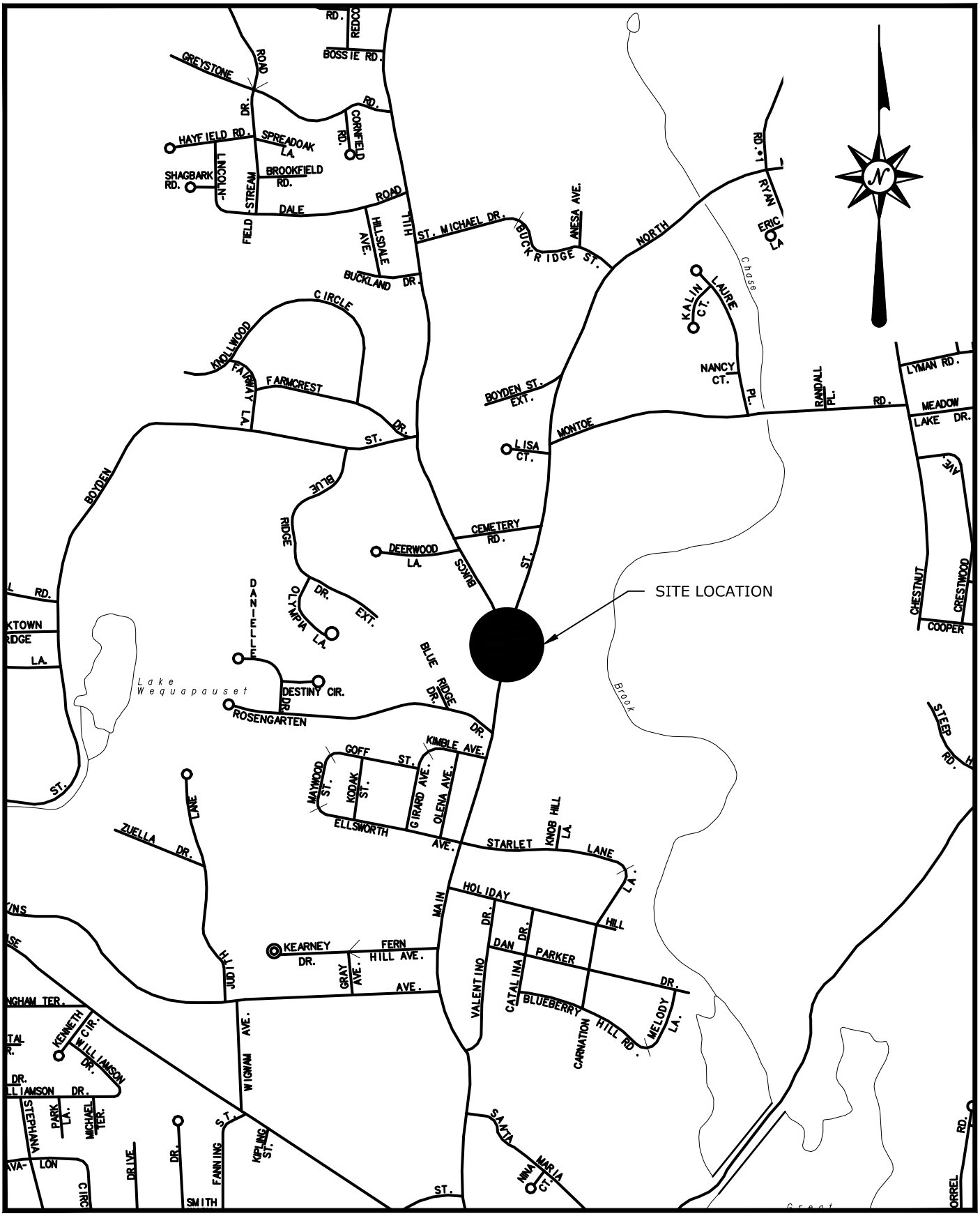




In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

East Aurora Street has a posted speed limit of 25 mph; however, City-collected speed data indicate widespread noncompliance in both directions. In the northbound direction, more than 82% of vehicles per day (approximately 4,110 vehicles) were observed traveling above the posted speed limit, including nearly 950 vehicles per day (19%) traveling at least 10 mph over the limit. In the southbound direction, nearly 92% of vehicles per day (approximately 3,250 vehicles) exceeded 25 mph, with approximately 1,260 vehicles per day (35%) traveling 10 mph or more above the posted speed limit. The frequency and severity of speeding violations indicate a significant and ongoing traffic safety concern along East Aurora Street.

In summary, the installation of Speed Cameras along East Aurora Street will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



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N MAIN ST AT BUCKS HILL RD

SPEED LIMIT CAMERA INSTALLATION
WATERBURY, CT
SCALE 1" : 1000'

Project No. 2503024
Date JUNE, 2026

FIGURE 19

CAD File TRA2503024_Camera_Design_Location_Maps

Xref (s): ; 151_DWG ; twnsite5 ; ECW ; TBD2503024_Camera_Design_Camera_Locations

10. North Main Street at Bucks Hill Road

Speed Enforcement

Traffic Data		Source
85th Percentile Speed[1], mph	34.5	March 2026 Counts[2]
ADT (Average Daily Traffic)[1], vpd	12,600	March 2026 Counts[2]

[1]Speed and ADT data are for both directions unless otherwise noted

[2]See **Appendix**

Enforcement Device Justification	Yes	No
Is enforcement data available?	◉	○
Was it recommended via a Road Safety Audit?	○	◉
Have other speed reduction measures been implemented and have not been ineffective?	○	◉
If any are yes, backup documentation has been attached to this document.		

Census Tract Information	Census Tract Number: 3524	
	Poverty Rate	**Households w/ Vehicles**
Citywide	**25.9%**	**80.5%**
Census Tract	**30.1%**	**89.3%**

Roadway Geometry and Location Description:

North Main Street is a rolling terrain in both directions. It has a 16' lanes in both direction with a posted speed limit of 25 mph. There is sidewalk present along the east side of the roadway withing the project location.

Justification:

Existing Roadway geometry and alignment creates unsafe conditions prone to speeding. For instance, in both directions, the roadway has very limited traffic signals, rolling grade with unobstructed mainline sight lines, wide lanes, inadequate streetlighting and streetscaping. All these contribute significantly to the speeding problem along the roadway.

In 2022, the Waterbury Police Department issued more than 150 speeding-related moving vehicle violations citywide. While the WPD's traffic enforcement unit has made significant



progress in recent years to limit poor driving behavior, they still face considerable constraints due to limited resources and competing needs such as preventing crime that take priority.

North Main Street has a speed limit of 25 mph. However, based on data collected by the City, in the northbound direction, more than 82% of vehicles per day (nearly 4,950 vpd) were measured traveling over 25 mph. More importantly, nearly 1,600 vehicles per day (26%) were measured to be traveling 10 miles over 25 mph limit. In the southbound direction, nearly 72% of vehicles per day (nearly 4,700 vpd) were measured traveling over the 25 mph speed limit. On an average day, in this opposite direction, nearly 1,400 vehicles per day (14%) were measured to be traveling 10 miles over the 25 mph speed limit. Although the 85th percentile speed is less than 10 mph over the speed limit, there is still a significant number of violations at this location.

In summary, the installation of Speed Cameras along North Main Street will reduce speeds, improve compliance and increase overall traffic safety. The implementation of Speed Cameras will also address stakeholder concerns around speeding due to poor driving behavior, inferior geometric conditions, while reducing the burden on local law enforcement.



APPENDIX

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EXISTING TRAFFIC SIGNAL PLANS

MOVEMENT DIAGRAM

	NTOR		PHASE 1 PRE-EMPT 1			PHASE 2 PRE-EMPT 2			PHASE 3			PHASE 4			PHASE 5 PRE-EMPT 2			PHASE 6 PRE-EMPT 1			PHASE 7			PHASE 8					
		FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
FACE #	1	Y	←R	↚R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R
	2	Y	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	3	R	R	R	R	R	R	R	←R	↚R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R
	4	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	5	Y	R	R	R	G	Y	R	R	R	R	R	R	R	←R	↚R	R	R	R	R	R	R	R	R	R	R	R	R	R
	6	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R
	7	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	←R	↚R	R	R	R	R	R	R	R
	8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R
	P	OFF	← DW									← DW															WØ	← DW	
						← YIELD POINT												← YIELD POINT											
	MIN		4	3	1	15	3	1	4	3	1	5	3	1	4	3	1	15	3	1	4	3	1	5	3	1	7/10	4	0
	MAX		15	5	3	60	5	3	15	5	3	30	5	3	15	5	3	60	5	3	15	5	3	40	5	4	10/25	4	3
INTERVALS	MIN GRN		5			20			5			7			5			20			5			7					
	WALK																										7		
	PED CLR																										14		
	VEH EXT		2						2			2			2						2			2					
	MAX 1		6			37			6			33			6			37			9			30					
	MAX 2		6			54			6			16			6			54			6			16					
	YELLOW			3.0			3.8			3.7			4.7			3.1			3.8			3.7			4.7			4.0		
	RED				1.0			2.2			1.0			2.0			1.0			2.2			1.0			2.0			0
	ADD INIT																												
	MAX INIT																												
	TBR																												
	TTR																												
	MIN GAP																												
	MODE		NON-LOCK			MAX RECALL			NON-LOCK			NON-LOCK			NON-LOCK			MAX RECALL			NON-LOCK			NON-LOCK			NON-LOCK		
	INIT START					THIS PHASE												THIS PHASE											

COUNTDOWN PEDESTRIAN SIGNAL

DETECTORS			
IDENT	SIZE (WXL)	TURNS	MODE
D1	6'x6'	3	PRESENCE
D3	6'x6'	3	PRESENCE
D4	6'x6'	3	PRESENCE
D4A	12'x6'	3	PRESENCE
D5	6'x6'	3	PRESENCE
D7	6'x6'	3	PRESENCE
D8	6'x6'	3	PRESENCE
D8A	9'x6'	3	PRESENCE
SD1	6'x6'	4	PRESENCE
SD2	6'x6'	4	PRESENCE

SYSTEM LOC	COORDINATION TYPE: CLOSED LOOP					
MASTER CITY HALL	PROGRAM			CYCLE	OFFSET	
	FUNCTION	TIME	DAYS		SEC	%
ZONE 10	FLASH	2300-0600	DAILY			
1001	MAX 1	SEE TECH NOTES	DAILY			
1002						
1003						
1004						
1005						
1006						
1007						

SIGN LEGEND

Ⓐ SPAN MOUNT 31-0135Z (↖)

Ⓑ SPAN MOUNT 31-0823Z (NTOR)

NOTES:

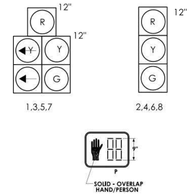
SEE SEPARATE PLAN FOR PAVEMENT MARKINGS AND ADDITIONAL SIGNING.

Ⓣ CITY MAINTAINED BAR TYPE CROSSWALK (16" x 16" x 8' MIN.)
CITY TO OWN AND MAINTAIN PRE-EMPTION EQUIPMENT

CLOSED LOOP DETECTOR CHART		
DETECTOR	LOCAL DETECTOR	SYSTEM DETECTOR
D1	1	
D1 REAR		SD6
D3	3	
D3 REAR		SD3
D4	4	
D4 REAR		SD4
D4A	9	
D5	5	
D5 REAR		SD5
D7	7	
D7 REAR		SD7
D8	8	
D8 REAR		SD8
D8A	10	
SD1		SD1
SD2		SD2

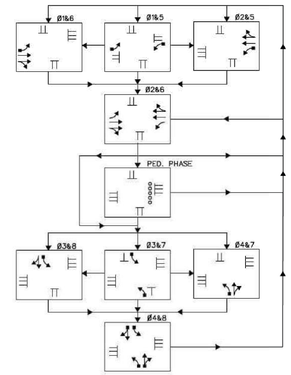
TECHNICAL NOTES	OFFICE RECORD
STANDARD OVERLAP SKIP FEATURES APPLY	REV # TIR # SM # SIGNAL REVISED:
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.	REVISED TIMINGS UNDER PROJECT #0174-0435.
TIMINGS SHOWN REFLECT FREE OPERATION. ACTUAL TIMINGS TO BE DETERMINED BY INTERNAL CLOSED LOOP	
LOCAL UNIT.	
COUNTDOWN ONLY DURING PEDESTRIAN CLEARANCE INTERVAL.	
MANUAL & INTERVAL ADVANCE TO BE DISCONNECTED DURING PED. CLEARANCE INTERVAL	
SIGNAL MAY DOUBLE-CYCLE IF PED. PUSH BUTTON IS ACTIVATED DURING COORDINATION.	
PHSAES 1 & 5 TO DRIVE FACES 1 & 5 ↚ AND ← ONLY.	
PHSAES 2 & 6 TO DRIVE FACES 1 & 5 R. Y. G.	
PHSAES 3 & 7 TO DRIVE FACES 3 & 7 ↚ AND ← ONLY.	
PHSAES 4 & 8 TO DRIVE FACES 3 & 7 R. Y. G.	
PHASE 2 ON TO OMIT PHASE 1.	
PHASE 6 ON TO OMIT PHASE 5.	

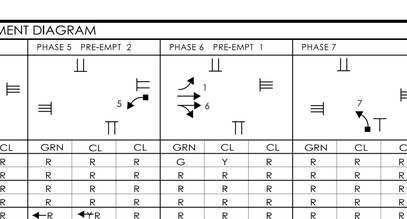
SIGNAL FACES



ALL INDICATIONS HAVE LED LAMPS.

PRE-EMPTION SETTINGS	PRE-EMPT 1	PRE-EMPT 2
PRIORITY	NO	NO
DET. LOCK	YES	YES
DELAY	0	0
ALT. MIN. GRN	5	5
ALT. YELLOW	PARENT	PARENT
ALT. RED	PARENT	PARENT
ALT. PED. CLR.	PARENT	PARENT
HOLD GREEN	15	15
HOLD YELLOW	3.0	3.1
HOLD RED	1.0	1.0
HOLD PHASE	1&6	2&5
EXIT PHASE	2&6	2&6
EXIT CALL	NONE	NONE





DETAIL 'A'
NOT TO SCALE

SCALE: 1" = 40'

This Sheet not corrected

CLEARANCE INTERVALS DESIGNED BY:
VN ENGINEERS, INC.

ENGINEER'S SEAL & SIGNATURE APPLY TO CLEARANCE INTERVALS ONLY.

VN ENGINEERS

CITY SIGNAL

	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAWN BY				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
APPROVED DATE				

REV #	INTERSECTION # 1001
ENERGY BY CITY	ADDRESS #
MAINT LEVEL	SERVICE POLE CL&P 25873
	UNMETERED SERVICE

NEW SHEET ADDED BY DESIGN INITIATED
CHANGE ORDER NO. 2

SPAN POLE INFORMATION
HEIGHT 28', B.C. 20", LOAD AT YIELD 6100 lbs.

REVISION DESCRIPTION
DATE
REV.

LEGEND:
R RED, Y YELLOW, G GREEN
FL FLASHING; ◀R RED ARROW; ◀Y YELLOW ARROW; ◀ GREEN ARROW; WØ WALK/ PED. CLR; D.W. DON'T WALK
DET. LEADS IN SAW CUT; PROPOSED RMC; EXISTING RMC; CABLE CLOSURE; VC VIDEO CAMERA CABLE; RC RADAR CABLE
PROPOSED WOOD SPAN POLE; EXISTING WOOD SPAN POLE; PROPOSED STEEL SPAN POLE; EXISTING STEEL SPAN POLE; PROPOSED UTILITY POLE; EXISTING UTILITY POLE
PEDESTAL MOUNTING; PEDESTRIAN PUSH BUTTON & SIGN; DIRECTIONAL ARW. FOR PUSH BUTTON; TRAFFIC SIGNAL FACE; PEDESTRIAN SIGNAL FACE; GUY WIRE
PROPOSED HANDHOLE; EXISTING HANDHOLE; AUXILIARY TERMINATION CABINET; AUXILIARY EQUIPMENT CABINET; PROPOSED CONTROLLER; EXISTING CONTROLLER
IP DETECTOR; RADAR DETECTOR; THERMAL DETECTOR; AUDIO DETECTOR; 360° CAMERA ASSEMBLY; OPTICAL DETECTOR
SD SYSTEM DETECTOR; VIDEO DETECTION ZONE; LOOP DETECTOR; RADIO ANTENNA

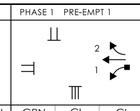
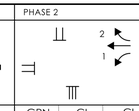
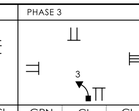
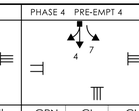
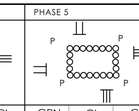
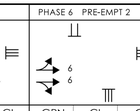
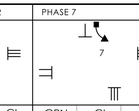
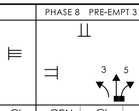
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0174-0435
COOKE STREET AT HOMER STREET
TOWN(S): WATERBURY
DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

DRAWING NO. TCS-39-137
SHEET NO. 03.39-137.C2

LASTED SAVED BY: RichardEH FILE NAME: C:\Users\richardeh\State of Connecticut\DOT CTDOT_DDE - CONNECT_WIP\CT_Configuration\Organization\Cell\CTDOT_Borders_Contract.cel
PLOTTED DATE: 6/19/2024

MOVEMENT DIAGRAM

NTOR		PHASE 1 PRE-EMPT 1			PHASE 2			PHASE 3			PHASE 4 PRE-EMPT 4			PHASE 5			PHASE 6 PRE-EMPT 2			PHASE 7			PHASE 8 PRE-EMPT 3					
NONE																												
	FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
1	Y	←G	←↑G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
2	Y	G	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
3	R	R	R	R	R	R	R	← R	←↑R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R			
4	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R			
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R			
6	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R			
7	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	←R	←↑R	R	R	R	R			
P	OFF	←					DW						→	WØ	←				DW						→			
					← YIELD POINT												← YIELD POINT											
MIN		6	3	1	15	3	1	5	3	1	5	3	1	5	3	0	15	3	1	5	3	1	5	3	1			
MAX		30	5	3	60	5	3	30	5	3	30	5	3	25	5	1	60	5	3	15	5	3	30	5	3			
MIN GRN		6			20			5			5						20			5			5					
WALK														7														
PED CLR														16														
VEH EXT					3			2			3						3			2			3					
MAX 1		10			37			7			20						37			7			20					
MAX 2		10			37			7			20						37			7			20					
YELLOW			3.0			3.8			3.0			3.5			4.0			3.8			3.0			3.5				
RED				1.0			2.6			1.0			1.7			0			2.6			1.0			1.7			
ADD INIT																												
MAX INIT																												
TBR																												
TTR																												
MIN GAP																												
MODE		NON-LOCK			MAX RECALL			NON-LOCK			NON-LOCK			NON-LOCK			MAX RECALL			NON-LOCK			NON-LOCK			OFF		
INIT START					THIS PHASE												THIS PHASE											

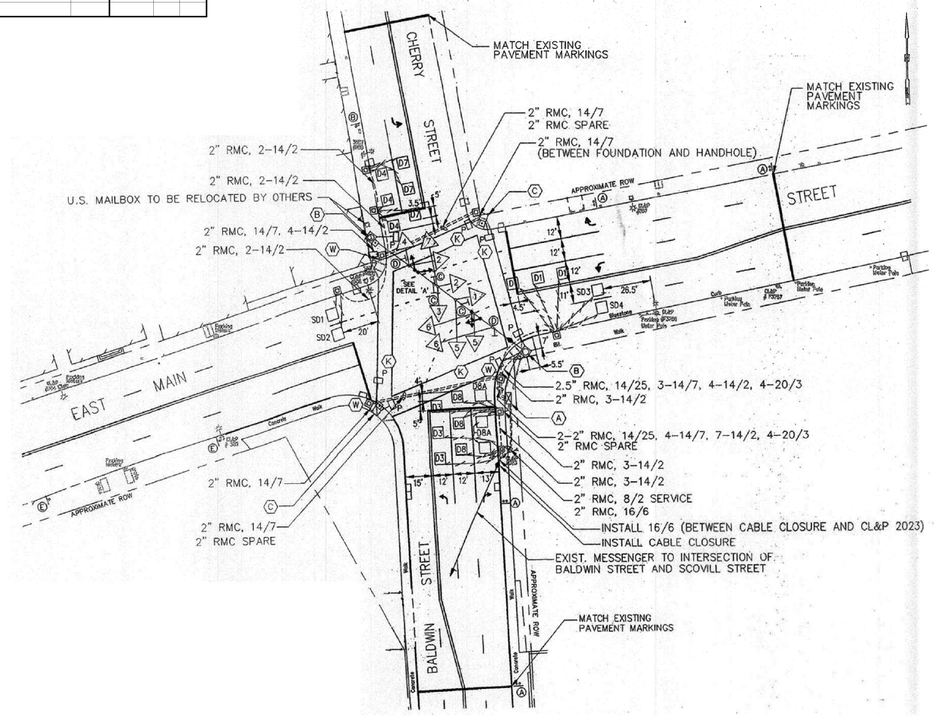
DETECTORS				SYSTEM LOC	COORDINATION TYPE: CLOSED LOOP					
IDENT	SIZE (WXL)	TURNS	MODE	MASTER CITY HALL	PROGRAM FUNCTION	PROGRAM TIME	PROGRAM DAYS	CYCLE	OFFSET SEC	OFFSET %
D1	6' X 6'	3	PRESENCE	III-1	FLASH	FUTURE				
D3	6' X 6'	3	PRESENCE	III-2	MAX 1	SEE TECH NOTES				
D4	6' X 6'	3	PRESENCE	III-3						
D7	6' X 6'	3	PRESENCE	III-4						
D8	6' X 6'	3	PRESENCE							
D8A	6' X 6'	3	PRESENCE							
SD1-4	6' X 6'	3	PRESENCE							

SIGN LEGEND

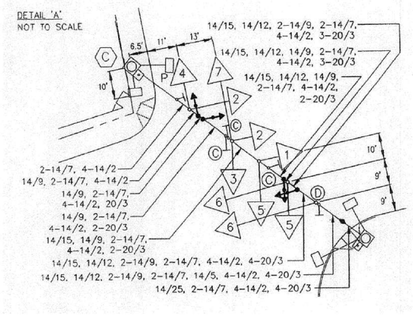
- (A) INSTALL 31-0302(z) ( )
- (B) INSTALL 31-0282(z) ( )
- (C) SPAN MOUNT 31-0183(z) ( )
- (D) SPAN MOUNT 31-0138(z) ( )
- (E) EXISTING ( )

NOTES

1. SEE SEPARATE SHEET FOR PAVEMENT MARKING AND SIGNING PLAN.
2. (X) INSTALL BAR TYPE CROSSWALK



DETAIL 'A'
NOT TO SCALE

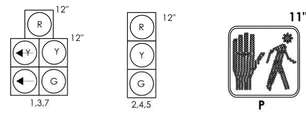


INTERNAL CLOSED LOOP DETECTOR ASSIGNMENT CHART				
DETECTOR	LOCAL DETECTOR	SYSTEM DETECTOR	PHASE ASSIGN	DETECTOR ASSIGN
D7	LD1		Ø5	25
D4	LD2		Ø5	26
D3	LD3		Ø4	27
D8	LD4		Ø5	28
D8A	LD5		Ø5	29
SD1		SD1		17
SD2		SD2		18
SD3		SD3		19
SD4		SD4		20

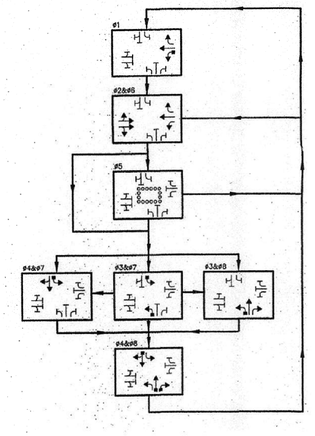
SPAN POLE DATA			
POLE TYPE	LENGTH	BOLT CIRCLE	LOAD AT YIELD 18" FROM TOP
(B)	30'	20"	7,800 lbs

TECHNICAL NOTES	OFFICE RECORD
STANDARD OVERLAP SKIP FEATURES APPLY	REV # TIR # SM # SIGNAL REVISED:
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.	REVISED TIMINGS UNDER PROJECT # 0174-0435.
PHASES 3 & 7 TO DRIVE FACES 3 & 7←Y-AND←ONLY.	
PHASES 4 & 8 TO DRIVE FACES 3 & 7 R, Y AND G.	
TIMINGS SHOWN REFLECT FREE OPERATION.	
ACTUAL COORDINATION INFORMATION TO BE DETERMINED BY THE COORDINATION SYSTEM.	
ARTERY PHASE DETECTORS TO BE NON-ACTUATING DURING COORDINATION.	

SIGNAL FACES



ALL SIGNAL FACES HAVE TUNNEL VISORS.
ALL INDICATIONS HAVE LED LAMPS.



PRE-EMPTION SETTINGS	PRE-EMPT 1	PRE-EMPT 2	PRE-EMPT 3	PRE-EMPT 4
PRIORITY	NO	NO	NO	NO
DET. LOCK	YES	YES	YES	YES
DELAY	0	0	0	0
ALT. MIN. GRN	5	5	5	5
ALT. YELLOW	PARENT	PARENT	PARENT	PARENT
ALT. RED	PARENT	PARENT	PARENT	PARENT
ALT. PED. CLR.	PARENT	PARENT	PARENT	PARENT
HOLD GREEN	15	15	15	15
HOLD YELLOW	3.0	3.8	3.5	3.5
HOLD RED	1.0	2.6	1.7	1.7
HOLD PHASE	1	6	8	4
EXIT PHASE	2&6	2&6	2&6	2&6
EXIT CALL	NONE	NONE	NONE	NONE

This Sheet not corrected

CLEARANCE INTERVALS DESIGNED BY:
VN ENGINEERS, INC.

ENGINEER'S SEAL & SIGNATURE APPLY TO CLEARANCE INTERVALS ONLY.

VN ENGINEERS

CITY SIGNAL

NEW SHEET ADDED BY DESIGN INITIATED CHANGE ORDER NO. 2

REVISION DESCRIPTION

DATE

REV.

SCALE: 1" = 40'

	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAWN BY				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
APPROVED DATE				

REV # INTERSECTION # III-2

ENERGY BY CITY | ADDRESS #
MAINT LEVEL 5 | SERVICE POLE
UNMETERED SERVICE

LEGEND:
FL. FLASHING; R RED; ◄R RED ARROW; Y YELLOW; ◄Y YELLOW ARROW; G GREEN; ◄G GREEN ARROW; W/Ø WALK/ PED. CLR; D.W. DON'T WALK; DET. LEADS IN SAW CUT; PROPOSED RMC; EXISTING RMC; CABLE CLOSURE; VC VIDEO CAMERA CABLE; RC RADAR CABLE; PROPOSED WOOD SPAN POLE; EXISTING WOOD SPAN POLE; PROPOSED STEEL SPAN POLE; EXISTING STEEL SPAN POLE; PROPOSED UTILITY POLE; EXISTING UTILITY POLE; PEDESTAL MOUNTING; PEDESTRIAN PUSH BUTTON & SIGN; DIRECTIONAL ARW. FOR PUSH BUTTON; TRAFFIC SIGNAL FACE; PEDESTRIAN SIGNAL FACE; GUY WIRE; PROPOSED HANDHOLE; EXISTING HANDHOLE; AUXILIARY TERMINATION CABINET; AUXILIARY EQUIPMENT CABINET; PROPOSED CONTROLLER; EXISTING CONTROLLER; IP DETECTOR; RADAR DETECTOR; THERMAL DETECTOR; AUDIO DETECTOR; 360° CAMERA ASSEMBLY; OPTICAL DETECTOR; SD SYSTEM DETECTOR; VIDEO DETECTION ZONE; LOOP DETECTOR; RADIO ANTENNA

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0174-0435
EAST MAIN STREET AT CHERRY STREET AND BALDWIN STREET
TOWN(S): WATERBURY
DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

DRAWING NO. TCS-39-130
SHEET NO. 03.39-130.C2

LASTED SAVED BY: RichardEH FILE NAME: C:\Users\richardeh\State of Connecticut\DOT CTDOT_DDE - CONNECT_WIP\CT_Configuration\Organization\Cell\CTDOT_Borders_Contract.cel
PLOTTED DATE: 6/19/2024

MOVEMENT DIAGRAM

	NTOR	PHASE 1 PRE-EMPT 3			PHASE 2			PHASE 3 PRE-EMPT 1			PHASE 4 PRE-EMPT 2			PHASE 5			PHASE 6			PHASE 7			PHASE 8					
	FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
FACE # 1	R	◄	◄Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
2	R	R	R	R	G	G	G	◄G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R						
3	R	G	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
4	R	R	R	R	G	G	G	G	G	G	G	Y	R	R	R	R	R	R	R	R	R	R						
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	◄G	Y	R	R	R	R						
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R						
7	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R						
8	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	G	Y	R						
9	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	◄G	Y	R						
P	OFF	◄			DW		►							WØ	◄	►	DW											
					YIELD POINT																							
MIN		4	3	1	15	3	1	5	3	1	8	3	1	6/12	0	0	5	3	1	5	3	1						
MAX		15	5	3	50	5	3	20	5	3	50	5	5	10/20	4	0	30	5	4	15	5	3						
INTERVALS MIN GRN		6			15			7			8						5			5								
WALK														7														
PED CLR														18														
VEH EXT		2									3						2			2								
MAX 1		8			25			10			16						8			8								
MAX 2		8			25			10			16						8			8								
YELLOW			3.4			3.5			3.3			3.3			4.0			3.7			3.0							
RED				1.0			1.0			1.2			4.9			0			3.9			2.1						
ADD INIT																												
MAX INIT																												
TBR																												
TTR																												
MIN GAP																												
MODE		LOCK			MAX RECALL			NON-LOCK			LOCK			NON-LOCK			LOCK			LOCK			OFF			OFF		
INIT START					THIS PHASE																							

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D1	6' X 6'	3	PRESENCE
D4, D4A	6' X 6'	3	PRESENCE
D6	6' X 11'	3	PRESENCE
D6A	6' X 8'	3	PRESENCE
D7	6' X 10'	3	PRESENCE
D7A	6' X 12'	3	PRESENCE
SD1	6' X 10'	3	PULSE
SD2	6' X 10'	3	PULSE
SD3, 4	6' X 6'	3	PULSE

SYSTEM LOC
MASTER CITY HALL

ZONE 10
1001
1002
1003
1004
1005
1006

COORDINATION TYPE: CLOSED LOOP

PROGRAM FUNCTION	PROGRAM TIME	PROGRAM DAYS	CYCLE	OFFSET SEC	OFFSET %
FLASH	2300-0630	DAILY			
MAX1	SEE TECH NOTES				

SIGN LEGEND

- (A) INSTALL 31-0552(z) STOP
- (B) INSTALL 31-1526(z)
- (C) INSTALL 31-0183(z)
- (D) INSTALL 31-0824(z) NTOR (MAST ARM MOUNTED)
- (E) INSTALL 31-0823(z) NTOR (SPAN MOUNTED)
- (F) INSTALL 41-4212
- (G) INSTALL 31-0307(z) ONLY
- (H) INSTALL (SEE SHEET X)

NOTES:

1. ALL PAVEMENT MARKINGS INCLUDING STOP BAR ON PRIVATE DRIVE TO BE MAINTAINED BY THE CITY OF WATERBURY.

(K) INSTALL BAR TYPE CROSSWALK

NEW SHEET ADDED BY DESIGN INITIATED CHANGE ORDER NO. 2

SPAN POLE DATA

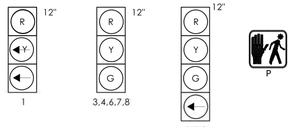
POLE TYPE	LENGTH	BOLT CIRCLE	LOAD AT YIELD 18" FROM TOP
(B)	32'	22"	10,000 LBS

MAST ARM INFORMATION

LOCATION	TYPE	ARM LENGTH	SHAFT LENGTH	SHAFT BOLT CIRCLE	ARM ATTACHMENT HEIGHT	MIN. EQUIVALENT LOAD WEIGHT (LBS)	MIN. EQUIVALENT LOAD AREA (SF)
(C)	STEEL	45'	19'	20"	18'	300	30

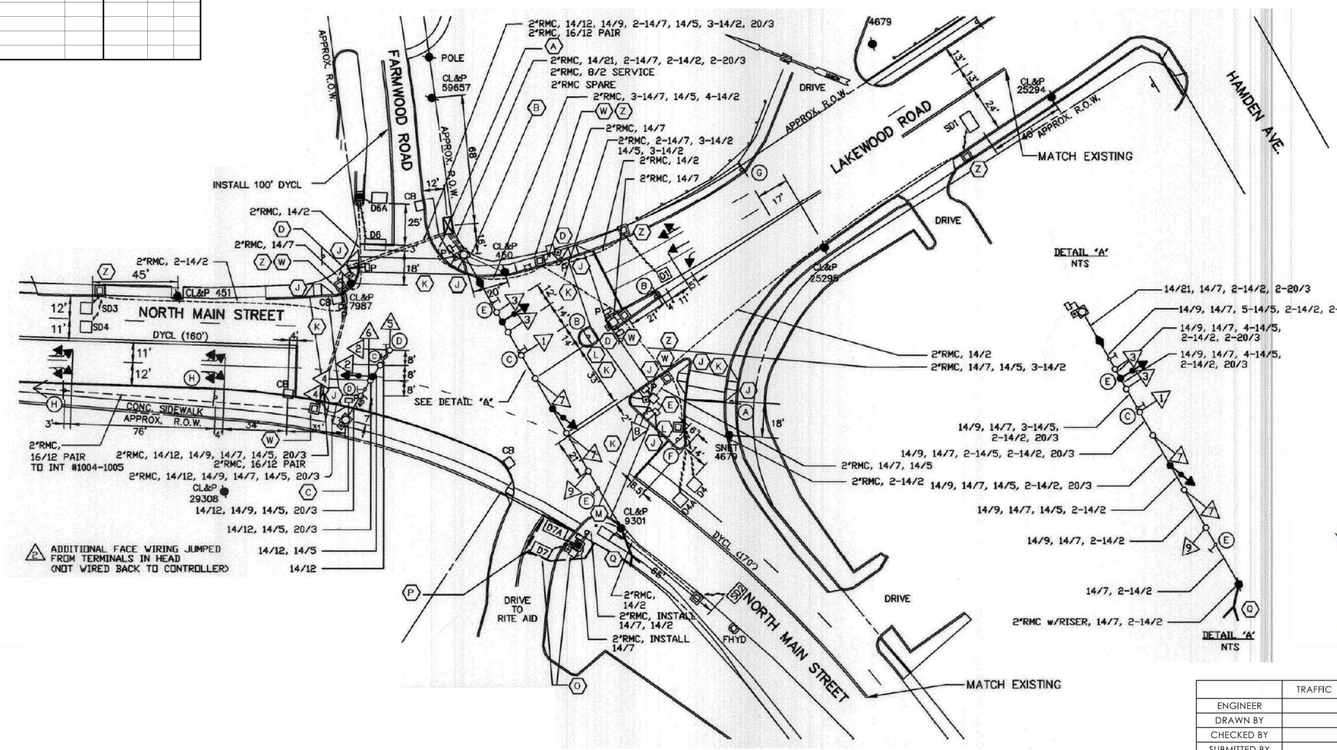
TECHNICAL NOTES	OFFICE RECORD
STANDARD OVERLAP SKIP FEATURES APPLY	REV # TIR # SM # SIGNAL REVISED:
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.	REVISED TIMINGS UNDER PROJECT #0174-0435.
PHASE 2 ON TO OMIT PHASE 4.	
PHASE 3 TO PRECEDE PHASE 4.	
PHASE 4 CHECK TO CALL PHASE 3.	
PUSH BUTTON AT ARDMORE AVE FIREHOUSE TO CALL PRE-EMPT #1.	
TIMINGS SHOWN REFLECT FREE OPERATION.	
ACTUAL COORDINATION INFORMATION O BE DETERMINED BY THE COORDINATION SYSTEM.	
ARTERY PHASE DETECTORS TO BE NON-ACTUATING DURING COORDINATION.	

SIGNAL FACES



ALL SIGNAL INDICATIONS ARE LED.
FACE HAVE TUNNEL VISORS & CUT-OFF LOUVERS ON ALL HEADS.
FACE 1 HAVE TUNNEL VISORS AND 7° 5 VANE CUT-OFF LOVERS ON THE RED INDICATIONS.

PRE-EMPTION SETTINGS	PRE-EMPT 1	PRE-EMPT 2	PRE-EMPT 3
PRIORITY	NO	NO	NO
DET. LOCK	YES	YES	YES
DELAY	0	0	0
ALT. MIN. GRN	5	5	5
ALT. YELLOW	PARENT	PARENT	PARENT
ALT. RED	PARENT	PARENT	PARENT
ALT. PED. CLR.	PARENT	PARENT	PARENT
HOLD GREEN	15	15	15
HOLD YELLOW	3.3	3.3	3.4
HOLD RED	1.2	4.9	1.0
HOLD PHASE	3	4	1
EXIT PHASE	4	1	2
EXIT CALL	3	1	2



SCALE: 1" = 40'

This Sheet not corrected

VN ENGINEERS

CLEARANCE INTERVALS DESIGNED BY: VN ENGINEERS, INC.

ENGINEER'S SEAL & SIGNATURE APPLY TO CLEARANCE INTERVALS ONLY.

CITY SIGNAL

	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAWN BY				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
APPROVED DATE				

REV # INTERSECTION # 1006

ENERGY BY CITY | ADDRESS #

MAINT LEVEL 3 | SERVICE POLE CL&P 450

UNMETERED SERVICE

LEGEND: FL. FLASHING; R RED; Y YELLOW; G GREEN; W/Ø WALK/ PED. CLR; D.W. DONT WALK; ARROW; ARROW; ARROW; CLOSURE; VC VIDEO CAMERA CABLE; RC RADAR CABLE; DET. LEADS IN SAW CUT; PROPOSED RMC; EXISTING RMC; CABLE CLOSURE; PROPOSED WOOD SPAN POLE; EXISTING WOOD SPAN POLE; PROPOSED STEEL SPAN POLE; EXISTING STEEL SPAN POLE; PROPOSED UTILITY POLE; EXISTING UTILITY POLE; PEDESTAL MOUNTING; PEDESTRIAN PUSH BUTTON & SIGN; DIRECTIONAL ARW. FOR PUSH BUTTON; TRAFFIC SIGNAL FACE; PEDESTRIAN SIGNAL FACE; GUY WIRE; PROPOSED HANDHOLE; EXISTING HANDHOLE; AUXILIARY TERMINATION CABINET; AUXILIARY EQUIPMENT CABINET; PROPOSED CONTROLLER; EXISTING CONTROLLER; IP DETECTOR; RADAR DETECTOR; THERMAL DETECTOR; AUDIO DETECTOR; 360° CAMERA ASSEMBLY; OPTICAL DETECTOR; SD SYSTEM DETECTOR; VIDEO DETECTION ZONE; LOOP DETECTOR; RADIO ANTENNA

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0174-0435
NORTH MAIN STREET AT LAKEWOOD ROAD, FARMWOOD ROAD, AND RITE AID DRIVEWAY
TOWN(S): WATERBURY
DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

DRAWING NO. TCS-39-141
SHEET NO. 03.39-141.C2

REVISION DESCRIPTION
DATE
REV.

LASTED SAVED BY: RichardEH FILE NAME: C:\Users\richardeh\State of Connecticut\DOT CTDOT_DDE - CONNECT_WIP\CT_Configuration\Organization\Cell\CTDOT_Borders_Contract.cel
PLOTTED DATE: 6/19/2024

NONE

NTOR		FLASH	PHASE 1 GRN	PHASE 1 CL	PHASE 1 CL	PRE-EMPTION PHASE 2 GRN	PHASE 2 CL	PHASE 2 CL	PHASE 3 GRN	PHASE 3 CL	PHASE 3 CL	MOVEMENT DIAGRAM PHASE 4 GRN	PHASE 4 CL	PHASE 4 CL	PHASE 5 GRN	PHASE 5 CL	PHASE 5 CL	PHASE 6 GRN	PHASE 6 CL	PHASE 6 CL	PHASE 7 GRN	PHASE 7 CL	PHASE 7 CL	PHASE 8 GRN	PHASE 8 CL	PHASE 8 CL
FACE #	1	Y	←G	←G	G	G	Y	R				R	R	R												
	2	Y	G	G	G	G	Y	R				R	R	R												
	3	Y	R	R	R	G	Y	R				R	R	R												
	4	R	R	R	R	R	R	R				G	Y	R												
	5	R	R	R	R	R	R	R				G	Y	R												
	6	R	R	R	R	R	R	R				G	Y	R												
	7	Y	G	G	G	G	Y	R				R	R	R												
						← YIELD																				
	MIN		3	3	0	10	3	0				5	3	0												
	MAX		20	5	2	70	5	2				50	5	2												
INTERVALS	MIN GRN		5			15						8														
	WALK					14						14														
	PED CLR					1						1														
	VEH EXT		2									3														
	MAX 1		8			44						28														
	MAX 2		16			39						26														
	YELLOW			3			3						3													
	RED				0.1			1						1												
	ADD INI																									
	MAX INT																									
	TBR																									
	TYR																									
	MIN GAP																									
MODE			NON-LOCK			MAX RECALL THIS PHASE			OFF			LOCK			OFF			OFF			OFF			OFF		
INI START																										

DETECTORS				PROGRAM		
IDENT	SIZE (WXL)	TURNS	MODE	FUNCTION	TIME	DAYS
D1	6'x6'	3	PRESENCE	FLASH	FUTURE	
D4	6'x6'	3	PRESENCE	MAX 2	FUTURE	
D4A	6'x6'	3	PRESENCE			
D4B	6'x6'	3	PRESENCE			
SD1-3	6'x6'	3	PRESENCE			
SD4	12'x6'	3	PRESENCE			

COORDINATION TYPE-CLOSED LOOP														PERMISSIVE PERIOD	
CYCLE	PHASE SPLITS Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	%/SEC SEC	%	OFFSET Ø	SEC		Ø	SEC

SYSTEM LOC
MASTER CITY HALL
ZONE 1

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

TIMINGS SHOWN ARE FREE OPERATION ACTUAL TIMINGS ARE TO BE DETERMINED BY MASTER.

PHASE 2 ON TO OMIT PHASE 1

PREEMPTION TO BE INOPERATIVE DURING FLASH OPERATION

ENERGY BY-TOWN | METER # -

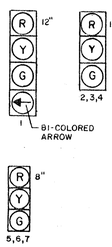
MAINT 24hr ☐ Norm ☒ | SERVICE POLE-S.N.E.T.#6047

UNMETERED SERVICE

INTERSECTION # W23/TS7

SIGNAL FACES

PRE-EMPTION I	
PRIORITY	NO
DET. LOCK	YES
DELAY	0
ALT. MIN. GRN.	5
ALT. YELLOW	PARENT
ALT. RED	PARENT
ALT. PED. CLR.	NO
HOLD GREEN	15
HOLD YELLOW	3
HOLD RED	1
HOLD PHASE	2
EXIT PHASE	4
EXIT CALL	NONE



OFFICE RECORD

STC # 151-9601-13 SM #
SIG REVISED
ADDED NEW TRAFFIC SIGNALS, DETECTORS, PED. SIGNALS, AND PRE-EMPTION

REVISION # 1
STC SM #
SIGNAL REVISED
WIDENED EB EAST MAIN STREET FOR RIGHT TURN LANE

TOWN SIGNAL

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

CITY OF WATERBURY
EAST MAIN ST AT WELTON ST. AND
BRASS MILL DR. (FORMERLY HAMILTON AVE.)

REV #	TRAFFIC DATE	ELECTRICAL DATE
ENGINEER		
DRAFTER		
CHECKED BY	BARKAN AND MESS ASSOC.	
SUBMITTED BY		
APPROVED BY		
DATE		

LEGEND

R	RED		PROPOSED CONTROLLER
Y	YELLOW		EXISTING CONTROLLER
G	GREEN		PROPOSED HANDHOLE
◀F	RED ARROW		EXISTING HANDHOLE
◀Y	YELLOW ARROW		PROPOSED (R.M.C.) RIGID METAL CONDUIT
◀G	GREEN ARROW		EXISTING (R.M.C.) RIGID METAL CONDUIT
WØ	WALK/ FL. D.W.		CABLE CLOSURE
D.W.	DON'T WALK		DET. LEADS IN SAW CUT
FL.	FLASHING		AUXILIARY TERMINATION CABINET
	PROPOSED WOOD SPAN POLE		AUXILIARY EQUIPMENT CABINET
	EXISTING WOOD SPAN POLE		AUDIBLE PEDESTRIAN SIGNAL
	PROPOSED STEEL SPAN POLE		
	EXISTING STEEL SPAN POLE		
	PROPOSED UTILITY POLE		
	EXISTING UTILITY POLE		
	PEDESTAL MOUNTING		
	PEDESTRIAN PUSH BUTTON & SIGN		
	TRAFFIC SIGNAL FACE		
	PEDESTRIAN SIGNAL FACE		
	LOOP DETECTOR		
	MAGNETIC DETECTOR		
SD	SYSTEM DETECTOR		
	OPTICAL DETECTOR		

REGION NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN.	WATERBURY		-			TS7A	

CONSTRUCTION NOTES

All traffic signal equipment is existing, except as noted.

Signal construction to be coordinated with roadway construction and utility work.

All of the underground conduit and handholes are to remain and be utilized. All mast arm assemblies to remain. All else are new.

All removed (salvaged) equipment shall be returned to City of Waterbury Traffic Division.

All signal heads are new.

All detectors are new.

All wiring, except service and interconnect is new.

All pedestals are new.

(D) Install pedestal adjacent to back edge of sidewalk and install 2" RMC from foundation to existing handhole.

(E) Remove existing pedestal and foundation and install 30" x 30" handhole. Install new pedestal (3.5' off curb), foundation and 2" RMC as shown.

(F) Install new pedestal and foundation (3.5' off curb). Direct existing conduit into new foundation.

Controller door to open field side.

Controller foundation is to modified to accept new controller cabinet.

Detectors to be installed in the pavement, where applicable, before surface course is placed.

All segmented loop detectors shall be placed 8' apart and 3' off edge of pavement, unless otherwise specified.

Install Opticom priority control preemption system in accordance with manufacture's recommendations and specifications.

The contractor shall comply with the following equipment list:

Controller - Transyt 3000 with internal closed loop and preemption (No UCF or 4 circuit clock)

8 Phase Cabinet -

Interconnect - Minimum of 12 pair. Tie down all pairs to telephone block or screw-down block. Ground all unused pairs.

Preemption - 3M Opticon

Loop Detector Amplifiers - Rack mounted 3M Canoga

Astro Bracs - For all signal heads and arm mounted signs

Stake all R.O.W. prior to excavation.

Replace entire section of sidewalk damaged due to installation or conduit, handhole or foundation.

New handholes to be Type 2, unless noted otherwise.

Utility contacts:

CLP: Don Coughlin (203) 597-4410

SNET: Fred Woltersdorf (203) 575-6622

CONSTRUCTION NOTES FOR REVISION #1

ALL TRAFFIC SIGNAL EQUIPMENT IS EXISTING, EXCEPT AS NOTED ON THE SOUTHWEST CORNER

SIGNAL CONSTRUCTION TO BE COORDINATED WITH ROADWAY CONSTRUCTION AND UTILITY WORK.

ALL OF THE UNDERGROUND CONDUIT AND HANDHOLES ARE TO REMAIN AND BE UTILIZED. ALL MAST ARM ASSEMBLIES TO REMAIN, EXCEPT ON THE SOUTHWEST CORNER.

ALL REMOVED (SALVAGED) EQUIPMENT SHALL BE RETURNED TO CITY OF WATERBURY TRAFFIC DIVISION.

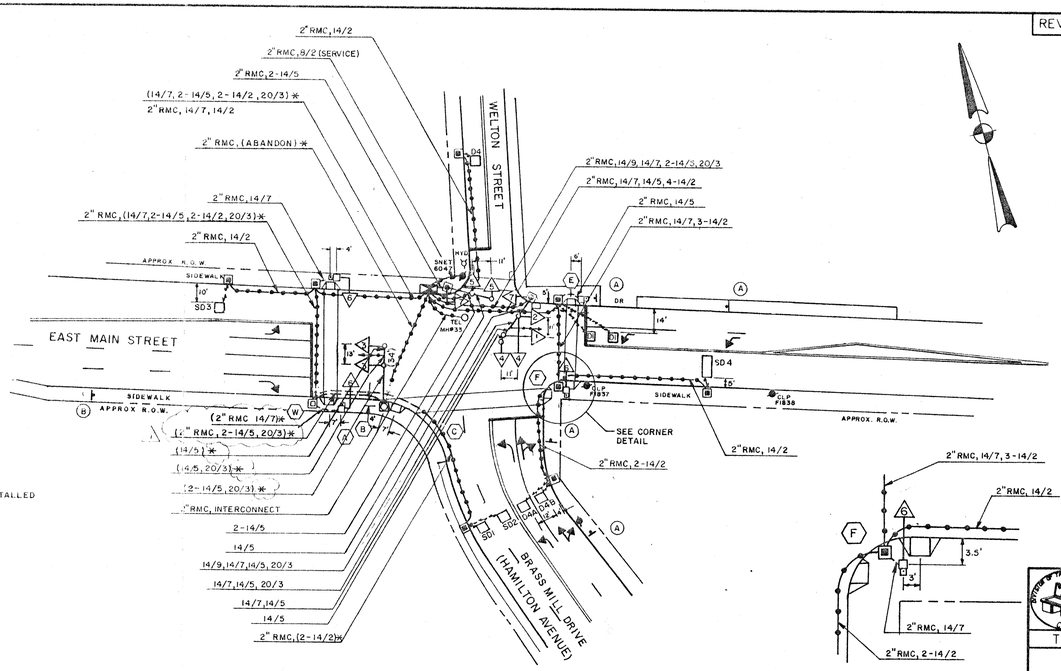
(W) INSTALL NEW 30" X 30" HANDHOLE AND EXTEND EXISTING 2" RMC FROM NORTH SIDE OF EAST MAIN STREET TO NEW HANDHOLE.

(A) RELOCATE EXISTING PEDESTAL ADJACENT TO BACK EDGE OF SIDEWALK AND INSTALL 2" RMC FROM FOUNDATION TO NEW HANDHOLE. INSTALL NEW WIRING TO CONTROLLER.

(B) REMOVE EXISTING MAST ARM ASSEMBLY AND POLE AND INSTALL NEW MAST ARM ASSEMBLY, SIGNAL HEADS, OPTICAL DETECTOR, WIRING, AND POLE AT LOCATION SHOWN. THE MAST ARM SHALL BE TRUSS TYPE, 34 FEET LONG, AND MATCH IN-KIND THAT WHICH IS BEING REPLACED. INSTALL NEW 2" RMC TO NEW HANDHOLE AS SHOWN. INSTALL NEW WIRING TO CONTROLLER FROM SIGNAL HEADS TO CONTROLLER.

(C) EXTEND EXISTING 2" RMS TO NEW HANDHOLE LOCATION, AS SHOWN. INSTALL NEW WIRING FROM EXISTING HANDHOLE TO CONTROLLER.

REV. #	INTERSECTION # W23/TS7



LEGEND
(00)* - TO BE INSTALLED

DETECTOR CHART		
	LOCAL	SYSTEM
D1	LD1	-
D4	LD2	-
D4A	LD3	-
D4B	LD4	-
SD1	-	SD1
SD2	-	SD2
SD3	-	SD3
SD4	-	SD4

SIGN LEGEND
(A) 31-0349 (9"x12") EXISTING
(B) 31-0583 (9"x12") INSTALL

NOTE:
SEE SEPARATE PLAN FOR INSTALLATION OF SIGNS AND PAVEMENT MARKINGS.

CORNER DETAIL
N.T.S.

TOWN SIGNAL

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY. OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL LAYOUT

CITY OF WATERBURY
EAST MAIN ST. AT WELTON ST. AND
BRASS MILL DR. (FORMERLY HAMILTON AVE.)

SCALE 1"= 40'

REV. # | INTERSECTION # W23/TS7A

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

3/03

TRAFFIC CONTROL SIGNAL

1 Rev 5/11/18

Acc. # 22172
22-1-26

MOVEMENT DIAGRAM

	NTOR	PHASE 1	PHASE 2	PRE-EMPT 1	PHASE 3	PHASE 4	PRE-EMPT 2	PHASE 5	PHASE 6	PRE-EMPT 1	PHASE 7	PHASE 8	PRE-EMPT 2	PED PHASE
	FLASH	GRN CL CL	GRN CL CL		GRN CL CL	GRN CL CL		GRN CL CL	GRN CL CL		GRN CL CL	GRN CL CL		GRN CL CL
FACE # 1		←R	←Y	←R	←R ←R ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		←R ←R ←R
2		R R R	G Y R		R R R	R R R		R R R	R R R		R R R	R R R		R R R
3		←R ←R ←R	←R ←R ←R		← ←Y ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		←R ←R ←R
4		R R R	R R R		R R R	G Y R		R R R	R R R		R R R	R R R		R R R
5		←R ←R ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		← ←Y ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		←R ←R ←R
6		R R R	R R R		R R R	R R R		R R R	G Y R		R R R	R R R		R R R
7		←R ←R ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		←R ←R ←R	←R ←R ←R		← ←Y ←R	←R ←R ←R		←R ←R ←R
8		R R R	R R R		R R R	R R R		R R R	R R R		R R R	G Y R		R R R
9		→R →R →R	→R →R →R		→R →R →R	→ →Y →R		→ →Y →R	→R →R →R		→R →R →R	→R →R →R		→R →R →R
10		R R R	R R R		R R R	R R R		R R R	R R R		R R R	G Y R		R R R
P	OFF	← DW	YIELD POINT		← DW	← DW		← DW	YIELD POINT		← DW	← DW		WØ ← DW
														WALK/PED CLR
MIN		5 3 0	15 3 1.5		5 3 0	11 3 1		5 3 0	15 3 1.5		5 3 0	11 3 1		4/25 3 0
MAX		20 4 2	40 5 3.5		20 4 3	40 5 3		20 4 2	40 5 3.5		20 4 2	40 5 3		15/35 5 2
INTERVALS MIN GRN		5	15		5	11		5	15		5	11		
WALK														4
PED CLR														① 29
VEH EXT		1.5	2.5		1.5	1.5		1.5	2.5		1.5	2.5		COUNTDOWN PEDESTRIAN SIGNAL
MAX 1		10	30		15	30		10	30		15	30		
MAX 2		10	30		15	30		10	30		15	30		
YELLOW		3.0	4.7		3.2	4.5		3.0	4.7		3.0	4.5		4.0
RED		1.0	2.9		2.7	1.0		1.0	2.9		1.0	1.0		0
ADD INIT			0.8						0.8					
MAX INIT			19						19					
TBR														
TTR														
MIN GAP														
MODE		NON-LOCK	MIN RECALL		NON-LOCK	NON-LOCK		NON-LOCK	MIN RECALL		NON-LOCK	NON-LOCK		NON-LOCK
INIT START			THIS PHASE						THIS PHASE					

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D1	6' X 6'	3	PRESENCE
D2, D2A	6' X 6'	4	PRESENCE
D3, D3A	6' X 6'	3	PRESENCE
D4, D5	6' X 6'	3	PRESENCE
D6, D6A, D6B, D6C	6' X 6'	4	PRESENCE
D7, D8	6' X 6'	3	PRESENCE
D8A	10' X 6'	3	PRESENCE
D9	6' X 6'	3	PRESENCE
SD1, SD2	6' X 6'	3	PRESENCE
SD3, SD4	6' X 6'	5	PRESENCE
SD5, SD6	6' X 6'	3	PRESENCE
SD7, SD8	6' X 6'	5	PRESENCE

SYSTEM LOC: MASTER ZONE 3

COORDINATION TYPE: CLOSED LOOP

PROGRAM FUNCTION	PROGRAM TIME	PROGRAM DAYS	CYCLE	OFFSET SEC	OFFSET %
FLASH	NONE				
	SEE TECH NOTES				

SIGN LEGEND:

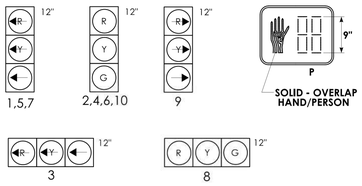
- (A) ERECT 31-1526 (KEEP RIGHT)
- (B) ERECT 41-4213 (DOUBLE DOWNWARD POINTING ARROW)
- (C) SPAN MOUNT 31-0135 (↖)
- (D) EXIST 31-0282z (↖↑↗)
- (E) EXIST 31-0307 (↖↑↗)
- (F) EXIST 31-0411 (↖↑↗↗)
- (G) EXIST 31-0467z (↖↖↑↗)
- (H) REMOVE 31-0847 (RIGHT TURN ON RED FROM RIGHT LANE ONLY)
- (I) SPAN MOUNT 31-0823 (NTOR)
- (J) EXISTING 31-1526 (KEEP RIGHT)

NOTES:

(S) BAR TYPE CROSSWALK (16" x 16" x 8') - STATE MAINTAINED
(T) BAR TYPE CROSSWALK (16" x 16" x 8') - CITY MAINTAINED
STATE TO MAINTAIN ALL SIGNS AND PAVEMENT MARKINGS ON ROUTE 69 AND ALL STOP BARS.
CITY TO MAINTAIN ALL SIGNS AND ALL OTHER PAVEMENT MARKINGS ON WASHINGTON ST. AND UNION ST.

TECHNICAL NOTES	OFFICE RECORD
STANDARD OVERLAP SKIP FEATURES APPLY	REV # TIR # SM # SIGNAL REVISED:
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION	REVISED TIMINGS UNDER PROJECT #0174-0435
① COUNTDOWN ONLY DURING FLASHING PEDESTRIANCLEARANCE INTERVAL	
SIGNAL MAY DOUBLE CYCLE IF PEDESTRIAN PHASE IS CALLED	
TIMINGS SHOWN REFLECT FREE OPERATION	
MANUAL AND INTERVAL ADVANCE TO BE DISCONNECTED DURING PED PHASE PEDESTRIN CHANGE INTERVAL	
ACTUAL COORDINATION INFORMATION TO BE DETERMINED BY THE COORDINATION SYSTEM	
ARTERY PHASE DETECTORS TO BE NON ACTUATING DURING COORDINATION	

SIGNAL FACES

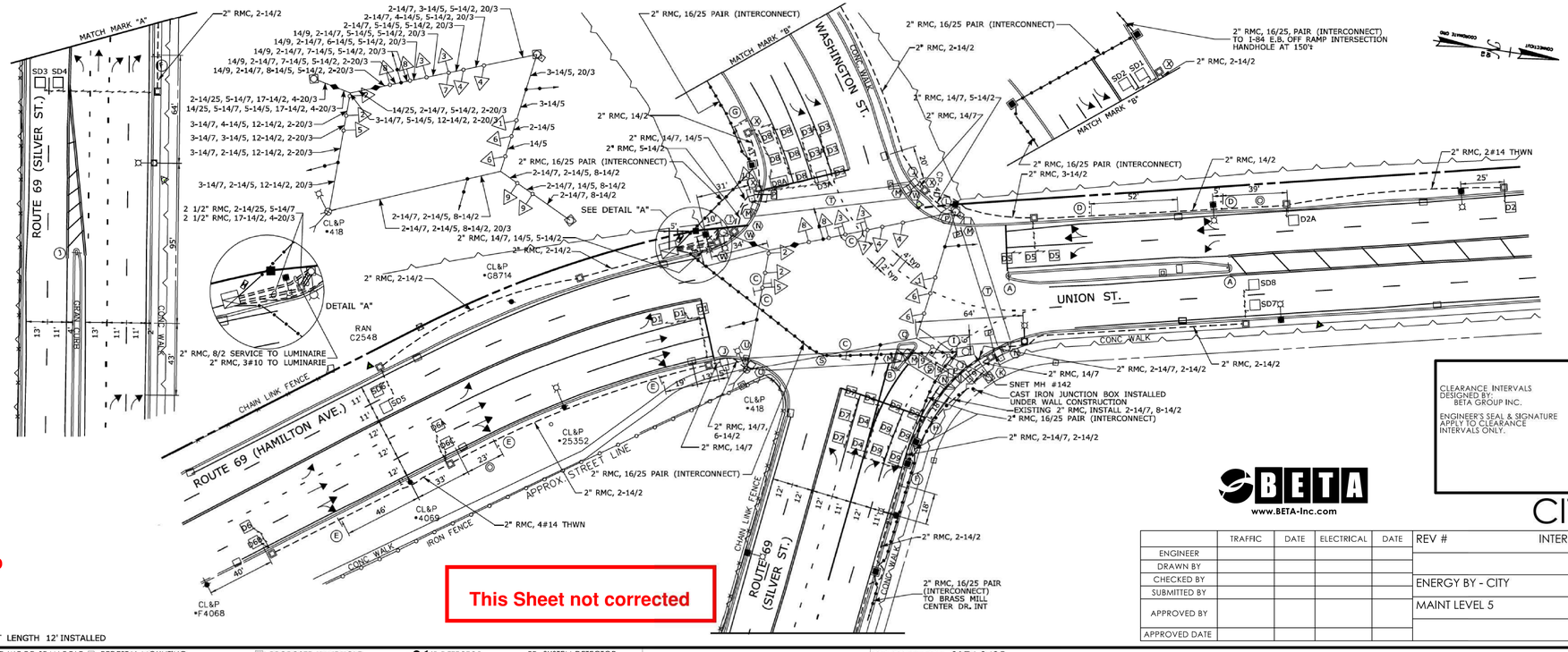


PRE-EMPTION SETTINGS

PRE-EMPTION SETTINGS	PRE-EMPT 1	PRE-EMPT 2
PRIORITY	NO	NO
DET. LOCK	YES	YES
DELAY	0	0
ALT. MIN. GRN	5	5
ALT. YELLOW	PARENT	PARENT
ALT. RED	PARENT	PARENT
ALT. PED. CLR.	PARENT	PARENT
HOLD GREEN	15	15
HOLD YELLOW	4.7	4.5
HOLD RED	2.9	1.0
HOLD PHASE	2 & 6	4 & 8
EXIT PHASE	4 & 8	2 & 6
EXIT CALL	NONE	NONE

CLOSED LOOP DETECTOR CHART

DETECTOR	LOCAL DETECTOR	SYSTEM DETECTOR
D1	LD8	
D1 REAR		SD8
D2, D2A	LD9	SD9
D3	LD4	
D3 REAR		SD4
D3A	LD5	
D3A REAR		SD5
D4	LD6	SD6
D5	LD1	
D5 REAR		SD1
D6, D6A	LD3	SD3
D6B, D6C	LD2	SD2
D7	LD10	
D7 REAR		SD10
D8, D8A	LD11	SD11
D9	LD7	SD7
SD1		SD12
SD2		SD13
SD3		SD14
SD4		SD15
SD5		SD16
SD6		SD17
SD7		SD18
SD8		SD19



NEW SHEET ADDED BY DESIGN INITIATED CHANGE ORDER NO. 2

SPAN POLE INFORMATION
HEIGHT 32', B.C. 22", LOAD AT YIELD 10,000 lbs., INSTALLED
COMBINATION SPAN POLE INFORMATION
HEIGHT 32', B.C. 22", LOAD AT YIELD 10,000 lbs., LUMINAIRE BRACKET LENGTH 12' INSTALLED

This Sheet not corrected

CLEARANCE INTERVALS DESIGNED BY: BETA GROUP INC.
ENGINEER'S SEAL & SIGNATURE APPLY TO CLEARANCE INTERVALS ONLY.

Joseph H. Rimiller 2024.06.20 08:41:29-04'00'

BETA www.BETA-Inc.com

CITY SIGNAL

	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAWN BY				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
APPROVED DATE				

REV # INTERSECTION #151-273

ENERGY BY - CITY | ADDRESS #
MAINT LEVEL 5 | SERVICE POLE - CL&P 25352
UNMETERED SERVICE

LEGEND: FL. FLASHING; R RED; Y YELLOW; G GREEN; RED ARROW; YELLOW ARROW; GREEN ARROW; WØ WALK/ PED. CLR; D.W. DON'T WALK; DET. LEADS IN SAW CUT; PROPOSED RMC; EXISTING RMC; CABLE CLOSURE; VC VIDEO CAMERA CABLE; RC RADAR CABLE; PROPOSED WOOD SPAN POLE; EXISTING WOOD SPAN POLE; PROPOSED STEEL SPAN POLE; EXISTING STEEL SPAN POLE; PROPOSED UTILITY POLE; EXISTING UTILITY POLE; PEDESTAL MOUNTING; PEDESTRIAN PUSH BUTTON & SIGN; DIRECTIONAL ARW. FOR PUSH BUTTON; TRAFFIC SIGNAL FACE; PEDESTRIAN SIGNAL FACE; GUY WIRE; PROPOSED HANDHOLE; EXISTING HANDHOLE; AUXILIARY TERMINATION CABINET; AUXILIARY EQUIPMENT CABINET; PROPOSED CONTROLLER; EXISTING CONTROLLER; IP DETECTOR; RADAR DETECTOR; THERMAL DETECTOR; AUDIO DETECTOR; 360° CAMERA ASSEMBLY; OPTICAL DETECTOR; SD SYSTEM DETECTOR; VIDEO DETECTION ZONE; LOOP DETECTOR; RADIO ANTENNA

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0174-0435
ROUTE 69 (HAMILTON AVENUE) AND UNION STREET AT ROUTE 69 (SILVER STREET) AND WASHINGTON STREET
CITY(S): WATERBURY
DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

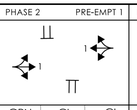
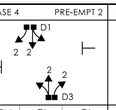
0 40 80 SCALE 1" = 40'

DRAWING NO. TCS-39-118
SHEET NO. 03.39-118.C2

LASTED SAVED BY: RichardEH FILE NAME: C:\Users\richardeh\State of Connecticut\DOT CTDOT_DDE - CONNECT_WIP\CT_Configuration\Organization\Cell\CTDOT_Borders_Contract.cel
PLOTTED DATE: 6/19/2024

REVISION DESCRIPTION
DATE
REV.

MOVEMENT DIAGRAM

NTOR	PHASE 1	PHASE 2 PRE-EMPT 1	PHASE 3	PHASE 4 PRE-EMPT 2	PHASE 5	PHASE 6	PHASE 7	PHASE 8	
NONE									

		FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
FACE #	1					G	Y	R	R	R	R	R	R	R												
	2					R	R	R	R	R	R	G	Y	R												
	P					← DW →			WØ	← DW →																
							←YIELD	POINT																		
	MIN					10	3	1	5	0.1	0	8	3	1												
	MAX					55	5	3	25	1	1	50	5	3												
INTERVALS	MIN GRN					15						12														
	WALK								7																	
	PED CLR								15																	
	VEH EXT											2														
	MAX 1					30						30														
	MAX 2					35						35														
	YELLOW						3.8			4.0			3.8													
	RED							2.3			0			1.0												
	ADD INIT																									
	MAX INIT																									
	TBR																									
	TTR																									
	MIN GAP																									
MODE			OFF			MAX RECALL			NON LOCK			LOCK			OFF			OFF			OFF			OFF		
INIT START						THIS PHASE																				

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D1	6'X 6'	2	PRESENCE
D2	6' X 6'	2	EXT. 5"
D3	6' X 10'	2	EXT. 3"

SYSTEM LOC

MASTER CITY HALL

ZONE 1

I-1	I-12
I-2	I-13
I-3	
I-4	
I-5	
I-6	
I-7	
I-8	
I-9	
I-10	
I-11	

COORDINATION TYPE: CLOSED LOOP

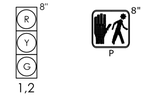
PROGRAM			CYCLE	OFFSET	
FUNCTION	TIME	DAYS		SEC	%
FLASH	NONE				
	SEE TECH NOTES				

SIGN LEGEND

- (A) EXISTING 31 - 0630 N.P.A.T.
- (B) EXISTING 31 - 0614 NO PARKING BUS STOP
- (C) EXISTING 31 - 0350
- (D) EXISTING 31 - 0645 1 HR. PARKING

TECHNICAL NOTES	OFFICE RECORD
TIMINGS SHOWN REFLECT FREE OPERATION.	REV # TIR #N/A SM # SIGNAL REVISED:
ACTUAL COORDINATION INFORMATION TO BE DETERMINED BY THE COORDINATION SYSTEM.	REVISED TIMINGS UNDER PROJECT # 0174-0435
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.	

SIGNAL FACES

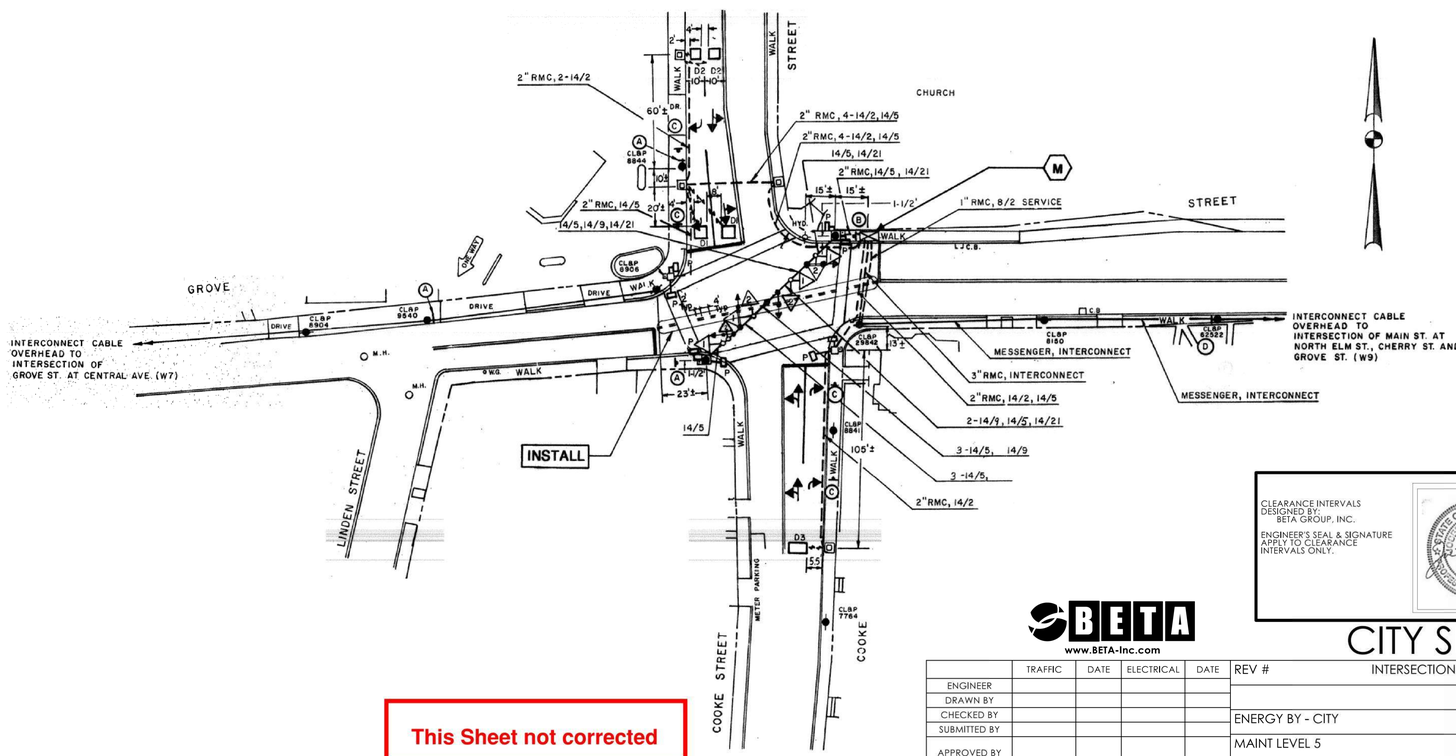


EMERGENCY VEHICLE PRE-EMPTION SETTING

PRE-EMPTION SETTINGS	PRE-EMPT 1	PRE-EMPT 2
PRIORITY	NO	NO
DET. LOCK	YES	YES
DELAY	0	0
ALT. MIN. GRN	5	5
ALT. YELLOW	PARENT	PARENT
ALT. RED	PARENT	PARENT
ALT. PED. CLR.	PARENT	PARENT
HOLD GREEN	15	15
HOLD YELLOW	3.8	3.8
HOLD RED	2.3	1.0
HOLD PHASE	2	4
EXIT PHASE	4	2
EXIT CALL	NONE	NONE

CLOSED LOOP DETECTOR CHART

DETECTOR	LOCAL DETECTOR	SYSTEM DETECTOR
D1	LD1	
D2	LD2	
D3	LD3	



CLEARANCE INTERVALS DESIGNED BY:
BETA GROUP, INC.

ENGINEER'S SEAL & SIGNATURE APPLY TO CLEARANCE INTERVALS ONLY.

Joseph H. Rimiller
2024.06.20 08:12:09-04'00'

BETA
www.BETA-Inc.com

CITY SIGNAL

	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAWN BY				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
APPROVED DATE				

REV #	INTERSECTION # I-10
ENERGY BY - CITY	ADDRESS #
MAINT LEVEL 5	SERVICE POLE - CL&P 29842
	UNMETERED SERVICE

This Sheet not corrected

NEW SHEET ADDED BY DESIGN INITIATED
CHANGE ORDER NO. 2

REVISION DESCRIPTION
DATE
REV.

LEGEND:
R RED, Y YELLOW, G GREEN
FL. FLASHING
◄R RED ARROW, ◄Y YELLOW ARROW, ◄G GREEN ARROW
W/Ø WALK/ PED. CLR
D.W. DON'T WALK
DET. LEADS IN SAW CUT
PROPOSED RMC
EXISTING RMC
CABLE CLOSURE
VC VIDEO CAMERA CABLE
RC RADAR CABLE
PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
DIRECTIONAL ARW. FOR PUSH BUTTON
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
GUY WIRE
PROPOSED HANDHOLE
EXISTING HANDHOLE
AUXILIARY TERMINATION CABINET
AUXILIARY EQUIPMENT CABINET
PROPOSED CONTROLLER
EXISTING CONTROLLER
IP DETECTOR
RADAR DETECTOR
THERMAL DETECTOR
AUDIO DETECTOR
360° CAMERA ASSEMBLY
OPTICAL DETECTOR
SD SYSTEM DETECTOR
VIDEO DETECTION ZONE
LOOP DETECTOR
RADIO ANTENNA

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

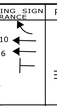
PROJECT NUMBER: 0174-0435
GROVE STREET AT COOKE STREET
CITY(S): WATERTOWN
DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

0 40 80
SCALE 1" = 40'

DRAWING NO. TCS-39-109
SHEET NO. 03.39-109.C2

LASTED SAVED BY: RichardEH **FILE NAME:** C:\Users\richardeh\State of Connecticut\DOT CTDOT_DDE - CONNECT_WIP\CT_Configuration\Organization\Cell\CTDOT_Borders_Contract.cel
PLOTTED DATE: 6/19/2024

MOVEMENT DIAGRAM

	NTOR	PHASE 1	PHASE 2	PHASE 3 - FLASHING SIGN CLEARANCE	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8	
										
	FLASH	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL
1	◄R	← ◄Y ◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄R ◄R	
2	Y	R R R	G G G	G Y R	R R R	R R R	R R R	R R R	R R R	
5	◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄Y ◄R	◄R ◄R ◄R	← ◄Y ◄R	◄R ◄R ◄R	◄R ◄R ◄R	◄R ◄R ◄R	
6	Y	R R R	R R R	G Y R	R R R	R R R	G G G	R R R	R R R	
7	R	R R R	R R R	R R R	R R R	R R R	R R R	← G ◄Y G① G ②	G Y R	
8	R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	G Y R	
9	R	R R R	R R R	R R R	R R R	R R R	R R R	G G G	G Y R	
10	Y	R R R	R R R	G Y ③ R ④	R R R	R R R	G G G	R → R Y► ⑤ R ⑤	R R R	
P	OFF	←	DW →		WØ ←		DW			→
			YIELD PT.				◄ YIELD PT.			
FLASHING SIGN	Ⓔ	← ON →	OFF			ON				→
FLASHING SIGN	Ⓕ	←		OFF			OFF →	ON		→

INTERVALS										
MIN GRN	6	15	6		6	15	5	5		
WALK				7						
PED CLR				23						
VEH EXT	2				2		2	2		
MAX 1	15	21	6		10	21	11	17		
MAX 2	19	21	6		10	21	11	17		
YELLOW	3.0	5.0	4.7	4.0	3.0	5.0	3.3	3.3		
RED	1.7	2.0	1.5	0	1.7	2.0	2.6	2.8		
ADD INIT										
MAX INIT										
TBR										
TTR										
MIN GAP										
MODE	NON-LOCK	MAX RECALL	NON-LOCK	NON-LOCK	NON-LOCK	MAX RECALL	NON-LOCK	NON-LOCK	OFF	
INT START		THIS PHASE				THIS PHASE				

COUNTDOWN PEDESTRIAN SIGNAL

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY
① TO BE Y IF PHASE 8 IS SKIPPED
② TO BE R IF PHASE 8 IS SKIPPED
③ TO BE Y —►IF PHASE 7 IS NEXT
④ TO BE R —►IF PHASE 7 IS NEXT
⑤ TO BE R —►IF PHASE 6 IS NEXT
PHASES 2 AND 6 ON TO OMIT PHASES 1,4,5,7 AND 8
PHASES 1,4,5,7 AND 8 CHECK TO CALL PHASE 3 VEH
PHASE 3 ON TO CALL PHASES 1 AND 5 VEH
SIGN Ⓔ OFF DURING PHASE 2 GREEN
SIGN Ⓕ OFF DURING PHASE 6 GREEN
SIGNAL MAY DOUBLE CYCLE IF PEDESTRIAN TIMING CALLED
D7 TO CALL AND EXTEND PHASES 7 AND 8

OFFICE RECORD

REV # 11 TIR # N/A SM # 100773 SIGNAL REVISED: 8/11/2016
REVISED TIMINGS UNDER PROJECT 174-387
REV # 12 TIR # N/A SM # N/A SIGNAL REVISED: 11/21/2023
TRAFFIC & ELECT. DES: TRAFFIC SIGNALS UNIT.
REVISED SIGNAL FACES 1 AND 5 TO HAVE LEFT RED ARROWS, AND REVISED PEDESTRIAN SIGNAL INDICATIONS UNDER PROJECT 0174-0443.

DETECTORS

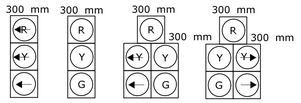
IDENT	SIZE (WXL)	TURNS	MODE
D1	1.8m X 1.8m	3	PRESENCE
D5	1.8m X 1.8m	3	PRESENCE
D7	1.8m X 1.8m	3	PRESENCE
D7A	1.8m X 1.8m	3	PRESENCE
D7B	2.4m X 1.8m	3	PRESENCE
D8	1.8m X 1.8m	3	PRESENCE
D8A	1.8m X 1.8m	3	PRESENCE
D8B	4.0m X 1.8m	3	PRESENCE

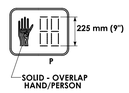
SYSTEM LOC
MASTER 151-245

COORDINATION TYPE: TIME CLOCK/TBC

PROGRAM FUNCTION	PROGRAM TIME	PROGRAM DAYS	CYCLE	OFFSET SEC	OFFSET %
FLASH	FUTURE				
MAX 1	ALL OTHER TIMES				
MAX 2	1500-2300	DAILY			
PATTERN 1	ALL OTHER TIMES		100"	95	95
PATTERN 2	1500-2300	DAILY	100"	87	87
FREE	2200-0500	DAILY			

SIGNAL FACES





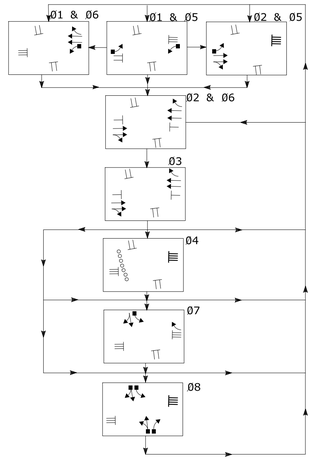
FACES 1 & 5 HAVE TUNNEL VISORS

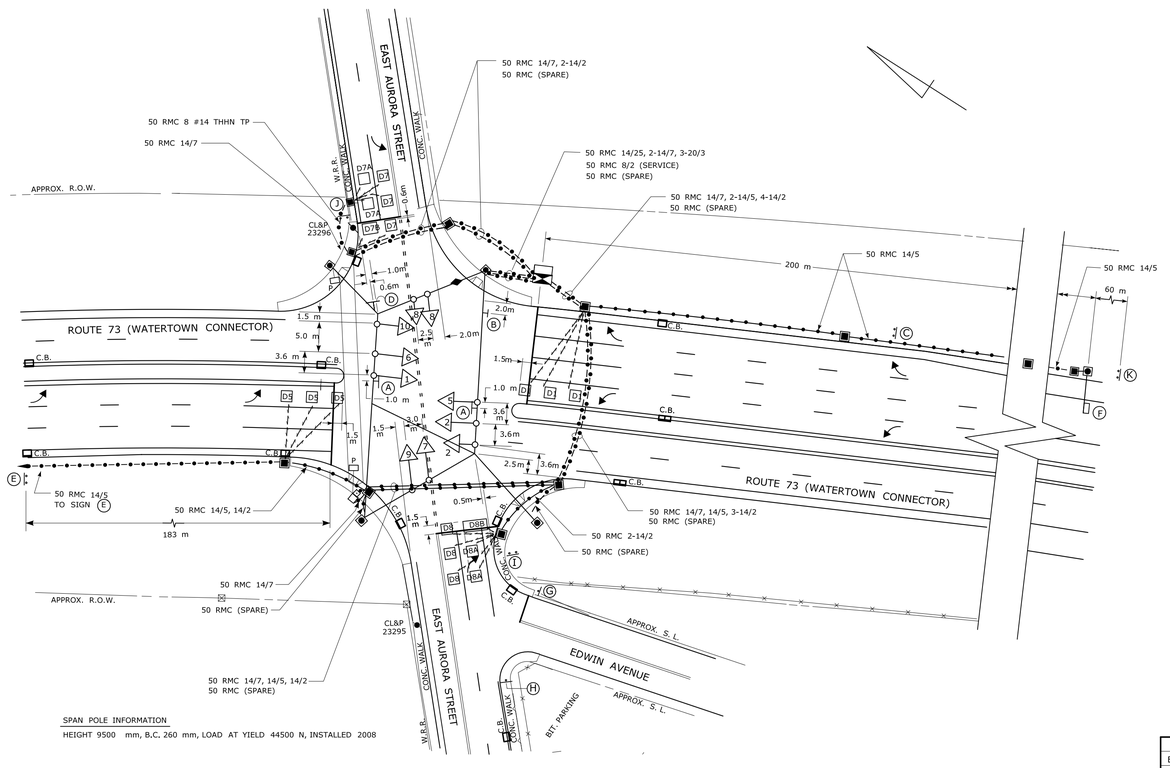
ALL INDICATIONS HAVE LED LAMPS

SIGN LEGEND:

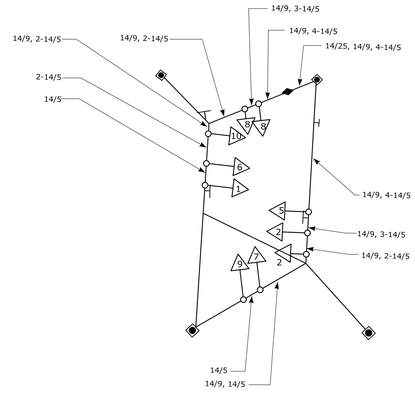
Ⓐ SPAN MOUNTED 31-0135 (↖)
Ⓑ SPAN MOUNTED 31-0138 (↗)
Ⓒ 31-0445 (↖↑↑↗)
Ⓓ SPAN MOUNTED 31-0823 (N.T.O.R.)
Ⓔ 41-0534 (WHEN FLASHING STOP AHEAD) W/FLASHERS (FL. SGN. INT. #151-282)
Ⓕ INTERNALLY ILLUMINATED FLASHING "STOP AHEAD" SIGN
Ⓖ 31-0552Z (STOP)
Ⓗ 31-0806Z (DO NOT BLOCK INTERSECTION)
Ⓘ 31-0283Z (↖↑↗)
Ⓙ 31-0282Z (↖↑↗)
Ⓚ 41-0848 (SIGNAL AHEAD SYMBOL)

NOTES:
SEE SEPARATE PLAN FOR PAVEMENT MARKINGS AND ADDITIONAL SIGNING.





SPAN POLE INFORMATION
HEIGHT 9500 mm, B.C. 260 mm, LOAD AT YIELD 44500 N, INSTALLED 2008



FOR REV #11:

FUSS & O'NEILL
WWW.FandO.COM
146 HARTFORD RD MANCHESTER, CT 06040 860.646.2469

	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAWN BY				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
APPROVED DATE				

REV #12 INTERSECTION # 151-209
FL. SIGN INT. # 151-282
ENERGY BY- CITY ADDRESS #
MAINT LEVEL 1 SERVICE POLE - CL&P 23296
UNMETERED SERVICE

NO.	DATE	REVISION DESCRIPTION

LEGEND:

R RED
Y YELLOW
G GREEN
◄R RED ARROW
◄Y YELLOW ARROW
◄G GREEN ARROW
WØ WALK/ PED. CLR
D.W. DON'T WALK
FL. FLASHING

PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
DIRECTIONAL ARW. FOR PUSH BUTTON

TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
DET. LEADS IN SAW CUT
PROPOSED RMC (RIGID METAL CONDUIT)
EXISTING RMC (RIGID METAL CONDUIT)
AUXILIARY TERMINATION CABINET
AUXILIARY EQUIPMENT CABINET
VIDEO DETECTION ZONE

PROPOSED CONTROLLER
EXISTING CONTROLLER
LOOP DETECTOR
SD SYSTEM DETECTOR
MAGNETIC DETECTOR
OPTICAL DETECTOR
VIDEO DETECTOR
AUDIO DETECTOR

SIDEWALK RAMP
CABLE CLOSURE
WIRELESS SENSOR
WIRELESS RECEIVER
WIRELESS TRANSMITTER
GUY WIRE
PROPOSED HANDHOLE
EXISTING HANDHOLE

DATE PLOTTED : 11/21/2024C:\Users\huangvl\State of Connecticut\DOT Division of Traffic Engineering - 151-209\012_P1_TR_ASSET_151-209.dgn

ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED. SCALE 1:500

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

ROUTE 73 (WATERTOWN CONNECTOR)
AT EAST AURORA ST

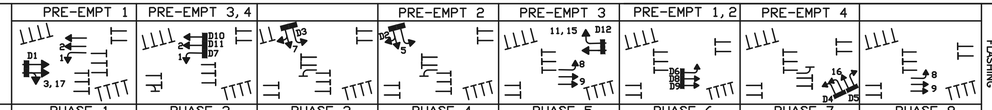
CITY: WATERBURY

DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

PROJECT NO.
DRAWING NO.
SHEET NO.

MOVEMENT DIAGRAM

INTERSECTION # IV-1



NTOR	PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8			
	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	
1	G	↑	G	G←	Y①	R②	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
2	↑	↑	↑	↑	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
3	↑	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
4,17	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
5,6	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R
7	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
8	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	G←	Y③	R③	R	R	R	G←	G↖	G	Y
9	R	R	R	R	R	R	R	R	R	R	R	R	↖	↖	↖	↖	Y	R	R	R	R	↖	↖	↖	Y
10	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	G	Y	R	R	R	R	G	G	G	Y
11	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	Y
12	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	Y
13, 14	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R
15	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	Y
16	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	←	Y	R	R	R	R	R	R	R	R
MIN	8	3	1	3	3	1	5	3	1	5	3	1	8	3	1	2	3	1	5	3	1	2	3	1	
MAX	50	5	3	50	5	3	50	5	3	50	5	3	50	5	3	50	5	3	50	5	3	40	5	3	

INTERVALS	PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8			
MIN GRN	10			3			8			8			10			2			6			2			MAIN
WALK										7									7						
PED CLR										5									4						
VEH EXT	4			1			4			4			4			1			4			0			24 Hr.
MAX 1	40			25			18			25			55			10			18			10			
MAX 2	30			30			30			30			30			30			30			20			NORM
YELLOW		3			3			3			3			3			3			3			3		
RED			1			2			2			2			1			1			1			1	
ADD INIT																									
MAX INIT																									
TBR																									
TTR																									
MIN GAP																									
MODE	NON-LOCK			MIN RECALL			NON-LOCK			NON-LOCK			LOCK			NON-LOCK			NON-LOCK			NON-LOCK			
INI START				THIS PHASE																					

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D1, D5	MAG	—	PULSE
D3, D3A	6' X 6'	3	PRESENCE
D4, D4A	6' X 6'	3	PRESENCE
D6, D11	2(6' X 8')	2	PRESENCE
D12	6' X 6'	3	PRESENCE
SD4, SD6	6' X 6'	3	PRESENCE
SD2	6' X 6'	3	PRESENCE
D1A	6' X 6'	3	PRESENCE

PROGRAM

FUNCTION	TIME	DAYS
FLASH	FUTURE	
MAX2	FUTURE	
MAX2	FUTURE	
PROG1	7AM-9AM	M-F
2	3PM-6PM	M-F
3	9AM-3PM	M-F
4	8AM-6PM	SAT-SUN
5	ALL OTHER TIMES	ALL
OPERATION.		

COORDINATION TYPE- CLOSED LOOP

CYCLE SAFETY CRT	OFFSET % /SEC	YELD PT %	PERMIS PERIOD	FORCE OFF % ø26	ø37	ø48
PROG. 1 100"	0	0	5	21	42	63
PROG. 1 100"	0	0	5	21	42	63
PROG. 2 120"	0	0	5	21	42	63
PROG. 3 90"	0	0	5	21	42	63
PROG. 4 80"	0	0	5	21	42	63
PROG. 5 80"	FREE					

SYSTEM LOC
MASTER CITY HALL
ZONE 4
TV -1
TV -2

TIMING SHOWN ARE FOR FREE OPERTION ACTUAL TIMING TO BE DETERMINED BY MASTER-WHERE THE ABOVE NOTE APPEARS IN THIS PROJECT IT SHALL MEAN' THIS SIGNAL IS PART OF CLOSED LOOP SYSTEM".

CNA ACTIVE WHEN COORDINATED (CALL YIELD POINT PHASES).

PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

① REPLACED BY G↖ IF PHASE 1 IS NEXT
② REPLACED BY G IF PHASE 1 IS NEXT
③ REPLACED BY G← IF PHASE 8 IS NEXT

ENERGY BY- CITY
SERVICE POLE- UNDERGROUND

UNMETERED SERVICE

OFFICE RECORD

JOB#	SM#
SIGNAL REVISED UNDER STATE PROJECT 151-269	
REPLACED CONTROLLER, ADDED PRE-EMTION, REPLACED MAGNETIC DETECTOR D3 WITH LOOP DETECTORS, REPLACED LOOP DETECTORS D7, D10, D11, AND SD3.	

REVISION:
DATE 7/29/2021
CHANGED FACES 11&15 TO GREEN BALLS.
ADDED SPAN POLE MTD SIGN

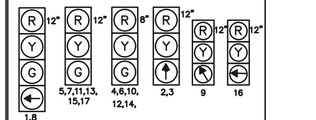
EMERGENCY VEHICLE PRE-EMPT SETTINGS

PRE-EMPT	1	2	3	4
PRIORITY	NO	NO	NO	NO
DEL LOCK	YES	YES	YES	YES
DELAY	0	0	0	0
ALT MIN. GRN.	5	5	5	5
ALT. YELLOW	PARENT	PARENT	PARENT	PARENT
ALT. RED	PARENT	PARENT	PARENT	PARENT
ALT. PED. CLR.	0	0	0	0
HOLD GREEN	15	15	15	15
HOLD YELLOW	3	3	3	3
HOLD RED	1	2	1	1
HOLD PHASE	1&5	4&8	2&5	2&7
EXIT PHASE	2&6	1&6	1&6	1&6
EXIT CALL	NONE	NONE	NONE	NONE

TOWN SIGNAL

* BIOCOLOR (G, Y)

SIGNAL FACES



ALL FACES 5 AND RED SECTION OF SIGNAL FACES 7 & 8 ARE LOUVERED SIGNAL FACES 5 & 7 TO HAVE TUNNEL VISORS.

LEGEND

- R RED
- Y YELLOW
- G GREEN
- ←R RED ARROW
- ←Y YELLOW ARROW
- ←G GREEN ARROW
- WALK/ FL. D.W.
- D.W. DON'T WALK
- FL. FLASHING
- PROPOSED WOOD SPAN POLE
- EXISTING WOOD SPAN POLE
- PROPOSED STEEL SPAN POLE
- EXISTING STEEL SPAN POLE
- PROPOSED UTILITY POLE
- EXISTING UTILITY POLE
- PEDESTAL MOUNTING
- PEDESTRIAN PUSH BUTTON & SIGN
- TRAFFIC SIGNAL FACE
- PEDESTRIAN SIGNAL FACE
- LOOP DETECTOR
- MAGNETIC DETECTOR
- SD SYSTEM DETECTOR
- OPTICAL DETECTOR
- CONTROLLER
- HANDHOLE
- PROPOSED (R.M.C.) RIGID METAL CONDUIT
- EXISTING (R.M.C.) RIGID METAL CONDUIT
- CABLE CLOSURE
- DET. LEADS IN SAW CUT
- AUXILIARY TERMINATION CABINET
- RADIO ANTENA

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING
TRAFFIC CONTROL SIGNAL

CITY OF WATERBURY
WEST MAIN STREET (S.R.846) AT RIVERSIDE ST, WATERTOWN AVE. AND S.B. OFF RAMP RTE 8

REV #	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAFTER				
CHECKED BY		MMI		
SUBMITTED BY				
APPROVED BY				
DATE				

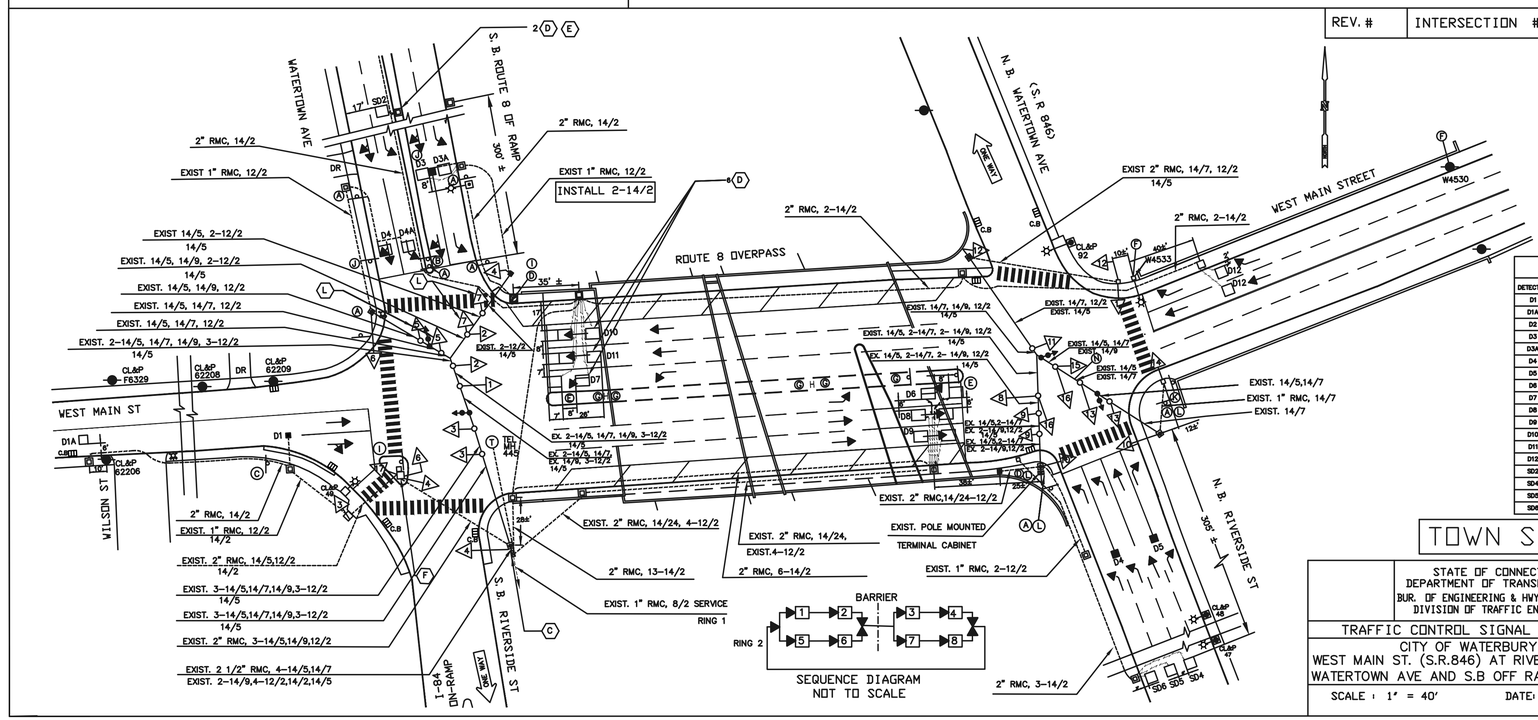
F. H. W. A. REGION NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN.	WATERBURY	STPA-7151(2)	151-269	1997	—	28	47

CONSTRUCTION NOTES

THE FOLLOWING NOTES APPLY TO WORK TO BE INCLUDED UNDER STATE PROJECT 151-269; FAP STPO-7151(2)

1. ALL NEW MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL CONFORM TO THE FORM 814A AND AS AMENDED. ALL EQUIPMENTIS EXISTING UNLESS OTHERWISE NOTED BELOW.
2. PRIOR ANY EXCAVATION (IF SO SPECIFIED), THE CONTRACTOR SHALL STAKE THE R.O.W. AND VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES.
3. ALL NEW CABLING WHERE SPECIFIED, SHALL BE INSTALLED WITHOUT SPLICES.
4. SPAN WIRE, IF SPECIFIED, SHALL BE 3/8", 120 DIA. EXTRA STRENGTH 15,400 LBS. MAXIMUM BREAKING STRENGTH.
5. THE CONTRACTOR SHALL CONTACT CALL BEFORE YOU DIG AT 1-800-922-4455 PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES.
6. ALL WORK TO BE COORDINATED WITH THE CITY OF WATERBURY-TRAFFIC ENGINEERING DIVISION.
7. THE CONTRACTOR WILL SCHEDULE HIS CONSTRUCTION WORK SO THAT POSITIVE TRAFFIC CONTROL (STOP SIGN, TEMPORARY SIGNALS, ETC.) ARE IN PLACE AND OPERATIONAL AT ALL TIMES.
8. ALL NEW OR MODERNIZED OR MODIFIED TRAFFIC SIGNALS, WHERE SPECIFIED, SHALL BE HUNG SO THAT A VERTICAL CLEARANCE OF 16'(4.88 METERS) TO 17' (5.2 METERS) IS MAINTAINED BETWEEN THE FINAL ROADWAY SURFACE AND THE BOTTOM OF SIGNALS.
9. THE STANDARD CITY APPROVED EMERGENCY VEHICLE PRE-EMPT RECEIVER(S) SHALL BE MOUNTED AT THE LOCATION SHOWN AND/OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THE LOCATION OF THE DETECTOR(S) SHALL BE APPROVED BY A REPRESENTATIVE OF THE MANUFACTURER PRIOR PLACING INTO OPERATION. A SEPARATE 20/3 CABLE SHALL BE INSTALLED (UNSPLICED) DIRECTLY TO THE CONTROLLER CABINET.
10. WHEN AND WHERE SPECIFIED, THE CONTRACTOR SHALL INSTALL THE PAINTED PAVEMENT MARKINGS AND SIGNING AS SHOWN ON THE PLAN AND AS APPROVED BY THE CITY OF WATERBURY.
11. WHERE AND WHEN SPECIFIED, INSTALL RMC STAND-OFFS ON ALL UTILITY POLES .
12. CONTACT BELOW NOTED UTILITY COMPANY REPRESENTATIVES A MINIMUM OF TWO (2) WEEKS PRIOR CONSTRUCTION.
13. IF SPECIFIED, INSTALL TRAFFIC SIGNAL CABLE CLOSURE ON SPAN 3'± FROM CURBLINE.
14. THE TRAFFIC SIGNAL CONTRACTOR SHALL COORDINATE AND PROPERLY SCHEDULE ALL ELEMENTS OF HIS WORK. ALL WORK SHALL BE STAKED OUT AND APPROVED BY THE CITY PROJECT REPRESENTATIVE, PRIOR TO CONSTRUCTION.
15. ALL TRAFFIC SIGNALS WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF WATERBURY AND CONNDOT'S STANDARD INSTALLATION DETAIL SHEET.
16. THE CONTRACTOR IS ADVISED THAT THE TIMING INFORMATION SHOWN IS SUBJECT TO CHANGE BY THE CITY OF WATERBURY PRIOR ACCEPTANCE.
17. ANY SALVAGED EQUIPMENT, WHERE SPECIFIED, SHALL BE DELIVERED TO THE CITY OF WATERBURY.
18. IF DAMAGED DUE TO THE CONTRACTOR'S WORK ON THIS PROJECT, THE CONTRACTOR SHALL REPLACE THE ENTIRE SECTION OF CONCRETE SIDEWALK-TO THE NEAREST JOINT.
19. ALL EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM EQUIPMENT FURNISHED AND INSTALLED UNDER THIS SHALL BE FULLY COMPATIBLE WITH THE CITY OF WATERBURY EXISTING EMERGENCY VEHICLE PRE-EMT SYSTEM.
20. UNDER THIS PROJECT, THE CONTRACTOR SHALL SUPPLY, FURNISH, INSTALL, AND MAKE FULLY OPERATIONAL THE FOLLOWING TRAFFIC CONTROL ITEMS:.

- (C) NEW 8 PEEK-TRANSYT SERIES 3000 CONTROLLER WITH PHASING AND TIMINGS SHOWN ON THE PLANS, IN NEW EXTENDED TYPE 'B' CONTROLLER CABINET (58"HX36"WX17"D) ON EXISTING CONTROLLER FOUNDATION. CONTROLLER CABINET DOOR TO OPEN FIELD SIDE WHEREVER POSSIBLE.
  - THE CONTRACTOR SHALL ALSO FURNISH AND INSTALL THE FOLLOWING PRE-EMT ITEMS:
    2 EA. PHASE SELECTOR
    1 EA. PRE-EMPTION SYSTEM CHASSIS.
  - ◆◆◆FOUR (4) TYPE 'A' OPTICAL DETECTORS, WITH UNSPLISED 20/3 CABLE TO PRE-EMPT PANEL IN CONTROLLER.
- (E) REMOVE MAGNETIC DETECTOR.
  - INSTALL 2-14/2 TO CONTROLLER.
- (D) INSTALL D3, D3A, D10, AND D11 LOOP DETECTORS, CENTERED IN THE LANE. INSTALL NEW LOOP AND MAGNETIC DETECTOR AMPLIFIERS, CONNECT D7, D10, AND D11 TO EXISTING 14/2 CABLE USING TYPICAL CONNDOT JUNCTION BOX SPLICE. D1A, AND D3A TO BE LOCAL AND SYSTEM DETECTORS..
- (F) REMOVE 14/2 AND 12/2 BETWEEN DETECTORS D1 AND SD1 AND THE CONTROLLER. DISCONNECT CONDUIT SWEEPS FROM CONDUIT AND REMOVE EXISTING FOUNDATION. INSTALL NEW FOUNDATION AND CONNECT NEW CONDUIT SWEEPS TO EXISTING CONDUIT. INSTALL 8-FOOT PEDESTAL WITH SIGNAL HEAD AND PEDESTRIAN PUSH BUTTON AND SIGN. INSTALL 14/9 AND 14/5 BACK TO CONTROLLER. INSTALL NEW 14/2 DETECTORS D1 AND SD1.
- (L) ADD TUNNEL VISORS TO SIGNAL FACES 5 AND 7.



CLOSED-LOOP DETECTOR CHART		
DETECTOR	LOCAL DETECTOR	SYSTEM DETECTOR
D1	LD1	–
D1A	LD1	SD1
D2	LD2	–
D3	LD3	–
D3A	LD3	SD3
D4	LD4	–
D5	LD5	–
D6	LD6	–
D7	LD7	–
D8	LD8	–
D9	LD9	–
D10	LD10	–
D11	LD11	–
D12	LD12	–
SD2	–	SD2
SD4	–	SD4
SD5	–	SD5
SD6	–	SD6

TOWN SIGNAL

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY. OPERATIONS
DIVISION OF TRAFFIC ENGINEERING
TRAFFIC CONTROL SIGNAL LAYOUT
CITY OF WATERBURY
WEST MAIN ST. (S.R.846) AT RIVERSIDE ST
WATERTOWN AVE AND S.B OFF RAMP RTE 8
SCALE : 1" = 40' DATE: 1997

REV. # | INTERSECTION # IV-1

SIGN LEGEND

(A)	EXISTING	31-0509, 12 DO NOT ENTER, WRONG WAY	(I)	EXISTING	31-0520, 19 NO LEFT TURN
(B)	EXISTING	31-0824 N.T.O.R.	(J)	EXISTING	31-0329
(C)	EXISTING	31-0504	(K)	EXISTING	31-0005 SPEED LIMIT 25 MPH
(D)	EXISTING	31-0518, 17 NO RIGHT TURN	(L)	EXISTING	31-0088 ONE WAY
(E)	EXISTING	31-0526, 27 KEEP RIGHT	(M)	EXISTING	31-0077 ONE WAY
(F)	EXISTING	31-0330	(N)	ADD	31-1603 NO LEFT TURN
(F)	EXISTING	31-0434			
(H)	EXISTING	31-0393 LEFT TURN SIGNAL			

UTILITY / PROJECT CONTACT

1. CITY/POLICE: Sgt John Hyland, (203) 777-6820
2. CITY ENGINEERING: Ernie Phillips PE, (203) 574-6850
3. SNET: Bob Bouffard, (800) 748-1693
4. NORTHEAST UTILITIES: Jim Harkin, (203) 597-4339
5. DESIGNER John P. Thompsin, P.E. (203) 271-1773

OWNERS NAME:
CITY OF WATERBURY

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

IV-1

REV. # | INTERSECTION # IV-1

MOVEMENT DIAGRAM

	PREEMPT 2		PREEMPT 3		PREEMPT 1		PREEMPT 4	
NTOR	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8

		FLASH	PHASE 1 GRN	PHASE 1 CL	PHASE 1 CL	PHASE 2 GRN	PHASE 2 CL	PHASE 2 CL	PHASE 3 GRN	PHASE 3 CL	PHASE 3 CL	PHASE 4 GRN	PHASE 4 CL	PHASE 4 CL	PHASE 5 GRN	PHASE 5 CL	PHASE 5 CL	PHASE 6 GRN	PHASE 6 CL	PHASE 6 CL	PHASE 7 GRN	PHASE 7 CL	PHASE 7 CL	PHASE 8 GRN	PHASE 8 CL	PHASE 8 CL
FACE #	1	YR				R	R	R				R	R	R	→	Y	R	R	R	R				R	R	R
	2	Y				G	Y	R				R	R	R	R	R	R	R	Y	R				R	R	R
	4	R				R	R	R				G	Y	R	R	R	R	R	R	R				R	R	R
	6	Y				R	R	R				R	R	R	G	G	G	G	Y	R				R	R	R
	8	R				R	R	R				R	R	R	R	R	R	R	R	R				G	Y	R
	P1	OFF				WØ	DW	DW				←				DW	→	←						DW	DW	DW
	P2	OFF				DW	DW	DW				WØ	←			DW	→	←						DW	DW	DW
	P3	OFF				DW	DW	DW				←				DW	→	WØ	DW	DW				DW	DW	DW
	P4	OFF				DW	DW	DW				←				DW	→	←						WØ	DW	DW
	MIN					5	3	1				5	3	1	5	3	1	5	3	1				5	3	1
	MAX					35	5	3				25	5	3	25	5	3	35	5	3				25	5	3
INTERVALS	MIN GRN					7						5			5			7						5		
	WALK																									
	PED CLR					17						14						23						14		
	VEH EXT																									
	MAX 1					40						40			10			30						15		
	MAX 2					40						40			10			30						15		
	YELLOW						3.4	2.0					3.4	1.0		3.4	1.0		3.4	2.0					3.4	2.0
	RED																									
	ADD INIT																									
	MAX INIT																									
	TBR																									
	TTR																									
	MIN GAP																									
MODE			OFF			RECALL			OFF			RECALL			RECALL			RECALL			OFF			RECALL		
INI START						THIS PHASE												THIS PHASE								

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE

PROGRAM

FUNCTION	T I M E	DAYS
FLASH	FUTURE	
MAX 2	FUTURE	
MAX 1	ALL OTHER TIMES	

COORDINATION TYPE – CLOSED LOOP

CYCLE	PHASE SPLITS SEC/% Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	OFFSET SEC	%	Ø SEQ

FIELD IMPLEMENTED COORDINATION
INFORMATION TO BE ADDED TO THE PLANS
UPON ACCEPTANCE BY THE CITY. PRELIMINARY
INFORMATION MAY BE FOUND IN THE SPECIAL
PROVISIONS SEE ITEM# 1108578A FULL ACTUATED
CONTROLLER 8 PHASE (MODIFIED) – NOT APPLICABLE

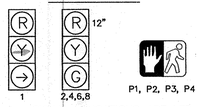
PERMISSIVE PERIOD

SYSTEM LOC	TECHNICAL NOTES
MASTER	STANDARD OVERLAP SKIP FEATURES APPLY
CITY HALL	PREEMPTION TO BE INOPERATIVE DURING
ZONE 1	FLASHING OPERATION
I-1 I-10	
I-2 I-11	
I-3 I-12	
I-4	
I-5	
I-6	
I-7	
I-8	
I-9	

ENERGY BY– CITY
MAINT LEVEL 3

UNMETERED SERVICE

SIGNAL FACES



ALL SIGNAL INDICATIONS ARE LED

ALL SIGNALS TO BE RIGID MOUNTED

EMERGENCY VEHICLE PRE-EMPT SETTINGS

	PRE-EMPT 1	2	3	4
FUNCTION	NO	NO	NO	NO
PRIORITY	YES	YES	YES	YES
DEL LOCK	0	0	0	0
DELAY	5	5	5	5
ALT. MIN. GRN.	PARENT	PARENT	PARENT	PARENT
ALT. YELLOW	PARENT	PARENT	PARENT	PARENT
ALT. RED	3.4	3.4	3.4	3.4
ALT. PED. CLR.	2.0	2.0	2.0	2.0
HOLD GREEN	15	15	15	15
HOLD YELLOW	3.4	3.4	3.4	3.4
HOLD RED	2.0	2.0	2.0	2.0
HOLD PHASE	6	2	4	8
EXIT PHASE	246	246	246	246
EXIT CALL	NONE	NONE	NONE	NONE

TOWN SIGNAL

LEGEND

R	RED		PROPOSED CONTROLLER
Y	YELLOW		EXISTING CONTROLLER
G	GREEN		PROPOSED HANDHOLE
←R	RED ARROW		EXISTING HANDHOLE
←Y	YELLOW ARROW		PROPOSED (R.M.C.) RIGID METAL CONDUIT
←	GREEN ARROW		EXISTING (R.M.C.) RIGID METAL CONDUIT
WØ/ D.W.	WALK/ FL. D.W.		CABLE CLOSURE
DON'T WALK FL.	DON'T WALK FLASHING		DET. LEADS IN SAW CUT
	PROPOSED WOOD SPAN POLE		AUXILIARY TERMINATION CABINET
	EXISTING WOOD SPAN POLE		AUXILIARY EQUIPMENT CABINET
	PROPOSED STEEL SPAN POLE		AUDIBLE PEDESTRIAN SIGNAL
	EXISTING STEEL SPAN POLE		COMBINATION STEEL MAST ARM
	PROPOSED UTILITY POLE		
	EXISTING UTILITY POLE		
	PEDESTAL MOUNTING		
	PEDESTRIAN PUSH BUTTON & SIGN		
	TRAFFIC SIGNAL FACE		
	PEDESTRIAN SIGNAL FACE		
	LOOP DETECTOR		
	MAGNETIC DETECTOR		
SD	SYSTEM DETECTOR		
	OPTICAL DETECTOR		
	MICROWAVE		

INTERSECTION # I–6

OFFICE RECORD

STC # SM #

TRAFFIC DESIGN – WILBUR SMITH ASSOCIATES
ELECTRICAL DESIGN – WILBUR SMITH ASSOC.
ADDED CONTROLLER

REVISION # 2
STC # SM #
SIGNAL REVISED:
INSTALLED ALL NEW EQUIPMENT, EMERGENCY VEHICLE PRE-EMPTION AND COMMUNICATIONS UNDER PROJECT 151– 252 FOR CENTRAL COMPUTER CONTROL.

REVISION # 3
STC # SM #
SIGNAL REVISED:
ELIMINATED LEFT TURNS FROM INTERSECTION, REMOVED DETECTION. MODIFIED PHASING TO PROVIDE CONCURRENT PED. PHASE.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION LICENSED PROFESSIONAL ENGINEER No. 18173

PLAN SEALED FOR REVISION NO. 3

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

CITY OF WATERBURY
EAST MAIN ST. AND WEST MAIN STREET AT
NORTH MAIN STREET AND SOUTH MAIN STREET

REV. # 3	TRAFFIC		ELECTRICAL	
		DATE		DATE
ENGINEER				
DRAFTER		MMI		
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
DATE	SEPTEMBER 2000		SEPTEMBER 2000	

CONSTRUCTION NOTES

ALL TRAFFIC SINGAL EQUIPMENT IS EXISTING EXCEPT AS NOTED.

THE CONTRACTOR SHALL CONTACT CALL BEFROE YOU DIG AT 1–800–922–4455 PRIOR TO COMMENCING ANY CONSTRUCTION ACITIVITES.

SEGMENTED LOOPS TO BE SPLICED IN SERIES.

INSTALL LOOP DETECTORS 3 FEET OFF EDGE OF PAVEMENT AND 8 FEET APART UNLESS OTHERWISE SPECIFIED.

THE CONTRACTOR IS ADVISED THAT THE TIMING INFORMATION SHOWN IS SUBJECT TO CHANGE BY THE CITY OF WATERBURY.

ALL REMOVED EQUIPMENT (LESS CABLE) SHALL REMAIN THE PROPERTY OF THE CITY OF WATERBURY. CONTACT MR. DENIS CUEVAS, P.E., CITY OF WATERBURY TRAFFIC ENGINEER, AT 203–574–6820 TO COORDINATE THE RETURN OF THE EQUIPMENT

IF DAMAGE OCCURS DUE TO CONTRACTOR'S WORK ON THIS PROJECT THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR.

(A) MODIFY EXISTING CONTROLLER TO PROVIDE REVISED PHASING, TIMING, SEQUENCE AND EMERGENCY VEHICLE PRE–EMPTION.

(B) REMOVE EXISTING PEDESTRIAN PUSH BUTTONS AND SIGNS. TERMINATE CABLE IN MAST ARM/PEDESTAL AND IN CONTROLLER CABINET. FILL HOLES IN MAST ARM/PEDESTAL RESULTING FROM REMOVAL OF PUSH BUTTONS.

(C) REMOVE AND MODIFY EXISTING ONE–WAY 5 SECTION TRAFFIC SIGNAL (CURRENT FACE NOS. 1, 4, 5 AND 7) TO PROVIDE ONE–WAY 3 SECTION TRAFFIC SIGNAL (NEW FACES 2,4,6 AND 8)

(D) INSTALL MAST ARM MOUNTED TURN RESTRICTION SIGNS (SIGNS C AND D) AND SIGN E (RLMTR)

(E) ERADICATE ALL LEFT TURN PAVEMENT MARKING ARROWS THROUGH NON DESTRUCTIVE MEANS

(F) ALL DETECTORS AND ASSOCIATED HOMERUN CABLE TO BE ABANDONED IN PLACE

(G) INSTALL NEW SIGNAL FACE 6 (CENTERLINE) AND 14/5 CABLE. LED LAMPS TO BE USED.

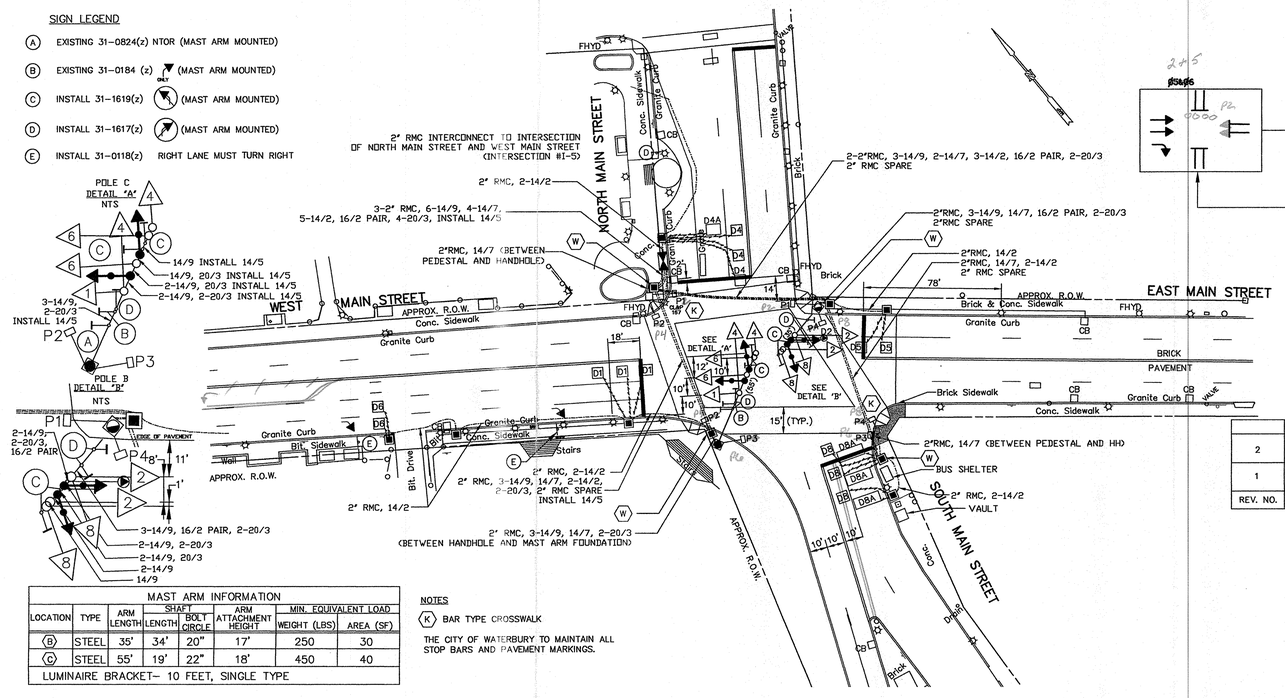
(H) CONVERT CURBSIDE FACE 6 FROM R,Y,G TO R,Y,→

(I) REVISE PAVEMENT MARKINGS ON SOUTHBOUND SOUTH MAIN STREET TO PROVIDE TWO SOUTHBOUND LANES AS SHOWN. ERADICATE EXISTING MARKINGS THROUGH NON DESTRUCTIVE MEANS.

(J) EXISTING 30"x 30" CONCRETE HANDHOLE

SIGN LEGEND

(A) EXISTING 31–0824(z) NTOR (MAST ARM MOUNTED)
(B) EXISTING 31–0184 (z) (MAST ARM MOUNTED)
(C) INSTALL 31–1619(z) (MAST ARM MOUNTED)
(D) INSTALL 31–1617(z) (MAST ARM MOUNTED)
(E) INSTALL 31–0118(z) RIGHT LANE MUST TURN RIGHT



MAST ARM INFORMATION							
LOCATION	TYPE	ARM LENGTH	SHAFT LENGTH	SHAFT BOLT CIRCLE	ARM ATTACHMENT HEIGHT	MIN. EQUIVALENT LOAD WEIGHT (LBS)	MIN. EQUIVALENT LOAD AREA (SF)
(B)	STEEL	35'	34'	20"	17'	250	30
(C)	STEEL	55'	19'	22"	18'	450	40
LUMINAIRE BRACKET– 10 FEET, SINGLE TYPE							

NOTES

(K) BAR TYPE CROSSWALK

THE CITY OF WATERBURY TO MAINTAIN ALL STOP BARS AND PAVEMENT MARKINGS.

REV. NO.	MODIFICATION	DATE
2	ELIMINATED LEFT TURNS FROM INTERSECTION, REMOVED DETECTION	7/1/03
1	REVISED MAST ARM LOCATIONS, DETECTOR D2 AND HANDHOLE IN SW CORNER.	9/17/02

TOWN SIGNAL

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY. OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL LAYOUT

CITY OF WATERBURY
EAST MAIN ST. AND WEST MAIN STREET AT
NORTH MAIN STREET AND SOUTH MAIN STREET

SCALE : 1" = 40' DATE: SEPTEMBER 2000

UTILITY COMPANY REPRESENTATIVES

1. MARCUS CABLE
   MR. RAY CENICOLA
   (203) 756–1905
2. SOUTHERN NEW ENGLAND TELEPHONE
   MR. ROBEFT BOUFFARD
   (203) 238–5620
3. NORTHEAST UTILITIES
   MR. GREG LATTANZIO
   (203) 597–4597
4. TRAFFIC ENGINEER, CITY OF WATERBURY
   DENIS CUEVAS, PE
   (203) 574–6820
5. CITY ENGINEER, CITY OF WATERBURY
   MR. ERNIE PHILIPS, P.E.
   (203) 574–6851

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

F.H.W.A. REGION NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO	YEAR	ROUTE NO.	SHEET NO.
1	CONN.	WATERBURY	STPA-7151(1)	151-252	2000		35

REV. # 3 | INTERSECTION # I–6

K:\esscr\main.dwg

CTDOT Signal Clearance Times

TOWN: Waterbury
INTERSECTION: North Main St at West Main St, East Main St, and South Main St
INTERSECTION #: I-6
BY: MDS

BL Job#: 2503024

DATE: 5/4/2026

YELLOW TIME

WHERE:

$$\text{YELLOW TIME (SEC)} = Y = t + \frac{V}{(2a+2Ag)}$$

	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
Critical Movement		WB Thru		SB Thru	EB Thru	EB Thru		NB Thru
T = PERCEPTION/REACTION TIME, SEC =		1	1	1	1	1	1	1
V = 85th %APPROACH SPEED, MPH		32		32	32	32		32
a = DECELERATION RATE, FT/SEC/SEC		10	10	10	10	10	10	10
A = DECELERATION OF GRAVITY, FT/SEC/SEC		32.2	32.2	32.2	32.2	32.2	32.2	32.2
G = GRADE, % (+ FOR UPGRADE, - FOR DOWNGRADE)		0		0	0	0		0
Y (YELLOW TIME)= Computed		3.4		3.4	3.4	3.4		3.4
Use (Must be between 3.0 sec - 5.0 sec)		**3.4**		**3.4**	**3.4**	**3.4**		**3.4**

RED TIME

WHERE:

$$\text{RED TIME (SEC)} = R = T_C - T_e + K$$

	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
Clearing Vehicle		EB Thru		SB Thru	EB Right	EB Thru		NB Thru
Entering Vehicle		NB Thru		EB Right	P6 Ped	NB Thru		P2 Ped
D_c=CLEARANCE DISTANCE, STOP BAR TO FURTHEST CONFLICT POINT, feet		101		100	35	101		98
V_c= CLEARANCE SPEED, SPEED LIMIT, MPH		25		25	25	25		25
CLEARING TIME (SEC) = $T_C = \frac{D_C}{V_C}$				4	1.4			
D_e = SHORTEST ENTERING DISTANCE, STOP BAR TO CONFLICT POINT, feet		39		81	32	39		6
Ve = ENTRANCE SPEED, MPH	15	15	15	15	2.4	15	15	2.4
ENTERING TIME (SEC) = $T_E = \frac{D_E}{V_E}$		2.6		5.4	13.3	2.6		2.5
K=TIME FOR LAST VEHICLE TO CLEAR CONFLICT POINT, SEC	1	1	1	1	1	1	1	1
R (RED TIME)= Computed		2.0		0.0	-7.1	2.0		2.0
Use (Minimum is 1.0 sec)		**2.0**		**1.0**	**1.0**	**2.0**		**2.0**

PEDESTRIAN CLEARANCE TIMES

WHERE:

$$PED = \frac{P_c}{3.5\frac{ft}{\text{sec}}}$$

	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9
PEDESTRIAN PHASING TYPE	None	Concurrent	None	Concurren	None	Concurren	None	Concurren	None
P_c = PEDESTRIAN CROSSING DISTANCE, FEET		77		65		100		66	
WALK TIME, SEC		7		7		7		7	
LPI TIME, SEC		0		0		0		0	
PED (PEDESTRIAN CLEARANCE TIME)= Computed		17		14		23		14	
Use (Minimum is 7 sec)		**17**		**14**		**23**		**14**	

Ref: CTDOT Traffic Signal Manual

Architecture
Engineering
Environmental
Land Surveying
BL Companies



TOWN ORDINANCE

CITY OF WATERBURY CODE OF ORDINANCES CHAPTER 71

AS ADOPTED APRIL 21, 2025

CHAPTER 71: AUTOMATED TRAFFIC ENFORCEMENT SAFETY DEVICES

§ 71.01 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

AUTOMATED TRAFFIC ENFORCEMENT SAFETY DEVICE. A device designed to detect and collect evidence of alleged violations set forth in this chapter by recording images that capture the number plate, date, time and location of a motor vehicle that (A) exceeds the posted speed limit by ten or more miles per hour, or (B) fails to stop such vehicle when facing a steady red signal on a traffic control signal.

AUTOMATED TRAFFIC ENFORCEMENT SAFETY DEVICE OPERATOR. A person who is trained and certified to operate an automated traffic enforcement safety device.

DRIVER. A "driver" as that term is defined in in section 14-1 of the general statutes.

MOTOR VEHICLE. A "motor vehicle" as that term is defined in in section 14-1 of the general statutes.

NUMBER PLATE. A "number plate" as that term is defined in in section 14-1 of the general statutes.

OWNER. An "owner" as that term is defined in in section 14-1 of the general statutes. In the case of a motor vehicle that is leased for a period of more than thirty days and identified by an automated traffic enforcement safety device as allegedly committing a violation of an ordinance adopted under this section, the lessee shall be considered the owner of such motor vehicle for the purposes of this section.

§ 71.02 USE OF AUTOMATED TRAFFIC ENFORCEMENT SAFETY DEVICES.

(A) The use of automated traffic enforcement safety devices at locations within school zones, pedestrian safety zones, and other places in the city is hereby authorized.

(B) The locations of any such devices will be identified in a plan approved by the state Department of Transportation in accordance with section 14-307e of the general statutes.

(C) The city may enter into agreements with vendors for the design, installation, operation or maintenance, or any combination thereof, of automated traffic enforcement safety devices. If a vendor designs, installs, operates or maintains an automated traffic enforcement safety device, the vendor's fee may not be contingent on the number of citations issued or fines paid under the terms of this chapter.

(D) In accordance with section 14-307c of the general statutes, (1) any automated traffic enforcement safety device shall be operated by an automated traffic enforcement safety device operator; (2) the owner of a motor vehicle commits a violation of this chapter if the person operating such motor vehicle (a) exceeds the posted speed limit by ten or more miles per hour and such operation is detected by an automated traffic enforcement safety device, or (b) fails to stop such motor vehicle when facing a steady red signal on a traffic control signal and such failure is detected by an automated traffic enforcement safety device; (3) an automated traffic enforcement safety device shall be used solely for identifying violations of this chapter; (4) for the first thirty days after a location is equipped with an operational automated traffic enforcement safety device, the owner of a motor vehicle allegedly committing a violation of such ordinance that is detected by such device shall receive a written warning instead of a citation, as described in subsection (i) of section 14-307c of the general statutes; (5) payment of a fine and any associated fee imposed for a violation of the ordinance may be made by electronic means; (6) a sworn member or employee of the municipality's police department or an employee of the municipality, as designated by the traffic authority, shall review and approve the recorded images before a citation is mailed to the owner of such motor vehicle; and (7) the defenses available to the owner of a motor vehicle allegedly committing a violation of such ordinance, which shall include, but are not limited to, the defenses listed in subsection (j) of section 14-307c of the general statutes.

§ 71.99 PENALTY.

(A) Any person who commits a violation of this chapter shall be subject to a penalty of fifty dollars for a first violation and seventy-five dollars for any subsequent violation that occurs within one year of the date of the owner’s most recent violation. Any subsequent violation occurring more than one year after the owner’s most recent violation shall be considered a first violation.

(B) In addition to the penalty set forth in subsection (A) of this section, any person who commits a violation of this chapter shall pay a fee of fifteen dollars for the costs associated with the electronic processing of the payment of any such fine.

(C) Any person against whom a penalty or fee is assessed in accordance with this chapter shall be entitled to contest that assessment at a hearing before a citation hearing officer, and to judicial review by way of appeal, as set forth in section 7-152c of the general statutes, as that section may be amended from time to time.

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ATESD PLAN CHECKLIST

Automated Traffic Enforcement Safety Device (ATESD) Plan Checklist for Submission to the OSTA

Requirements for all ATESD Plans:

☒ A copy of the ordinance adopted by the municipality authorizing the use of ATESDs.

☐ A copy of the notice of the public hearing conducted on the municipality's ATESD plan.

☐ A copy of minutes of the meeting at which the municipality's legislative body or board of selectman voted to approve the ATESD plan.

☒ A copy of the municipality's Comprehensive Safety Action Plan (CSAP), the section in the Regional Transportation Safety Plan (RTSP) specific to the municipality, and/or the municipality's Vision Zero Action Plan.

☐ A signed copy of the ATESD Municipal Self-Certification which requires the Chief Elected Official to read and understand the requirements associated with the implementation of an ATESD Program.

☒ A written justification, with supporting documentation, explaining how and why an ATESD was selected for installation at each location. Supporting documentation may include but is not limited to:

- ☒ Crash History
- ☒ Speed Data
- ☒ Enforcement Data
- ☒ Traffic Data (Vehicles, Pedestrians, Bicyclists, etc.)
- ☐ Recommendations from a Road Safety Audit (RSA)
- ☐ Findings that other speed reduction measures are not feasible or have not been effective

☒ A scaled roadway plan or an aerial image showing:

- ☒ The location for the ATESD at a traffic control signal, school zone, pedestrian safety zone, or other location(s); and,
- ☒ The location for the signs notifying motorists there is operational ATESD present.

Additional Requirements for ATESDs at a Traffic Control Signal:

☒ A copy of the current traffic signal plan of record showing the geometry, phasing/sequence, and timing.

☒ Confirmation that the traffic control signal location appears on the list of intersections on the CT Red Light Intersection Evaluation Tool (CT-REDV).

☒ If the traffic control signal is municipally owned, then all of the following requirements must be met:

☒ The Traffic Investigation Report (TIR) confirming that the current traffic signal plan of record has been approved by the Office of the State Traffic Administration (OSTA).

☒ The traffic signal plans shows that the change intervals (e.g. yellow, red, and pedestrian clearance timings) have already been optimized in accordance with Chapter 6 in CTDOT's Traffic Control Signal Design Manual.

Additional Requirements for ATESDs at a School Zone:

☐ Confirmation that the school zone has been approved or established by either the OSTA or Local Traffic Authority (LTA).

☐ The scaled roadway plan or aerial image must show all existing school zone signage within the limit of the school zone.

Additional Requirements for ATESDs at a Pedestrian Safety Zone:

☐ Confirmation that the pedestrian safety zone has been approved or established by either the OSTA or Local Traffic Authority (LTA).

☐ The scaled roadway plan or aerial image must show all existing pedestrian safety zone signage within the limits of the pedestrian safety zone.

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NVCOG VISION ZERO ACTION REPORT

NAUGATUCK VALLEY COUNCIL of GOVERNMENTS

NVision Zero

NAUGATUCK VALLEY VISION ZERO ACTION REPORT















Prepared:
December 2025

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Letter from the Board Chair:



Dear Residents and Partners of the Naugatuck Valley Region,

On behalf of the Naugatuck Valley Council of Governments (NVCOG) Board, I am proud to share the launch of our the NVision Zero Action Plan—a critical step forward in our collective effort to make our roads safer, our communities stronger, and our region more connected.

Every year, far too many lives are lost or forever changed due to crashes on our roadways. These tragedies are not inevitable. They are preventable. That belief is at the heart of this plan and the federal Safe Streets and Roads for All (SS4A) initiative that helped make it possible. This plan provides a data-driven, community-informed roadmap to reduce—and ultimately eliminate—serious injuries and fatalities on our roads.

The NVCOG region is home to more than 450,000 residents across 19 municipalities, each with unique needs but a shared desire for safer streets. Whether you're walking to school in Seymour, biking to work in Waterbury, or driving home in Bristol, you deserve infrastructure that protects you.

This plan does more than identify problem areas. It elevates local voices, prioritizes mobility, and offers real, actionable solutions. It was built in collaboration with town leaders, transportation professionals, and the people who live and travel here every day.

As Chair of the NVCOG Board, I want to express my deep gratitude to the municipal and regional staff, elected officials, community advocates, and residents who contributed to this effort. Your input and commitment were essential.

Now comes the most important part: implementation. The Safety Action Plan is a foundation—a tool we will use to secure future funding, guide infrastructure investments, and support local projects that align with our shared goals. But to succeed, we need continued collaboration and community engagement.

Let this plan mark the beginning of a safer future for all who live, work, and travel in the Naugatuck Valley. Together, we can build streets that serve everyone—no matter how they move.

With appreciation and resolve,



Executive Summary

The Naugatuck Valley's Vision Zero Action Plan takes a data-driven approach to improving roadway safety in the 19 towns, cities, and boroughs of the region. This plan starts with the belief that roadway fatalities and serious injuries are not inevitable, and that using a safe systems approach can prevent these outcomes. With that belief in mind, the NVCOG Board endorsed a Vision Zero target of eliminating all fatalities and serious injuries from the region's roads by 2060.

To make that vision a reality, this plan starts with an in-depth analysis of the serious and fatal crashes that took place between January 1, 2022, and December 31, 2024. This analysis provided information about both the most common crash types and causes as well as the locations where these crashes are taking place. Using this data, NVCOG selected priority locations for improvements and, through a combination of the Federal Highway Administration's Proven Safety Countermeasures, Connecticut Department of Transportation best practices, and the region's Complete Streets Guidebook, developed a list of actions for these priority corridors.

Vision Zero isn't just a plan or a list of projects, but a paradigm shift in how the region thinks about roadway safety. For this reason, this plan isn't an end, but just the beginning of the hard but valuable work to eliminate fatalities and serious injuries on our roads. The policy recommendations, safe streets framework, and leadership commitment included here represent the importance of this work and the dedication of the Naugatuck Valley.

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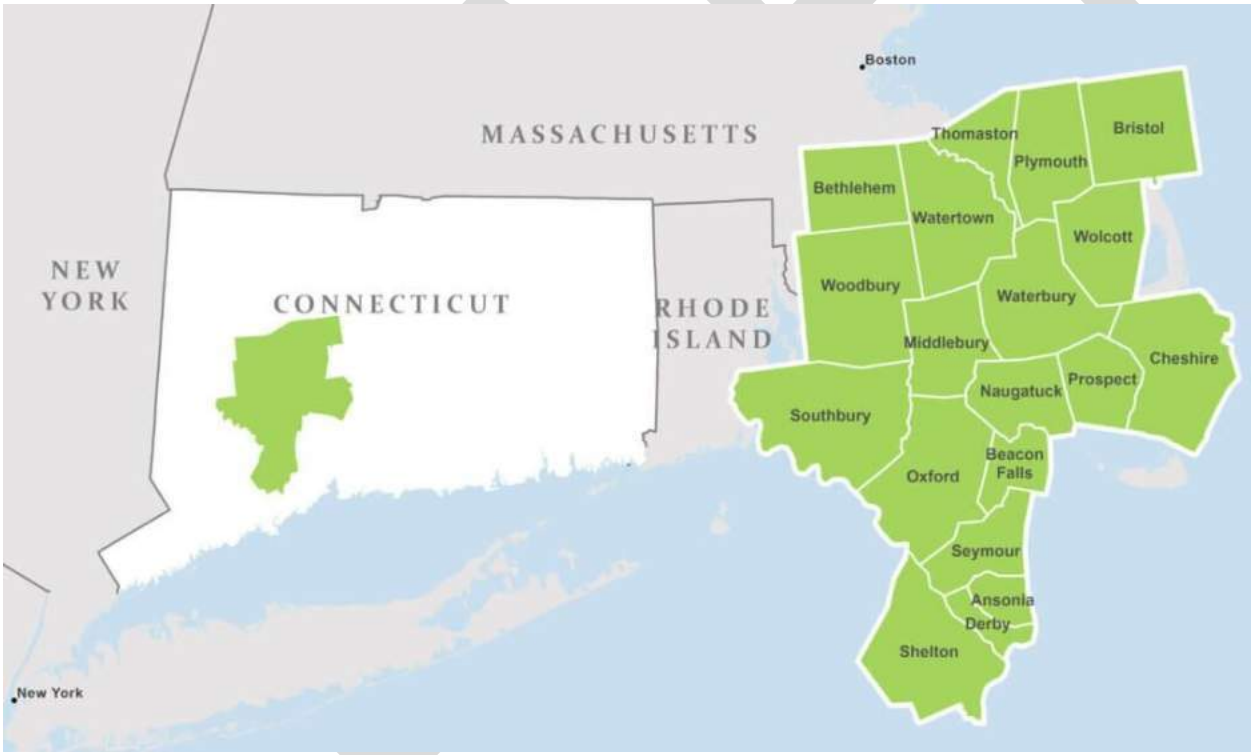
About the Naugatuck Valley Planning Region

The Naugatuck Valley Planning Region, represented by the Naugatuck Valley Council of Governments, is an association of nineteen towns, cities, and boroughs located in west-central Connecticut. The region stagnated for many years following deindustrialization, but in recent years the economy and population of the region have started growing again, putting new pressure on the aging and at times neglected transportation system. Now home to more than 450,000 residents, the Naugatuck Valley has more than 2,800 miles of road.

The region is a diverse mix of urban development, suburban neighborhoods, and rural areas, located within easy reach of Bridgeport, Hartford, New Haven, Lower Fairfield Country, and New York City. Within the region, six stations along the Waterbury Branch Line provide rail connections to Bridgeport, New Haven, New York City, and the greater Northeast Megaregion. Bus connections in the region provide transport all across the state and connect to the systems in Hartford, New Haven, and Fairfield County.



What is Vision Zero

At the Naugatuck Valley Council of Governments, we pride ourselves in helping communities plan safe and reliable transportation systems. One of the most important goals we support is **Vision Zero**. Vision Zero is a commitment to end all traffic deaths and serious injuries on our roads, no matter whether people are walking, biking, driving, or using public transit.

Vision Zero starts with a simple idea: **no loss of life on our streets is acceptable**. Crashes are not "accidents." They are events that can be prevented with better planning, safer street design, and clearer rules. As an MPO, we work with our municipalities and Connecticut DOT to study where crashes happen and why. Then we help leaders make decisions based on data, not guesswork.

Vision Zero focuses on building a transportation system that protects everyone. This includes adding safer crosswalks, building bike lanes, lowering speed limits in busy areas, improving lighting, and redesigning streets so they encourage safer driving. We also look at fairness, making sure safety improvements reach neighborhoods that have been overlooked in the past.

Reaching Vision Zero takes teamwork. We rely on police officers, engineers, schools, transit agencies, and community members. We ask for public input because people who use the streets every day know where the biggest problems are. Vision Zero is not about blaming individuals but instead fixing the system so small mistakes don't lead to tragedy.

The Naugatuck Valley believes Vision Zero is both possible and necessary. With smart planning, community support, and a shared commitment to safety, we can create streets where everyone can travel comfortably.

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Goals of this Plan:

Based on the goals laid out in the NVCOG's Metropolitan Transportation Plan, public meetings held for various roadway safety projects, and conversations with the transportation technical advisory, the following goals were laid out for this action plan:

1. Eliminate fatalities and serious injuries in the Naugatuck Valley Planning Region by 2060.
2. Use data to find where fatal and serious injury crashes are happening most often, and what factors contribute to those crashes.
3. Develop plans to improve those locations and put an implementation strategy together to get those improvements built.
4. Recommend system-wide improvements that can be included anywhere in the region where crashes are happening.
5. Make information about roadway safety more widely available, in a simple to use and easy to read format.
6. Advance the region's goal of a transportation system with more options for travelers, ensuring that no matter how you choose to get around you can be safe and comfortable.
7. Help residents, visitors, and decision makers better understand the tools available to make our roads safer.

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Chapter 2 – Building the Plan

Work on this safety action plan has involved many individuals and supporters. From support committees to residents, the ideas and goals included in this plan represent a broad range of comments. Implementing these improvements will rely on all of us in the Naugatuck Valley making a commitment to roadway safety.

1. Goal Setting – Before getting into the work of planning for roadway safety, the goals for this plan were laid out. These goals were picked to align this plan with the region's past planning work and Vision Zero.
2. Data Review – The next step to this plan was a review of crash data. The UConn Crash Data Repository[1] was used to look at all serious and fatal crashes from January 1, 2022, through December 31, 2024.
3. Public Engagement – During the whole process, we referenced what we've heard from residents and municipal staff. These comments helped us pick the most important locations for improvement, the best ways to solve problems, and ensured that all residents were set to benefit from the work we propose.
4. Picking Countermeasures – Using a combination of best practices from the Federal Highway Administration, CTDOT, and communities around New England, potential fixes for dangerous locations were selected. No ideas were not considered possible at this stage.
5. Site Selection – Using the data collected in step 2, staff picked the locations with the most serious injury and fatal crashes. We then looked more into the crash types and causes at these spots.
6. System Evaluation – In addition to looking at specific spots with multiple crashes, we looked through the regional crash data to identify patterns in crash causes. We then recommended easily implementable solutions to these for anywhere they would be needed in the region.
7. Setting Performance Measures – To make sure the strategies recommended in this plan are helping, we set some measures to look to over time. These metrics will make sure that the region keeps working toward eliminating serious injuries and fatalities on our roads.

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Key Stakeholders and Committees

NVCOG Policy Board

The NVCOG Policy Board, made up of the chief elected official of each member town, has the authority to adopt this plan for implementation. As the decision makers in the region, the Policy Board has helped set the content of this plan, the goals for improving regional safety, and will be key partners as these projects reach implementation.
At the regularly scheduled monthly meeting, NVCOG staff provided updates as work progressed on this plan. This included sharing the methodology used as for data analysis, selection of priority implementation sites, and then the types of interventions proposed.

Transportation Technical Advisory Committee

In their role as advisors to the NVCOG Board, the Transportation Technical Advisory Committee is responsible for making recommendations to the board. The TTAC has been the primary steering committee for how this plan has come together. The TTAC, made up of Public Works Directors and City Engineers, will also be important as our members work on implementing elements of this plan.

Connecticut Department of Transportation

As with all transportation planning gin the region, the Connecticut Department of Transportation is an important partner. Many of the region's high crash locations are on state roads. CTDOT's engineering standards are used across the state, and many funding sources are primarily controlled at the state level. The Bureau of Policy and Planning, as well as Engineering, were both important in helping to develop this plan.

NVision Zero

All of this adds up to the NVision Zero campaign, the engagement and strategic outreach for Vision Zero in the Naugatuck Valley. As an important part of the NVision Zero campaign, this document will guide our strategy through the next four years.

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Chapter 3 Safety Analysis

To ensure that this plan can most effectively program improvements in the region, it was essential to understand the locations and types of crashes that most often lead to serious injuries and fatalities within the region.

This analysis was completed in two parts. First, using data from the University of Connecticut's Crash Data Repository, staff reviewed the number and types of crashes, as well as contributing factors. Second, using geospatial analysis of crash locations, staff identified the high frequency crash segments, then used this data to identify the high-intensity crash network.

Crash Type Analysis Methodology

Based on Federal Highway Administration (FHWA) guidance, crash data was used for the last three full years for which data is available. These are the years of 2022, 2023, and 2024. UConn's crash data repository provides a detailed record of each crash in the state, and the full crash history for these years was downloaded and analyzed by the team.

Total Vehicle Crashes: 2022-2024		
Year	Number	Percent
2022	12,437	34.0%
2023	12,040	32.9%
2024	12,136	33.1%
Total:	36,613	

Source: UConn Crash Data Repository

Vehicle -Involvement in Crashes: 2022-2024			
Number of Vehicles	Number	Percent	N_Vehicles
1-Vehicle	7,703	21.0%	7,703
2-Vehicles	26,805	73.2%	53,610
3-Vehicles	1,785	4.9%	5,355
4 or more Vehicles	320	0.9%	1,392
Total:	36,613		68,060

Source: UConn Crash Data Repository

Safety assessments were completed for each municipality in the region to identify their specific issues and problems, as well as for the full region. Over the past three years, a total of 36,613 crashes were recorded in the Naugatuck Vally planning region.

The total crashes recorded in the region involved 68,060 vehicles, indicating that, on average, a vehicle crash involved 1.86 vehicles. Most (79.0%) of the crashes involved at least two vehicles, with two-vehicle crashes accounting for 73.2% of the total. Single vehicle crashes

represent 21.0% of all crashes. Crashes that involved only a single vehicle include vehicle collisions with a pedestrian, bicyclist, a fixed object, an animal in the road, or a

road departure. A small number of the crashes involved three vehicles and less than one percent occurred with four or more vehicles.

The focus of the Safety Action Plan is on the incidence of crashes that result in a serious injury or fatality. Nearly three-quarters of all crashes were classified as property damage only with no apparent injuries resulting from the crash. A possible injury or suspected minor injury was reported on about 23.4% of the crashes. Between 2022 and 2024, 465 crashes (1.3%) caused a serious injury, impacting 549 people, and 127 crashes resulted in a fatality with the number of deaths totaling 137.

Severity of Vehicle Crashes: 2022-2024

Severity	Number	Persons
No Apparent Injury	27,266	71,348
Possible Injury	4,127	5,984
Suspected Minor Injury	4,628	6,131
Suspected Serious Injury	465	549
Fatality	127	137
Total:	36,613	84,149

Source: UConn Crash Data Repository

The federal safety performance targets require MPOs to estimate the rates of serious injury and fatal crashes per 100 million vehicle miles of travel (VMT). It is estimated that, on average, daily VMT in Naugatuck Valley planning region totals about 10.4 million miles. Extrapolating the daily estimate results in an annual average of about 3.8 billion miles. The VMT estimate is based on the CTDOT Travel Demand Model (Cube Series 2). The rates for fatal and serious injury crashes averaged 1.12 fatal crashes per 100 million VMT and 4.09 serious injury crashes per 100 million VMT.

Crash Rates: 2022-2024

Severity	100 mVMT	Fatal	Serious Injury
2022	37.78	1.35	4.31
2023	37.94	1.03	3.64
2024	38.11	0.97	4.30

mVMT = Million Vehicle Miles of Travel. Based on CTDOT Travel Demand Model (Cube Series 2)
Source: UConn Crash Data Repository, CTDOT

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The safety action plan is also focused on improving the safety and reducing crashes involving the most vulnerable road users. While the number of collisions involving a pedestrian or bicyclist is relatively small, the severity of injuries suffered by pedestrians and bicyclists involved in a crash with a vehicle tends to be greater. From the beginning of 2022 through 2024, 599 crashes involved a pedestrian or bicyclist. This total represents only about 1.6% of all crashes that occurred in the Naugatuck Valley region. The majority (81.3%) of these crashes were pedestrian-related crashes.

Pedestrian and Bicyclist Related Crashes: 2022-2024

Severity	Number	Percent
Pedestrian	487	1.3%
Bicyclist	112	0.3%
Total:	599	1.6%

Source: UConn Crash Data Repository

One evolving and alarming trend is a sharp rise in bicycle related crashes in 2025, partially attributed to the increasing popularity of e-bikes and other micro mobility devices. Safety concerns in this area were commonly brought up in conversations with municipal officials, as well as across state agencies.

To help address this concern, the NVCOG is participating, alongside other state, regional, and local agencies, in a working group led by WatchforMe CT to recommend policies and practices for education, enforcement, and potential legal changes.

The remaining assessment of transportation safety aims to identify the factors that contribute to these crashes and locations at which these crashes occur. This analysis has informed the recommended policies in chapter 5 and the recommended actions and projects identified in chapter 6.

The key to understanding the incidence of crashes that result in a fatality and serious injury is identifying the factors that contribute to the crash. Factors include:

- Location and road type – intersection, roadway and jurisdiction
- Manner of the collision
- Condition and behavior of the driver at the time of the crash – was the driver impaired, driving in an aggressive manner or made an inappropriate action
- Involvement of other, non-motorized persons
- Road and weather conditions at the time of the collision

Manner of Collision of Crashes: 2022-2024		
Severity	Number	Percent
Angle	146	24.7%
Front-to-Front	64	10.8%
Front-to-Rear	56	9.5%
Sideswipe	22	3.7%
Hit Fixed Object	156	26.4%
Pedestrian	77	13.0%
Bicyclist	6	1.0%
Overturn/Rollover	15	2.5%
Curb	27	4.5%
Other	23	3.9%
Total:	592	

Source: UConn Crash Data Repository

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There were 592 crashes between 2022 and 2024 that resulted in a fatality or serious injury. Fatal crashes accounted for 21.5% of these crashes. The majority occurred on the roadway, either along the road or at an intersection. About 22.8% occurred off the road and represent road departures. Few crashes were recorded at some other location, such as at a median or in a parking lot. While most vehicle crashes occurred at an intersection (64.6%), crashes that result in a fatality or serious injury more often involve a crash along the roadway. Only about 15.0% of fatal crashes and 32.3% of serious injury crashes were associated with an intersection.

Location and Road Type of Fatal and Serious Injury Crashes: 2022-2024

Road Type	Number	Percent
On Roadway	424	71.6%
Off-Road	142	24.0%
Median	13	2.2%
Other/Unknown	13	2.2%
Intersection	169	28.5%
Not Intersection	423	71.5%
Expressway	51	8.6%
State Route	226	38.2%
Local	297	50.2%
Blank	18	3.0%
Total	592	

Source: UConn Crash Data Repository

Roadway type is also determinant of severe vehicle crashes. Often, interstate highways and other expressways are perceived as the more hazardous facilities, due to the higher speed and volume of traffic. However, in the Naugatuck Valley region, only 7.1% of the fatal and serious injury crashes were recorded on a limited access highway. There are such facilities in the region: I-84, I-691, and CT Route 8. Of the three, Route 8 accounts for 52.3% of the fatal and serious injury crashes that were recorded on the expressway system. The region is crisscrossed by numerous state-owned and maintained routes that serve as the primary travel corridors. Combined, these roads carry the higher daily traffic volumes and provide access to the expressway network and connect all parts of the region. About 38.2% of fatal and serious injury crashes occurred on a state-numbered road.

By contrast, local roads serve as the connectors to and from high function arterials and neighborhoods. These roads typically carry lower amounts of vehicles, and these vehicles travel at lower speeds. Despite these factors, local roads are the sites of the majority of fatal and serious injury crashes. Over, 50.5% of these crashes happened on a local road.

The manner of the collision provides insight into the movement of the vehicles at the time of the crash and factors that contributed to the crash. There was a range of factors listed. Angle type crashes and vehicles hitting a fixed object off the side of the road accounted for about half of the crashes, roughly a quarter for each type, 24.7% and 26.4%, respectively. An angle-type crash occurs when two vehicles are travelling straight and collide at an angle, typically at 90° and at a four-way intersection. The "Hit Fixed Object" category includes a wide range collisions that involve a vehicle running off the road and hitting some object off the side of the road. Fixed objects include guardrails, fences, trees, traffic barriers, bridge supports and abutments, and traffic signs. Often, these crashes involve one vehicle.

Front-to-front crashes are defined as collisions in which two vehicles collide in a head-on manner. This category involves turning vehicles at an intersection, as well as vehicles traveling straight with one crossing the centerline and colliding head-on with a vehicle travelling in the opposite direction. These crashes represent about 10.8% of the total fatal and serious injury crashes.

How vehicles were moving at the time of the crash is also important to determining causes and possible mitigation actions. Nearly half of the vehicles involved in a crash were traveling straight ahead. Only 12.1% of the fatal and serious injury crashes involved vehicles making a turn, with the vast majority of these turning left (87.6%). For 12.1% of the crashes, a vehicle was negotiating a curve at the of the crash. The remaining twenty percent of the crashes involved a range of vehicle movements, including entering or exiting the traffic lane, trying to overtake or pass another vehicle, changing lanes, or stopped or slowing for traffic.

Manner of Collision: 2022-2024

Severity	Number	Percent
Turning Left/Right	121	12.1%
Straight Ahead	524	52.3%
Negotiating a Curve	121	12.1%
Wrong Way	17	1.7%
Changing Lanes	6	0.6%
Entering/Exiting Ln	24	2.4%
Stopped/Slowing	50	5.0%
Other	87	8.7%
Overtaking/Passing	32	3.2%
Unknown	19	1.9%
Total:	1001	

Source: UConn Crash Data Repository

Driver action at the time of the crash is a critical factor in the cause. There is a wide range of driver actions that contributed to the crash. Actions include one where the driver failed follow proper rules of the road, such as disregarding traffic signs, signals and lane markers, following too closely, failing to maintain proper lane, and operating the vehicle in a reckless, aggressive and inattentive manner. For records for which driver action is indicated, an improper action by the driver was the contributing factor on 57.6% of fatal and serious injury crashes. No contributing action was indicated on 27.2% of the crashes. The driver following too close to the vehicle in front of them was the factor in only 2.7% of the crashes and the driver failing to grant the right of way was indicated for only 3.8%.

Driver Action at Time of Crashes: 2022-2024		
Severity	Number	Percent
Disregarded Traffic Control	17	3.6%
Operated Vehicle in Reckless, Aggressive & Inattentive Manner	74	15.5%
Improper movement	21	4.4%
Failed to Yield Right-of-Way	18	3.8%
Failed to Keep in Proper Lane	113	23.7%
Followed Too Closely	13	2.7%
Ran Off Roadway	50	10.4%
Other Contributing Action	14	3.0%
No Contributing Action	130	27.2%
Unknown	27	5.7%
Total:	477	

Source: UConn Crash Data Repository

The incidence of road departure crashes is an emphasis area of the Connecticut Department of Transportation and the CT Vision Zero Council, and the action plan is focused on ways to reduce these crashes. A road departure crash is one when at least one vehicle involved in the crash runs off the roadway. While only about 10.4% of the crashes involved the driver running off the road, over one-third (37.9%) of serious injury and fatal crashes were classified as a road departure crash. The difference is because road departures include a wide range of crashes the involved a vehicle hitting a fixed object off the roadway. For crashes that resulted in a fatality, over half (54.3%) involved a road departure.

Road Departure Crashes: 2022-2024			
Severity	Road Departure	Total	Percent
Serious Injury	147	465	31.6%
Fatal	69	127	54.3%
Total:	216	592	36.5%

Source: UConn Crash Data Repository

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The locations of crashes tend to be spread throughout the region. However, the more prevalent locations are in more urban, densely populated areas and along higher function roads that carry the higher volume of traffic. Of the total fatal and serious injury crashes (592) that occurred in the region between 2022 and 2024, 229 crashes or 38.9% were recorded in Waterbury. Roughly, 22.3% of these resulted in a fatality, A high incidence of crashes also was recorded in Bristol (14.4% of the total) and Shelton (9.5%).

Location of Crashes: 2022-2024

Municipality	Number	Percent
Ansonia	15	2.5%
Beacon Falls	2	0.3%
Bethlehem	1	0.2%
Bristol	85	14.4%
Cheshire	36	6.1%
Derby	20	3.4%
Middlebury	11	1.9%
Naugatuck	18	3.0%
Oxford	3	0.5%
Plymouth	20	3.4%
Prospect	4	0.7%
Seymour	21	3.5%
Shelton	56	9.5%
Southbury	12	2.0%
Thomaston	10	1.7%
Waterbury	229	38.7%
Watertown	18	3.0%
Wolcott	22	3.7%
Woodbury	9	1.5%
Total:	592	

Source: UConn Crash Data Repository

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High Injury Network Methodology

All serious injury and fatal crashes were exported as Comma Separated Value (.CSV) files and contained XY coordinates indicating where each crash took place. Using the XY table to point tool in ArcGIS Pro, these crashes were mapped as points. Each point was then reviewed to ensure the point was placed properly, with the reviewer comparing the description of the crash location in the table with where the point was placed. Improperly placed points were moved near centerlines at the described location.

Each crash was provided with a weighted score using the "Equivalent Property Damage Only" (EPDO) methodology. This methodology, based on federal guidelines and figures, assigns values to crashes based on the ratio of the monetary cost of a property damage only crash to the monetary cost of a serious or fatal injury crash. Using 2020 figures, property damage only crashes cost $4,000 on average, while serious injury crashes cost $402,000, and fatal injury crashes cost $5,800,000. The ratio of these two higher severity costs to property damage only costs are 100 and 1,450 respectively, so a value of 100 was attributed to serious injury only crashes and a value of 1,450 was attributed to fatal injury crashes for this analysis.

High Injury Network (HIN) Development

Using CT Department of Emergency Services & Public Protection 911 street centerline shapefiles in ArcGIS Pro, NVCOG created 50-foot flat buffers around road centerlines (50 feet in each direction). Select intersections with multiple serious/fatal injury crashes previously had their intersecting segments combined to create intersection buffers. The number of serious and fatal crashes within each buffer were counted, and the weighted scores of each crash within the buffer were added using a spatial join. While more complex analyses segment roads by a uniform length to account for biases based on line length, NVCOG opted to minimally edit the roadways data set, as the 911 centerlines are already fairly short and uniform, and the number of very high injury buffers (containing at least one fatal crash) is relatively small at 137, allowing for site-specific analysis in future planning/programming. This analysis created 637 buffers in which at least one serious injury crash occurred, providing this report's High Injury Network.

The map on the following page shows the High Injury Network.

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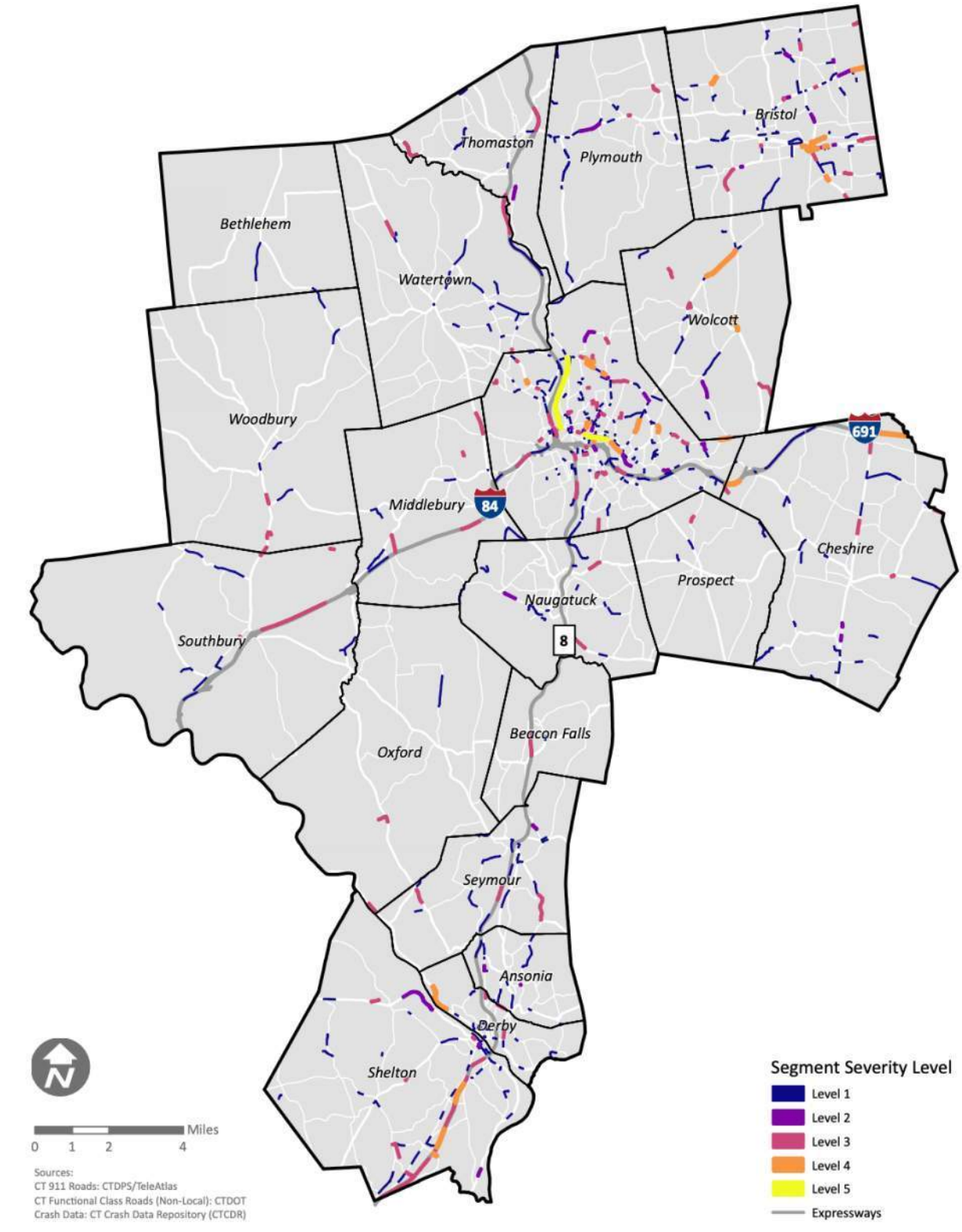
Bristol
Thomaston
Plymouth
Bethlehem
Watertown
Wolcott
Woodbury
691
Middlebury
84
Cheshire
Prospect
Naugatuck
8
Southbury
Beacon Falls
Oxford
Seymour
Ansonia
Derby
Shelton
Miles
0 1 2 4
Sources:
CT 911 Roads: CTDPS/TeleAtlas
CT Functional Class Roads (Non-Local): CTDOT
Crash Data: CT Crash Data Repository (CTCDR)
Segment Severity Level
Level 1
Level 2
Level 3
Level 4
Level 5
Expressways

Priority Corridors Development

To create a more compacted view of the HIN, NVCOG combined HIN buffers if they had a common street name and a common municipality, adding together their numbers of serious and fatal crashes and combined weighted scores before merging them in ArcGIS Pro. NVCOG selected the top 20 of these new compacted HIN corridors (by score) to develop a Priority Corridors list and map for planning purposes.

High Priority Corridors			
Serious and Fatal Crashes	Municipality	Street	Weighted Value
27	Waterbury	E Main St	13500
10	Shelton	State Hwy 8	13150
10	Waterbury	Thomaston Ave	7750
11	Waterbury	Watertown Ave	6500
9	Bristol	Middle St	6300
9	Waterbury	W Main St	6300
13	Bristol	Farmington Ave	5450
8	Waterbury	Baldwin St	4850
6	Waterbury	Chase Ave	4650
5	Waterbury	State Hwy 8	4550
4	Waterbury	Perkins Ave	4450
4	Woodbury	Main St S	4450
11	Bristol	Pine St	3800
7	Waterbury	I 84	3400
7	Wolcott	Wolcott Rd	3400
5	Derby	Roosevelt Dr	3200
4	Cheshire	Highland Ave	3100
4	Waterbury	Meriden Rd	3100
2	Bristol	Lincoln Ave	2900
2	Bristol	State Hwy 72	2900

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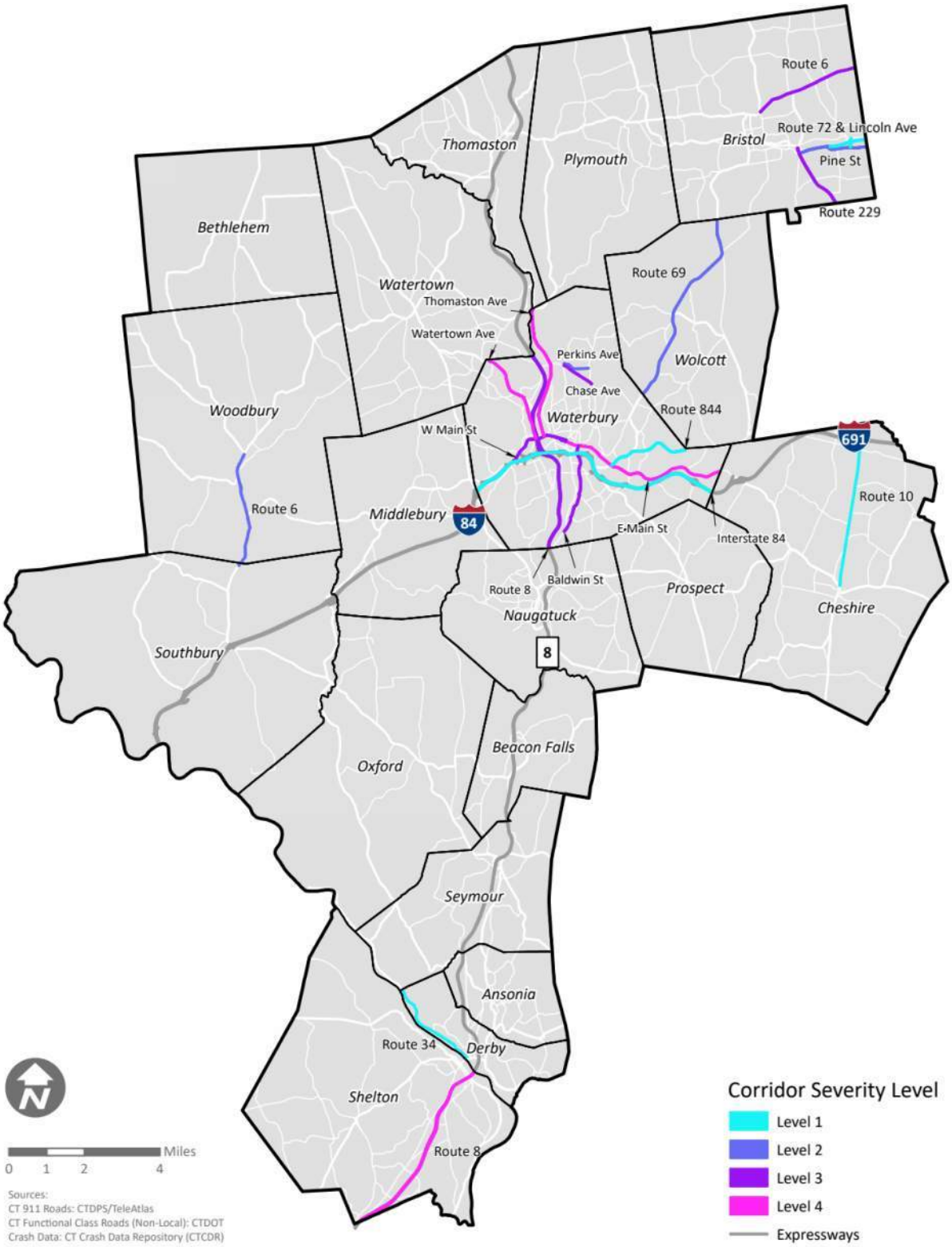
Route 6
Route 72 & Lincoln Ave
Pine St
Route 229
Thomaston
Plymouth
Bristol
Bethlehem
Watertown
Thomaston Ave
Watertown Ave
Route 69
Perkins Ave
Chase Ave
Wolcott
Woodbury
Waterbury
Route 844
W Main St
691
Route 10
Route 6
Middlebury
84
E Main St
Interstate 84
Baldwin St
Route 8
Prospect
Cheshire
Naugatuck
8
Southbury
Beacon Falls
Oxford
Seymour
Ansonia
Route 34
Derby
Shelton
Route 8
Miles
0 1 2 4
Sources:
CT 911 Roads: CTDPS/TeleAtlas
CT Functional Class Roads (Non-Local): CTDOT
Crash Data: CT Crash Data Repository (CTCDR)
Corridor Severity Level
Level 1
Level 2
Level 3
Level 4
Expressways

Chapter 4. Public Engagement

Listening to the people who live, work, and play in our region is a top priority for transportation projects. Because safety is so prominently focused in all NVCOG projects, feedback from residents on many projects has been considered as this plan was assembled. These insights help ensure that our strategies reflect real community needs and concerns and demonstrate the importance of a safe and reliable transportation system to the residents and visitors to the Naugatuck Valley region.

Sharing Information

In line with the NVCOG's Public Participation Plan, information about the Vision Zero Action Plan was shared in many formats:

- At six full NVCOG Board Meeting, updates about progress and information about important Vision Zero items were shared.
- At 4 meetings of the NVCOG TTAC, progress updates were shared.
- Meeting recordings were made available via the NVCOG YouTube page.
- Plan progress was tracked on the NVCOG website, via the project page at https://nvcogct.gov/project/current-projects/transportation-planning-studies/regional-vzap/
- Information was made available on the NVCOG's new NVision Zero Hub at https://nvision-zero-nvcog.hub.arcgis.com/
- NVCOG staff attended public events to share our progress.

Feedback Themes

Several recurring themes have emerged from feedback received in the region. **Pedestrian and bicyclist safety** is a major issue, with many residents expressing fear for children walking to school or playing near roads due to speeding and inattentive drivers. There were repeated calls for sidewalk repairs, new sidewalks, and bike lanes, especially near parks, schools, and residential areas. Comments related to crosswalks were often faded or ignored, and some intersections lacked pedestrian signals or any signage.

Another recurring theme is **traffic enforcement and law awareness**. Residents are continually frustrated by the lack of enforcement of existing traffic laws, particularly around stop signs, red lights, and speeding. Many would like to see more police patrols, traffic cameras, and ticketing to deter reckless driving. Several mention the need for public education campaigns to remind both drivers and pedestrians of their responsibilities.

In terms of **infrastructure and design solutions**, residents often suggest measures such as speed humps, raised crosswalks, flashing pedestrian signs, and narrowed lanes to slow traffic. Poor road markings, inadequate lighting, and blocked sidewalks were cited as hazards that reduce visibility and safety. Additional proposals included installing mirrors at blind corners, bollards, and better signage in high-risk areas.

Finally, **community involvement and accountability** emerged as an important priority. Many residents expressed a desire for more community input in traffic planning and a clearer sense that their concerns were being addressed. There was also a call for transparency and follow-through on traffic calming initiatives, with some residents offering to collaborate or share further insights.

Future Engagement

Because Vision Zero isn't a plan or project but a full paradigm shift in how NVCOG approaches transportation planning, the publication of this report is not an end but a beginning of the public engagement process.

Resources for sharing concerns and ideas, as well as asking questions, will always be available on the NVCOG website, the NVision Zero Hub Site, and can be shared during all NVCOG transportation meetings.

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Chapter 5 – Policy Recommendations

Eliminating roadway fatalities and serious injuries takes more than just infrastructure change. These proposed policies and best practices are designed to protect travelers in ways beyond just the infrastructure improvements identified within this plan.

Importantly, NVCOG is one of many entities working on roadway safety here in Connecticut. Across the state, towns and cities are adopting Vision Zero goals, addressing safety enforcement, and investing into their infrastructure.

At the state level, several entities are working together to develop policy recommendations and provide tools, resources, and support.

- The State's Vision Zero Council, chaired by the Commissioner of CTDOT and comprised of commissioners or designated representatives from the Department of Public Health, Department of Emergency Services and Public Protection, Department of Motor Vehicles, Department of Education, Department of Aging and Disability Services, and the Office of Early Childhood, has formulated numerous policy recommendations that have been considered or adopted by the state legislature. The Council continues to actively advocate for new initiatives aimed at enhancing public safety and saving lives.
- https://portal.ct.gov/dot/programs/vision-zero?language=en_US
- The Connecticut Transportation Institute at the University of Connecticut continues to provide resources and trainings for roadway planners, engineers, and Departments of Public Works across the state.
- https://www.cti.uconn.edu/cti/default.asp
- The CT Bike and Pedestrian Advisory Board, a collaboration between the CTDOT and Connecticut Children's Medical Center, focuses on educational materials as laws and infrastructure change.

As these agencies continue working on policy at the state level, the NVCOG will continue to support changes that prioritize roadway safety. In addition to these broader policy goals, NVCOG staff will continue working with the NVCOG board and member communities to support the following:

Local Policy Recommendations

Within the NVCOG's member communities:

- Adoption of a municipal Vision Zero Target, joining the growing network of towns and cities across the state and country publicly committing to Roadway Safety.
- Establish a local Vision Zero Committee, made up of members of the public, Police Chief, Public Works Director, City or Town Engineer, Mayor

or First Selectman's Office staff, and the town's LTA, plus interested members of the public.
- Adoption of a municipal Complete Streets Policy, outlining the protections for pedestrians and cyclists on municipally funded projects.
- Include Pedestrian and Cyclist safety education in school curriculums. Additionally, offer education in these areas in municipally sponsored summer programs and camps.

Regional Policy Recommendations

- Following adoption of this plan, the NVCOG will adopt a new Complete Streets Policy for the region.
- A safety review sub-committee of TTAC will be formed to review regional and state projects and score based on their anticipated safety impact.
- An enhanced active transportation review sheet will be prepared for all regionally sponsored or funded projects.
- The NVCOG engineering team will adopt the Intersection Control Evaluation policy of the CTDOT and perform these evaluations for any regional project.

Use of Federal Highway Administration Proven Safety Countermeasures

To ensure consistency across the region in planning for a safe system, NVCOG will prioritize use of the Federal Highway Administration's Proven Safety Countermeasures. These actions, broken into five major categories, are designed to address the most common roadway safety concerns across the country and are supported by ongoing research.

Utilizing the most current best practices and data supported infrastructure design will lead to easier collaboration with local and statewide stakeholders and ensure consistency of function and feel of the system for travelers.

These categories include:

- Speed Management
- Pedestrian/ Cyclist Safety
- Roadway Departure
- Intersections
- Crosscutting measures that work in multiple contexts

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Chapter 6 - Strategy and Project Selections

The safety assessment identified factors that contribute to the incidence of vehicle crashes, the types of crash and priority locations. Critical crash locations are spread throughout the region and include both along a roadway and at an intersection. Effective countermeasures include site-specific engineering actions to improve and enhance infrastructure as well as systemic strategies that can be implemented throughout the region.

While this plan is primarily focused on engineering and infrastructure, these actions need to be combined with education and enforcement strategies, as well as continued support of well-equipped and resourced emergency responders. To ensure that motorists understand the infrastructure changes being implemented as part of the safe systems approach, educational materials, like those distributed by Watch for Me CT, play an important role. User acceptance and comfort with the infrastructure is important to ensure the continued success of our Vision Zero efforts. Additionally, to manage the total amount of kinetic energy when crashes do happen, this plan considers enforcement options, including a recommendation for implementation of automated traffic enforcement safety devices (ATESDs) in key locations.

Based on the data and analysis, NVCOG developed a series of emphasis areas for improvement across the region. These emphasis areas, and the related proposed improvements, align closely with those of the CTDOT and the statewide Highway Safety Improvement Program.

Intersection crashes are the result of conflicts between vehicles passing through the intersection. The presence of pedestrians crossing at the intersection further increases the number of conflicts. Congestion, limited sight distance, driver behavior, and other variables exacerbate the inherent crash potential at an intersection. Intersections vary widely from geometry, classification (urban or rural), traffic control (signalized or unsignalized), traffic volumes, and design (conventional design or alternative designs such as roundabouts). Reducing the number of intersection fatalities and serious injuries is possible by applying a multidisciplinary approach using strategies that focus on improving roadway geometry (engineering), improving traffic controls, and enhancing pedestrian accommodations.

Non-intersection related crashes occur along a section of a roadway and involve a variety of manner of crash. A key emphasis area is roadway departure crashes. These are described as conflicts that result when vehicles cross an edge line, a center line, or otherwise leave a travel lane. There are several factors that can contribute to a roadway departure crash, including horizontal curvature and pavement condition of the road and road surface condition (snow and ice). Driver behavior issues are also critical factors that contribute to a crash and may cause their vehicle to depart from the roadway.

These include aggressive and reckless driving, driving too fast for conditions, impaired driving (driving under the influence drugs or alcohol), and inattentive or distracted driving. To address roadway lane departure safety, countermeasures that address keeping vehicles in the proper travel lane and reduce crash severity are imperative.

Intersections

While almost 40% of crashes within the region happen at intersections, only 28.2% of serious injury and fatal crashes do, suggesting that serious injuries and fatalities are less prevalent for motorists when they occur at intersections. However, intersections do tend to be

While an intersection is the location of about 39.3% crashes regionwide, only 28.2% of serious injury and fatal crashes occurred at an intersection, suggesting that serious injuries are a lesser concern at intersection. However, intersections tend to be the site of crashes involving pedestrians. There were 17 fatal crashes at intersections, with seven involving a pedestrian and one involving a bicyclist.

Key actions to address serious injury and fatal crashes at intersections include:

- Replace and upgrade traffic control devices to MUTCD standards, including retroreflective backplates and ensure signal heads are properly located.
- Upgrade and enhance pedestrian signal devices to current MUTCD requirements, including countdown display and audible signals.
- Install high-visibility crosswalks, curb extensions and other pedestrian enhancements.
- Install centerline rumble strips along critical road corridors.
- Reconstruction of the intersection reduce the number of lanes.
- Conduct a high-level assessment of locations that are candidates for installation of a roundabout to reduce conflict points and eliminate stop controls.

Roadway Departures

An emphasis area of the SAP is the reduction of severe crashes involving road departures.

This includes variety of events, but with a common feature of at least one vehicle departing the proper travel lane. Often, the departing vehicle hits a fixed object off the roadway, such as a utility pole, guardrail, tree, or sign support. Most road departures occur along the roadway, but about a quarter are associated with an intersection. Speed was not a major contributing factor as only about 37.0% of road departure crashes involved

a vehicle traveling too fast for conditions. Weather condition was not an issue, as only a few crashes occurred during snow covered or icy road surface. However, over half of the road departure crashes happened when it was dark, either under lighted or unlighted conditions.

There are several proven safety countermeasures that help mitigate the incidence of road departure crashes. These are mostly intended for through roadway sections:

- Install a series of chevron signs for enhanced delineation for horizontal curves.
- Add longitudinal rumble strips and pavement edge line along the shoulder areas.
- Add centerline rumble strips.
- Construct roadside improvements at curve.
- Install dynamic speed feedback signs at locations where speed has been determined to be an issue.
- Upgrade advance warning signs to ensure they are properly located, in good condition and visible.
- Remove fixed objects that are too close to travel lanes.
- Manage and control roadside vegetation.
- Implement systemic safety countermeasures including high friction surface treatments, and improved signage and pavement markings on curves and safety edges.

Driver Behavior

The safety analysis indicates that over half (54.6%) of the crashes that resulted in a serious injury or fatality were caused in part by driver error. These contributing factors include numerous improper actions by the driver and their failure to follow the rules of the road. Poor driving behavior involves the driver disregarding or disobeying (running) traffic control signals and signs, failing to grant the right of way, failing to maintain the proper lane, and driving in an inattentive, careless, or reckless manner. Examples of driver behavior that could lead to a crash are rolling through a stop sign instead of coming to a complete stop before proceeding, continuing through a yellow indication at a traffic light, and entering a traffic lane without a sufficient gap in the flow.
These driver actions suggest a level of driver impatience and indicate that a crash, when it occurs, could have been avoided if the driver had obeyed the rules of the road and had driven properly. The behavior of not following traffic laws or driving in an inattentive manner is not only issue of drivers. The data indicated that the failure of pedestrians and bicyclists to obey traffic controls or follow proper actions contributed to a number of crashes. Issues included pedestrians not crossing at a designated crosswalk and disobeying a pedestrian signal indication. Bicyclists sometimes contributed to a crash by riding against traffic instead of with traffic and crossing the road improperly.

Because driver behavior related crashes are not due to traffic or roadway characteristics, actions to address driver behavior focus primarily on education and public service announcements through the media. These would relate to distracted driving and driving while impaired. Engineering actions are also needed to make roads safer despite improper driver, pedestrian and bicyclist behavior. These include installing additional signage, enhancing pavement markings, increasing the visibility of pedestrian features, and longitudinal rumble strips along the edge line and center line to warning drivers that they are failing to maintain the proper lane.

Aggressive Driving

Aggressive driving includes any driver behavior that exceeds the norms of safe driving and places other motorists in danger by their actions. While exceeding the posted speed limit is often considered as aggressive driving behavior, recklessness involves other actions in addition to travel speed. This includes driving too fast for conditions, either related to weather, road surface conditions or congestion of traffic, driving too close to nearby vehicles, making unsafe lane changes, and exceeding the speed of adjacent traffic. These behaviors reduce the safe and reasonable gap between vehicles and shortens reaction time avoid a collision.

Aggressive driving does not include road rage. Under current laws, road rage is considered assault.

Operating the vehicle in a reckless or aggressive manner was indicated as a contributing factor in 13.9% of the serious injury and fatal crashes. Most often these drivers were also cited for exceeding the speed limit and driving too fast for conditions, suggesting aggressive driving and speeding are interrelated. In aggregate, speed was indicated as a contributing factor in nearly twenty percent (19.9%) of serious injury and fatal crashes.

As is the situation with driver behavior related crashes, actions to mitigate aggressive driving focus on efforts to change how people drive. And, because crashes caused by aggressive driving are unpredictable and can occur anywhere, enforcement campaigns that specifically target speed and aggressive driving may be a reasonable action. This could also include use of dynamic message boards.

Pedestrians

Pedestrians are some of the most vulnerable road users and more likely to be seriously injured or killed in crashes involving a motorized vehicle. How safe a person feels is critical in deciding whether or not to walk. People feel most safe when the path they are using is separated from traffic.

While the incidence of crashes involving pedestrians is relatively small, only 1.3% of all crashes in the Naugatuck Valley region between 2022 and 2024, because of their inherent vulnerabilities, pedestrians are more likely to be seriously injuries or die when involved in a crash with a motorized vehicle. Crash data involving pedestrians indicated that pedestrians accounted for 15.0% of the serious injuries and fatalities that were recorded in the region. The critical concern is that pedestrians were 20.5% of the fatalities.

The incidence of crashes involving a pedestrian is strongly related to urban make-up of the municipality and its land use density. The denser the land development pattern and the greater of land use types, the greater the incidence of pedestrian-motorized vehicle crashes. The breakdown of pedestrian crashes by municipality shows the highest incidence occurred in Waterbury. However, pedestrian safety is an issue in all the downtown areas of all cities and towns in the region. A contributing factor is that the main street through the downtown areas are also state routes and serve a principal travel corridor. This increases the potential of conflicts between people walking around the downtown and motorized traffic traveling through the area.
The NVCOG is developing a regional Complete Streets Policy that complements the CTDOT policy. The intent of the Complete Streets Policy is to advocate and promote conversion of roadways, especially in downtown areas, to accommodate all users, not just automobiles, and make the street environment more livable and walkable, There are several proven safety countermeasures to improve walking in the region and reduce the incidence of crashes involving pedestrians:

- Promote and support the Watch for CT program and coordinate with state and local advocacy groups.
- Install and upgrade crosswalks and enhance the visibility of crosswalk.
- Install curb extension at key intersections to provide increased visibility and shorten the walk distance across the road.
- Replace old pedestrian signals and upgrade to meet current MUTCD guidelines, including countdown indications and audible signals.
- Enhance traffic signal timing and phasing to provide protection for pedestrians crossing a street, including adding a leading pedestrian interval that provides an advance for pedestrians.
- Enhance sidewalks, including widening existing sidewalks to a minimum of five feet, with eight feet preferrable, and closing any gaps in the sidewalk network.
- Add Rectangular Rapid Flashing Beacons (RRFB), advance warning signa and advance warning pavement markings at mid-block crosswalks.
- Along high-volume roads, install pedestrian refuge islands and medians.
- Investigate to opportunity and feasibility of constructing road-diets along downtown streets to reduce the number of travel lanes and narrow road width.
- Consider installing automated traffic enforcement safety devices, especially speed cameras along key pedestrian corridors.

Bicyclist

Bicyclists are more vulnerable to motorized vehicle crashes because they often share the road with vehicles. Because bicycles are considered a vehicle, bicyclists need to follow the same rules of the road as a motorized vehicle. While more experienced bicyclists are comfortable riding on the road, younger and less experienced riders, which represent the majority of bicyclists, require a more protected riding environment and prefer separated facilities, that is protected bike lanes and multiuse trails. As is the case with pedestrians, safety is critical in deciding whether or not to bike

The incidence of crashes involving bicyclist represents only 0.3% of all crashes in the Naugatuck Valley region, totaling 113 crashes over the three-year analysis period. Of these, nine resulted in a serious injury and two resulted in a fatality. Despite the low number of crashes involving bicyclists, actions are needed to eliminate the number and severity of bicyclist crashes.

Bicycling in the Naugatuck Valley region is challenging because of its geography with a hilly terrain, land use patterns with its mainly urban development and older infrastructure. Roads through the region's downtown areas are relatively narrow with on-street parking. These features make bicyclists unsafe riding on the road and limits the willingness of many to ride in the region.

The region has alternatives to bicycling on the road. There are two multiuse trails – Farmington Canal Historic Trail and Middlebury Greenway – and efforts are underway to build the Naugatuck River Greenway Trail. Several sections of the NRG Trail have been completed. Other actions are needed to enhance safety of bicyclists riding in and through the region"

- Design and construct all sections of the NRG Trail between Thomaston and Derby.
- Create connections to existing and planned multiuse trails, including:
- Connection between the Farmington Canal Historic Trail (FCHT) in Cheshire to the planned Central Connecticut Loop Trail.
- Connection and extension of the Middlebury Greenway to downtown Naugatuck and the NRG Trail.
- Extension of the Middlebury Greenway to Woodbury.
- Completion of the Oxford trail and side path along Route 67 with a connection to the Larkin State Park Trail and extension/connection to downtown Seymour and the NRG Trail.
- Completion of the Steele Brook Greenway in Watertown.
- Develop a side path and trail through Bristol and connection to the FCHT in Plainville.
- Install protected bike lanes along key road sections in and through the region's downtown areas.
- Develop an interconnected network of on-road bicycle routes to define preferred bicycle corridors.
- Minor widening to provide a minimum four-foot shoulder width.
- Add shared-road pavement markings along roads along which the minimum shoulder width cannot be provided.
- Install bicycle route and shared-road signs along key bicycle route corridors.
- Promote and support the Watch for CT program and coordinate with state and local advocacy groups.

Older Drivers

Older drivers, which are categorized as drivers 65 years and older, are a greater risk of being involved in a serious injury or fatal crash. Although age itself is not the principal

determinant in driving performance, as people age their mental and physical abilities change which can affect their driving ability. These changes, such as poor vision and slower reaction time, can affect driver performance and survivability in a crash. Because the population of the Naugatuck Valley planning region is aging, it is important to implement and promote programs and actions that can reduce the incidence of crashes involving older drivers.

Between 2022 and 2024, there were 60 crashes resulting in a serious injury or fatality of a person 65 years and older. This about 10.1% of the total that occurred in the region. Eighteen of these crashes caused a fatality, and 16 involved a person walking. The rate of pedestrian involved crashes was 26.7% of the total, significantly higher than percentage of total pedestrian crashes (14.7%). This suggests older persons are more susceptible to being involved in a crash while walking.

Strategies to address difficulties faced by older drivers focus on education programs that promote various agencies' drive well toolkits. Programs that provide alternative travel options for older persons need to be expanded to better meet their travel needs.

Young Drivers

Young drivers are those who are between the ages of 16 and 25 years old. Because of their driving inexperience, this subset of drivers is at a greater risk of being involved in traffic crashes and ones that result in a serious injury or fatality. Driver behavior of this age group, such as an increase in novelty seeking and risk-taking,

Drivers in this age group were involved in a 125 serious injury and fatal crashes.

An additional 11 persons in this age group were involved in a severe crash as a pedestrian and one as a bicyclist. These statistics indicate that persons in this age cohort were involved in 25.4% of crashes that resulted in a serious injury and 15.0% of those in which someone was killed.

Connecticut has a graduated driver licensing (GDL) program, limiting passenger allowance in the first 12 months of licensing, imposing a driver curfew until their 18th birthday, requiring all passengers in vehicles to use seat belts, and prohibiting all use of cell phones and mobile electronic devices while driving. The state also requires pre-licensure driver education for drivers and parents, as well as 40 hours of behind-the-wheel training under supervision. These requirements are intended to provide young drivers a good foundation of proper driving technics before they receive their driver's license as limit their exposure to serious crashes. It is also important to continue to coordinate young driver messages with multiple agencies, in Spanish and English, at Department of Motor Vehicle offices, auto insurance agencies, public safety agencies, and public and private schools.

Road Safety Audits and Corridor Safety Assessments

One of NVCOG's most important offerings is Roadway Safety Audits and Corridor Safety Assessments. These offerings, as part of our broader Roadway Safety Study program, take a data-driven approach to identify multiple alternative improvements and select a preferred alternative, as well as identify implementation plans.

The following road corridors are recommended for conducting corridor safety assessments:

- East Main Street/SR801between North Main Street and I-84, Waterbury
- Wolcott Street between East Main Street & Stillson Road (Route 69), Waterbury
- Lakewood Road between North Main Street and Wolcott Street (Route 69), Waterbury
- Pine Street & Mountain Road between Downs Street and Todd Street, Bristol
- Route 10 between Route 42 (South Brooksvale Road) and Route 222, Cheshire
- Pershing Drive (SR 727) and Division Street (SR 853), Derby and Ansonia
- Route 313 (Maple Street) between Derby Avenue & Haddad Road, Seymour
- Route 110 (Howe Avenue) from Kneen Street to White Street, Shelton
- Bridgeport Avenue (SR 714) from Route 8 on-ramp to Old Stratford Road, Shelton

Infrastructure Projects

A number of priority infrastructure projects have been identified as a result of this assessment. While the majority of these are included in the municipal appendices for each town, details of some of the highest priority projects are detailed below.

Thomaston Avenue, Waterbury: The NVCOG conducted a Road Safety Audit (RSA) to assess safety along Thomaston Avenue and identify actions to improve safety along the corridor. Recommended actions include:

- Center guiderail
- Narrow travel lanes
- Construct roundabout at Huntingdon Avenue

East Main Street & Williams Street, Waterbury:

- Install curb extensions
- Install raised intersection
- Define on-street parking
- Install cycle track

Perkins Avenue & Judith Lane, Waterbury

- Vegetation control
- Mount stop signs correctly
- Convert to 4-way stop control
- Add shoulder striping & stop bars
- Add curb extensions

East Main Street & in vicinity of the Mall Entrance and Garcias Mexican Fusion, Waterbury

- Reconstruct & upgrade sidewalks
- Narrow travel lanes
- Define on-street parking

- Reconstruct mall entrance driveway – curb improvements, reduce exit lanes & consider closing access
- Cycle Track on south side of the roadway
- Modernize traffic signal

Route 8 Expressway, Northbound 0.5 miles south of Exit 11, Shelton

- Extend climbing lane; convert to auxiliary lane
- Repave with high friction pavement
- Add guiderail

Route 34 – Rosevelt Drive section, Derby

- Actions to reduce the incidence of road departure crashes.

Chase Avenue & Hill Street, Waterbury

- Realign signs
- Install advanced warning signs
- Narrow Hill Avenue

East Main Street & Baldwin Street, Waterbury

- CTDOT has developed two alternatives as part of the NewMix program. These both include:

Route 72 (Pine Street) at Emmett Street, Bristol

- Convert intersection to roundabout

Route 229 between Cross Street/Redstone Hill Road and Pine Brook Terrace, Bristol

- Install centerline rumble strips
- Driveway access management
- Upgrade traffic signals
- Implement left turn restrictions

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Chapter 7 - Setting Targets and Measuring Progress

As the Naugatuck Valley works toward zero serious injuries and fatalities, it is important that we know where we stand now and have a way to measure our progress.

While zero is always the goal when it comes to serious injuries and fatalities on our roads, we know there is a lot of work to get there. This means establishing achievable targets along the way against which we can measure progress.

Target setting is a requirement for states and Metropolitan Planning Organizations around the country. As the host agency for one MPO and co-host for another, NVCOG regularly does this work for a subset of our nineteen towns. For this action plan, we use this same methodology to set milestones for the four-year life of this plan and along the path to zero by 2060.

Using just the statistical analysis model, detailed more in the Central Naugatuck Valley MPO's 2026 Safety Targets, we set a target for 2026. This is then adjusted for each year to set a target for the end of this plan in 2030.

Target Setting

Using the methodology recommended by FHWA for Metropolitan Planning Organizations, the following targets have been established for 2026. Over the next 35 years, these targets will gradually decrease toward zero. As always, the annual goal for fatalities and serious injuries is zero every year, and all the implementation of this plan will be aimed at achieving that goal.

Using the data from the previous five years across the region, we established the 2026 target with the five-year rolling average methodology. These targets are listed in the chart below.

To achieve zero by 2060, these targets will be reduced each year. Based on the 2026 target, the 2030 targets are also included in the below chart. When this plan gets its next major update in 2030 the baseline numbers will be recalculated, and annual goals will be adjusted to meet the Vision Zero date.

DRAFT

Target	2026	2027	2028	2029	2030
Fatalities	43	42	40	39	37
Serious Injuries	180	175	170	164	159
Vulnerable User Fatalities and Serious Injuries	159	154	149	144	140

Measuring Progress

Each year, NVCOG will publish a Vision Zero Progress Report. This report, in addition to highlighting the progress made on safety projects in the past year, will report on the trends for fatal and serious injuries. These reports will help ensure that the region is moving in the right direction.

To help make data, and progress, more easily available to the public, the NVCOG has created a web page using the Esri Hub Site feature. This page inlcudes:

- A dashboard with real time safety performance
- Background information on Vision Zero
- Elements of this plan and our regional strategy to achieve zero
- Links and resources to important roadway safety documents

Achieving zero in the Naugatuck Valley region is truly a shared responsibility. The NVCOG remains committed to bringing residents and policy makers together to put roadway safety at the core of our transportation system, build a culture of safe systems in our infrastructure planning and design, and to prioritize the upgrades that will have the most immediate impacts. By remaining committed to the residents and visitors in our region, we can embody the ideals enumerated in the bold target of zero.

DRAFT

Architecture
Engineering
Environmental
Land Surveying
BL Companies



NVCOG REGIONAL TRANSPORTATION SAFETY PLAN

September, 2022

Naugatuck Valley Council of Governments Regional Safety Plan

2022 Update







U.S. Department of Transportation

Federal Highway Administration

CT-262 (Buckingham Street), Watertown



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Report Terminology

TERM	DEFINITION
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
ADT	Average Daily Traffic
Cat Tracks	Dotted lines that extend lane line markings into the intersection for enhanced delination. They are typically applied at offset, skewed, multileg, complex intersections, or curved roadways, or where multiple turn lanes are used.
Collector Road	The Federal Highway Administration defines Collector Roads as the network that gathers traffic from local roads and directs them to the Arterial network.
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
Injury A	Suspected Serious Injury
Injury B	Suspected Minor Injury
Injury C	Possible Injury
Injury K	Fatal Injury
Injury O	Property Damage Only
LPI	Leading pedestrian interval. A leading pedestrian interval (LPI) gives pedestrians the opportunity to enter an intersection 3-7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left.
Local Roads	The FHWA describes Local Roads as having the largest percentage of all roadways in terms of mileage. They are intended for short distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land. They are often designed to discourage through traffic.
LRTP	Long-Range Transportation Plan
MUTCD	Manual on Uniform Traffic Control Devices
MVMT	Million Vehicle Miles Traveled
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
Per VMT	Describes a crash rate per million vehicle miles
Per Capita	Describes a crash rate per population
Performance Measure	Indicators that enable decision-makers and other stakeholders to monitor changes in system conditions and performance against established visions, goals, and objectives.
RTSP	Regional Transportation Safety Plan
Reverse Curve	Reverse curves are two successive turns or curves that bend in opposite directions.
SHIP	State Highway Improvement Plan
SHSP	Strategic Highway Safety Plan
TIP	Transportation Improvement Program
VMT	Vehicle Miles Traveled

1. Introduction

Executive Summary

In 2017, the Connecticut Department of Transportation published the Connecticut Strategic Highway Safety Plan (SHSP) to guide the State in reducing fatal and serious injuries along CT roadways. This Regional Transportation Safety Plan (RTSP) is in congruence with the CT SHSP. It will serve as a road map and strategy to help the Naugatuck Valley Region and its 19 municipalities collaborate with the State in reducing fatal and injury crashes. It will also serve to increase safety awareness and allow the member towns, cities, and the region to focus on their transportation safety issues.

The approach used in this study applies similar methodology to the State plan, but it includes more local input, reflecting both the needs of each of its 19 individual communities and the region as a whole. In addition to the regional plan, each municipality has its own mini-report which includes specific crash data and priority locations and incorporates stakeholder feedback.

The plan is data-driven, multimodal, and multidisciplinary. It identifies the region's high frequency crash locations and outlines effective countermeasures and strategies to reduce crashes. The purpose of listing countermeasures is to help the region prioritize its projects and better position the region for any available safety funds.

The plan was developed involving local stakeholders from the four E's of transportation safety: Engineering, Enforcement, Education, and Emergency Response. The overall goal of the Naugatuck Valley Region's RTSP is to reduce traffic injuries and fatalities by 15% by 2025. This means a reduction from a three-year average of 2,994 injury and fatal crashes per year to an annual average of 2,545 fatal and injury crashes per year in the Naugatuck Valley Region.

This RTSP is a living document. Federal regulations require an update for the SHSP every five years, and this regional safety plan will follow this same update process. The regional plan will adhere to the same mandate as the SHSP, with the expectation that all updates will reflect the most current federal surface transportation legislation.

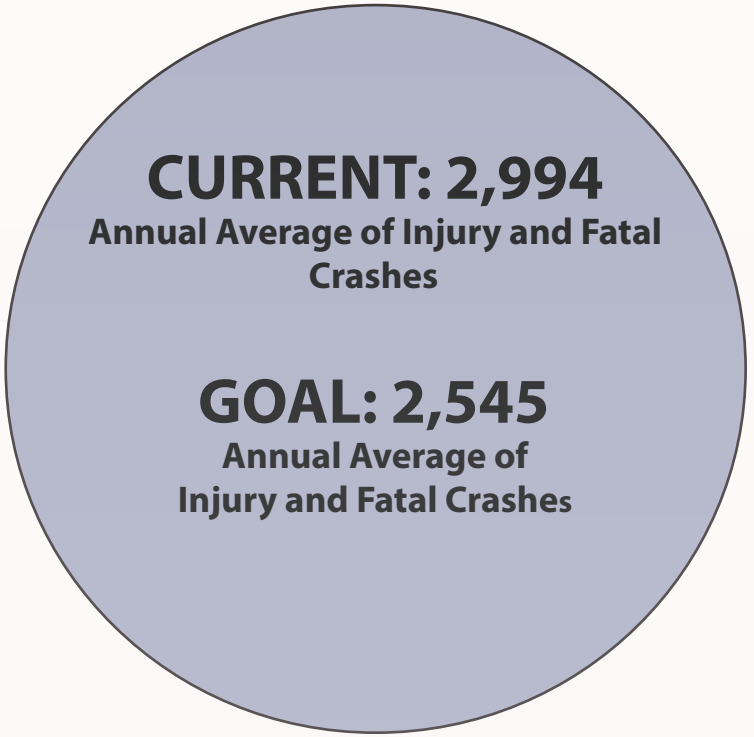
THE FOUR E'S OF TRANSPORTATION SAFETY

ENGINEERING: Highway design, traffic, maintenance, operations, and planning professionals.

ENFORCEMENT: State and local law enforcement agencies.

EDUCATION: Prevention specialists, communication professionals, educators, and citizen advocacy groups.

EMERGENCY RESPONSE: First responders, paramedics, fire, and rescue.



2. Stakeholders

Stakeholders engaged in the process and development of the Naugatuck Valley RTSP include representatives from the four E's. In order to ensure stakeholder input, the NVCOG member municipalities were involved with the plan development from the onset of the study. The following is a list of involved safety partners that provided input and feedback throughout the project's process:

NVCOG Member Towns

Ansonia
Beacon Falls
Bethlehem
Bristol
Cheshire
Derby
Middlebury
Naugatuck
Oxford
Plymouth
Prospect
Seymour
Shelton
Southbury
Thomaston
Waterbury
Watertown
Wolcott
Woodbury

CTDOT

NVCOG

State and Local Traffic Enforcement Officials

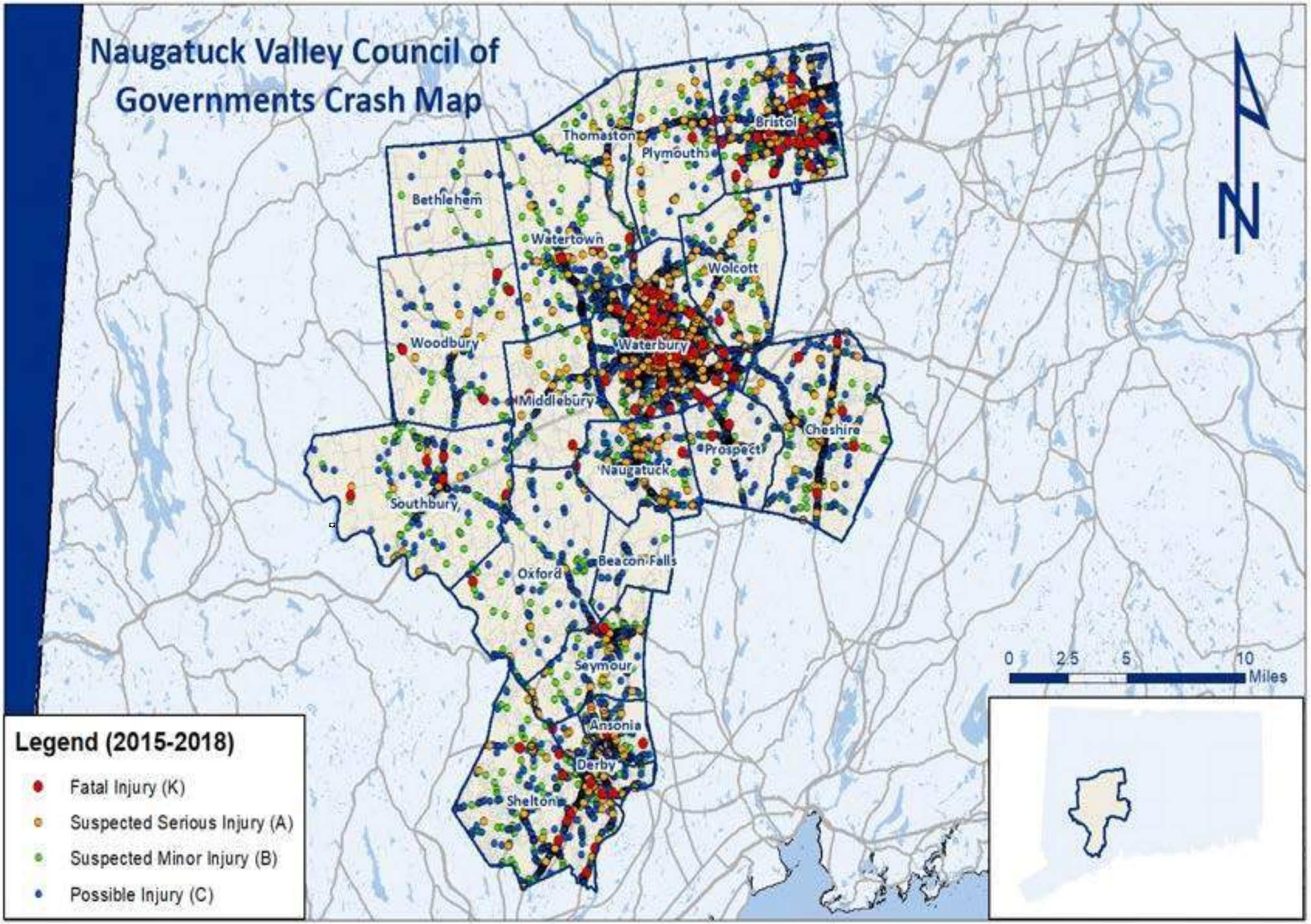
Municipal Fire Department officials and/ or First Responders

Municipal Officials

Municipal Public Works Director

NVCOG Member Town Representatives

David Cassetti
Christopher Bielik
Leonard Assard
Ellen Zoppo-Sassu
Rob Oris, Jr.
Richard Dziekan
Edward St. John
N. Warren Hess
George Temple
David Merchant
Robert Chatfield
W. Kurt Miller
Mark Lauretti
Jeffrey Manville
Ed Mone
Neil O'Leary
Thomas Winn
Tom Dunn
Barbara Perkinson


Naugatuck Valley Council of Governments Crash Map
Thomaston
Plymouth
Bristol
Bethlehem
Watertown
Wolcott
Woodbury
Waterbury
Middlebury
Cheshire
Prospect
Naugatuck
Southbury
Beacon Falls
Oxford
Seymour
Ansonia
Derby
Shelton
N
0 2.5 5 10
Miles
Legend (2015-2018)
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)

3. Regional Overview







Source: VN Engineers

The Naugatuck Valley Region is composed of 19-member municipalities that include Ansonia, Beacon Falls, Bethlehem, Bristol, Cheshire, Derby, Middlebury, Naugatuck, Oxford, Plymouth, Prospect, Seymour, Shelton, Southbury, Thomaston, Waterbury, Watertown, Wolcott, and Woodbury. The region encompasses roughly 550 square miles, with a population of about 589,135 people. The municipalities range from rural to exurban to suburban and urban communities, so each town and city has varying local traffic concerns and challenges.

In order to analyze and best understand the region's transportation network, each municipality in the Naugatuck Valley Region was invited to participate in the development of this plan to improve transportation within their individual town or city. The objective was to identify each municipality's concerns and then piece these together to present an overall regional safety plan. The insight and cooperation of each municipality and NVCOG were imperative to the success of this initiative.

The data gathered and used for this study represents crashes that occurred on both local and State roads. In many cases, numerous crashes occurred on State roads, most likely due to higher traffic volumes. All roads, except limited access highways, were included in the study. According to the State, each municipality is responsible for improvements on local roads, but local officials cannot make any physical changes or improvements to any State road without an encroachment permit from the State.

4. RTSP Planning Process

Beginning in 2017, Federal regulation mandates that states set five performance targets each year:

1. **Number of Fatalities**
2. **Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)**
3. **Number of Serious Injuries**
4. **Rate of Serious Injuries per 100 Million VMT**
5. **Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries (combined total)**

The crash statistics are evaluated on a five-year average. The Naugatuck Valley Regional Transportation Safety Plan will also look at these same performance metrics and establish the region's target objectives in congruence with the State's plan. This includes a 15% reduction in the number of fatalities and serious injuries on all public roads in the region by 2025. In order to obtain this goal, the RTSP includes estimated completion time (short, medium, and long), possible costs, and funding sources.

The Naugatuck Valley Regional Transportation Safety Plan process had a regional study and 19 municipal studies. The regional overview was a data-driven analysis of the top crash locations, which included a listing of possible countermeasures, and the selection of emphasis areas and strategies to reduce fatal and injury crashes. The municipal studies included data-driven crash locations and stakeholder input to reduce fatal and injury crashes in each municipality. Combining the data-driven analysis with stakeholder input provided for a more comprehensive regional transportation safety plan.



Wolcott Street, Waterbury

The municipal reports are in the appendices, but since they were completed prior to the regional analysis, their methodology is included first in this plan. More information on the regional analysis and methodology is found in Section Five.

The methodology for the municipal reports began with the collection of fatal and injury crash data from the period of January 1, 2015 to December 31, 2018. The data was collected from the University of Connecticut's Crash Data Repository website, specifically excluding limited access highways. The crash data studied in this report consisted of only fatal and injury crashes, after the removal of property damage only (PDO) crashes. PDO crashes were not included in this study because they were not included in the CT SHSP.

The extracted crash data was imported into the mapping program ArcGIS to create 19 individual fatal and injury crash maps, one for each Naugatuck Valley Region municipality. High frequency crash locations were identified and if an intersection or segment of roadway had a cluster of crashes, it was highlighted on the maps. Additional crash locations were identified by municipal representatives due to potential safety concerns or due to historic site-specific safety issues not reflected in the four years of data analyzed. These were not added to the maps, but the locations were included in the municipal reports in the Town Input sections.

Crash locations and corresponding severities were presented at each of the municipal meetings with chief elected officials, EMS, law enforcement agents, public works directors, and other municipal stakeholders. These meetings were an opportunity to receive municipal input into the crash locations and to get feedback on contributing factors. The input from municipal representatives influenced the development of countermeasure recommendations for the municipal reports.

The municipal reports include the meeting summary in the municipal input section. In addition, two field reviews were completed based on the priority locations of the municipal representatives . A summary of the field review and images taken are included in the Field Site Inventory section of the municipal reports. Countermeasure tables are also included at the end of each municipal report to suggest safety improvements that could be considered in each of the Region's member town or city.

The top crash locations in the region were also identified and the top 50 were further analyzed to identify contributing factors and possible countermeasures. For a more detailed description of this process, please see the Top Motorized Crash Locations in the Naugatuck Valley Region's Top Crash Locations section of this report found on page 12.



Source: VN Engineers

5. Top Regional Crash Locations

5.1 Methodology for Identifying Top Crash Locations in the Region

Overview

This report identifies the top crash intersections and corridors in the Region using the Equivalent Property Damage Only (EPDO) methodology built into the Connecticut Roadway Safety Management System. This method is based on the EPDO crash costs that were developed using Federal Highway Administration's (FHWA) national guidance. The EPDO method calculates a combined frequency and severity score for each site by assigning weighting factors to crashes by crash severity and monetary consequences. The weighting factors are based on the costs of property damage only crashes, and the calculated score accounts for the severity of crashes and the expected crash costs for each site. The weighting factors used in this study are estimated by the Federal Highway Administration (FHWA) and documented in the "Safety Analyst User Manual" based on the mean comprehensive monetary costs for each severity level.

EPDO Methodology

The EPDO network screening analysis was conducted according to the following steps in a GIS and tabular format.
The comprehensive monetary costs are as follows After applying an adjustment factor for Connecticut, each crash was assigned the following overall cost:

- **K (fatal)**: $5,800,000
- **A (suspected serious injury)**: $402,000
- **B (suspected minor injury)**: $80,000
- **C (possible injury)**: $42,000
- **O (no apparent injury)**: $4,000

The ratio of these combined direct and indirect crash-related costs provided the weights for each maximum severity associated with each crash:

- **K**: 1450
- **A**: 100
- **B**: 20
- **C**: 10
- **PDO**: 1

EPDO ADJUSTMENT FACTORS
FATAL=1450
SUSPECTED SERIOUS INJURY=100
SUSPECTED MINOR INJURY=20
POSSIBLE INJURY=10
NO APPARENT INJURY=1

Roads were segmented in GIS to break each centerline at each intersection. Crashes were joined to the road centerline network using a GIS spatial join. The maximum search radius was 100 feet for segments and 250 feet for intersections. If a crash occurred within 100 feet of more than one road centerline, it was joined to all centerlines within 100 feet.

Note: More complex methodologies join each crash to a single centerline; however, this is typically the result of exhaustive crash accuracy analysis and the error associated with multiple joins is addressed later in the methodology.

The associated weights for each joined crash were summed for each centerline segment and intersection. Segments were then ranked according to their summed EPDO weights divided by the mile length of the segment.

Note: More complex analyses segment the road network according to a uniform length (e.g., 0.1 miles). This accounts for bias associated with segments of differing length. The EPDO per mile method attempts to address this bias and provide a rough estimate for planning-level purposes.

The top 20% of scored segments were selected for further review; individual segments were aggregated by route or street name to develop contiguous individual sites. Any segment less than 0.02 miles long (approximately 100 feet) was not included in the analysis. Final corridors had to be at least 0.1 miles long and have at least 3 total crashes.

Final cuts were made to the ranked list of sites based on these criteria: ramps and interstates were removed and top ranked corridors and intersections were inspected visually to determine if there were overlapping sites. If intersections overlapped with a corridor(s), then the analyst determined if the high crash location was the result of the single intersection issue or the corridor as a whole. The top crash locations are divided into intersections (Table 5.2) and corridors (Table 5.3) and ranked based on EPDO.

Note: The final EPDO score should not be used as an objective standard. This observed crash-based analysis is subject to regression-to-the-mean[1] and should only be used as a relative metric for sites during the specific analysis period.

The top non-motorized crash locations were selected and ranked based on the same methodology. The non-motorized crash countermeasures were selected based on the Connecticut Uniform Police Crash Reports and a desktop review of the applicable locations.

1 Regression to the Mean
When identifying potential safety issues, the analyst must be aware of the statistical phenomenon of regression to the mean (RTM). RTM describes a situation in which crash rates are artificially high during the before period and would have been reduced even without an improvement to the site. Programs focused on high-hazard locations, such as the HSIP, are vulnerable to the RTM bias which is perhaps the most important cause of erroneous conclusions in highway-related evaluations. This threat is greatest when sites are chosen because of their extreme value (e.g., high number of crashes or crash rate) in a given time period.

KABCO SEVERITY RANKINGS

Severity	Crash Cost	EPDO Score
K-Fatal	$5,800,000	1450
A-Suspected Serious Injury	$402,000	100
B-Suspected Minor Injury	$80,000	20
C-Possible Injury	$42,000	10

2015-2018
TOTAL CRASH AND FATAL INJURIES BY TOWN

Municipality	Bike and Pedestrian Fatal and Injury Crashes	Motorized Fatal and Injury Crashes
Ansonia	20	340
Beacon Falls	3	50
Bethlehem	2	33
Bristol	102	1,633
Cheshire	46	459
Derby	24	311
Middlebury	7	236
Naugatuck	38	386
Oxford	2	179
Plymouth	4	260
Prospect	4	203
Seymour	7	269
Shelton	26	660
Southbury	8	266
Thomaston	2	165
Waterbury	435	4,920
Watertown	8	418
Wolcott	7	299
Woodbury	6	148
Total in NVCOG	**751**	**11,235**

5.2 Top Motorized Crash Locations with Countermeasures, 2015-2018

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Bethlehem	CT-61 (Main St S) from The Green to True Value Access	9	1,055	Speeding	Install dynamic speed feedback signs.	Low
Bristol	CT-72 (Pine St) from Lois St to Emmett St	37	4,238	Driveway access	Restrict Valero gas station to right-in, right-out access using flexible posts on centerline of Pine St.	Low
Bristol	N Main St from Bristol Fire Department to Bristol City Hall	25	2,550	Speeding	Install raised crosswalk at current crosswalk and/or chokers at other locations on segment.	Low-Medium
Bristol	CT-229 (Middle St) from Pine Brook Ter to Enterprise Dr	11	2,495	Speeding	Install dynamic speed feedback signs.	Low
Bristol	Stafford Ave from Bel Air Dr to Jewel St	4	2,150	Speeding	Install dynamic speed feedback signs.	Low
Bristol	CT-229 (Middle St) from CT-72 (Memorial Blvd) to Pine St	66	2,471	Speeding	Install dynamic speed feedback signs.	Low
				Access management	Install left turn lane for access to gas stations or restrict access to right-in, right-out.	Low
				Rear-end crashes	Install traffic signal retroreflective backplates at all signals.	Low-Medium
Bristol	Pine St and CT-229 (Middle St)	58	1,158	Access management	Restrict access to right-in, right-out from gas station and coffee shop.	Low
Bristol	Pound St and CT-69 (West St)/Cemetery Ave	3	1,025	Rear-end crashes	Reduce the size of the West St and Pound St intersection and create a 90-degree angle intersection using flexible posts and paint.	Low-Medium
Cheshire	CT-68 (Yalesville Rd) from CT-68/70 (S Meriden Rd) to Prinz Ct	3	1,578	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Derby	CT-34 (New Haven Ave) from Chapel St to Ashwood Ter	30	1,185	Speeding	Install dynamic speed feedback signs.	Low
Oxford	CT-67 (Seymour Southbury Rd) from Great Hill Rd to Mountain Rd	29	969	Speeding	Install dynamic speed feedback signs.	Low
				Front to rear crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
Prospect	CT-68 (Union City Rd) from Cedar Hill Dr/Dorothy Ave to Laura Ave	5	2,302	Speeding	Install dynamic speed feedback signs.	Low
Prospect	CT-69 (Waterbury Rd) from Murphy Rd to Greenwood Dr	5	2,831	Speeding	Install dynamic speed feedback signs.	Low
				Intersection-related crashes	Install intersection ahead signs for Murphy Rd and Greenwood Dr.	Low
Seymour	CT-67 (Bank St) from Martha St to Franklin St	9	1,575	Access management	Prohibit left turns out of driveway from 98 CT-67 (Bank St).	Low
Shelton	CT-110 (Howe Ave) from Hill St to Wharf St	16	2,565	Speeding	Install dynamic speed feedback signs.	Low
				Access management	Install left turn lane for access to gas station.	Low
Southbury	US-6 (Main St N) from Old Field Hill Rd to Old Field Rd	10	1,046	Speeding	Install dynamic speed feedback signs.	Low.
Waterbury	Wolcott St from Niagara St to Lydia St	4	4,114	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	CT-69 (Prospect Rd) from Glen Rock Rd to Bateswood Rd	4	2,771	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	E Main St from Niagara St to Hamilton Park Rd/ Silver St	23	1,950	Speeding	Install dynamic speed feedback signs.	Low
				Pedestrian safety	Install high-visibility crosswalk with curb extensions at Silver St.	Low-Medium
					Remove street parking in conjunction with crosswalk curb extensions and relocate bus stops.	Medium
Waterbury	Captain Neville Dr from Austin Rd to 0.08 mi W of Progress Ln	4	1,828	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	E Main St from Wall St to Wolcott St	16	1,817	Angle crashes	Install lane designation pavement marking for E Main NB approach.	Low
				Pedestrian safety	Install high-visibility crosswalk with curb extensions at Rutledge St.	Low-Medium
					Remove street parking in conjunction with crosswalk curb extensions.	Medium
Waterbury	Wolcott St and Bouley Ave/Dallas Ave	5	1,775	Speeding	Install dynamic speed feedback signs.	Low
					Reduce speed limit and apply infrastructure changes that match the reduced speed limit.	Medium
				Driveway density	Work with property owners to reduce the number of driveways.	High
Waterbury	Spring Lake Rd from Jersey St to Naugatuck town line	4	1,523	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	CT-847 (Thomaston Ave) from CT-262 (Spruce Brook Rd) to Seidel Aluminum Access	5	1,086	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install dynamic speed feedback signs.	Low
Waterbury	CT-69 (Union St) and Silver St Expy	8	1,125	Front to rear crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
					Install warning sign with flashers indicating "Be Prepared to Stop" for eastbound Washington St.	

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	Scott Rd from Stonefield Dr to Hart Cir	9	4,613	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	Baldwin St from Scovill St to I-84 (Yankee Expy)/ McMahon St	19	3,457	Front to rear crashes	Install traffic signal retroreflective backplates at all signals.	Low-Medium
				Skidding on bridge	Install high friction surface treatment.	Low
				Front to rear crashes	Install advance warning signs with 12" flashers to warn of signal ahead at Baldwin St/ Scovill St.	Low-Medium
Waterbury	CT-846 (W Main St) from Naugatuck River to Thomaston Ave	63	1,056	Front to rear crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
				Driveway density	Work with property owners to reduce the number of driveways.	High
Waterbury	CT-846 (Watertown Ave) from Carter Ave to 0.05 mi N of Robbins St	5	1,454	Speeding	Install dynamic speed feedback signs.	Low
Waterbury	Wolcott St from Dallas Ave to Maher Ave	7	1,125	Speeding	Install dynamic speed feedback signs.	Low
				Driveway density	Work with property owners to reduce the number of driveways.	High
				Road diet	Reduce number of through lanes to one in each direction and provide two-way left turn lane.	Low-Medium
Waterbury	Manor Ave from Wacona Ave to CT-69 (Meriden Rd)	15	5,464	Driveway density	Work with property owners to reduce the number of driveways.	High
Waterbury	Wolcott St from Harper Ave to Bouley Ave	14	3,331	Speeding	Install dynamic speed feedback signs.	Low
				Driveway density	Work with property owners to reduce the number of driveways.	High
				Turning conflicts	Reduce number of through lanes to one in each direction and provide two-way left turn lane.	Low-Medium
Waterbury	Perkins Ave from Cooke St to Judith Ln	25	967	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	Cooke St from Faber Ave to Nottingham Ter	3	18,150	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Pedestrian safety	Relocate crosswalk from Faber Ave to Nottingham Ter adjacent to bus stops and install high-visibility crosswalk.	Low-Medium
Waterbury	Long Hill Rd from Division St/Drake St to Birch St	4	9,200	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Curve of Long Hill Rd at Division St/Drake St	Install advance warning signs with 12" flashers to warn of skewed intersection.	Low-Medium
Waterbury	Bronson St from Cooke St to Pearl St	6	9,094	Turning speeds from Cooke St	Install flexible yellow centerline posts on Cooke St to slow left turns from Cooke St on to Bronson St.	Low
				Parked vehicles near intersection	Restrict parking on Bronson St within 100 ft of Cooke St.	Low
Waterbury	Baldwin St from Galivan St to E Liberty St	10	7,765	Speeding	Install dynamic speed feedback signs.	Low
				Parked vehicles near intersection	Install curb extensions at each of Galivan St and E Liberty St to provide improved pedestrian crossing amenities and prohibit parking at intersections.	Low-Medium
Waterbury	Cooke St from Gordon St to Hawley St	7	7,280	Speeding	Install dynamic speed feedback signs.	Low
Waterbury	Hill St from Lannen St/ Hotchkiss St to Hillview Ave	3	7,260	Pedestrian safety	Install high-visibility crosswalk at Hillview Ave in proximity to bus stops.	Low-Medium
				Speeding	Install dynamic speed feedback signs.	Low
Waterbury	Cooke St from Kaytonne Ave to McDonald Ave	3	6,125	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	Lakewood Rd and Grilleytown Rd	8	1,120	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
				Rear-end crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
Waterbury	CT-73 (Watertown Ave) from Waterbury Municipal Stadium Parking to Irvington Ave	16	2,362	Speeding	Install dynamic speed feedback signs.	Low
				Access management	Reconfigure stadium parking lot to provide only one access point with a signalized intersection at Media Ave.	High
Waterbury	Frost Rd from Joseph St to Selah St	14	2,049	Speeding	Install dynamic speed feedback signs.	Low
					Install speed humps.	Low-Medium
Waterbury	Hill St and Inman Ave/ Platt St	3	1,000	Speeding	Install dynamic speed feedback signs for southbound Hill St.	Low
				Angle crashes	Install flexible posts for centerline of Hill St to guide turns from Platt St.	Low
Waterbury	E Main St from Wolcott St to Orchard St	55	996	Speeding	Install dynamic speed feedback signs.	Low
					Apply infrastructure changes that match the signed speed limit.	Medium
Waterbury	Wolcott St from Maher Ave to Wesco Rd	72	1,383	Speeding	Install dynamic speed feedback signs.	Low
				High turning movements	Install alternating center turn lanes and /or center medians.	Medium
				Driveway density	Work with property owners to reduce the number of driveways.	High
Watertown	CT-63 (Main St) from Heminway Park Rd to Depot St	18	4,101	Speeding	Install dynamic speed feedback signs.	Low
				Rear-end crashes	Install traffic signal retroreflective backplates at Echo Lake Rd signal.	Low-Medium
Wolcott	CT-69 (Wolcott Rd) from Tosun Rd to Old Connecticut 69 (South)	7	1,752	Speeding	Install dynamic speed feedback signs.	Low

5.3 Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Ansonia	CT-727 (Pershing Dr) from Division St to 16 north of Division St	2 Pedestrians	One of the pedestrians was hit midblock. The other pedestrian crossed at the signalized intersection against the Do Not Walk cue. Four-lane wide cross-section on CT-727 in commercial area with high number of curb cuts. Crosswalks on northern and eastern leg of intersection.	Increase northbound pedestrian and bike visibility from driveway to the intersection of CT-727 (Pershing Dr) at Division St. Check signal timing and ensure pedestrian signals are working.	Watch for Me CT Campaign
Ansonia	CT-115 (N Main St) from 3rd St to 5th St	2 Pedestrians	One pedestrian was substance-impaired. Both pedestrians were hit crossing midblock. For northbound CT-115 motorists, there is no signage or indication that there is a transition to a more populated area.	Install signage or gateway treatment to alert drivers that they are approaching populated area.	Watch for Me CT Campaign
Ansonia	CT-115 (Main St) and W Main St	2 Pedestrians	Both pedestrians were struck by westbound W Main St/parking lot left-turning traffic onto southbound CT-115 (Main St) at a marked crosswalk and sustained suspected minor injuries. Wide intersection. Large turning radii on West Main St possibly for truck access.	Enhance crosswalks. Add yield to pedestrians in crosswalk on the signal span wires if feasible.	Watch for Me CT Campaign
Bristol	CT-72 (Pine St) from Lois St to Emmett St	2 Pedestrians 1 Bicyclist (1 Fatal)	All three crashes were west of the CT-72 (Pine St) intersection with Emmett St. Wide cross-section. Dark conditions and substance impairment were contributing factors.	Enhance crosswalks at the CT-72 (Pine St) intersection with Emmett St. Investigate roadway illumination. Road diet.	Watch for Me CT Campaign Drive Sober Campaign
Bristol	N Main St from Bristol Fire Department to City Hall	2 Pedestrians (1 Fatal)	Walking with traffic and dark-not lighted condition. Faded pavement markings. Travel lane widths are too wide.	Enhance crosswalks, Narrow travel lanes. Repaint and restripe crosswalks and add traffic calming medians, etc.	Watch for Me CT Campaign
Bristol	US-6 (Farmington Ave) and Jerome Ave	1 Pedestrian (Fatal)	Pedestrian hit while crossing westbound US-6 (Farmington Ave) at Jerome Ave in a marked crosswalk. Dark-lighted conditions. Pedestrian was substance-impaired, wide cross-section on US-6.	Enhance crosswalks at the CT-6 (Farmington Ave) intersection with Jerome Ave. Investigate roadway illumination.	Watch for Me CT Campaign
Bristol	Prospect St from Queen St to Munchausen Ave.	1 Pedestrian 1 Bicyclist	The bicyclist was hit in roadway riding against traffic. The pedestrian was hit crossing Prospect St midblock. Residential road with no edge lines. Vertical curvature could contribute to speeding.	Bike and pedestrian warning signs. Traffic calming on Prospect St. Stripe edgelines. Speed tables.	Watch for Me CT Campaign/Promote Traffic Skills 101 Course

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Bristol	Prospect St from Queen St to Munchausen Ave	1Pedestrian 1 Bicyclist	The bicyclist was hit riding against traffic. The young pedestrian was hit crossing Prospect St mid-block. Residential road with no edge lines. Vertical curvature could contribute to speeding.	Watch for children sign. Bike and pedestrian warning signs. Traffic calming on Prospect St. Stripe edgelines. Speed tables. Dynamic speed feedback signs.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Bristol	US-6 (North Street) from Hungerford Alley to CT-69 (Burlington Ave)	3 Pedestrians	One pedestrian was hit at an intersection-marked crosswalk by car making left. Two were hit at mid-block unmarked crossings. Skewed wide intersection at US-6 and CT-69. This intersection is adjacent to active railroad tracks.	Tighten up and realign intersection. Traffic signal retroreflective-backplates. Dynamic speed feedback for westbound US-6.	Watch for Me CT Campaign
Bristol	CT-229 (King St) and Woodland St No. 1	2 Bicyclists	One bicyclist hit under dark not lighted-conditions, one hit riding against traffic on CT-229.	Sharrows on CT-229 and Woodland St. Dynamic speed feedback signs on CT-229. Investigate illumination.	Watch for Me CT Campaign Share the Road Promote Traffic Skills 101 Course
Bristol	US-6 (Farmington Ave) and Columbus Ave	2 Pedestrians	Both pedestrians were hit by southbound parking lot left-turning traffic onto eastbound US-6 (Farmington Ave) at a marked crosswalk. High number of curb cuts. Faded crosswalks. No pedestrian signal. Four lane cross-section on US-6.	Repaint all crosswalks at intersection. Add countdown pedestrian signals. Reduce number of curb cuts or install a pedestrian hybrid beacon (PHB)	Watch for Me CT Campaign
Bristol	CT-229 (King St/ Middle St) and CT-72 (Riverside Ave)	1 Pedestrian	The pedestrian was struck by southbound CT-229 (King St) left-turning traffic onto eastbound CT-72 (Riverside Ave) at a marked crosswalk and sustained possible injuries. The pedestrian was not visible (dark clothing, no lighting, etc.).	Repaint crosswalk at the east approach of CT-72 (Riverside Ave) as high-visibility. Investigate illumination.	Watch for Me CT Campaign
Bristol	CT-69 (West St) and Laurel St	1 Pedestrian	Pedestrian sustained suspected minor injuries crossing at an unmarked crosswalk across Laurel Street while not visible (dark clothing, dark-not lighted etc.).	Ensure existing roadway illumination is in operation and is sufficient. Restripe crosswalk on Laurel St.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Cheshire	CT-10 (S Main St) from Brentwood Dr to Mansion Rd	1 Pedestrian (Fatal) 1 Bicyclist	Bicyclist hit when car didn't yield right of way. Pedestrian was hit crossing CT-10 (S Main St) in dark-lighted conditions mid-block.	Sharrows. Pedestrian warning signs. Dynamic speed feedback signs.	Watch for Me CT Campaign Enforcement
Cheshire	Sandbank Rd (MP 0.00 to 0.18)	2 Bicyclists	Both bicyclists were hit crossing Sandbank Rd on the linear trail.	As this is already a raised crosswalk, explore the application of making Linear Trail crosswalk at Sandbank Rd higher visibility. Add transverse rumble strips on Sandbank Road on the approaches to trail crossing.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Cheshire	CT-70 (W Main St) from Carter Ln to Robin Ln	1 Pedestrian 1 Bicyclist	One bicyclist hit while cycling along the roadway with traffic when crossing a driveway. No crosswalks on side streets.	Stripe crosswalk on Ives Row. Pedestrian and bicyclist warning signs.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Cheshire	CT-68 (W Main St) and Cherry St	1 Pedestrian	Pedestrian hit crossing Cherry St in crosswalk.	Restripe crosswalk on Cherry St.	Watch for Me CT Campaign
Cheshire	CT-10 (S Main St) from Elmwood Dr to Chipman Dr	1 Pedestrian 1 Bicyclist	One pedestrian hit during incident response. One bicyclist hit riding on sidewalk in driveway entrance.	Narrow travel lanes and widen shoulder. Pedestrian and bike warning signs.	Watch for Me CT Campaign Promote Traffic Skills 101 Course Traffic Incident Management
Cheshire	CT-10 (S Main St) and Higgins Rd	2 Bicyclists	Both bicyclists were struck crossing the Higgins Rd crosswalk at CT-10.	Narrow travel lanes and widen shoulder. Pedestrian and bike warning signs. Manage vegetation. Bump outs on Higgins Rd.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Derby	CT-34 (Main St) at CT-712 (Bridge St)	2 Pedestrians	Both pedestrians hit in marked crosswalks by turning vehicles. Wide cross-sections. No Turn on Red sign for CT-34 EB.	Repaint existing crosswalks. Add crosswalk to Olivia St. Realign the intersection of Olivia St to improve sight distance and reduce crossing distances.	Watch for Me CT Campaign Enforce No Turn on Red
Naugatuck	CT-63 (New Haven Rd) and Cross St	2 Pedestrians	Both pedestrians hit in roadway shoulder (no sidewalk) Both under dark conditions.	Evaluate the need for widening the buffered shoulder along eastbound CT-63 (New Haven Rd). Investigate illumination. Pedestrian warning signs.	Watch for Me CT Campaign
Naugatuck	CT-68 (Bridge St) and Spring St	2 Pedestrians	Both pedestrians hit by cars at the intersection. One pedestrian did not have right of way. There are no pedestrian signals or crosswalk on the northern leg of CT-68, maybe due to misaligned curbs. No Turn on Red signs on all approaches except the Plaza Exit on southside.	Restripe crosswalks.	Watch for Me CT Campaign Enforce No Turn on Red
Naugatuck	CT-63 (Meadow St) and Division St	2 Pedestrians 1 Bicyclist	The bicyclist was struck front-to-rear by a southbound CT-63 (Meadow St) left-turning vehicle while traveling northbound on CT-63 (Meadow St). Two pedestrians hit while crossing CT-63 (Meadow St) at a marked crosswalk. Salem Elementary School and several churches are in intersection vicinity.	Traffic signal retroreflective backplates.	Watch for Me CT Campaign
Shelton	CT-108 (Coram Ave) from White St to Center St	5 Pedestrians	Four pedestrians hit crossing at a non-intersection and one in a marked crosswalk. Vertical curvature on CT-108. No edgelines.	Repaint existing CT-108 (Coram Ave) crosswalk at the municipal/US Postal Service parking lots as high-visibility and at the intersection with Center St. Stripe edgelines on CT-108-to narrow lanes to 11'. Investigate additional signage.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Shelton	CT-110 (Howe Ave) from White St to Center St	2 Pedestrians 1 Bicyclist	All crashes under dark-lighted conditions. One vehicle ran a red light and struck pedestrian.	Traffic signal retroreflective backplates. Investigate roadway illumination on CT-110, especially at intersections.	Watch for Me CT Campaign
Shelton	CT-110 (Howe Ave) and CT-108 (Center St)	2 Pedestrians	Both pedestrians hit under dark conditions crossing CT-110, one was in a crosswalk and one was not.	Investigate roadway illumination at crosswalks. Traffic signal retroreflective backplates. Curb extensions.	Watch for Me CT Campaign
Southbury	US-6 (Main St N) and Heritage Rd	1 Pedestrian	Substance-impaired pedestrian under dark conditions hit in unmarked crosswalk.	Stripe high-visibility crosswalk on Heritage Rd and across US-6 on southern leg.	Watch for Me CT Campaign
Waterbury	E Main St from Niagara St to Hamilton Park Rd	3 Pedestrians	Crashes both in daylight and under dark-lighted conditions. Faded pavement markings, no edgelines. Wide crossing on Niagara St.	Stripe Edgelines and on-street parking lines. Add bump outs across E Main St. Reconfigure Niagara St and Silver St at East Main St.	Watch for Me CT Campaign
Waterbury	E Main St from Wolcott St to Orchard St	3 Pedestrians (1 Fatal)	Three pedestrian crashes occurred along this segment, one in daylight and two under dark-lighted, wet conditions. Mid block crossing crash, Motorist struck pedestrian on sidewalk. Low curb reveal Sidewalks in poor condition.	Raise the curb on East Main St. Restripe crosswalks. RRFB at mid-block by YMCA.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	Willow St from Plaza Ave to Tower Rd	2 Pedestrians	Two pedestrians were hit one in daylight and one dart/dash crash in dark-lighted conditions. Vertical curvature and no edgelines.	Stripe edgelines and on-street parking markings. Investigate roadway illumination and adequate signage.	Watch for Me CT Campaign Enforcement
Waterbury	Frost Rd from Rockridge Rd to to CT-844 (Meriden Rd)	3 Pedestrians	Two of the three crashes involved dark-lighted conditions, while the other was dark-not lighted. Jaywalking. No edgelines, retail on both sides of roadway.	Stripe edgelines. Enhance crosswalks at Frost Rd and CT-844.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	Johnson St from Sperry St to Chestnut Ave	1 Pedestrian	Pedestrian walking in roadway under dark-not lighted and wet conditions. Sidewalks are in poor condition.	Improve sidewalks. Investigate roadway illumination. Traffic calming.	Watch for Me CT Campaign
Waterbury	CT-847 (S Main St) and E Liberty St	4 Pedestrians (1 Fatal)	Two car angle crash at signalized intersection resulted in one car hitting four pedestrians walking on sidewalk.	Traffic signal retroreflective backplates. Remove older utility poles at the intersection to improve sight distance.	Watch for Me CT Campaign
Waterbury	Chase Ave from Hill St to 450 feet east of Hill St	3 Pedestrians	All pedestrians hit crossing Chase Ave mid-block under dark conditions. Four lane wide cross-section. No pedestrian amenities for crossing Chase Ave in this segment.	Road Diet on Chase Ave. Investigate illumination.	Watch for Me CT Campaign
Waterbury	Baldwin St from Scovill St to E Main St	4 Pedestrians	Pedestrians were struck when crossing Baldwin St. One pedestrian jaywalked. Two were in marked crosswalks. Baldwin St does not have edge lines. Near school and retail.	Add high-visibility crosswalks and bulb outs at the Baldwin St intersection with Scovill St and Mill St. Stripe edge lines.	Watch for Me CT Campaign
Waterbury	East Main St from Baldwin St to Orange St	6 Pedestrians 1 Bicyclist	Three crashes involved motorists turning and not yielding to pedestrians in crosswalks. One pedestrian was hit outside crosswalk. Bicyclist hit crossing roadway.	Add high-visibility crosswalks and bulb outs at the East Main St intersection with Cherry St and Baldwin St. Yield to pedestrians in crosswalks signs.	Watch for Me CT Campaign
Waterbury	North Main St from West Farm St to Division St	3 Pedestrians 1 Bicyclist	All three crashes were in daylight under clear conditions. Pedestrians were hit at mid-block and at intersection. No Turn on Red sign at the North Main St and East Farm St and West Farm St intersection.	Traffic calming on North Main St. Stripe edgelines. Enhance crosswalks.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	Congress Ave from Poplar Pl to James St	1 Pedestrian 1 Bicyclist	Congress Ave has vertical and horizontal curvature. Sight distance to crosswalk on Congress Ave near where pedestrian was hit is limited by curve for northbound motorists. Roadway has faded pavement markings .	Advanced crossing signs on Congress Ave. Add speed tables on Congress Ave or raised crosswalks. Stripe edgelines for shoulder to accommodate bicyclists.	Watch for Me CT Campaign
Waterbury	Walnut St from Locust St to E Farm St	3 Pedestrians	All three crashes involved pedestrians crossing at E Farm St and Walnut St under dark conditions. West bound Walnut is not under stop control at the intersection.	Traffic calming. Realign Walnut St and East Farm St and have traffic stop in all directions (LRARP approved project). Potential roundabout. Add high-visibility crosswalks at intersection. Investigate illumination.	Watch for Me CT Campaign
Waterbury	Highland Ave from Cynthia St to Ledgeside Ave	2 Pedestrians	Two pedestrians hit crossing roadway mid-block. Highland Ave has vertical curvature which could increase speeds. There are no crosswalks or stop control on Highland Ave at these intersections.	Stripe edgelines. Dynamic speed feedback signs. Install midblock crosswalks with RRFBs.	Watch for Me CT Campaign
Waterbury	Cooke St from Avalon Circle N to Avalon Circle S	2 Pedestrians	One pedestrian cited for failure to yield right-of-way when crossing the roadway, while the other pedestrian was hit in the roadway distracted. Cooke St has vertical curvature so northbound motorists could be exceeding speed limit.	Traffic calming on Cooke St. Stripe edgelines. Dynamic speed feedback signs.	Watch for Me CT Campaign Speed enforcement.
Waterbury	East Main St from Englewood Ave to Wales St	2 Pedestrians	Both pedestrians received a verbal warning, one for wrong-way walking and the other for being in the roadway improperly.	Stripe edgelines. Restripe crosswalks. Add bump outs at crosswalks.	Watch for Me CT Campaign
Waterbury	Cherry St from Maple Ave to Walnut St	2 Pedestrians 1 Bicyclist	Poor pavement condition and no pavement markings. Pedestrians struck crossing the street mid-block and the bicyclist was hit riding with traffic.	Enhance crosswalks. Consider bike lanes.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-69 (Wolcott St) from Mattatuck Plaza Entrance to Bernie's Plaza Entrance	7 Pedestrians	The pedestrian crashes are centered around the CT-69 (Wolcott St) intersection with Mattatuck Plaza Shopping Center and Naugatuck Valley Shopping Center. Crosswalks are faded. Cross-section on CT-69 is four lanes.	High-visibility crosswalks at the north and west approaches of CT-69 (Wolcott St) at Lakewood Rd, as well as at the north, east, and west approaches of CT-69 (Wolcott St) at Mattatuck Plaza Shopping Center and Naugatuck Valley Shopping Center. Repaint crosswalks at the south approach of CT-69 (Wolcott St) at Lakewood Rd, as well as the south approach of CT-69 (Wolcott St) at Mattatuck Plaza Shopping Center and Naugatuck Valley Shopping Center as high-visibility. Extend sidewalk. Consider a road diet.	Watch for Me CT Campaign/Promote Traffic Skills 101 Course
Waterbury	CT-847 (W Main St) from the Metro North Overpass to Judd St	4 Pedestrians (1 fatal) 2 Bicyclist (1fatal)	Two fatal crashes in this section of CT-847. There is a mid-block crossing with a pedestrian crossing sign. Westbound CT-847 is 25 feet wide with only one indicated travel lane. There are no edge lines.	Raise the mid-block crossing or install a PHB. Stripe two westbound lanes or add bike lane. Road diet.	Watch for Me CT Campaign/Promote Traffic Skills 101 Course
Waterbury	CT-846 (W Main St) from Naugatuck River to CT-847 (Thomaston Ave)	2 Pedestrians	Pedestrians sustained suspected minor injuries, but received verbal warnings. One pedestrian was crossing the roadway and the other was in the roadway improperly. The Thomaston Ave and West Main Street intersection has faded crosswalks with wide cross-sections.	Restripe crosswalks. Consider extending island on Thomaston Ave to provide pedestrian refuge. Possible road diet on CT-846.	Watch for Me CT Campaign
Waterbury	E Main St from Exchange Pl to Phoenix Ave	3 Pedestrians	All pedestrians were hit crossing the street at intersections. The Exchange Pl and E Main St intersection is wide.	Add bump outs to shorten crossings. Restripe crosswalk. Revise pedestrian interval at signal.	Watch for Me CT Campaign Enforce turning violations at the signal.

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-847 (W Main St/ Meadow St) from Judd St to Brown Pl	2 Pedestrians	Both pedestrians were hit crossing roadway, one at a marked crosswalk and the other mid-block. Intersection of CT-847 and Willow Street is a wide skewed intersection.	Bulb outs to shorten crossing at CT-847 and Willow St. Traffic signal retroreflective backplates. Restripe roadway and edge lines.	Watch for Me CT Campaign
Waterbury	CT-847 (S Main St) from Union St to McMahon St	4 Pedestrians 1 Bicyclist	Three pedestrians were hit crossing the Our Lady of Lourdes church parking lot while on the sidewalk. One pedestrian struck crossing roadway mid-block. The bicyclist hit at signalized intersection.	Stripe edgelines on CT-847.	Watch for Me CT Campaign Promote Traffic Skills 101 Course. Share the Road
Waterbury	E Main St from Brook St to 350 feet east of Brook St	3 Pedestrians	Two crashes at mid-block-marked crosswalks.	Repaint and elevate existing mid-block crosswalks on E Main St as high-visibility.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	CT-69 (Meriden Rd) from Eastwood Ave to Hungerford Ave	4 Pedestrians	Two pedestrians were hit at intersection. Two were hit mid-block. Crosswalks are faded.	Restripe crosswalks. Add crosswalk on Manor Ave. Dynamic speed feedback sign.	Watch for Me CT Campaign
Waterbury	N Main St from City Mills Ln to Winchester St	1 Pedestrian 1 Bicyclist	The bicyclist was hit while cycling with traffic in the travel lane and the pedestrian was hit while walking adjacent to a parking lot.	Stripe edge lines on North Main St.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	Bunker Hill Ave from Farnham Ave to Tremont St	2 Pedestrians	These two crashes involved entering or exiting parked or standing vehicles in the vicinity of Bunker Hill School.	Add a buffered shoulder along northbound Bunker Hill Ave for protection of pedestrians in front of Bunker Hill School. Add flashing beacons to school zone warning signs. Stripe edgelines. Consider speed tables.	Watch for Me CT Campaign Enforcement during school arrival and dismissal hours

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-846 (Watertown Ave) from Aurora St to Edwin Ave.	3 Pedestrians	One crash involved two pedestrians reportedly hit on side of roadway. However with the very low to zero curb reveal, they could have been on sidewalk when hit. The other pedestrian was hit while crossing at an unmarked mid-block location.	Stripe edgelines. Replace crumbling sidewalks and curbing.	Watch for Me CT Campaign
Waterbury	S. Elm St from E. Clay St to Union St.	3 Pedestrians	Two pedestrians struck crossing in crosswalk at Union St next to hospital. Rainy conditions. One crossing mid-block. Next to St Mary's Hospital and Sacred Heart High School.	Curb extension at Union St and S Elm St intersection. Stripe edgelines.	Watch for Me CT Campaign
Waterbury	CT-847 (Thomaston Ave) from 200 ft north of CT-846 (W Main St) to 1400 ft north of CT-846 (W Main St)	2 Pedestrians	Both pedestrians struck crossing mid-block. Thomaston Ave has high number of curb cuts and sidewalks are in poor condition. Crosswalks at CT-847 and CT-846 are wide and faded.	Realign the intersection of CT-847 and CT-846. Enhance crosswalk and add pedestrian refuge island at CT-847 and CT-846.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	CT-845 (Chase Pkwy) from W Main St to I-84 EB Ramp	2 Pedestrians	Both pedestrians struck crossing driveways on CT-845. Near various schools.	Explore application of high-visibility crosswalks across Old Colony Dr.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	CT-847 (Grand St) and Bank St	1 Pedestrian 1 Bicyclist	Bike and pedestrians all struck crossing at marked crosswalk. Bank St crossings are wide.	Add curb extensions on Bank St.	Watch for Me CT Campaign
Waterbury	CT-69 (Hamilton Ave) and Edgewood Ave	1 Pedestrian	Pedestrian hit crossing at signalized T-intersection. There are no crosswalks or pedestrian signals. On a slope so speed could be contributing factor.	Strip high-visibility crosswalks on all legs of intersection. Traffic signal retroreflective backplates.	Watch for Me CT Campaign
Waterbury	CT-847 (Thomaston Ave) and Huntington Ave	3 Pedestrians	Both pedestrians were struck at the marked crosswalk and one was hit mid-block.	Repaint crosswalks at intersection as high-visibility.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-69 (Wolcott St) from Maher Ave to Wesco Rd	2 Pedestrians 1 Bicyclist	One pedestrian struck in crosswalk, the other pedestrian and bicyclist were hit mid-block. This is a highly commercial area with four lane cross-section and high number of curb cuts. There are no edgelines. This is a bus route.	Repaint existing Wolcott St crosswalks at the Waterbury Plaza Shopping Center as high-visibility. Paint edgelines. Traffic signal retroreflective backplates. Investigate road diet.	Watch for Me CT Campaign
Waterbury	CT-69 (Wolcott St) from Long Hill Rd to Stillson Rd	5 Pedestrians 1 Bicyclist	Various factors: vehicle failing to obey traffic signs and signals,traffic incident management crash, one substance-impaired crash. Wide cross-sections, faded pavement markings.	Traffic signal retroreflective backplates. Repaint and enhance the crosswalks. Investigate road diet.	Watch for Me CT Campaign
Waterbury	East Main St from Wall St to Rutledge St	7 Pedestrians 1 Bicyclist	Pedestrians hit crossing roadway not in crosswalk. One pedestrian hit in marked crosswalk. Bicyclist failed to yield right-of-way to vehicle.	High-visibility mid-block crosswalk at the east approach of East Main St at Wall St with RRFBs. Add high-visibility crosswalk across Wall St. Repaint crosswalk at the west approach of East Main St as high-visibility. Stripe edgelines. Add bump outs on East Main St.	Watch for Me CT Campaign
Waterbury	E Farm St from Walnut St to N Walnut St	3 Pedestrians 1 Bicyclist	Dark-not lighted conditions, substance-impaired and the other pedestrian involved in a dart/dash crash. Jaywalking. No edgelines, retail on both sides of roadway. The bicyclist was hit at driveway access point.	Stripe edgelines. Evaluate roadway/lane configuration, similar to the Walnut St segment. Add roadway illumination. Install bump outs. Consider some raised speed tables near churches.	Watch for Me CT Campaign
Waterbury	CT-69 (Silver St Expy/ Meriden Rd) and E Main St	4 Pedestrians	Pedestrians struck at signalized intersection in crosswalks. One pedestrian hit mid-block. Wide crossing distances on CT-69 and E Main St. Vertical curvature.	Curb extensions where feasible. Restripe high-visibility crosswalks.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-69 (Meriden Rd) and Manor Ave	3 Pedestrians	One pedestrian hit at mid-block location. Two hit at marked intersection with crosswalks.	Explore application of high-visibility crosswalk across Manor Ave at CT-69 (Meriden Rd) and enhance crosswalk on CT-69. Curb extension on Meriden Road.	Watch for Me CT Campaign
Waterbury	CT-69 (Wolcott St) and Lakewood Rd	3 Pedestrians	Two pedestrians hit under dark conditions, one at unmarked crossing near intersection and one was hit in crosswalk. The crosswalk on Wolcott St is very wide. There are no sidewalks, but worn dirt paths indicate pedestrian activity.	Explore application of high-visibility crosswalk on the three legs of the intersection. Investigate illumination.	Watch for Me CT Campaign
Waterbury	CT-847 (Willow St/ Meadow St) at West Main St No 2	3 Pedestrians	One pedestrian hit in marked crosswalk. Two pedestrians hit mid-block. Five legged intersection.	Install traffic signal retroreflective backplates. Restripe crosswalks as high-visibility at the intersection. Consider roundabout.	Watch for Me CT Campaign
Waterbury	CT-847 (W Main St) at Sperry St	2 Pedestrians	One pedestrian hit at intersection and one just west of intersection. There are no crosswalks and stop control limited to Sperry Rd at West Main St. West Main Street has no edgelines.	Realign and narrow the Sperry Road intersection-start with delineators. Stripe edgelines on West Main St.	Watch for Me CT Campaign
Watertown[1]	CT-63 (Litchfield Rd/ Main St/Straits Tpke) (MP 23.87-24.05)	2 Pedestrians (2 Fatals)	Dark conditions. One Pedestrian hit crossing at a marked midblock crosswalk. One pedestrian was hit while exiting car.	Investigate roadway illumination. Traffic calming. PHB.	Watch for Me CT Campaign
Woodbury	US-6 (Main St N) from Middle Road Tpke to 925 ft south of Middle Road Tpke	1 Pedestrian 1 Bicyclist	Pedestrian struck by car turning into driveway. Bicyclist struck riding in shoulder.	Evaluate the need for bike lanes, particularly in the southbound direction. Widen shoulders where feasible next VIP. Sharrows. Dynamic speed feedback signs. Pedestrian and Bike warning signs.	Watch for Me CT Campaign Share the Road Campaign

1 According to Town representatives, one of these fatalities involved a substance-impaired motorist.

6. Public Education Resources to Support Behavior Change

Drowsy Driving	Develop evidence-based awareness and educational message strategies that address why drowsy driving is risky, how motorists can prevent drowsy driving, signs and symptoms of drowsy driving, and strategies for dealing with drowsiness as a driver. Investigate drowsy driving legislation and potential for changing awareness and attitudes towards drowsy driving. Identify high-risk drivers for drowsy driving. The National Sleep Foundation has a Drowsy Driving Prevention Week in November to help reduce the number of drowsy driving related crashes in the United States. Campaign materials are provided for this campaign event through the National Highway Traffic Safety Administration (NHTSA). The United States Department of Transportation (USDOT) Traffic Safety Marketing (TSM) provides a fact sheet, sample news release, and an educational sheet that addresses drowsy driving prevention.						
Resources for Drowsy Driving	National Safety Council	NHTSA	Federal Motor Carrier Safety Administration	National Institute of Health National Heart Lung, and Blood Institute	Center for Disease Control and Prevention		
Speeding	"When Speeding Kills" marketing campaign materials are provided by the Connecticut Department of Transportation to encourage safe travel speeds in Connecticut. Alternative campaign materials that share the message "Stop Speeding before it Stops You," are provided by the United States Department of Transportation's Traffic Safety Marketing (TSM) website. Banner ads, media, logos, radio ads, television ads, and web videos for speed campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA.						
Resources for Speeding	Traffic Safety Marketing	NHTSA	CTDOT	Governor's Highway Safety Association	Vision Zero	National Transportation Safety Board	
Drunk Driving	The United States Department of Transportation and the National Highway Traffic Safety Administration (NHTSA) provide marketing campaign materials for year-round education such as "Buzzed Driving is Drunk Driving" or "Drive Sober or Get Pulled Over." The United States Department of Transportation encourages the use of their "No Refusal Toolkit" which is an enforcement strategy that allows jurisdictions to obtain search warrants for blood samples from drivers suspected of drinking who refuse breath tests. The USDOT website explains that this program should be publicized to let the public know that the chance of being caught and facing the consequences of drunk driving is high. Banner ads, media, logos, radio ads, television ads, and web videos for drunk driving campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Drunk Driving	Traffic Safety Marketing	NHTSA	Mothers Against Drunk Driving	Center for Disease Control and Prevention	Foundation for Advancing Alcohol Responsibility	CTDOT	
Drugged Driving	NHTSA and the USDOT are working on studies to understand how illegal drugs and prescription medications affect drivers and provide marketing campaign materials are to be used as tools to raise awareness. The USDOT TSM provides a Fact Sheet, Sample News Release, and an educational sheet that address drug-impaired driving prevention. Banner ads, media, logos, radio ads, television ads, and web videos for drug-impaired driving campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Drugged Driving	NHTSA	Traffic Safety Marketing	National Institute on Drug Abuse	Stop Drugged Driving (Institute for Behavior and Health, Inc.)	Governor's Highway Safety Association	CTDOT	Mothers Against Drunk Driving

Public Education Resources to Support Behavior Change

Distracted Driving	NHTSA describes distracted driving as any activity that diverts the attention of the driver from driving, including using electronic devices, eating and drinking, talking to people in your vehicle, changing the station on the radio, entertainment/navigation systems, etc. NHTSA provides resources on its website to educate Americans on the dangers of distracted driving. NHTSA provides suggestions for how teens, parents, employers, and educators can get involved with preventing distracted driving and how to make your voice heard to educate your community. The United States Department of Transportation provides Traffic Safety Marketing focused on combating distracted driving through Television Ads that are available to every community. Banner ads, media, logos, radio ads, television ads, and web videos for distracted driving campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Distracted Driving	Traffic Safety Marketing	NHTSA	National Safety Council	Governor's Highway Safety Association	Center for Disease Control and Prevention	Insurance Institute for Highway Safety	CTDOT
Pedestrian and Bike Safety	The Watch for Me CT campaign is run by the Connecticut Department of Transportation in partnership with the Connecticut Children's Medical Center Injury Prevention Center. They share a message of responsibility for everyone on Connecticut roads, including pedestrians and bicyclists. The Watch for Me CT website provides facts about pedestrian crashes, pedestrian laws, and safety tips. The Watch for Me CT website also includes tips for drivers and campaign materials. NHTSA's pedestrian safety web page provides pedestrian safety related research, tips, curriculum, and programs that can be shared in any community to discuss pedestrian safety. The US DOT's Traffic Safety Marketing website provides campaign materials such as banner ads, media, logos, radio ads, television ads, and web videos for pedestrian campaigns used throughout the Country. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Pedestrian and Bike Safety	Watch for Me CT	Federal Highway Administration	National Complete Streets Coalition	NHTSA	America Walks	Vision Zero	
Older Driver Safety	Older driver campaigns focus on providing resources for older drivers, their families, caregivers, medical providers and law enforcement to educate how medical conditions can affect driving, how to assess older driver safety issues, and other transportation options provided in case an older driver's mobility is threatened when they are no longer recommended to drive a motor vehicle. NHTSA provides information for what to do if an individual has concerns about an older driver's ability to drive and what the proper licensing procedures are for older drivers. The USDOT Traffic Safety Marketing web page provides marketing resources for the DriveWell campaign that focuses on older driver safety and mobility.						
Resources for Older Drivers	NHTSA	Department of Motor Vehicles	AAA CT	National Institute on Aging	American Association of Retired Persons	Insurance Institute for Highway Safety	

7. Funding

Funding

Department of Energy and Environmental Protection Recreational Trails Funds: Bicycles, Pedestrians, Horseback, Recreational Vehicle
This program is administered through the Connecticut Department of Energy & Environmental Protection (DEEP). Funds can be used for projects such as new trail construction, maintenance and restoration of existing trails, acquisition of land or easements for a trail. Note: There is currently no funding available for this program.
Small Towns Economic Assistance Program (STEAP) Funds: Bicycles, Pedestrians, Passenger Vehicles
STEAP funds are issued by the State Bond Commission and can be used for capital projects which are new construction, expansion, renovation or replacement of existing facilities. The funding is directed towards small towns.
Local Capital Improvement Program (LoCIP) Funds: Bicycles, Pedestrians, Passenger Vehicles
This program provides financial assistance to municipalities for eligible projects in the form of annual entitlement grants funded with State general obligation bonds. LoCIP grants can fund road construction, renovation and repair, sidewalk and pavement improvements, bridges, and bikeway and greenway establishment.
Highway Safety Programs Funds: Driver and Passenger Behavior
The Connecticut Highway Safety program supports Federal Section 402 highway safety grant funds that are made available to the State to carry out its annual Highway Safety Plan. Grants are issued to address programs pertaining to impaired driving, public information and education, work zone safety and highway safety related legislation, police traffic services, occupant protection, and child passenger safety.
Federal-Aid Essentials for Local Public Agencies
This website provides local public agency staffers a centralized hub for guidance, policies, procedures, and best practices for administering federal-aid projects. The website includes a library of videos covering key aspects of the project development and delivery process.
Local Transportation Capital Improvement Program (LOTCIP) Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit, Bridges
Provides State monies to municipalities for transportation capital improvement projects. Councils of Governments are responsible for soliciting and selecting projects and administering the program. Eligible projects include reconstruction, pavement rehabilitation, sidewalks, and multi-use trails. Except for off-road bike projects, all projects must be located on/along federally eligible roadways.

Funding

Transportation Alternatives (TA) Set-Aside Program Funds: Bicycles, Pedestrian
Provides federal funding, half administered through the State and half administered through Regional Planning Organizations for surface transportation projects in categories that are not typically eligible for funding under other federal sources. Bicycle and pedestrian projects have typically been targeted for these funds.
Congestion Mitigation and Air Quality (CMAQ) Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit
The Congestion Mitigation and Air Quality program is managed by the CTDOT as a competitive grant program. A portion of funding is programmed for projects of regional significance. It provides funds for projects that will improve air quality such as congestion reduction and traffic flow improvements, and transit improvements.
Community Connectivity Program (CCP) Funds: Bicycles, Pedestrians
This Program offers Connecticut's towns and cities assistance in conducting Road Safety Audits (RSA) at important bike and pedestrian corridors and intersections. An RSA is a process that identifies safety issues and countermeasures to help improve safety and reduce vehicle crashes. Note: As of 7/27/2018, the Department is pleased to announce that on Wednesday, July 25th, the State Bond Commission approved the DOT's request to fund the Community Connectivity Grant Program. All municipalities that submitted applications for grants were formally notified on 9/21/2018.
Local Road Accident Reduction Program (LRARP) Funds: Bicycles, Pedestrians, Passenger Vehicles
This program aims to fund projects that improve motor vehicle safety on local public roadways. The funding for the LRARP comes from the Federal Highway Safety Improvement Program (HSIP) which also funds projects on State highways and railroad/highway grade crossings.

8. Emphasis Areas

The top emphasis areas in the Naugatuck Valley Region were selected based on the conclusion that these contributed to the majority of the injury and fatal crashes verified from the 2015-2018 data and the feedback from the individual town representatives. The seven emphasis areas are:

1. **Critical Roadway Locations: Includes both roadway departure and intersection crashes.**
2. **Driver Behavior: Includes aggressive driving, unrestrained occupants, substance-impaired driving, and distracted driving.**
3. **Older Drivers: Includes drivers aged 65 years and older.**
4. **Young Drivers: Includes drivers aged 15-25 years old.**
5. **Non-Motorized Users: Includes pedestrians and bicyclists.**
6. **Motorcyclist Safety.**
7. **Traffic Incident Management.**

These emphasis areas were selected based on crash types that have the highest potential of achieving the State's 15% injury and fatal crash rate reduction goal and fatal crash rates by 2025. From these identified emphasis areas, strategies and countermeasures were developed in conjunction with stakeholders' input. Each emphasis area's countermeasures were developed according to the four E's of transportation safety. For a total of all fatal and injury crashes by emphasis area, see Appendix B.

Performance Measures: The Naugatuck Valley RTSP follows the 2017 CT SHSP strategy of implementing countermeasures identified for each emphasis area. In all cases, implementation includes site-specific and systemic safety improvements. Connecticut has set annual safety performance measure targets which the regions are encouraged to follow. The region can also establish their own performance measures, independent of the State's goals.



CT-68 (Cheshire Road), Prospect

8.1 Critical Roadway Locations

The critical roadway locations emphasis areas include both roadway departure and intersection crashes. Intersection crashes are conflicts that occur due to complex travel patterns. Congestion, limited sight distance, driver behavior, and other variables exacerbate the inherent crash potential at each intersection. Intersections vary widely from geometry, classification (urban or rural), traffic control (signalized or unsignalized), traffic volumes, and design (conventional design or alternative designs such as roundabouts). Additionally, at-grade rail crossings are considered intersections as trains and roadway users cross paths. Reducing the number of intersection fatalities and injuries is possible by applying a multidisciplinary approach using strategies that focus on engineering, education, and enforcement.

Roadway departure crashes are described as conflicts that result when vehicles cross an edge line, a center line, or otherwise leave a travel lane. There are several factors that can contribute to a lane departure crash, including roadway characteristics like horizontal curvature and pavement condition. Other weather-related conditions like rain, snow, or ice can impede a driver's sight of the roadway and make controlling vehicles difficult. Time of day can also play a role in lane departure crashes due to decreased visibility, which can affect driving performance.

Behavioural issues like speeding, impaired driving, and distracted driving can affect the driver's safe vehicle operation and may cause them to depart from the roadway. To improve lane departure safety, countermeasures that address keeping vehicles in the travel lane, provide for a safe recovery, and reduce crash severity are imperative. The region can use both systemic and site-specific engineering strategies combined with education and enforcement.

8.1.1 Intersections

Performance Measure: From 2015-2018, there were 4,842 intersection crashes resulting in injuries or fatalities within the Naugatuck Valley Region or an annual average of 1,211 crashes per year. Of those 4,842 intersection injury and fatal crashes reported, 34 were fatal. The Region's 2015-2018 intersection injury and fatal crashes make up 8% of the 59,224 intersection injury and fatal crashes in Connecticut.

Performance Objective: Decrease intersection injuries and fatalities by 20% over the 5-year period of the SHSP. This will result in preventing 242 combined injuries and fatalities per year.



Mountain Road/CT-229 (Middle Street), Bristol

Strategies for Intersections:

Engineering: Implement proven and low-cost spot improvements and systemic safety improvements to reduce intersection crashes. Examples include enhancing signs and pavement markings, modifying signals and signal timing, adding turn lanes, and controlling access through medians.

Enforcement: Conduct high-visibility enforcement, media campaigns and public outreach at selected locations with a significant number of intersection crashes.

Education: Advertise and promote the Safety Circuit Rider and other similar programs that provide training and outreach about intersection safety.

Engineering: Incorporate safety elements and countermeasures into all regional roadway and intersection project designs and maintenance improvements.

Engineering: Consider No Turn on Red restrictions at identified crash locations.

8.1.2 Roadway Departures

Performance Measure: From 2015-2018, there were 2,194 roadway departure crashes resulting in injuries or fatalities within the Naugatuck Valley Region or an annual average of 549 crashes per year. Of those 2,194 reported roadway departure crashes, 29 were fatal. The Region's roadway departure injury and fatal crashes accounts for 9% of the 24,935 total roadway departure injury and fatal crashes in Connecticut.

Performance Objective: Decrease injuries and fatalities by 20% over a five year period. This will result in preventing 110 combined injuries and fatalities per year.



Rimmons Hill Road, Beacon Falls

Strategies for Roadway Departures:

Engineering
Design the roadside to include protection systems (such as cable median, crash cushions and guiderail end treatments) or manage roadside vegetation, trees and other fixed objects to minimize the severity of crashes.

Engineering
Implement proven systemic safety countermeasures to lessen roadway departure crashes. Examples include high friction surface treatments, improved signage and pavement markings on curves, safety edges, and center line and edge line rumble strips.

Enforcement
Conduct high-visibility regional and local enforcement, media campaigns and public outreach on identified corridors with a high number of severe roadway departure crashes.

Education
Utilize established regional and State programs, such as the Safety Circuit Rider, to provide education, training, and outreach.



Source: kwikbondpolymers.com

8.2 Driver Behavior

The second emphasis area is Driver Behavior which includes the subset areas of speeding or aggressive driving, unrestrained occupants, substance-involved driving, and distracted driving. These subsections are related to driver behavior and not due to traffic or roadway characteristics, although they can be interdependent.

8.2.1 Aggressive Driving

The aggressive driving emphasis area includes any driver behavior that involves speeding, recklessness, driving too close, running red lights, and making unsafe lane changes. Any behavior that "exceeds the norms of safe driving" and places other motorists in danger is considered as aggressive driving. This does not include road rage which is considered assault.

Performance Measure: Speeding-related injury and fatal crashes totaled 1,544 from 2015-2018. There were 36 fatal crashes with an annual average of 386 injury and fatal crashes per year from 2015-2018. The Naugatuck Valley Region's aggressive driving injury and fatal crashes make up 17% of the 9,347 total aggressive driving injury and fatal crashes in Connecticut.

Performance Objective: Exceeding the state's goal of an 8% reduction of speed related fatalities, the region's objective is to lower the average of 9 speed related deaths per year to 8 per year by 2025.



Source: The Day

Source: NHTSA

Strategies for Aggressive Driving:

Engineering/Enforcement: Explore the possibility of creating safety corridors where a segment of roadway has higher-than-expected number of fatal and serious injury crashes due to driver behaviors. Additional signage followed by increased traffic enforcement and zero tolerance for violations.

Enforcement: Regional and municipal support for High Visibility Enforcement campaigns that specifically target speed and aggressive driving. This could include enhanced patrols using roads signs, electronic message boards and command posts.

Enforcement: Regional collaboration and resource sharing of scientifically valid speed measurement technology for enforcement.

Education: Coordinate with local agencies, local police and fire departments, hospitals, the auto insurance industry, and driving schools to disseminate and educate the public on the hazards of aggressive driving.

Engineering: Integrate the speed management countermeasures into roadway departure, intersection, and pedestrian safety areas.

8.2.2 Unrestrained Occupants

The unrestrained occupants emphasis area involves either passengers or drivers who do not wear seat belts while traveling, including children not properly positioned in restraint systems. Connecticut enacted a law in October 2017, requiring that children be in booster seats until they reach a minimum of 60 pounds and they turn eight years old, that toddlers ride in a forward-facing seat with a five-point harness until they are 5 years old and weigh at least 40 pounds, and that infants be in rear-facing seats until they are two years old and 30 pounds.

Performance Measure: From 2015-2018, there were 821 crashes involving unrestrained occupants that resulted in injury or fatality, which is an annual average of 205 crashes per year. Out of these 821 crashes reported, 26 of them were fatal. NVCOG unrestrained occupant injury and fatal crashes make up 15% of the total 5,423 unrestrained occupant injury and fatal crashes in Connecticut.

Performance Objective: Reduce the number of unrestrained occupant injury and fatal crashes from the four-year average of 205 crashes per year by 10% to an average of 185 crashes per year by 2025. Increase the statewide observed seat belt use rate from 85.4% in 2015 to 88% or above in 2018. In August 2017, Connecticut surpassed its goal of 88% seat belt compliance rate to 90.3%.

8.2.3 Substance-Impaired Driving

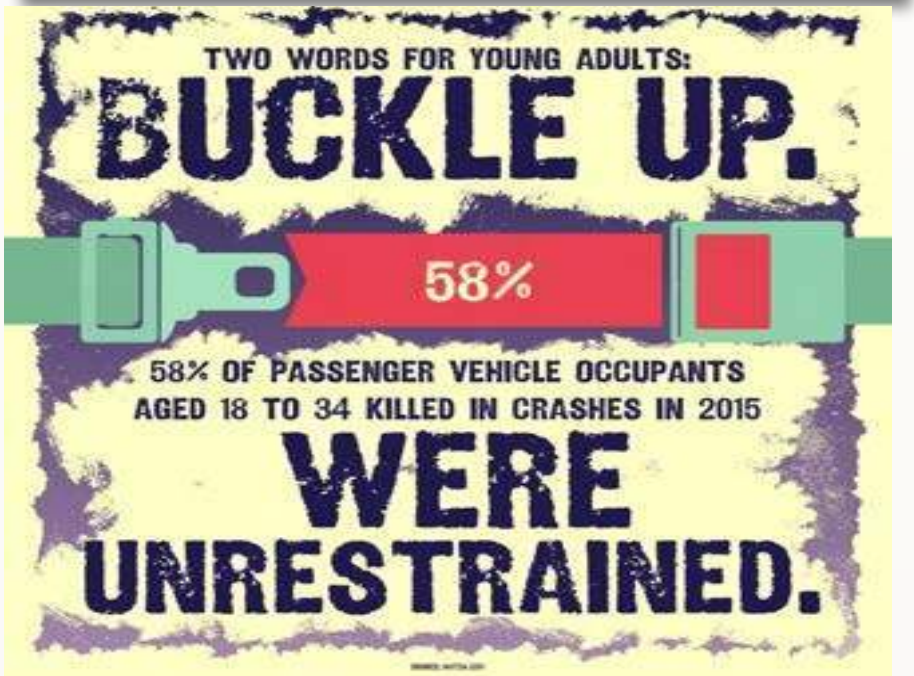
Substance-impaired driving involves motorists who are under the influence of alcohol and/or drugs, both prescribed/non-prescribed, and/or illegal. A driver with a Blood Alcohol Concentration (BAC) of .08 or higher is considered alcohol impaired. Drug impairment is more challenging to detect and confirm because there is no standard breathalyzer test. In addition, it is hard to determine drug effects on driving behavior, which also makes it difficult to develop effective laws and strategies for enforcement. However, according to NHTSA, many of the alcohol-impaired driving countermeasures may deter drug-impaired driving.

Strategies for Unrestrained Occupants:

Enforcement: Coordinate with NHTSA's calendar of high visibility enforcement of safety belts and child safety enforcement and coordinate with AAA, CTDOT, and T2 Center to explore potential educational/outreach efforts promoting seat belt use. Continue regional and municipal enforcement using checkpoints and roving and saturation patrols.

Education: Communicate the new child safety seat laws, coordinating with multi agencies like Safe Kids CT, local police and fire departments, hospitals in the region the YMCA, and others to disseminate information with educate the public.

Enforcement and Education: Coordinate with private sector stakeholders to host car seat clinics and publicize the safe fitting stations in the region using earned media outlets.



Source: US DOT

Strategies for Substance-Impaired Driving:

Enforcement and Education: Encourage the State to provide the funding for officers to take the Advanced Roadside Impaired Driving Enforcement (ARIDE) program and to get certified as Drug Recognition Experts (DRE) offered by the Department of Emergency Services and Public Protection. Cooperate with the SHSP goal to increase the number of certified standardized field sobriety test practitioners and instructors.

Education: Expand regional and town-specific outreach of impaired driving beyond the traditional mass media campaign by using innovative and unique delivery methods that reach specific populations of the targeted audience through local police and fire departments, the hospitals in the region, the YMCA, and driving schools to disseminate information and educate the public. Highlight the importance of sober driving during the month of December, during the Office of National Drug Control Policy's National Drunk and Drugged Driving Prevention month, and NHTSA's drive sober or get pulled over mobilization.

Education: Continue to support Mothers Against Drunk Driving (MADD) CT chapter's outreach and education efforts, including the Victim Impact Panels that take place at Waterbury City Hall.

Engineering: Municipalities should support policies and programs that increase the availability, convenience, affordability, and safety of transportation alternatives for drinkers who may drive especially during nighttime and weekend hours) and boosting or incentivizing transportation alternatives in rural areas, which are disproportionately impacted by alcohol-impaired driving crashes and fatalities.

Enforcement: Continue to enforce the interlock devices for all Connecticut DUI/DWI/OUI first time offenders. Conduct regional high visibility impaired driving enforcement program.

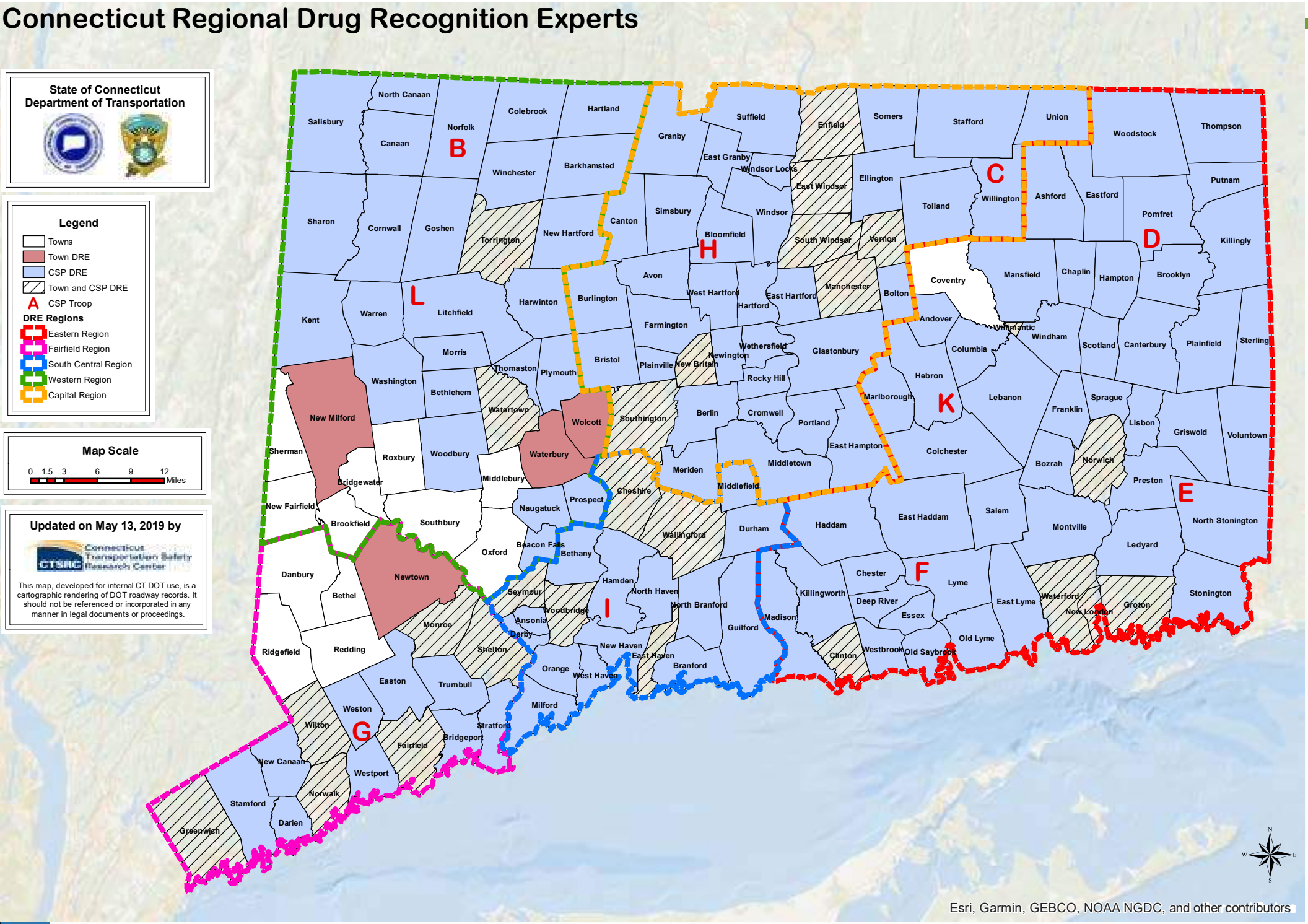
Performance Measure: From 2015-2018, there were 640 reported substance-impaired driving crashes that resulted in injury or death, which is an annual average of 160 crashes per year. Of these 640 crashes, 25 were fatal. The Naugatuck Valley Region's substance-impaired injury crashes make up 18% of the 3,489 statewide substance-impaired injury and fatal crashes.

Performance Objective: Increase the number of Drug Recognition Expert (DRE) practitioners in the Naugatuck Valley Region by 2025. The State's goal was to increase the DREs in Connecticut from 31 in 2016 to 45 in 2018. By January 2020, there were 61 DREs in the entire State. The objective is to increase DRE practitioners by one additional DRE per NVCOG member municipality by 2025. This would be an additional 19 DREs.



Source: NHTSA

Connecticut Regional Drug Recognition Experts



8.2.4 Distracted Driving

Distracted driving is another subset of the driver behavior emphasis area. It involves any motorist whose attention is diverted by a variety of activities besides navigation. Common sources of driver distraction are cell phone use, eating, drinking, or adjusting the radio. Due to the increase of text messaging, GPS navigation systems, and other technologies, distracted driving is on the increase.

Performance Measure: From 2015-2018 there were 915 reported injury and fatal crashes related to distracted driving, an average of 229 crashes annually. Four of the 915 crashes were fatal. The Naugatuck Valley Region's distracted driving injury and fatal crashes make up 24% of the total 3,744 distracted driving injury and fatal crashes in Connecticut.

Performance Objective: In line with the CT SHSP, the lack of useful crash data in the area of distracted driving has made it difficult to select a goal measuring the impacts on distraction-related crashes. The performance objective is to decrease fatalities and injuries as a result of crashes caused by driver distraction, especially those caused by handheld mobile phone use. To that end, the quantifiable performance objective is focused on hi-high visibility enforcement (HVE) activities and to maintain or increase the number of police agencies participating in high visibility distracted driving enforcement (HVE) from 50 in 2016 to 60 by 2025.



Source: WTNH.com



Source: portal.ct.gov/DOT

Strategies for Distracted Driving:

Enforcement: Conduct distracted driver observational surveys, similar to those done for seat belt use.

Enforcement: Update to the MMUCC 5th Edition to include distraction on involved non-motorists crashes.

Enforcement: Regionally conduct high visibility distracted-related enforcement, focusing on municipalities with a higher rates of distracted driving related fatalities and serious injuries.

Enforcement: In addition to high visibility enforcement, use unmarked patrol vehicles or spotter techniques in high traffic areas.

Education: Increase regional public outreach of distracted driving that reach specific populations of the targeted audience. Coordinate with NHTSA's calendar of outreach.

Education: Coordinate distracted driver messages with multiple agencies: DMV, AAA CT Chapter, Local and State law enforcement, Emergency Management Services, hospitals in the region, the YMCA, and driving schools to disseminate information and educate the public.

8.3 Older Drivers

The third emphasis area is older drivers, which are categorized as drivers 65 years and older. Although age itself is not the principal determinant in driving performance as people age their mental and physical abilities change which can affect their driving. The most common of these conditions is poor vision, but other cognitive skills may be affected, including memory and coordination. In addition, older drivers crash survivability is another safety concern. Due to the fact that population in the Naugatuck Valley Region is aging, this emphasis area is of particular importance.



Source: CDC.gov

Strategies for Older Drivers:

Education: Consider supporting stricter CT DMV policy of License Renewal for Senior Drivers and consider mandatory in person tests with vision exam for drivers 65 years and older.

Education: Coordinate with multiple agencies such as the United Way of Greater-Central Agency on Aging, the various local chapters of the YMCA, and the Connecticut Association of Senior Center Personnel to address older driver challenges and general safety.

Education: Using earned media outlets promote NHTSA's DriveWell Toolkit to aid older drivers.

Education: Continue to promote alternative ways for older people to get around and promote Know How to Go website.

Education: Encourage older drivers to use AARP Smart Driver Course available online or in a classroom in the region.

Performance Measure: From 2015-2018, there were 1,163 crashes in the Naugatuck Valley Region involving older drivers that ended in injuries or fatalities. This is an average of 291 crashes annually and 23 of the 1,163 older driver crashes from 2015-2018 were fatal.

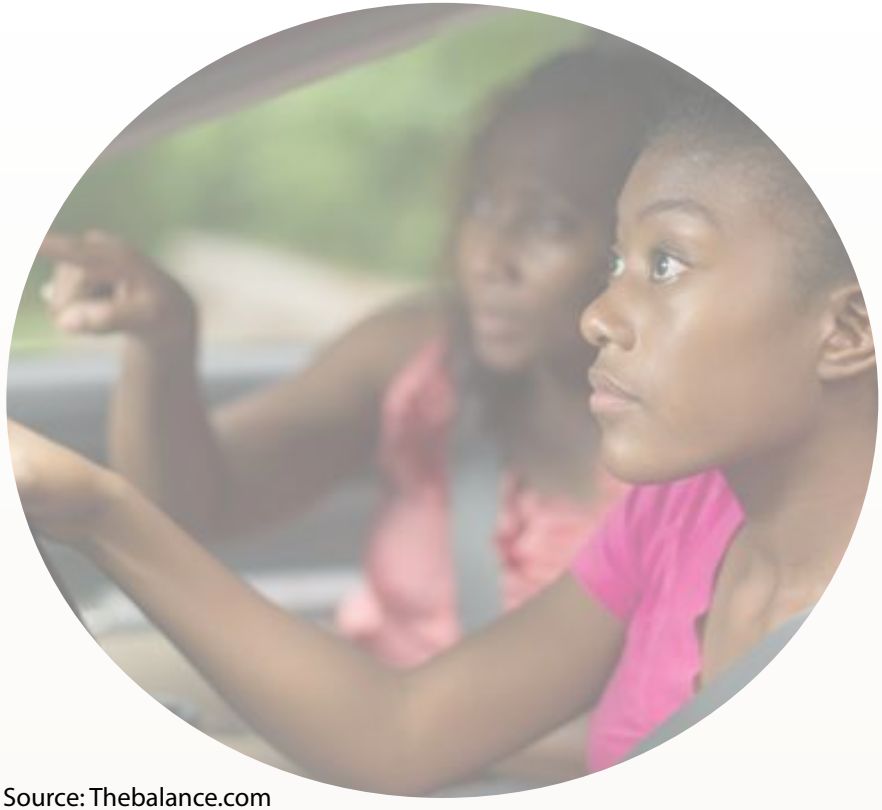
This region's older driver injury and fatal crashes make up 11% of the total 10,605 older driver injury and fatal crashes in Connecticut.

Performance Objective: Decrease the number of drivers aged 65 or older involved in fatal crashes from an average of almost 6 fatal crashes per year to annual average of 4 fatal crashes per year by 2025.

8.4 Young Drivers

Young drivers are motorists between the ages of 15-25. Due to their driving inexperience and behavior that can involve an increase in novelty seeking and risk-taking, this subset of drivers is at a greater risk of being involved in traffic crashes.

Connecticut has a graduated driver licensing (GDL) program, limiting passenger allowance in the first 12 months of licensing, imposing a driver curfew until their 18th birthday, requiring all passengers in vehicles to use seat belts, and prohibiting all use of cell phones and mobile electronic devices while driving. The State also requires pre-licensure driver education for drivers and parents.



Source: Thebalance.com

Strategies for Young Drivers:

Engineering, Education, Enforcement: Continue regional support for statewide graduated driver licensing.

Enforcement: Regional education and enforcement of Young Driver Laws, including the State's .02 BAC laws for young drivers by organizing and conducting high visibility enforcement campaigns.

Education: Coordinate young driver messages with multiple agencies in Spanish and English at DMV offices, auto insurance agencies, AAA CT Chapters, State and local law enforcement agencies, Emergency Management Services, public and private schools, local chapters of the YMCA, and the State Board of Education.

Performance Measure: From 2015-2018, there were 2,454 crashes involving young drivers that ended in injuries or fatalities. This is an average of 614 crashes annually and 26 of these 2,454 crashes were fatal. The region's young driver injury and fatal crashes make up 11% of the 22,204 young driver injury and fatal crashes in Connecticut.

Performance Objective: Decrease the region's four-year average of 6 young driver fatal crashes (2015-2018) to 2 or less annual young driver fatal crashes by the year 2025.

8.5 Non-Motorized Users

The non-motorized users emphasis area includes crashes involving pedestrians and bicyclists. Pedestrians and bicyclists are more susceptible to injuries and fatalities when involved in a crash with a motor vehicle. Pedestrian friendly environments are consistent with complete streets, desirable residential and employment sites, and sustainable/low cost transportation.

From 2015-2018, there were 751 crashes that resulted in bicyclist or pedestrian fatalities or injuries within the Naugatuck Valley Region, and 29 of these 751 crashes were fatal.

8.5.1 Pedestrians

Performance Measure: From 2015-2018, there were 638 injury and fatal pedestrian crashes in the Naugatuck Valley Region, 26 of these were fatal. That is an average of 160 crashes per year. The Region's pedestrian injury and fatal crashes make up 12% of the total 5,236 pedestrian injury and fatal crashes in Connecticut.

Performance Objective: The Naugatuck Valley RTSP is in congruence with the SHSP's goal of reducing pedestrian injury and fatal crashes 15% over the 5-year period of the SHSP (ending in 2025). This will result in preventing 24 combined pedestrian injury and fatal crashes per year.

8.5.2 Bicyclists

Performance Measure: From 2015-2018, there were 113 bicycle crashes in Naugatuck Valley Region and 3 were fatal. That is an average of 28 injury and fatal crashes per year. The Naugatuck Valley Region's bicyclist injury and fatal crashes make up 7% of the 1,610 injury and fatal bicycle crashes in Connecticut.

Performance Objective: The Naugatuck Valley RTSP is in congruence with the SHSP goal of decreasing bicyclist injuries and fatalities by 15% over the 5-year period of the SHSP (ending in 2025). This will result in preventing 4 combined bicyclist injury and fatal crashes per year.



CT-110 (Howe Street), Shelton



Source: safety.fhwa.dot.gov

Strategies for Non-Motorized Users

Education: Coordinate with state, regional, and local advocacy groups and bike store owners, including Bike Walk CT, the CTDOT Bike and Pedestrian Advisory Board, and other stakeholders to strategize best practices for the region.

Engineering: Coordinate with CTDOT on the *Pedestrian Signing and Pavement Marking Project,* which improves crosswalk visibility on local roads.

Education and Enforcement: Promote the Watch for Me CT Program.

Education: Regionally promote the CT Bike Ped Plan interactive bike map.

Engineering: Encourage municipal and regional adoption of the CTDOT's Complete Streets Policy, which ensures that the needs of all users of all abilities and ages (specifically including pedestrians, bicyclists, transit users, and vehicle operators) in the planning, programming, design, construction, retrofit, and maintenance activities related to all roads and streets as a means of providing a "safe, efficient transportation network which enhances quality of life and economic vitality."

Engineering: Continue to update the Regional Pedestrian and Bike Plan and to follow the feasible action plan steps in the upcoming complete streets plan.

Education and Enforcement: Educate regional law enforcement personnel on the 2014 Vulnerable User Law and the 2015 Bike Bill.

Education: Promote the Connecticut Technology Transfer Center's educational outreach initiatives that promote bike and pedestrian safety.



CT-115 (North Main Street), Ansonia

8.6 Motorcyclist Safety

Motorcyclist safety is an area of traffic concern both regionally and nationally. According to NHTSA 2015 Countermeasures that Work report, "per vehicle mile travelled, motorcyclists are about 26 times more likely than passenger car occupants to die in traffic crashes". (NHTSA Countermeasures that Work, 2015 8th edition). A motorcyclist travels at the same speeds and in the same lanes as other motorized vehicles, but without the same degree of protection.



Source: idrivesafely.com

Performance Measure: From 2015-2018, there were 583 motorcycle crashes that ended in injury or fatal to the persons involved, where 19 crashes were fatal. The annual average for injury and fatal motorcycle crashes is 146 crashes per year. Naugatuck Valley Region's motorcycle injury and fatal crashes make up 14% of the 4,040 total motorcycle injury and fatal crashes in Connecticut.

Strategies for Motorcyclist Safety:

Education: Continue to endorse CT DMV's Connecticut Rider Education Program (CONREP) for Motorcycle Safety. Current locations in the Naugatuck Valley Region include Naugatuck Valley Community College in Waterbury.

Engineering, Education, Enforcement: Continue to support the insurance industry's rate discount for CONREP graduates.

Engineering, Education, Enforcement: Coordinate with local motorcycle dealerships, CT DMV, hospitals in the region, and other public and private sector agencies to promote safety campaigns, encouraging riders to wear helmets, goggles and protective clothing and gear, and for motorists to share the road. These campaigns can be amped up during May's Motorcycle Safety Awareness Month.

Education, Enforcement: Regionally support None for The Road campaign and the www.rider4ever.org encouraging riders to not drink and ride and to ride safely.

Education: Regionally promote various motorcycle safety awareness resources, such as Helmetcheck.org, the Motorcycle Safety Foundation, Interactive Scenic Ride Map, and CT Travel Smart websites.

Performance Objective: The Naugatuck Valley RTSP is in congruence with the SHSP goal of decreasing the number of motorcyclist fatalities from the 4-year average of 5 to 3 in 2025.

There were 7 unhelmeted fatalities from 2015-2018, which is an average of 2 per year. The goal is to increase media outreach and encourage motorcycle riders to wear protective clothing and gear and to decrease the number of unhelmeted fatalities from the 2015-2018 average of 2 per year to 0 per year by 2025.

8.7 Traffic Incident Management

A traffic incident is an event (such as a vehicle crash, work zone activity, or vehicle breakdown) that disrupts the normal operation of the transportation system. Traffic incidents are an important concern in Connecticut because they can potentially cause safety issues, increasing the risk to uninvolved motorists, congestion delays, and secondary incidents. The CTDOT recommends a statewide Traffic Incident Management (TIM) plan be implemented to coordinate the use of human, institutional, mechanical, and technological resources to reduce the duration and impact of incidents.

TIM "consists of a planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible." Effective TIM reduces the duration and impacts of traffic incidents, improves the safety of motorists, crash victims, and emergency responders.

Performance Objectives: In congruence with the CT SHSP's goals, the Naugatuck Valley Region's goal is to promote the safety of motorists, crash victims, and incident responders by reducing secondary crashes and associated fatalities and serious injuries. In order to achieve this goal the region could increase its first responders attendance in incident management training by 50%. Currently, the NVCOG region participates on the Greater Hartford TIM Coalition which has prioritized this emphasis area and has developed a plan to reduce TIM related injury and fatal crashes.



Source: FHWA

Strategies for Traffic Incident Management

Education: Continue to support the CT Travel Smart website and to promote this resource regionally through media and public outreach campaigns.

Education: Continue to conduct public awareness programs for effective on-scene traffic incident management by road users.

Enforcement: Support the State operated State Farm Safety Patrol Program.

Engineering: Continue collaborating with CTDOT to implement Intelligent Transportation Systems (ITS) to update the freeway traffic management system and improve incident management efforts.

Education: Support the CT SHSP objective to establish a statewide TIM program with a lead agency to administer clearly defined responsibilities that meet the requirements of the National Incident Management System (NIMS).

Education: Continue the planning, implementation, and coordination of activities, such as the adoption of a Unified Response Manual, updating of diversion plans, TIM training, and participation in the FHWA annual TIM Self-Assessment. Also work on the development and implementation of a public awareness campaign for motor vehicle laws relating to highway incidents such as the "Move It" and the "Move Over."

Education: Continue to research the benefits and impacts of providing a regional approach to operating and maintaining local traffic signal systems. Collaborate with the Greater Hartford TIM Coalition to develop best practices.

Enforcement: Conduct after Action Reviews to improve response and scene management.

Engineering: Include Weather Responsive Traffic Management (WRTM) strategies, such as Road Weather Information Systems (RWIS).

Engineering Education, and Enforcement: Support the development and tracking of TIM performance metrics following national standards and definitions.

9 Technological Advances Affecting Traffic Safety

9.1 Connected and Automated Vehicles

Connected vehicle (CV) and automated vehicle (AV) technologies (described below) are in various stages of discovery, development and deployment nationwide. These technologies have the potential to play an integral role in improving the future of traffic safety. According to the National Highway Traffic Safety Administration (NHTSA), of all motor vehicle crashes on public roadways today, "94% are due to human error or choices." Each year in Connecticut these human errors or choices results in more than 100,000 crashes, more than 30,000 injuries and more than 250 deaths.

Automated Driver Assistance Systems

Today, most of the newer motor vehicles sold in the United States have at least some form of automated driver assistance system (ADAS) technologies included that increase safety. ADAS is the hardware and software within vehicles in that is collectively capable of supporting or providing alerts to the driver (e.g. blind spot detection, lane departure warning, front collision warning, etc.) or assisting the driver to automatically perform some of the real-time operational and tactical functions in on-road traffic (steering, accelerating, braking, etc.). The term ADAS includes the Society of Automotive Engineering International (SAE) driving automation levels 0, 1 and 2. Note, for vehicles equipped with ADAS, the driver is still responsible for performing most or all of the driving tasks, thus active driver performance, supervision and/or intervention is required.

Automated Driving Systems

The future of automated vehicles is focused on automated driving systems (ADS). These technologies are being studied, developed and pilot tested around the world today and have the potential to exponentially improve safety and save lives. ADS is the combination of hardware and software within vehicles that are collectively capable of performing all of the real-time operational and tactical functions required to operate a vehicle in on-road traffic on a sustained basis, regardless of whether the ADS is limited to a specific operational design domains under which it is able to function. The term ADS, includes SAE driving automation levels 3, 4 and 5. The primary difference between these levels has to do with the conditions under which the ADS is able to perform and whether or not there are any expectations for a human driver to intervene. The performance of level 3 and level 4 driving automation is the primary focus for research, development and pilot testing around the world today.
See page 168 for an info graphic showing the various levels of driving automation.



Source: NHTSA

Connected Vehicles

In addition to the automated vehicle technologies described above, the development and implementation of connected vehicle (CV) technologies also have significant promise to improve safety on public roadways. According to NHTSA, 80% of unimpaired crashes could be prevented by the deployment of CV technologies. [1] CV are described as vehicles that use specific wireless communication protocols (e.g. DSRC, C-V2X, 5G) to communicate with their surroundings for the purpose of improving traffic flows and preventing collisions. These technologies are able to send and receive real time transportation safety, mobility and other travel data to and from other vehicles, roadside infrastructure (e.g. traffic signals), users of the transportation system (e.g. drivers, pedestrians) and even the cloud.



Source: NHTSA

Several CV technologies have undergone many years of national research, testing and standards development and could soon begin to be deployed nationwide on a systematic scale. However, standing in the way of large nationwide deployments are key federal policy decisions by the Federal Communications Commission (FCC) to preserve the 5.9 GHz spectrum and the resulting competition between which communication protocols (e.g. DSRC, C-V2X, 5G) will dominate the market. Additionally, both state and local infrastructure owner operators (IOO) will ultimately play a significant role in the implementation of connected vehicle to infrastructure (V2I) technologies. In order to be future proof, IOOs will need more certainty from national direction, market adoption and standards before upgrading their infrastructure in support of V2I.

1 NHTSA, https://www.its.dot.gov/factsheets/pdf/safetypilot_nhtsa_factsheet.pdf

Connecticut Update

The CTDOT is currently undertaking two projects along a 10-mile segment of the Berlin Turnpike to replace and upgrade 28 signalized intersections near the CTDOT headquarters building. These projects will serve as early adopters for testing and deploying emerging technologies, including connected vehicle to infrastructure (V2I) applications that have the potential for improving safety and mobility, enhancing CTDOT traffic signal operations and reducing congestion. Both projects will require installation of modern traffic signal controllers, new backhaul communications (fiber) and include the implementation of adaptive signal control technology and automated traffic signal performance measures software.

As part of the replacement and upgrade, the CTDOT will install roadside units (RSU) at each intersection and equip various state-owned fleet vehicles with corresponding on-board units (OBU) to test and deploy different V2I applications (e.g. signal phasing and timing, signal priority, etc.). Both projects will investigate the application of dual mode RSUs capable of sending and receiving V2I data using dedicated short-range communications (DSRC) and current generation cellular networks for connected vehicles, typically referred to as C-V2X. Both projects will also involve the submission of licensing applications to the Federal Communications Commission (FCC) to utilize multiple channels within the 5.9 GHz spectrum for connected vehicle technology. Once operational, the CTDOT looks to apply lessons learned from these projects as a template for other traffic signal replacement projects moving forward (where applicable).

In addition to the Berlin Turnpike, the CTDOT also owns and operates an ideal facility for piloting and deploying AV transit technologies – the CTfastrak bus rapid transit (BRT) corridor. This facility is a nine-mile, bus-only, fixed guideway in central Connecticut that connects four municipalities including the state's capital city of Hartford, West Hartford, Newington and New Britain. Success with AV transit technologies here has the potential to advance the marketability of near-term AV transit technologies as well as improve service and efficiencies that could free up resources to be deployed in other locations that have transit needs. The Department will continue to target the CTfastrak as a priority area for testing and deploying AV transit technologies.

Over the next few years, the Department and its assembled team, including the Federal Transit Administration (FTA), Center for Transportation and the Environment (CTE), New Flyer Industries, Robotic Research, Inc., University of Connecticut (UConn), and the Capitol Region Council of Governments (CRCOG), will be working collaboratively to advance a state-of-the-art pilot project to test the performance and operation of full size, automated, and battery electric buses in revenue service on the CTfastrak BRT. This demonstration project is anticipated to deploy three 40' New Flyer Excelsior Charge battery electric buses equipped with increasing levels of driving automation, capable of up to high automation (SAE level 4). Automated driving capabilities demonstrated will include steering, precision docking at CTfastrak station platforms, and platooning.



The automated buses deployed as part of this project will always have a safety attendant behind the wheel to drive and/or take control of operations as necessary. The buses will be operated and maintained by the Hartford division of CTtransit, which is the brand name for transit services operated by private transit providers under contract with the Department. Extensive testing will take place without passengers at an off-road test facility and on CTfastrak prior to the buses operating in service for passengers. Traffic signals along the CTfastrak fixed guideway will also be updated in order to broadcast connected vehicle to infrastructure signal phasing and timing (SPaT) data and MAP data. This broadcasted SPaT and MAP data will be integrated with the automated driving system on the buses to further enhance safety through intersections.

9.2 Concerns with Data Collection

Connecticut uses the Model Minimum Uniform Crash Criteria Guideline (MMUCC) developed by the National Highway Traffic Safety Administration (NHTSA) and the Governors Highway Safety Association (GHSA).

The purpose of this is to standardize data nationally, so that collected data can be compared and used for strategies to prevent crashes. There are some factors that affect traffic safety that are difficult to observe and measure:

- *Alcohol and drugs, low alcohol concentration, other drugs including prescription, illicit, and over-the- counter drugs*
- *Fatigue and distraction*
- *Communications technologies and advanced driver assistance systems*
- *Factors involving teen or novice driving*

MMUCC no longer defines how data elements should be collected (at scene/linked or derived). States are encouraged to link or derive data wherever feasible to minimize the impact on law enforcement. In January 2015, Connecticut initiated the transition to the updated electronic crash reporting system. The purpose is to help local police departments obtain public safety equipment. Improved tools, resources and technology would allow local police departments to better implement new E-Crash investigation and enforcement initiatives.[1]

1.CT Traffic Records Strategic Plan (CT-TRCC) July 1, 2020

10. Implementation, Evaluation & Update Requirements

10.1 Implementation

The Naugatuck Valley RTSP is a supplemental document to the NVCOG Transportation Plan, the Transportation Improvement Plan (TIP), and the Unified Planning Work Program (UPWP). Collectively, these plans can assist the region in prioritizing projects that will improve roadway safety. The member municipalities should be dedicated to the implementation of safety improvements and the reduction of fatal and injury crashes based on appropriate countermeasures, some of which are included in this report.

NVCOG, the NVCOG Transportation Committee, member municipalities, and CTDOT have provided their local and regional knowledge, input and strategies to this safety plan. Development of this plan was an iterative process with municipal and regional input included from the onset. Throughout the implementation of this plan, NVCOG staff and the Transportation Committee can provide guidance and be dedicated to bringing appropriate strategies to fruition.

NVCOG could provide oversight of this safety effort and report progress to CTDOT and the member municipalities at least once a year. Each emphasis area could be reported at a NVCOG monthly meeting to ensure progress is being made and to provide member municipalities the opportunity to evaluate the implemented strategies. It is recommended that the implementation of each strategy be documented, and the performance measures monitored to provide transparency and ensure progress. Reporting could detail current strategy activities, accomplishments, safety performance measures, and any issues that may need additional support or guidance.

10.2 Evaluation

The Naugatuck Valley RTSP evaluation process will follow the CT SHSP required adherence to the 2016 FHWA Guidance on Strategic Highway Safety Plans and the FAST Act. The RTSP is to be updated every five years. The COG should be responsible for communicating with the member municipalities and CTDOT, and in addition routinely evaluate safety data to determine the selected emphasis areas are still relevant. If any strategies prove ineffective or irrelevant, the region can make appropriate adjustments to their approach.

Areas for Evaluation and Implementation:

- *Are strategies current and relevant to ongoing data trends?*
- *Are strategies being incorporated into local, regional, and state projects?*
- *Is the data showing that fatalities and injuries in NVCOG are trending towards a 15% reduction by 2022?*
- *Does the annual reporting reflect the RTSP performance objectives?*

Reporting should include information on which strategies are being implemented, what goals have been accomplished, the progress of performance measures, best practices and any lessons learned.

Recommended Steps to be taken by NVCOG

- Annual reporting of RTSP strategies and performance measure progress.
- Coordination with CTDOT's SHSP committee and emphasis area sub committees to collaborate on state and regional goals.
- Annual review of goals and development of new strategies when warranted.



CT-188 (Quaker Farms Road), Oxford

10.3 Updating the RTSP

The Regional Transportation Safety Plan is a living document congruent with the CT SHSP. Federal regulations require an update for the SHSP every five years and this regional safety plan will follow this same update process, ensuring federal compliance. Each COG is responsible for updating their regional transportation safety plan every five years. The regional plan will adhere to the same mandates, with updates reflecting the most current federal surface transportation legislation.

10.4 Implementation Periods Defined

For the purposes of the RTSP, short-term is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right-of-way acquisition). Mid-term recommendations may be costlier and require establishment of a funding source, or they may need some additional study or design before implementation. Nonetheless, they should not require significant lengths of time before they can be implemented. Typically, they should be completed within a window of eighteen months to two years. Long-term improvements are those that require substantial study and engineering and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more after funding is secured.

10.5 Other Resources

Connecticut Technology Transfer Center's Safety Circuit Rider and Traffic Signal Circuit Rider Programs

The Connecticut Technology Transfer Center's Safety Circuit Rider Program and the Traffic Signal Circuit Rider Program are statewide programs aimed at reducing the frequency and severity of fatal and injury crashes by assisting and supporting local road safety authorities. Both programs offer safety-related information, educational programs, technical assistance, and various training opportunities at no cost to all Connecticut municipalities.

The following assistance is available through the Safety Circuit Rider Program:

- Coordination of Road Safety Assessments (RSAs)
- Collection and analysis of traffic volume data
- Identification of low-cost safety improvements
- Assistance in the development of Local Road Safety Plans
- Development of a Connecticut Toolbox of Safety Resources
- Development of a series of Roadway Safety Briefs
- Delivery of Local Road Safety Training

The following assistance is available through the Traffic Signal Circuit Rider Program:

- Support for the development of management plans with clear goals and objectives for the operation, maintenance, and design of traffic signal infrastructure
- Training on traffic signal topics relevant to local agencies through seminars, technical briefs, and site visits
- Assistance for the development of traffic signal timing at isolated intersections and coordinated systems, including evaluating relevant performance measures
- Promotion of opportunities for federal-aid funding for traffic signal operations and encourage the integration of traffic signal operations into metropolitan transportation plans and programs
- Equipment Loan Program

Appendix A

Municipal Reports

Introduction to the Individual Municipal Reports

The town reports in **Appendix A** provide a more in-depth analysis and overview of traffic safety in each of the 19 NVCOG member municipalities. Each municipal report includes basic demographic information, data identified corridors, intersections and bike and pedestrian crash totals. In addition to the data-identified sites, locations that exhibit safety concerns for the municipal representatives were documented. From the data identified and prioritized locations systemic improvements and site-specific strategies were developed to minimize or prevent fatal and injury crashes in the future. These are listed in tabular format with estimated costs.



Mountain Road/CT-229 (Middle Street), Bristol

CITY OF ANSONIA

2016 US Census Population Estimate: 18,732
Area: 6.20 square miles
Population Density: 3,021 persons per square mile
2016 Vehicle Miles Traveled (VMT): 80,598,205
2016 VMT per Capita: 4,303
Setting: Urban
Town Representatives: Andrew Cota (Chief of Police)
Data Identified Data-Driven Corridors: N/A
Data Identified High Crash Intersections: Division Street and CT-334-Pershing Drive
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2018: 20
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 360


North Main Street

Overview

Ansonia, also referred to as "The Copper City", is a city in New Haven County on Naugatuck River bordered by Seymour to the north, Woodbridge to the east, Derby to the south, and Shelton to the west. The City's main thoroughfares are CT-8, CT-115, and CT-243.

City Input

Fatal Crashes from 2015-2018

- Ford Street - Young pedestrian fatal crash.
- CT-115 (Main Street) and Bridge Street - Motorized angle fatal crash.

SR-727 (Pershing Drive) and Division Street

This is a signalized, four-way intersection with multiple lane approaches and high frequency rear-end and angle crashes. The traffic volume is high as this serves as the main access point to CT-8 (General Samuel Jaskilka Highway). The curb cuts from gas stations and the pharmacy contribute to high conflict points.

CT-115 (Main Street/Derby Avenue) and CT-243 (Elm Street)

This intersection has high frequency angle crashes and high traffic volumes. In the past, the State has made improvements to this intersection, but it is still a high-crash location.

CT-243 (Platt Street) and Spring Street

This is a skewed intersection with sight distance issues.

CT-243 (Pulaski Highway/Prindle Avenue/Platt Street/Elm Street)
This is a high frequency crash corridor with horizontal curvature, some curves are 90 degrees State has applied high-friction surface treatment which has mitigated some crashes, but many crashes still occur during inclement weather. The State does a good job plowing state-owned roads in the City. This corridor is close to many of the town schools and sidewalks and RRFB will be installed on the corridor to protect high school pedestrians. The CT-243 (Pulaski Highway/Prindle Avenue/Platt Street/Elm Street) corridor has through traffic exiting and entering from the Town of Woodbridge.

Bridge Street and West Main Street
This is a high-crash signalized intersection. A Target store nearby is a major traffic generator. The Chief of Police suspects that sun glare might contribute to high crash numbers. Installation of traffic signal retroreflective backplates could mitigate the sun glare visibility issue.

City divided by the Naugatuck River
Three bridges in the city connect the east to the west side, concentrating traffic at these locations.

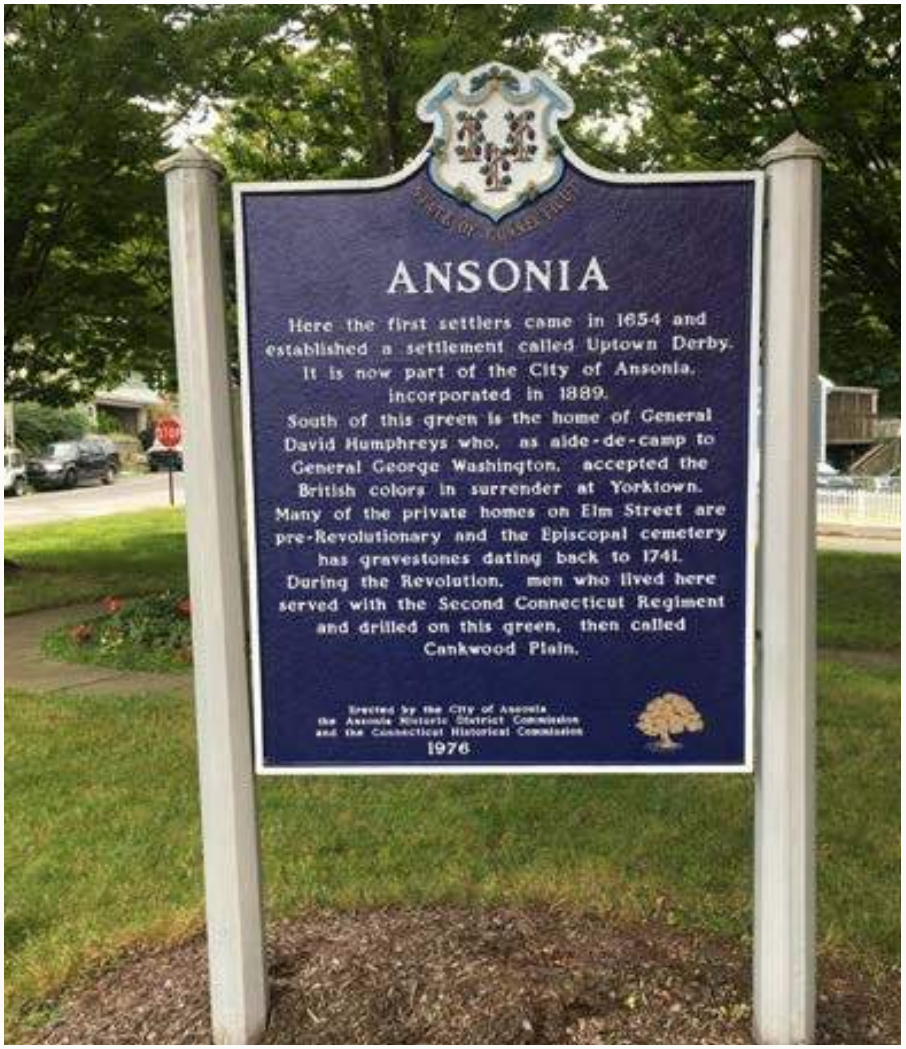
North State Street and CT-115 (North Main Street)
This is a skewed, T-intersection with a stop-controlled side street which has limited sight distance. The intersection has a steep downgrade when approaching the side street and there is an uncontrolled mid-block pedestrian crossing.

Wakelee Avenue
This is the main north-south corridor through the City, adjacent to CT-8 (General Samuel Jaskilka Highway). Crashes occur throughout the corridor, which has high-conflict points at driveways and intersections.

CT-8 on and off ramps near northern City line
This is the sole exit for Southbound CT-8 (General Samuel Jaskilka Highway) motorists in the City of Ansonia and has high crash frequency.

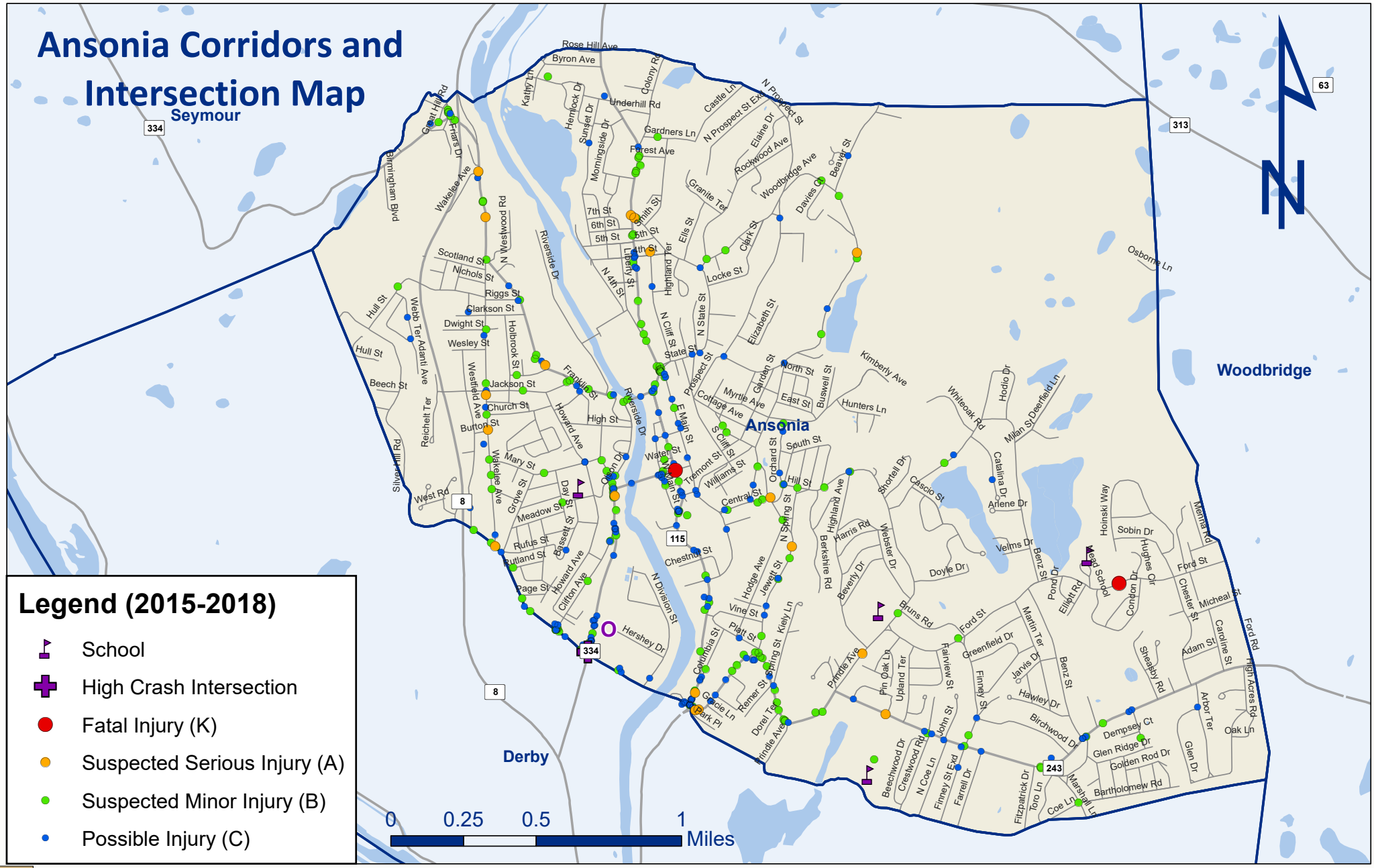
Bikes and Pedestrians
The City has had some minor bicycle injury crashes and pedestrians rarely use crosswalks. Education may be needed.

Enforcement
The City is working on installing a speed trailer and a data collecting trailer.



Source: VN Engineers

Ansonia Corridors and Intersection Map



Ansonia Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	0	1
Suspected Serious Injury (A)	6	8	2	3
Suspected Minor Injury (B)	43	46	38	42
Possible Injury (C)	36	40	44	50
Total Injury Crashes	86	94	84	96

Field Site Inventory

CT-115 (North Main Street)/North State Street

This is a skewed stop-controlled intersection. The existing wall on the private property, the utility pole and the vegetation on the north-east corner impede the sight distance from North State Street looking north onto CT-115 (North Main Street). In addition there is horizontal curvature along CT-115 (North Main Street) just north of North State Street. Looking south from CT-115 (North Main Street) has challenges due to vegetation on the southeast corner. There is a crosswalk on the southern leg of CT-115 (North Main Street) with an outdated pedestrian crossing sign.

CT-115 (North Main Street) consists of one travel lane in each direction and a shoulder. There is a bus stop at this intersection and the CT-15 (North Main Street) posted speed limit is 30 MPH. North State Street consists of one travel lane in each direction. There are faded pavement marking lines.

Recommendations:

- Trim vegetation.
- Relocate pole.
- Realign intersection.
- Update pedestrian crossing signs.
- RRFBs.
- Restripe pavement on North State Street.
- Investigate curve signage and intersection ahead warning signs.



CT-115 (N Main St)



CT-115 (N Main ST)/N State St

Field Site Inventory

SR-727 (Pershing Drive)/Division Street

The intersection of SR-727 (Pershing Drive) and Division Street is a four-way, signalized intersection in a built-up commercial area. The SR-727 (Pershing Drive) Northbound approach consists of an exclusive right-turn lane, two through lanes and an exclusive left-turn lane. The SR-727 (Pershing Drive) Southbound approach consists of an exclusive left-turn lane, a through lane and shared through-right turn lane. The Division Street Westbound approach consists of an exclusive left-turn lane, through lane and exclusive right-turn lane. The Division Street Eastbound approach consists of an exclusive left-turn lane and shared though-right turn lane. Crosswalks are located across the SR-727 (Pershing Drive) Southbound approach and Division Street Westbound approach. Crashes have been reported associated with the high turn-over driveway onto SR-727 (Pershing Drive) associated with the gas and convenience store located on the northwest corner of the intersection. The driveway is under stop control and located approximately 175 ft north of the intersection. Vehicle queuing associated with the SR-727 (Pershing Drive) Southbound approach to the intersection occurs past the commercial driveway blocking vehicles from exiting, particularly vehicles exiting to the north due to the three SR-727 (Pershing Drive) Southbound travel lanes. Driveway-exiting vehicles are many times "waved out" by a queued motorist in the first lane only to be sideswiped by a vehicle in the second lane.

Recommendation:

- Consider prohibiting left-turns for the commercial driveway through signage and/or physical constraints.



SR-727 (Pershing Dr)/Division St

Ansonia Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-115 (North Main St)/North State St	Sight distance	Remove vegetation	Low
		Relocate pole	Low
		T-up intersection	Medium
	Mid block pedestrian crossing	Update pedestrian crossing signs	Low
		RRFB	Medium
	Speeding	Restripe pavement on North State Street to 11' lanes	Low
SR-727 (Pershing Dr)/Division St	Driveway-related crashes	Consider prohibiting left-turns for the commercial driveway through signage or physical constraints	Low-Medium
Bridge St and West Main St	Sun glare-related crashes	Traffic signal retroreflective backplates	Low-Medium
Citywide	Pedestrian safety	Ensure pedestrian crossings are optimally located	Low-Medium
		Education - Watch for Me CT	Low
	High curb cut-related crashes	Corridor access management	Low-Medium
		Dynamic speed feedback signs	Low
	Crashes at intersections	Traffic signal retroreflective backplates	Low-Medium
		Consider clearance interval retiming	Low-Medium

TOWN OF BEACON FALLS

2016 US Census Population Estimate: 6,095
Area: 9.90 square miles
Population Density: 616 persons per square mile
2016 Vehicle Miles Traveled (VMT): 92,737,375
2016 VMT per Capita: 15,215
Setting: Rural/Suburban
Town Representatives: Chris Bielik (First Selectman), Jamie Gracy (PW), Eddie Rodriguez (Town PD)
Data-Identified High Frequency Crash Corridors: N/A
Data-Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals: 3
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 53


Bethany Road/Munson Road

Overview

Beacon Falls is a rural/suburban town in New Haven County located in southwestern CT, where it is bisected by the Naugatuck River. It is bordered by Naugatuck to the north, Bethany to the east, Oxford to the west, and Seymour to the south. The Town's main thoroughfares are CT-8, CT-42, CT-721, and CT-852.

Town Input

Blackberry Hill Road
This is a local road with steep vertical curvature. It is used as a cut through between Beacon Falls and CT-63 (Amity Road) via Falls Road in the Town of Bethany. There are no grade warning or chevron curve signs. The roadway conditions are a concern of the Town, particularly in winter due to the steep grade. In an effort to lower speeds, 25 MPH speed limit signs will be installed to replace the 35 MPH speed limits signs on this roadway.

Rimmon Hill Road
This is a local roadway through a residential area with horizontal and vertical curvature. The Woodland Regional High School football stadium, located at the top of the roadway has parking on the opposite side of the roadway and dark not-lighted crossings are present. The faded pedestrian crossing markings and a lack of advanced pedestrian warning signs in dark-not lighted conditions are a concern for the Town of Beacon Falls. Furthermore, the approach is along a horizontal curve with limited sight distance. The Town wants additional protection for the pedestrians and has been in contact with Eversource to install a utility pole to mount lighting at the crosswalk. The horses also use Rimmon Hill Road to cross on Saturday and Sundays. The horses' owners place an in-street horse crossing warning sign at this location.

CT-42 (Pines Bridge Road/Marilyn Avenue/South Main Street/Bethany Road/Munson Road/Lasky Road)
This is a main, east-west corridor through the town. The majority of crashes are due to higher ADT, especially through the center of town.

CT-42 (Bethany Road/Munson Road)/Blackberry Hill Road/Skokorat Street)
This is a stop-controlled four-way intersection with a high concentration of crashes.

Beacon Valley Road
This corridor has a high concentration of crashes. A current construction project on CT-8 (Ansonia-Derby-Shelton Expressway) Exit 25 (Cross Street) is forcing trucks and the motorists through Beacon Falls onto Beacon Valley Road. The residents are unhappy with the traffic diversion through their neighborhood. The project will be ending soon.

Skokorat Street
This local roadway has vertical and horizontal curvature. The town representatives believe the crashes did not show in the collected data because they may have been classified as property damage only. This roadway has heavy traffic and high curbs cuts, though it is located in a residential land use. This roadway is used as a cut-through to CT-67 (New Haven Road/Bank Street/Oxford Road) in the Town of Seymour. The speed limit is posted at 25 MPH and is part of the CTDOT Curve Signing Program.

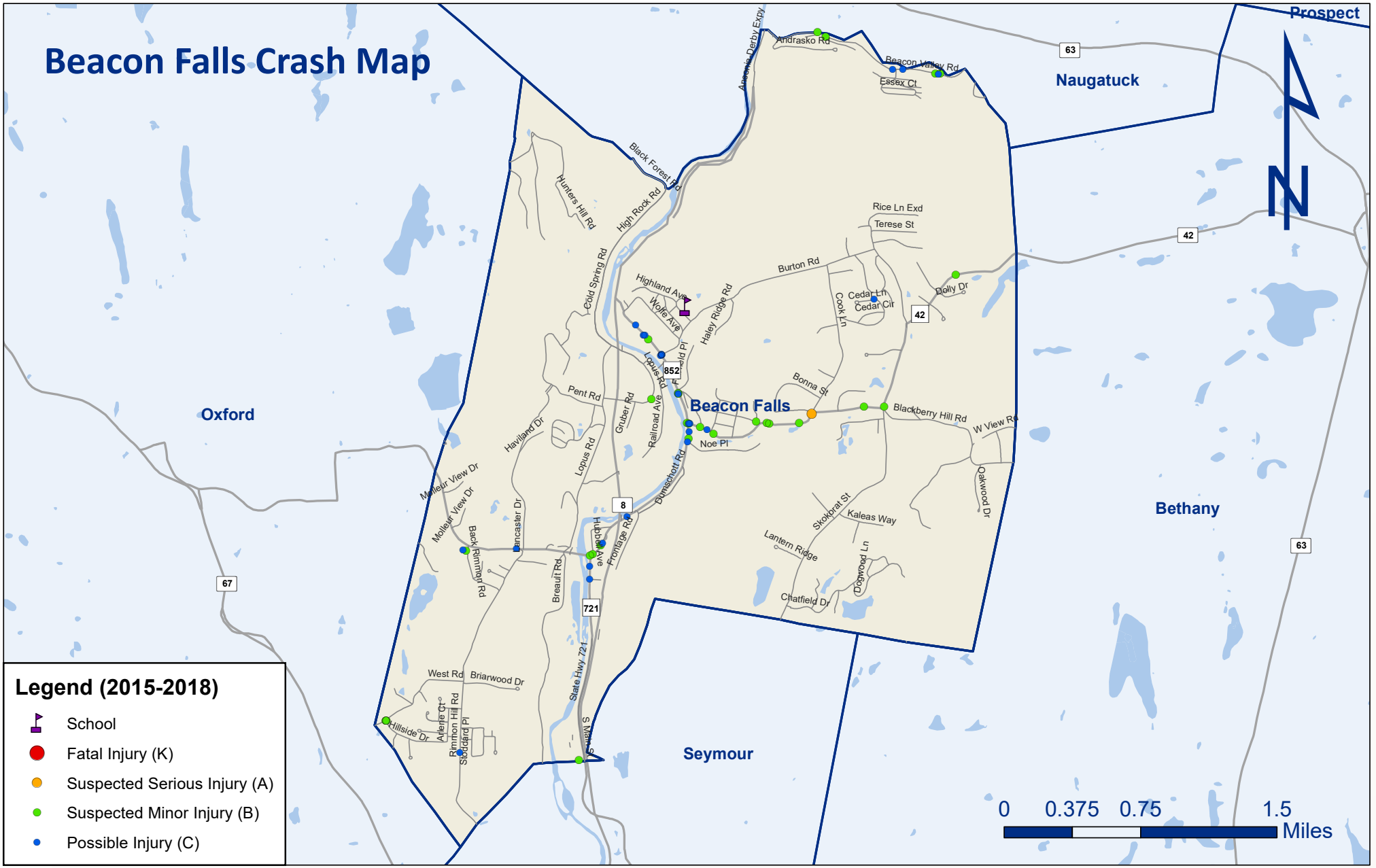
Bicyclists and Pedestrians
The Naugatuck River Greenway segment runs from Burton Road to CT-42 (Munson Road/Lasky Road). This greenway has potential to extend to CT-8 (Ansonia-Derby-Shelton Expressway) with the availability of future funding. The Town of Beacon Falls does not have many cyclist due to roadway geometry.

Enforcement
The Beacon Falls Police Department is using dynamic speed feedback signs in Town. Several speed feedback signs are permanently mounted on Burton Road and Beacon Valley Road. The town will be placing additional signs with data collection abilities at Skokorat Street and Rimmon Hill Road.


Rimmons Hill Road

Beacon Falls Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	0	0
Suspected Serious Injury (A)	1	0	0	0
Suspected Minor Injury (B)	8	8	6	6
Possible Injury (C)	6	7	5	6
Total Injury Crashes	15	15	11	12


Beacon Falls Crash Map
Prospect
Naugatuck
Oxford
Beacon Falls
Bethany
Seymour
Andrasko Rd
Beacon Valley Rd
Essex Ct
Ansonia-Derby Expy
Black Forest Rd
Hunters Hill Rd
High Rock Rd
Cold Spring Rd
Rice Ln Exd
Terese St
Burton Rd
Highland Ave
Wolfe Ave
Haley Ridge Rd
Cedar Ln
Cedar Cir
Cook Ln
Dolly Dr
Bonna St
Blackberry Hill Rd
W View Rd
Pent Rd
Lopus Rd
Gruber Rd
Railroad Ave
Noe Pl
Dumschott Rd
Havilland Dr
Mollear View Dr
Back Rimmon Rd
Lancaster Dr
Hubbell Ave
Frontage Rd
Breault Rd
Skokorat St
Kaleas Way
Lantern Ridge
Dogwood Ln
Oakwood Dr
Chatfield Dr
West Rd
Briarwood Dr
Hillside Dr
Arlene Dr
Rimmon Hill Rd
Stoddard Pl
State Hwy 721
S Main St
42
63
67
8
721
852
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.375 0.75 1.5
Miles

Field Site Inventory

Blackberry Hill Road

Blackberry Hill Road is a rural roadway consisting of one travel lane in each direction and no shoulders. It has steep down grade and horizontal curvature, but there are no grade advisory signs or chevron curve signs. Blackberry Hill Road intersects CT-42 (Bethany Road/Munson Road), and Skokorat Street at a wide off-set, four-way stop-controlled intersection.

Recommendations:

- Install chevron curve signs and advance curve warning signs.
- Add intermittent center-line rumble strips along down grade.
- High friction surface treatment.
- Install grade advisory signs.
- Bump out intersection and realign.



Blackberry Hill Rd/CT-42 (Bethany Rd/Munson Rd)/Skokorat St

Rimmon Hill Road

Rimmon Hill Road is a rural roadway consisting of one travel lane in each direction, no shoulders, and a narrow cross-section. This road has horizontal and vertical curvature. At the Woodland Regional High School football stadium, there is a faded pedestrian crosswalk linking the stadium entrance to a parking lot. There are no advanced pedestrian warning signs and illumination is limited due to the positions of the utility poles on Rimmon Hill Road. The town stated that it is a highly active crossing when there is a football game.

Recommendations:

- Install chevron curve signs and advance curve warning signs.
- Install pedestrian crossing ahead signage.
- Enhance crosswalk visibility.
- Provide vegetation management.


Rimmon Hill Rd/Woodland Regional High School football stadium

Beacon Falls Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Blackberry Hill Road	Speeding	Traffic calming	Low
		Enforce speed limit	Low-Medium
		Dynamic speed feedback signs	Low
	Horizontal and vertical curvature	Centerline rumble strips through the curves	Low
		Enhanced delineation	Low
Rimmon Hill Road	Pedestrian safety	Install pedestrian crossing ahead signage	Low
		Add crosswalk visibility enhancements	Low
		Add crosswalk lighting	Low
		Provide vegetation management	Low
Skokorat Street	Vertical and horizontal curvature	Horizontal curve warning signs scheduled to be installed	Low
	Speeding	Dynamic speed feedback signs	Low
		Enforcement	Low-Medium
CT-42 (Bethany Road/ Munson Road)/Blackberry Hill Road/Skokorat Street	High crashes at intersection	Investigate sight distance	Low-Medium

TOWN OF BETHLEHEM

2016 US Census Population Estimate: 3,447
Area: 19.70 square miles
Population Density: 175 persons per square mile
2016 Vehicle Miles Traveled (VMT): 16,510,045
2016 VMT per Capita: 4,790
Setting: Rural
Town Representatives: Lenny Assard (First Selectman), Conan Delia (Resident State Trooper)
Data Identified Data-Driven Corridors: N/A
Data Identified Data-Driven Intersections: N/A
Bike and Pedestrian Injury and Fatal Crashes, 2015-2018: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 35



CT-132 Kasson Rd

Overview

Bethlehem is a rural town in Litchfield County, bordered by Morris to the north, Watertown to the east, Washington to the west and Woodbury to the south. The Town of Bethlehem's main thoroughfares are CT-61 and CT-132.

Town Input

Fatal Crashes from 2015-2018

- There was one fatal crash as a result of a motorist reversing into a ditch and being ejected through the sunroof.

CT-132 (Lakes Road/East Street)/Magnolia Hill Road/Nonnewaug Road

This is a high-frequency crash location with stop control on the local road. CT-132 (Lakes Road/East Street) has a sharp curve, and Nonnewaug Road intersects in the middle of the curve where sight distance is extremely limited. The trees along CT-132 (Lakes Road/East Street) further inhibit the sight distance, and the town believes removing some of them would improve the safety of this intersection. This intersection is a site of a 2009 motorcycle fatal angle crash. CTDOT had developed two concept plans to redesign the intersection, and the town is amenable to the design, but not sure what phase the project is in currently.

CT-132 (Kasson Road) and Hard Hill North and South

This high-frequency crash location has stop control on the local roads. The sight distance is limited due to the vertical curvature along CT132 (Kasson Road). The State has since installed a flashing yellow beacon at this intersection.

CT-61 (Main Street North)/Bellamy Lane/Kasson Road

This is a high-frequency crash, four-way intersection with stop control on Bellamy Lane and Kasson Road. Bellamy Lane approach and stop bar are skewed at the intersection. The utility poles along Bellamy Road at CT-61 (Main Street North) block sight lines for the motorists exiting Bellamy Lane. This intersection was the site of a near fatal bike crash that is outside of this study period.

CT-132 (Kasson Road) and Woodland Road

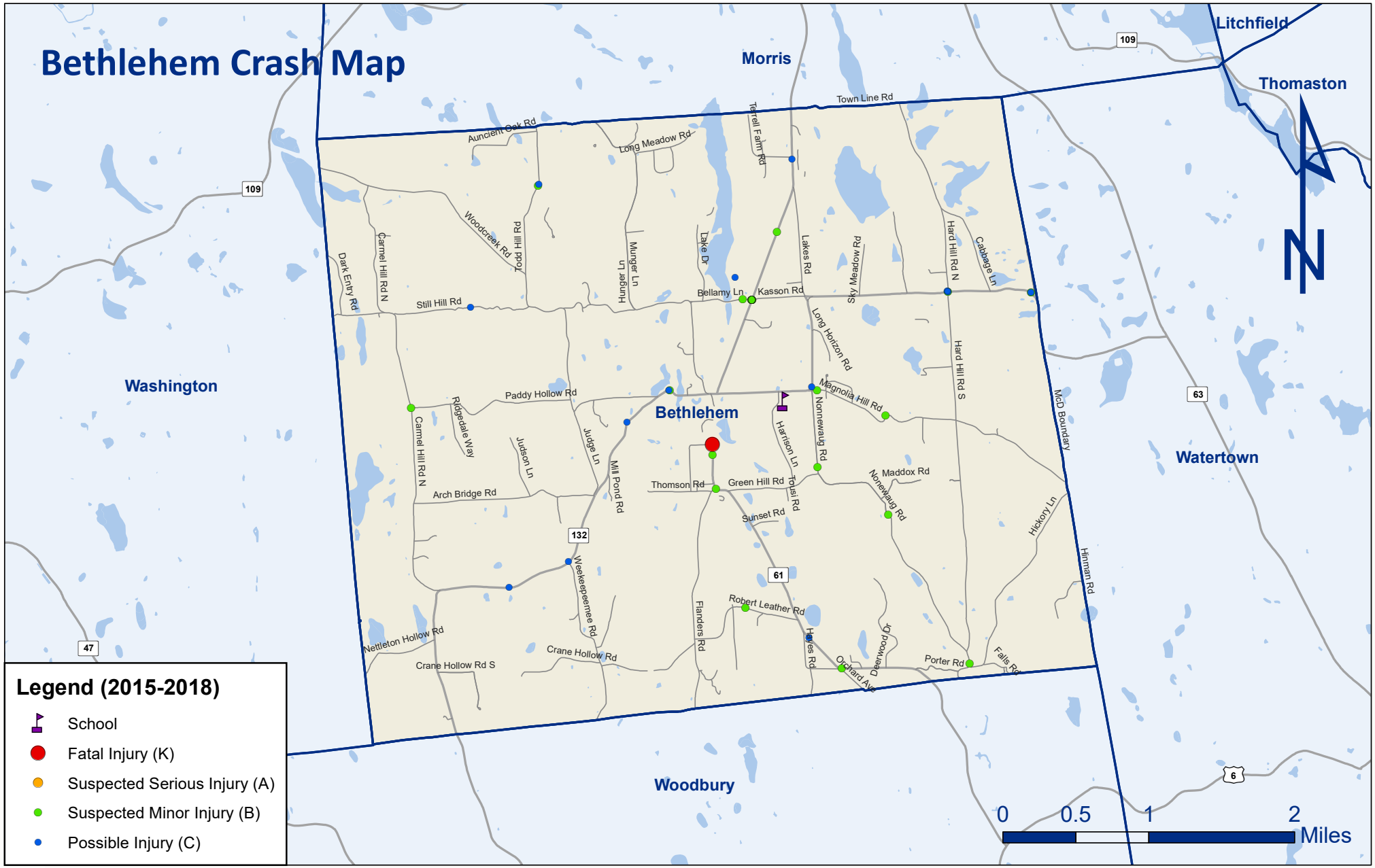
Woodland Road is a privately-owned road leading to about 20 residences. It forms a T-intersection with CT-132 (Kasson Road). The Town is very concerned with this segment of CT-132 (Kasson Road) because the Eastbound CT-132 (Kasson Road) is marked so that cars can pass each other despite the potential conflict with the motorists turning in and out of Woodland Road. The State has said that because CT-132 (Kasson Road) is not a Town-owned road, they will not change the lane-passing designation. The residents said that there are near misses with oncoming and turning traffic and that they want passing to be eliminated along this segment. In addition, there is a bus stop at Woodland Road and CT-132 (Kasson Road) which elevates the importance of evaluating this again.

Enforcement

The Town of Bethlehem is a part of the resident state trooper program Troop L. The Troopers use dynamic speed feedback signs in the Town. Trooper Conan Delia expressed concern that the PR-1 forms are not always accurate because the geocoded location is often from the origin of the 911 call-in or an estimate based on cross streets.

Bethlehem Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	0	0
Suspected Serious Injury (A)	0	0	0	0
Suspected Minor Injury (B)	4	4	8	5
Possible Injury (C)	4	3	4	2
Total Injury Crashes	9	7	12	7


Bethlehem Crash Map
Morris
Litchfield
Thomaston
Washington
Bethlehem
Watertown
Woodbury
Town Line Rd
Auncient Oak Rd
Long Meadow Rd
Terrell Farm Rd
Dark Entry Rd
Carmel Hill Rd N
Woodcreek Rd
Pod Hill Rd
Munger Ln
Hunger Ln
Lake Dr
Lakes Rd
Sky Meadow Rd
Hard Hill Rd N
Cabbage Ln
Still Hill Rd
Bellamy Ln
Kasson Rd
Long Horizon Rd
Hard Hill Rd S
Paddy Hollow Rd
Magnolia Hill Rd
Ridgedale Way
Judson Ln
Judge Ln
Mill Pond Rd
Harrison Ln
Nonnewaug Rd
Thomson Rd
Green Hill Rd
Tousi Rd
Maddox Rd
Arch Bridge Rd
Sunset Rd
Hickory Ln
Hinman Rd
McD Boundary
Weekeepeemee Rd
Flanders Rd
Robert Leather Rd
Hayes Rd
Orchard Ave
Deerwood Dr
Porter Rd
Falls Rd
Nettleton Hollow Rd
Crane Hollow Rd
Crane Hollow Rd S
109
132
61
63
47
6
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles

Field Site Inventory

CT-61 (Main Street North)/Bellamy Lane/Kasson Road

This is a two-way stop-controlled intersection with a vertical curvature in all directions and a limited sight distance. The sight distance from Kasson Road is obstructed by a utility pole and by vegetation. Furthermore, the intersection is skewed. Each stop sign has supplemental plaque warning the motorists that cross traffic does not stop.

Bellamy Lane consists of one travel lane in each direction and no shoulders. The sight distance is not limited from Bellamy Lane, but motorists still have to deal with high travel speeds on CT-61 (Main Street North). CT-61 (Main Street North) speed limit is posted at 40 MPH, but the motorists travel at higher speeds. CT-61 (Main Street North) consist of one travel lane in each direction with approximately 2-foot shoulders.

Recommendations:

- Relocate the utility pole.
- Provide vegetation management.
- Analyze roadway geometry.
- Install dynamic speed feedback signs.

CT-132 (Kasson Road)/Woodland Road

The intersection of CT-132 (Kasson Road) and Woodland Road (private road) is a 3-way intersection with CT-132 (Kasson Road) as the mainline and Woodland Road as the side street under inferred stop control with no stop sign or stop bar. CT-132 (Kasson Road) has a posted speed limit of 40 MPH and is designated as a passing zone through the intersection. Woodland Road provides access to approximately 20 residential homes with peak traffic use during the AM and PM commuter periods. The intersection is also designated as a School Bus Stop raising significant concerns associated with the posted passing zone and high travel/passing speeds, particularly during the morning and afternoon pick-up and drop-off periods.

Recommendation:

- Consider installing a stop sign and stop bar for the Woodland Street approach and eliminating the passing zone through the intersection.
- Provide regulatory enforcement.



CT-61(Main St North)/Bellamy Ln



CT-132 (Kasson Rd) looking west from Woodland Rd

Bethlehem Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-132 (Lakes Road/East Street)/Magnolia Hill Road/Nonnewaug Road	High frequency crashes and limited sight distance	CTDOT redesigning intersection	Medium-High
CT-61 (Main Street North)/ Bellamy Lane/Kasson Road	Utility pole impedes sight lines	Relocate the utility pole	Medium-High
	Vegetation overgrowth	Provide vegetation management	Low
	Skewed intersection	Analyze roadway geometry	Low-Medium
	High speed-related crash frequency	Install dynamic speed feedback signs	Medium
CT-132 (Kasson Road) and Woodland Road	Intersection related crashes	Traffic calming on CT-132	Low
	Motorists bypassing on shoulder	Consider installing a stop sign and stop bar for the Woodland Road approach and eliminating the passing zone through the intersection	Low
CT-61 (Main Street South) and Green Hill Road	High frequency crash intersection	CTDOT installing flashing yellow beacon	Low-Medium
		Dynamic speed feedback signs on CT-61	Low
		Speed enforcement	Low-Medium

CITY OF BRISTOL

2016 US Census Population Estimate: 60,147
Area: 26.80 square miles
Population Density: 2,244 persons per square mile
2016 Vehicle Miles Traveled (VMT): 254,215,565
2016 VMT per Capita: 4,227
Setting: Suburban City
Town and Regional Representatives: Raymond Rogozinski (Bristol DPW), Patrick Krajewski (PD), Michael Duval (PD)
Data Identified High Crash Corridors: US-6-Farmington Avenue (From John Avenue to Town Line); US-6-Farmington Avenue/North Street/Terryville Avenue (From Vanderbilt Road to Matthews Street); CT-229-King Street (From West Washington Street to Business Park Road); CT-72-Pine Street (From Todd Street to Downs Street)
Data Identified High Crash Intersections: CT-229-King Street and Moody Street; CT-CT-229-Middle Street and CT-72-Riverside Avenue; CT-229-Middle Street and Pine Street; Pine Street and Emmett Street; East Road and Willis Street; Center Street and Summer Street
Bike and Ped Injury and Fatal Crash Injuries: 102
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 1,735



Mountain Road/CT-229 (Middle Street)

Overview

Bristol is a suburban city in Hartford County, bordered by Burlington to the north, Farmington and Plainville to the east, Plymouth to the west and Wolcott and Southington to the south. The City's main thoroughfares are US-6, CT-69, CT-72, and CT-229.

Bristol Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	5	5	6	4
Suspected Serious Injury (A)	16	31	20	17
Suspected Minor Injury (B)	140	135	130	167
Possible Injury (C)	290	287	268	214
Total Injury Crashes	451	458	424	402

City Input

Fatal Crashes from 2015-2018

There were 20 fatal crashes reported from 2015-2018, along non-limited access highways within the city limits. The following fatal crashes were discussed:

- Willis Street - Angle motorcycle fatal crash.
- Witches Rock Road - Distracted driving fatal crash.
- CT-229 (King Street) - Motorcycle fatal crash.
- Waterbury Road – Front-to-rear fatal crash, sun glare related.
- CT-229 (Middle Street) - Substance-impaired fatal crash.
- US-6 (Farmington Avenue) - Motorcycle fatal crash.
- US-6 (Farmington Avenue) - Substance-impaired pedestrian fatal crash.
- Stafford Avenue – Substance-impaired fatal crash.
- Union Street - Pedestrian fatal crash.
- CT-229 (Middle Street) - Pedestrian fatal crash.
- Broad Street - Roadway departure fatal crash.
- CT-72 (Pine Street) - Bicycle fatal crash.

Willis Street, Waterbury Road and Wolcott Street
All three roadways have similar characteristics: wide cross section with new pavement and a propensity for drivers speeding. Willis Street has daily police enforcement. The city representatives discussed centerline rumble strips as a possible solution along these three roadways.

CT-229 (King Street/Middle Street)
This is a high-crash, north-south corridor. NVCOG is initiating a transportation study of the CT-229 (King Street/Middle Street) corridor past the city limits of Bristol. This will hopefully address problematic intersections at CT-229 (Middle Street) and Pine Street as well as the corridor-wide issues.

CT-72 (Pine Street/Riverside Avenue/Main Street/School Street/Divinity Street/Park Street/Terryville Road)
This is a high-crash east-west corridor with heavy traffic volumes. The South Street and Mountain Road portion of CT-72 (Riverside Avenue) expands out to two lanes in both directions, and the City of Bristol representatives stated that this wide cross section is unnecessary and permits motorists to make unsafe lane changes. In addition the lane widths forced the construction of a retaining wall on the south side along the Mountain Road segment.

One of the high priority segments for the city is from CT-229 (Middle Street) to CT-69 (West Street). CTDOT has a project to redesign the intersection of CT-69 (West Street) and CT-72 (Divinity Street/School Street). The intersection of CT-72 (Riverside Avenue), Downs Street and Blakeslee Street is a high-crash intersection, and CTDOT initiated a project to redesign this intersection.

CTDOT has conceptual plans to realign CT-72 (School Street) and pass through Brackett Park to address poor horizontal curvature through this section of the corridor. This project is widely supported by the Staff administration and city residents. The city wants to streetscape from CT-72 (Main Street) to Memorial Boulevard.

Memorial Boulevard
This is a four-lane cross section divided by a grass median corridor. There is a truck prohibition on Memorial Blvd, but trucks still use this roadway. The city is going to use CT Community Connectivity Program grant funds to reduce the cross section to one lane in each direction with adjacent bicycle lanes.

CT-69 (Burlington Avenue/West Street/Wolcott Street/Wolcott Road)
This is a north-south corridor with a high volume of crashes. If feasible, the city wants to add left turn lanes at the intersection of CT-69, South Street and South Street extension.

Signal Timing
The city owns 23 traffic signals with recently upgraded video detection and has also received funding for signal retiming.

Bikes and Pedestrians
The City of Bristol wants to add a pedestrian parkway connecting Rockwell Park, Brackett Park and Memorial Park. Currently, the city does not have a large bike population, except among younger school-aged residents.

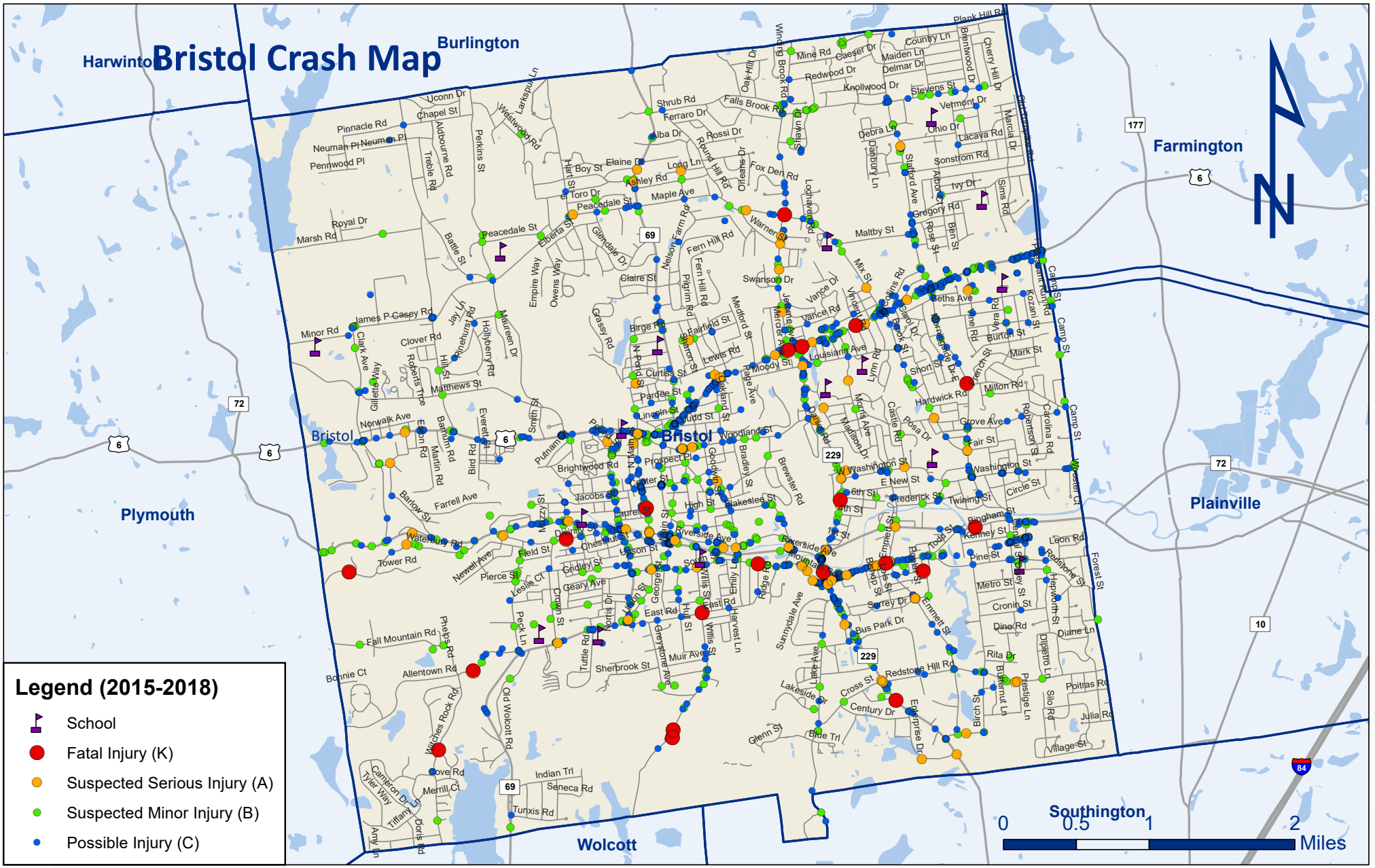
Enforcement
The city uses DUI and Distracted Driving (spotter used) grants for enforcement. Dynamic speed feedback signs are used, but two transferable signs were recently purchased.



Rockwell Park entrance Source: Bristol, CT



Source: WatchForMeCT.org


Bristol Crash Map
Harwinton
Burlington
Farmington
Plymouth
Bristol
Plainville
Southington
Wolcott
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles

Field Site Inventory

Mountain Road/CT-229 (Middle Street)

This four way signalized intersection has a very wide cross section with travel lanes measuring almost 20 feet. The cross section changes from two to four travel lanes when South Street becomes Mountain Road west of CT-229 (Middle Street). A very high retaining wall is on the south side of Mountain Road with nets, jersey barriers and a guide rail for protection. There are incomplete sidewalks on the east and west sides of Mountain Rd. There is also vertical curvatures on Mountain Road when approaching CT-229 (Middle Street).

Recommendations:

- Narrow roadway to one lane in each direction. Road diet to maintain roadway consistency until CT-229 (Middle St).
- Narrow travel lanes to 11' if not able to complete as part of CTDOT road diet feasibility. (CT-229 from Cross St to ESPN Drive is under review by CTDOT for road diet feasibility)

Rockwell Park/Brackett Park/Memorial Park- Pedestrian Connectivity

Rockwell Park, Brackett Park and Memorial Park are active pedestrian and bicycle destinations surrounded by dense residential and commercial land uses within the City of Bristol. These pedestrian and bicycle destinations are within a linear mile and generally connected by the Pequabuck River corridor. However, there is limited pedestrian and bicycle infrastructure to facilitate this connection.

Recommendation:

- To improve pedestrian and bicycle mobility and encourage walking and bicycling, the city would like to connect these resources with a multi-use trail and/or a combinations of multi-use trails, sidewalks and various bicycle accommodations.



Mountain Rd/CT-229 (Middle St)



North Main Street north of the police station

Bristol Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-69 and CT-72[1]	High crash intersection	Initiate CTDOT's redesign of intersection	See below
CT-72 (South Street and Mountain Rd section)	Wide cross section and aggressive driving	Narrow lane widths to 11' and widen shoulders where applicable	Medium
CT-72 and Memorial Parkway	Pedestrian and bike mobility	Streetscaping	Low
	Wide cross section on Memorial Pkwy	Use CT Community Connectivity Grant to reduce lanes and add bike lanes	Medium (grant funded)
Rockwell Park, Brackett Park and Memorial Park	Pedestrian connectivity	Add pedestrian walkway	Medium-High
CT-69 and South St	High number of crashes at intersection	Add left turn lane	Low-Medium
Citywide	Speeding	Narrow lanes to 11' where feasible	Low
		Add centerline rumble strips to reduce lane departures	Low
	Uncoordinated signal timing	Coordinate city-owned signals and state-owned signals	Low-Medium

1 There is an active project listed on the TIP to construct intersection improvements at CT-69. Includes realignment of the intersection. Total cost estimate; $13,000.00.

TOWN OF CHESHIRE

2016 US Census Population Estimate: 29,282
Area: 33.40 square miles
Population Density: 877 persons per square mile
2016 Vehicle Miles Traveled (VMT): 295,963,170
2016 VMT per Capita: 10,107
Setting: Urban
Town and Regional Representatives: Sean Kimball (Town Manager), Brian Pichnarcik (PD), Jeffrey Sutherland (PD), Neil Dryfe (PD), Christian Meyer (NVCOG), Walter Gancarz (Town Engineering), Don Nolte (Cheshire Operations)
Data Identified High Crash Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Ped Injury and Fatal Crash Injuries: 46
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 505



CT-10

Overview

Cheshire is an urban town in New Haven County, bordered by Southington and Wolcott to the north, Meriden and Wallingford to the east, Prospect and Waterbury to the west and Bethany and Hamden to the south. The town's main thoroughfares are I-84, I-691, CT-10, CT-42, CT-68, CT-70, and CT-801.

Town Input

Fatal Crashes from 2015-2018

- CT-10 (Highland Avenue) - Fatal motorcycle angle crash.
- Knotter Drive - Possible medically-related fatal crash.
- Country Club Road - Medically-related fatal crash.
- CT-70 (West Main Street) and Willow Street - Older driver fatal angle crash.
- CT-10 (South Main Street) near King Road - Dark-lighted pedestrian fatal crash.
- CT-70 (South Meriden Road) near Talmadge Road - Driver fatigue fatal crash.

CT-70 (South Meriden Road/Academy Road/Main Street/West Main Street/Waterbury Road)
This corridor has high volumes of traffic and high concentration of crashes. The signals at CT-70 (South Meriden Road)/CT-68 (Academy Road), and CT-70 (West Main Street)/Mountain Road intersections are very congested and need upgrading to include left-turn clearance. The state has proposed a project to upgrade these signals in 2023.

The Farmington Canal Heritage Trail crossing on CT-70 (West Main Street) has a pedestrian hybrid beacon (PHB) signal, which has caused some user confusion. When the red traffic signal flashes for motorists, the pedestrian countdown timing is still activated, which can falsely indicate that vehicles have stopped. This is especially problematic for cyclists. The other trail crossings have crosswalks and some in-street pedestrian crossing signs but no actuated signals.

Mount Sanford and South Brooksvale Road
This is a stop-controlled, skewed T-intersection with sight distance issues. The state has proposed a realignment to improve sight distance, which the Town Council has approved. This project is being advanced by the Town under LOTCIP funds.

CT-42 (Bethany Mountain Road)
This roadway has vertical and horizontal curvatures and icy conditions in winter. There are advanced curve warning signs with advisory speed limits and chevron along the horizontal curves. Roadway departure crashes are common, and the state had applied a high-friction surface treatment which has mitigated those type of crashes. The state has since repaved this roadway but has not reapplied the treatment, which the town wants them to do, especially before winter.

Jinny Hill Road and Cook Hill Road
This intersection has vertical and horizontal curvatures. The town would like centerline rumble strips along the horizontal curves, but does not have machines to install them.

Local Roads
The following roads are used as cut-throughs and are often cited as areas of speeding by residents: Mountain Road, Cook Hill Road, Peck Lane, and Cheshire Road. NVCOG has a grant for an origin and destination study. They can coordinate with and assist the Town of Cheshire to legitimize their concerns regarding the roadway's usage. The possible countermeasures could include reducing travel lane widths and other traffic calming countermeasures where feasible.

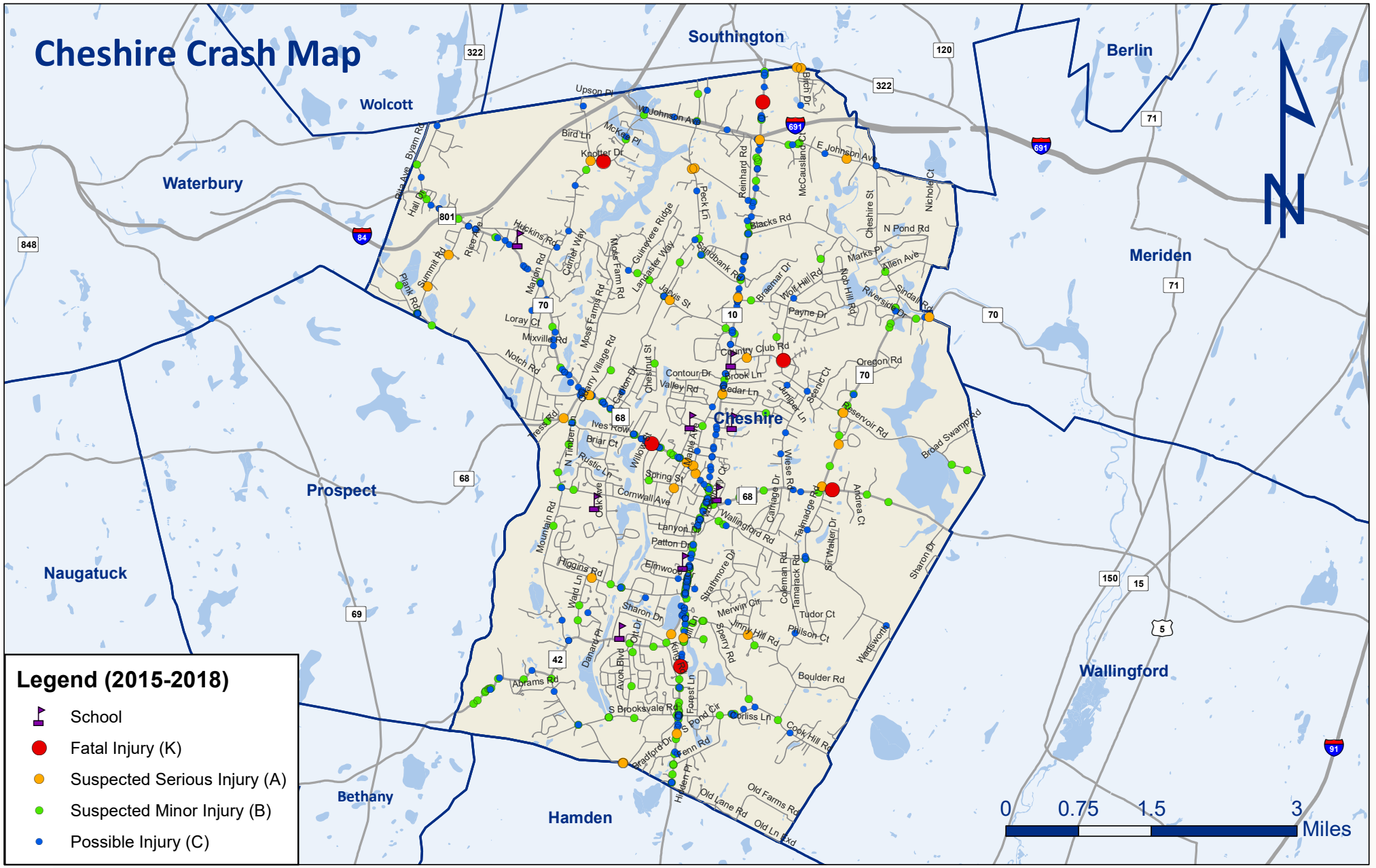
Speeding
The police have stated that about 90% of their complaints are speed related. The town uses dynamic speed feedback signs. The collected data shows that the 85th percentile for speed in Cheshire is between 37-42 MPH, but most of the town's roads are posted at 25 MPH. The Town of Cheshire wants a town-wide speed and traffic study to determine best practices.

Through Trucks
There are through truck issues in the northern end of the town with trucks cutting through local roadways to access I-84 (Yankee Expressway). Whole Foods is redesigning their exit driveway to try to force commercial drivers to use CT-10 (Highland Avenue) and curb the use of local roads. The town of Southington has the same issue and applied for through truck prohibitions but were denied by the state.

Pedestrian
There are conflicts between vehicles and pedestrians at the Farmington Canal Heritage Trail crossings. The Town installed pedestrian signals at West Main Street and Rumberg Road, at Big Y plaza, and crossing signs at CT-10 (South Main Street) in response to fatal pedestrian crashes.

Cheshire Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	3	0	2	1
Suspected Serious Injury (A)	7	7	10	6
Suspected Minor Injury (B)	56	53	51	47
Possible Injury (C)	66	60	63	73
Total Injury Crashes	132	120	126	127


Cheshire Crash Map
Southington
Berlin
Wolcott
Waterbury
Meriden
Prospect
Naugatuck
Wallingford
Bethany
Hamden
Cheshire
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles

Field Site Inventory

CT-10 (South Main Street)

This high-frequency crash corridor has predominantly two-lane cross sections with intermittent four-lane cross sections and turning lanes with high-volume traffic. CT-10 (South Main Street) from CT-70 (Academy Road) south to Hamden has congestion issue. This corridor has one travel lane in each direction which widens out around the high school entrances and left turn lanes at signals. Southside of CT-10 (South Main Street) has some two-way center left-turn lane pockets, but cars queue to make left turns midblock along corridor at various spots. There are sidewalks along both sides of the corridor.

Recommendation:

- Investigate two-way center left-turn lanes to alleviate congestion from cars turning left. This will improve mobility, possibly reducing angle crashes.

Mountain Road

Mountain Road is a rural residential roadway that experiences high traffic volumes due to significant north-south cut-through traffic. The roadway cross-section is generally narrow and consists of one travel lane in each direction with no shoulders. The posted speed limit is 25 mph; however, significantly higher travel speeds have consistently been observed by the town.

Recommendation:

- Consider traffic calming measures such as speed tables and speed feedback signs at key locations.



CT-10 (South Main St)



Mountain Road

Cheshire Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-10 (Highland Avenue/ South Main Street)	Insufficient left turn lanes	Road diet with two way center left turn lanes	Medium
	High turning movements		
CT-70	Congestion at signals	State proposed signal redesign on CT-70 and Mountain Rd and CT-70 and Academy Rd (2023)	Medium
CT-42 (Bethany Mountain Rd)	Roadway repaved without high friction surface treatment	Redo high friction surface treatment for roadway departure crashes	Low
Various local roads	High traffic volumes	NVCOG origin and destination study	Low
Jinny Hill Road and Cook Hill Road	Horizontal curvature	Centerline rumble strip spot treatment-coordinate with state	Medium
Mountain Road	Speeding	Speed tables	Low-Medium
		Dynamic speed feedback signs	Low
Farmington Canal Heritage Trail Crossing on CT-70	Pedestrian hybrid signal user confusion	Add signs on trail to indicate that pedestrian signal time not concurrent with motorists signal	Low
		Education on PHB signals	Low

CITY OF DERBY

2016 US Census Population Estimate: 12,631

Area: 5.40 square miles

Population Density: 2,339 persons per square mile

2016 Vehicle Miles Traveled (VMT): 122,833,085

2016 VMT per Capita: 9,725

Setting: Urban

Town and Regional Representatives: Richard Dziekan (Mayor), Andrew Baklik (City of Derby), Scott Todd (Police Department)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: CT-34-New Haven Avenue/Derby Avenue and Old New Haven Avenue; CT-34-New Haven Avenue/Derby Avenue and Sentinel Hill Road

Bike and Ped Injury and Fatal Crash Injuries: 24

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 335



Elizabeth Street

Overview

Derby is a city in New Haven County, bordered by Seymour and Ansonia to the north, Woodbridge to the east, Shelton to the west, and Shelton and Orange to the south. The city's main thoroughfares are CT-8, and CT-34.

City Input

Fatal Crashes from 2015-2018

- CT-34 (Roosevelt Drive) - Front to front fatal crash near Seymour town line, prior to CTDOT reinstalling the centerline rumble strips, due to a roadway project.

CT-34 (Roosevelt Drive/Main Street/Derby Avenue/New Haven Avenue)
This corridor has high traffic volume. The centerline rumble strips along the western section within Derby have reduced the frequency of crashes. The east-west corridor along the river has various segments of higher crashes. The state and NVCOG are widening the roadway from Bridge Street to CT-8 (General Samuel Jaskilka Highway) from two to four lanes and adding a center median and turning lanes. In addition, Minerva and Elizabeth Street will be converted to one-ways to address the issues at the CT-34 (Main Street) signal. The bike path will be moved off the road and closer to the Naugatuck River Greenway trail.

CT-34 (New Haven Avenue/Derby Avenue) and Sentinel Hill Road
This signalized intersection had the highest frequency crashes in 2015-2018 in Derby. The City stated that sun glare is a possible contributor to crashes, preventing motorists from seeing the signal. This site is a possible candidate for installation of retroreflective backplates. The state redesigned this intersection recently, which the city anticipates will mitigate the issues at this location. This project was completed.

CT-34 (New Haven Avenue/Derby Avenue) and Sodom Lane
This intersection in the commercial area of the city has high frequency of crashes. It has short left turn lanes storage and speeding is common. The city said it is slated for pedestrian improvements.

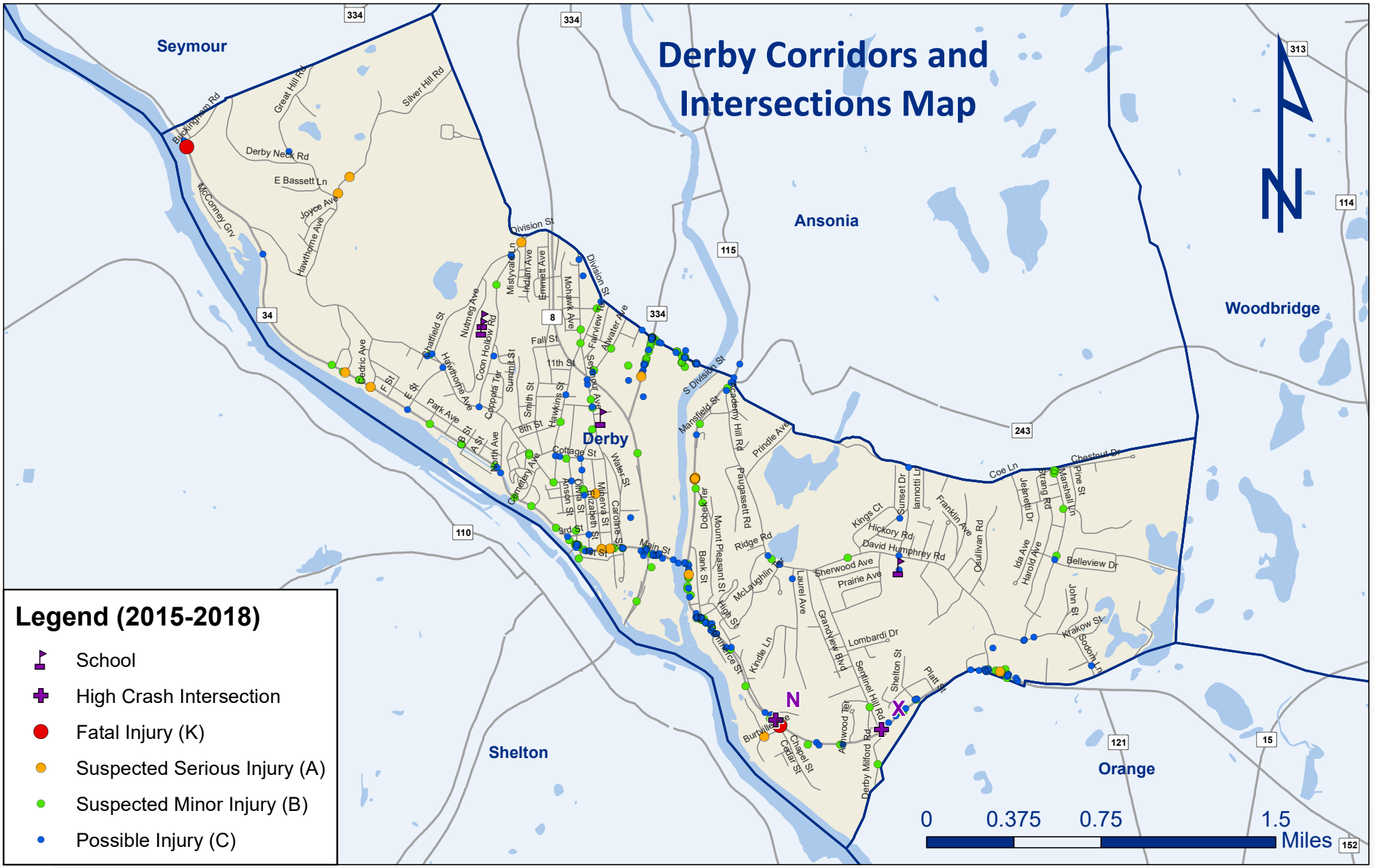
Seymour Avenue/Atwater Avenue/CT-8 (General Samuel Jaskilka Highway) Off Ramps
This is a four-legged, skewed, signalized intersection with a cluster of crashes and confusing geometry. It has an older city-owned signal which needs updating.

CT Community Connectivity Grant for CT-34 (New Haven Avenue/Derby Avenue) Pedestrian Safety Improvements
CTDOT has a project that will include sidewalks, crosswalks, and pedestrian signals on CT-34 (New Haven Avenue/Derby Avenue)/Gilbert Street/Bank Street, and CT-34 (New Haven Avenue/Derby Avenue)/Sodom Lane intersections.

State pedestrian and chevron curve signage programs
The state has systematically installed pedestrian crossing signs throughout Derby, creating, what feels like, sign clutter. The City of Derby feels that many of the signs are excessive and, since the affiliated crosswalks are often at intersections, several of them are unnecessary. The state has advised the city that they can remove whichever signs are not needed. Unlike many other municipalities, the City of Derby opted to maintain all the installed chevron curve signs, especially along CT-34 (Roosevelt Drive/Main Street/Derby Avenue/New Haven Avenue) due to its previous high rate of crashes.

Derby Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	1	0	1
Suspected Serious Injury (A)	4	8	4	2
Suspected Minor Injury (B)	33	37	40	19
Possible Injury (C)	51	49	54	32
Total Crashes	88	95	98	54


Derby Corridors and Intersections Map
Seymour
Ansonia
Woodbridge
Derby
Shelton
Orange
Legend (2015-2018)
School
High Crash Intersection
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.375 0.75 1.5 Miles
N
X
Division St
Main St
Ridge Rd
Derby Neck Rd
E Bassett Ln
Great Hill Rd
Silver Hill Rd
Buckingham Rd
Hawthorne Ave
Coon Hollow Rd
Academy Hill Rd
Paugassett Rd
Prindle Ave
Coe Ln
Chestnut Dr
Hickory Rd
David Humphrey Rd
Sherwood Ave
Prairie Ave
Belleview Dr
Lombardi Dr
Sentinel Hill Rd
Derby Milford Rd
Shelton St
Platt St
Kingsley Ave
Bank St
Mount Pleasant St
Laurel Ave
Grandview Blvd
Franklin Ave
Osullivan Rd
Sunset Dr
Iannotti Ln
Jeanetti Dr
Strang Rd
Marshall Ln
Pine St
Ida Ave
Harold Ave
John St
Krakow St
Scoboria Ln
Kindle Ln
Burwell Ave
Chapel St
Cedar St
Elizabeth St
Minerva St
Caroline St
Water St
Cemetery Ave
Cottage St
Anson St
Olivia St
Smith St
Hawkins St
Sunnmit St
Coppola Ter
Park Ave
Cedric Ave
Hatfield St
Nutmeg Ave
Mistyvale Ln
Indian Ave
Emmett Ave
Mohawk Ave
Fairview Ave
Seymour Ave
Awalter Ave
Fall St
11th St
8th St
S Division St
Mansfield St
Dodge Ter
McLaughlin Dr
Kings Ct
Woodcrest Ter
Ave A
Ave B
E St
F St
McConney Grv
334
34
8
110
115
243
313
114
121
15
152

Field Site Inventory

Academy Hill Road/CT-115 (Derby Avenue)

This is a skewed intersection with stop control on Academy Hill Road. CT-115 (Derby Avenue) consists of a two-lane cross section with on-street parking on the west side. The speed limit is posted at 30 MPH. CT-115 northbound approaches Academy Hill Road on a horizontal curvature which impedes sight distance. There is a combination horizontal alignment/intersection warning sign with a flashing beacon for northbound CT-115. Academy Hill Road has a two lane cross section and approaches CT-115 along vertical curvature. For cars exiting Academy Hill Road there is very limited sight distance due to the horizontal curvature, vegetation and a retaining wall on the east side of CT-115.

Recommendations:

- Eliminate a few parking spots.
- Realign CT-115 to the north to improve sight distance from Academy Hill Road.
- Realign intersection to be more perendicular.
- Remove vegetation.
- Dynamic speed feedback signs prior to curve on CT-115

CT-8 (General Samuel Jaskilka Hwy) Exit 17 Ramps/Atwater Avenue/Seymour Avenue

Seymour Avenue and Atwater Avenue come together at a signalized intersection while providing access to CT-8 (General Samuel Jaskilka Hwy) Northbound and Southbound, as well as an off-ramp from CT-8 (General Samuel Jaskilka Hwy) Exit 17. The intersection is significantly skewed and elongated by approximately 300 ft due to the CT-8 (General Samuel Jaskilka Hwy) underpass of Seymour Avenue. The traffic signal controls the Seymour Avenue northbound and southbound approaches, the CT-8 (General Samuel Jaskilka Hwy) Exit 17 off-ramp and the Atwater Avenue approach. The signal equipment is antiquated and the signal timings and phasing need to be optimized to respond to peak period traffic volumes.

Recommendation:

- Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes.



Academy Hill Rd/CT-115 (Derby Ave)



CT-8 (General Samuel Jaskilka Hwy) Exit 17 Ramps/Atwater Ave/Seymour Ave

Derby Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-34 (Roosevelt Drive/ Main Street/Derby Avenue/New Haven Avenue)	Capacity issues	NVCOG project which will widen roadway and add lanes	High
CT-34 (New Haven Avenue/Derby Avenue) and Sentinel Hill Road	High frequency crashes at signal	Traffic signal retroreflective backplates	Low- Medium
Seymour Avenue/Atwater Avenue/CT-8 (General Samuel Jaskilka Highway) Off Ramps	Outdated signal	Update traffic signal equipment	Medium-High
Academy Hill Road/CT-115 (Derby Avenue)	Inadequate sight distance	Realign intersection	Low-Medium
		Realign CT-115 farther east along curve	Low-Medium
		Remove vegetation	Low
		Dynamic speed feedback signs prior to curve on CT-115	Low
		Realign Academy Hill Road at CT-115	Low-Medium
CT-8 (General Samuel Jaskilka Hwy) Exit 17 Ramps/Atwater Avenue/ Seymour Avenue	Outdated signalization	Update traffic signal equipment and optimize timing	Medium
	Capacity issues		

TOWN OF MIDDLEBURY

2016 US Census Population Estimate: 7,641

Area: 18.50 square miles

Population Density: 413 persons per square mile

2016 Vehicle Miles Traveled (VMT): 192,405,005

2016 VMT per Capita: 25,181

Setting: Rural suburban

Town and Regional Representatives: Edward St. John (First Selectman), Curtis Bosco (Zoning Enforcement Officer), Fran Dabbo (Town Police Chief)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: CT-64-Middlebury Road and CT-63-Straits Turnpike

Bike and Ped Injury and Fatal Crash Injuries: 7

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 243



CT-63 (Straits Turnpike)

Overview

Middlebury is a rural town in New Haven County, bordered by Woodbury and Watertown to the north, Waterbury and Naugatuck to the east, Woodbury and Southbury to the west and Oxford to the south. The town's main thoroughfares are I-84, CT-63, CT-64, and CT-188.

Town Input

Fatal Crash Summary from 2015-2018

- CT-64 (Middlebury Road) and Christian Road - Motorcycle angle fatal crash.
- CT-64 (Middlebury Road) west of Tranquility Road - Young driver front-to-front fatal crash.
- South Street - Possible suicide fatal crash.

CT-63 (Straits Turnpike)

This high-frequency crash corridor has a narrow two-lane cross section with travel lane constraints and high volumes of traffic. It is located in the commercial area of the town.

CT-63 (Straits Turnpike) and Park Road/Park Road Extension

There are three proposed developments at this intersection: a gas station, a medical center and a car dealership. The town is working with the state and the developers on traffic and access management decisions.

CT-63 (Straits Turnpike) and CT-64 (Middlebury Road)
This is a four-way, signalized intersection with a high concentration of crashes which CTDOT has redesigned. There will be a new connector between CT-63 (Straits Turnpike) and CT-64 (Middlebury Road) that will divert a substantial amount of traffic from the intersection. (CTDOT Project number 0080-0128).

CT-188 (Southford Road) and Christian Road
This is a side street, stop-controlled, four-way intersection with sight distance issues and a high concentration of crashes. The CT-188 (Southford Road) corridor has significant speeding issues.

CT-64 (Middlebury Road) and Lake Quassy Entrance
There are no turning lanes from CT-64 into Lake Quassy. The driveway is offset from Christian Road. The Town would like a crosswalk to connect the two parking areas on opposite sides of CT-64. Some events attract many people, and safety is a concern for both motorists and pedestrians. The town representatives stated that a flashing yellow beacon would help alert the motorists to be more cautious along this segment of CT-64 (Middlebury Road).

CT-64 (Middlebury Road)
This corridor is used as the parallel route due to I-84 (Yankee Expressway) and does not have any off-ramps in the Town of Middlebury (Exit 17 is used for access). Any I-84 incident shifts the traffic to CT-64 (Middlebury Road). In addition, CT-64 (Middlebury Road) is used as a cut-through by the residents from the Towns of Southbury, Woodbury, Roxbury and Washington.

CT-64 (Middlebury Road) and Four Corner Store Driveways
There are two access drives near the signalized intersection of CT-64 (Middlebury Road)/Reagan Road/Glenwood Avenue. The peak period traffic queues can block egress from driveways onto CT-64 (Middlebury Road) northbound, creating additional traffic congestion during these hours.

Center Line Rumble Strips
The Town of Middlebury said that local or state roads in the town do not have rumble strips. They think it would help to reduce lane departures on CT-64 (Middlebury Road).

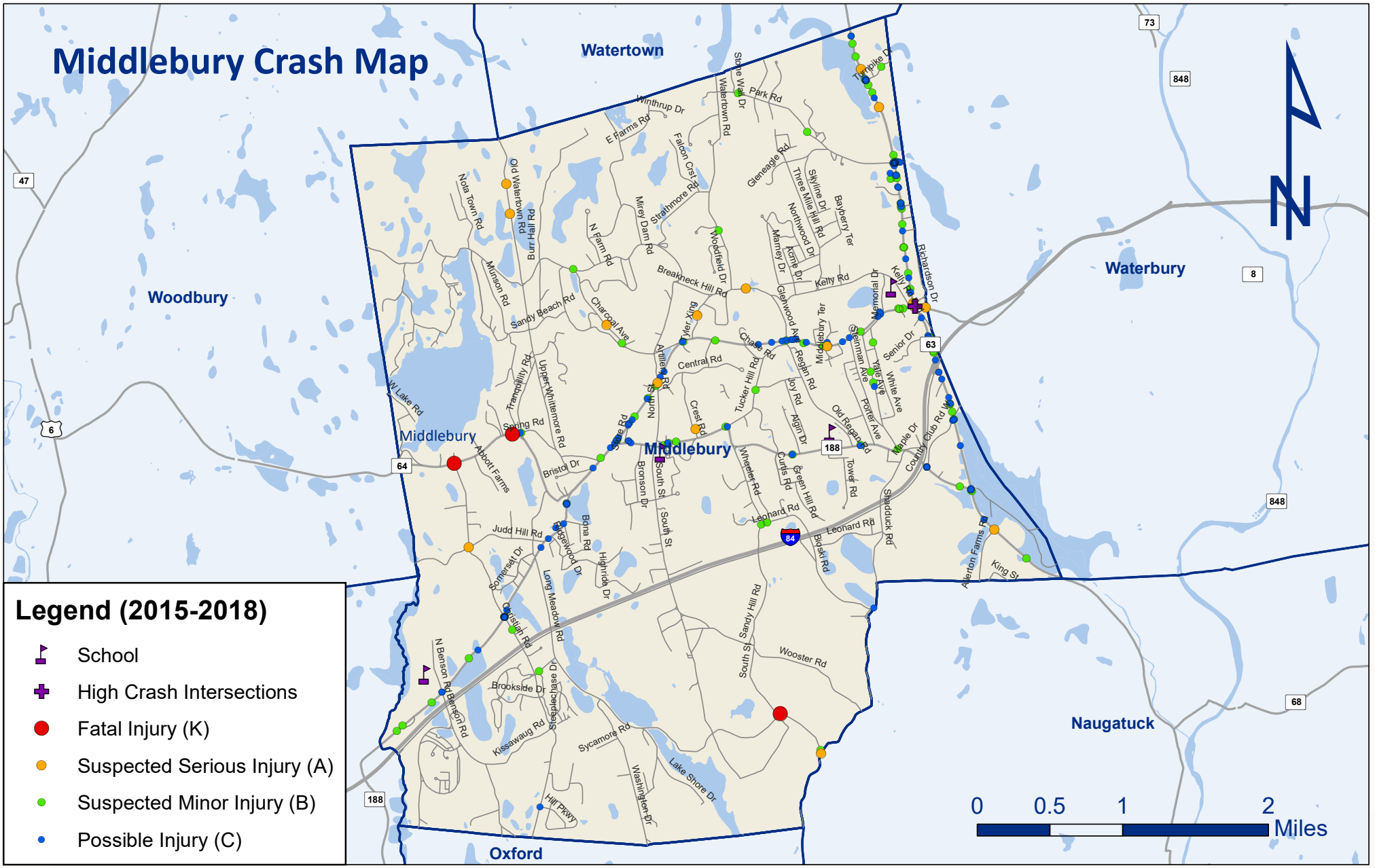
Greenway
The Middlebury Greenway is a multiuse trail that runs parallel to CT-64 (Middlebury Road). The town wants to encourage residents to use the Greenway and stay off the roads for biking and walking because their roadways are narrow and have horizontal curvature. In addition, speeding and distracted driving make the roadways less amenable for non-motorized users.



Source: VN Engineers

Middlebury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	1	0	2
Suspected Serious Injury (A)	6	8	2	0
Suspected Minor Injury (B)	21	37	13	21
Possible Injury (C)	32	32	29	39
Total Crashes	59	78	44	62


Middlebury Crash Map
Watertown
Woodbury
Waterbury
Middlebury
Naugatuck
Oxford
Legend (2015-2018)
School
High Crash Intersections
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.5 1 2
Miles
N
Park Rd
Winthrup Dr
E Farms Rd
Falcon Crst Cir
Watertown Rd
Stone Wall Dr
Turnpike Dr
Gleneagle Rd
Skyline Dr
Three Mile Hill Rd
Northwood Dr
Bayberry Ter
Kerne Dr
Marney Dr
Woodfield Dr
Strathmore Rd
Mirey Dam Rd
N Farm Rd
Old Watertown Rd
Burr Hall Rd
Nota Town Rd
Munson Rd
Sandy Beach Rd
Charcoal Ave
Breakneck Hill Rd
Kelly Rd
Memorial Dr
Richardson Dr
Glenwood Ave
Middlebury Ter
Chase Rd
Regan Rd
Joy Rd
Senior Dr
Spinman Ave
Yale Ave
White Ave
Porter Ave
Old Reagan Rd
Maple Dr
County Club Rd W
Tucker Hill Rd
Crest Rd
Central Rd
Artillery Rd
Tyler King
Union St
Tranquility Rd
Upper Whittemore Rd
W Lake Rd
Spring Rd
Abbott Farms
Bristol Dr
Bronson Dr
South St
Wheeler Rd
Curtis Rd
Green Hill Rd
Tower Rd
Leonard Rd
Shadduck Rd
Bidski Rd
Alerton Farms Rd
King St
Judd Hill Rd
Bona Rd
Edgewood Dr
Highride Dr
Somerset Dr
Long Meadow Rd
Christian Rd
N Benson Rd
Benson Rd
Brookside Dr
Steeplechase Dr
Kissawaug Rd
Sycamore Rd
Washington Dr
Lake Shore Dr
Hill Pkwy
South St
Sandy Hill Rd
Wooster Rd
73
848
47
6
64
188
84
63
8
68

Field Site Inventory

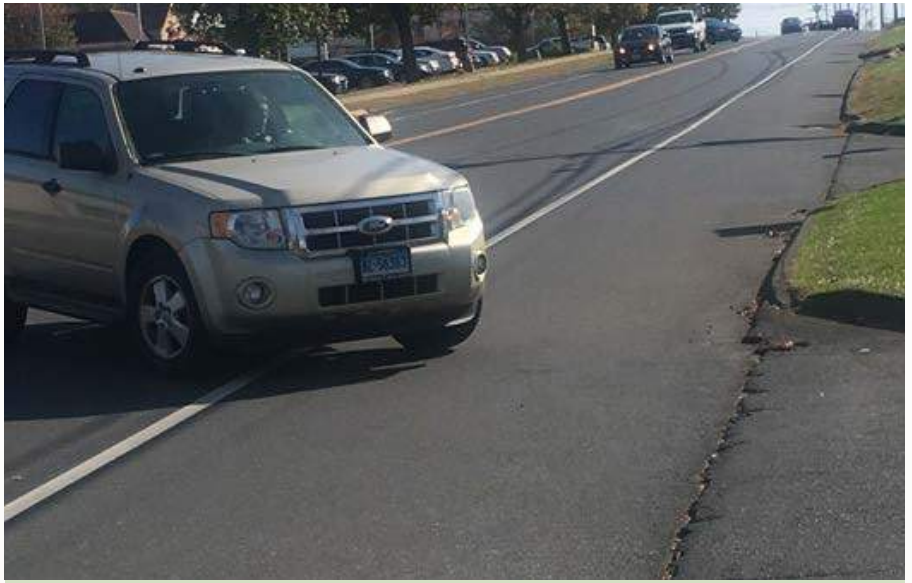
CT-63 (Straits Turnpike) north of CT-64 (Middlebury Road)

CT-63 north of CT-64 is a two-lane cross section through a rural residential area. At Jo Ann Drive, CT-63 expands to two travel lanes with intermittent turning lanes and then the lanes reduce back to two through lanes with no turning lanes from Park Rd to north of Turnpike Drive.

This section of CT-63 has a stretch of commercial businesses, with a high concentration of car dealerships. There are no turning lanes into businesses along this segment, but the cross section is wide enough to accommodate potential turn lanes. The businesses have one or two access points each.

Recommendations:

- Traffic signal retroreflective backplates along entire corridor.
- Coordinate with CTDOT on improvements at CT-64 (Middlebury Road) and CT-63 (Straits Turnpike).
- Strict access management at new development sites to limit turning conflicts.
- Determine if traffic signal upgrades are needed.
- Add turning lanes by striping and/or widening roadway to the west at various intersections along corridor, especially in the section of Sperrys Pond and just north of CT-64 (Middlebury Road).
- Investigate feasibility of adding center two-way left-turn lanes in the section on northern side near car dealerships.



CT-63 North of CT-64



CT-63 business driveways

Field Site Inventory

CT-188 (Southford Road)/Christian Road

The intersection of CT-188 (Southford Road) and Christian Road is a rural, unsignalized, 4-way, slightly skewed intersection with CT-188 (Southford Road) as the mainline and the Christian Road approaches under stop control. Sight distances from Christian Road are compromised by the CT-188 (Southford Road) crest vertical curve to the south and a steep upgradient and sharp horizontal curve to the north. CT-188 (Southford Road) has a posted speed limit of 40 MPH, however much higher speeds are reported further contributing to the sight distance challenges.

Recommendations:

- Consider installing Intersection Warning Sign for CT-188 SB (Southford Rd) approach to the intersection.
- Clear vegetation in the vicinity of the CT-188 NB (Southford Rd) approach Intersection Warning sign.
- Consider narrowing the travel lanes on CT-188 (Southford Rd).
- Consider installing curve warning signs.



CT-188 (Southford Rd)/Christian Rd



Christian Rd at CT-188 (Southford Rd)

Middlebury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-63 north of CT-64	Lane constraints	Add turning lanes by striping and or widening roadway to the west at various intersections along corridor especially in the section of Sperrys Pond and just north of CT-64 (Middlebury Road)	Low
		Investigate feasibility of adding two-way center left turn lanes in section on northern side near car dealerships	Low
	High volume of traffic	Traffic signal retroreflective backplates	Low-Medium
		Signal optimization	Medium
	High turning movements	Corridor access management	Low-Medium
CT-188 (Southford Road)/ Christian Road	Speeding	Consider narrowing the travel lanes for the CT-188 (Southford Road) approaches to the intersection to assist in addressing high speeds on CT-188 (Southford Road)	Low
	Poor sight distance	Consider installing horizontal curve signing	Medium
CT-64 (Middlebury Road) and Lake Quassy Entrance	Pedestrian crossing	PHB with crosswalks	Low
	Lack of turning lanes into Lake Quassy along high speed corridor	Investigate possibilities of adding turning lanes	Low-Medium
CT-63 (Straits Turnpike) and Park Road/Park Road Extension	Proposed developments will increase turning movements	Corridor access management	Low
CT-64	Lane departures	Centerline rumble strips	Low
Town-wide	High turning movements at intersections with high curb cuts	Town-wide corridor access management policy	Low
	Speeding	Dynamic speed feedback signs	Low

BOROUGH OF NAUGATUCK

2016 US Census Population Estimate: 31,392

Area: 16.50 square miles

Population Density: 1,903 persons per square mile

2016 Vehicle Miles Traveled (VMT): 157,417,565

2016 VMT per Capita: 5,015

Setting: Rural

Town and Regional Representatives: Peter Hess (Mayor), Wayne Zirolli (Borough Engineer), James Stewart (DPW), Steven Hunt (PD), Colin McAllister (PD), Bryon Cammarata (PD)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 38

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 424



Church Street

Overview

Naugatuck is a consolidated borough in New Haven County, bordered by Waterbury and Middlebury to the north, Beacon Falls and Bethany to the south, Middlebury and Oxford to the west and Prospect to the east. The borough spans both sides of Naugatuck River and includes the communities of Union City, Straitsville, and Millville. The Borough of Naugatuck's main thoroughfares are CT-8, CT-63, and CT-68.

Borough Input

Fatal Crashes from 2015-2018

- May Street - One vehicle roadway departure fatal crash (possible suicide).
- Guntown Road - Front-to-front fatal crash in a narrow section of the roadway.
- Spring Street - Front-to-front crash along a horizontal curve. The injuries from the crash resulted in death six months after the crash, but the crash is not officially classified as fatal according to USDOT regulations.

CT-68 (Prospect Street)/Union Street/Golden Connecticut
The state redesigned the traffic signal for this congested intersection. There is an area of congestion and bottle necking over the bridge.

YMCA at Church Street and Cedar Street
Older pedestrians have complained that the pedestrian crossing is not safe for them due to the motorists not stopping or yielding.

CT-63 (New Haven Road)
The segment of CT-63 (New Haven Road) from Cross Street to the Bethany Town Line is a concern for the Town due to speeding and the high number of intersecting side streets. Naugatuck police focus enforcement on CT-63 (New Haven Road) for distracted driving and restraint systems (Click it or Ticket). The Town said there will be more commercial and industrial development (more traffic generators) south of Cross Street, including truck traffic. The Borough of Naugatuck wants a corridor study to determine what improvements could be made along CT-63 (New Haven Road) for mobility and safety.

Maple Street/South Main Street/CT-8 (Ansonia-Derby-Shelton Expressway) Off-Ramps
This is a confusing signalized intersection with CT-8 (Ansonia-Derby-Shelton Expressway) off-ramp. The state is installing a new signal and redesigning the intersection. The channelized island on Maple Street is still intact, and the borough wants it removed.

CT-63 (Cherry Street/Meadow Street) and Rubber Avenue
The Borough of Naugatuck received LOTCIP funding to improve this signalized intersection. The borough is going to install a roundabout by 2020. The project is already designed, and the public information hearing was held with mixed reviews from residents.

Hoadley Street/Rubber Avenue/Melbourne Street
This intersection has LRARP funds for traffic signal improvements.

North Main Street
The borough is installing traffic calming with LOTCIP funding (bump outs, crosswalks, etc.) to reconstruct the intersection.

Cross Street
The borough is realigning Cross Street and installing crosswalks and realigning the intersection of Cotton Hollow and Cross Street.

CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/Meadow Street
This is a multi-legged, stop-controlled intersection with a cluster of crashes and confusing geometry. Various roads are bisected with grassy medians, impeding the flow on CT-63. The borough wants to investigate a potential roundabout to improve mobility, reduce confusion, and reduce crash severity and frequency.

CT-63 and Cherry Street
This is a signalized intersection with three legs of Cherry Street intersecting CT-63. In addition, there are center medians. The signalized intersection of Scott Road and CT-63 (Cherry Street) is less than 300 feet away. This intersection is another potential roundabout candidate to alleviate confusion and improve mobility.

Connecticut Connectivity Grant
The Borough received funding to install and improve sidewalks in downtown area.

Naugatuck River Greenway
The Borough of Naugatuck has received two grants to install more sections of the greenway through LOTCIP and TAP. Their main challenge on the northern end is the cost of a potential pedestrian bridge and/or receiving access from Waterbury and the railroad to build the path along the west side, adjacent to the active rail line. The borough would install protective fencing as precaution.


Meadow Street

Naugatuck Total Crashes by Severity

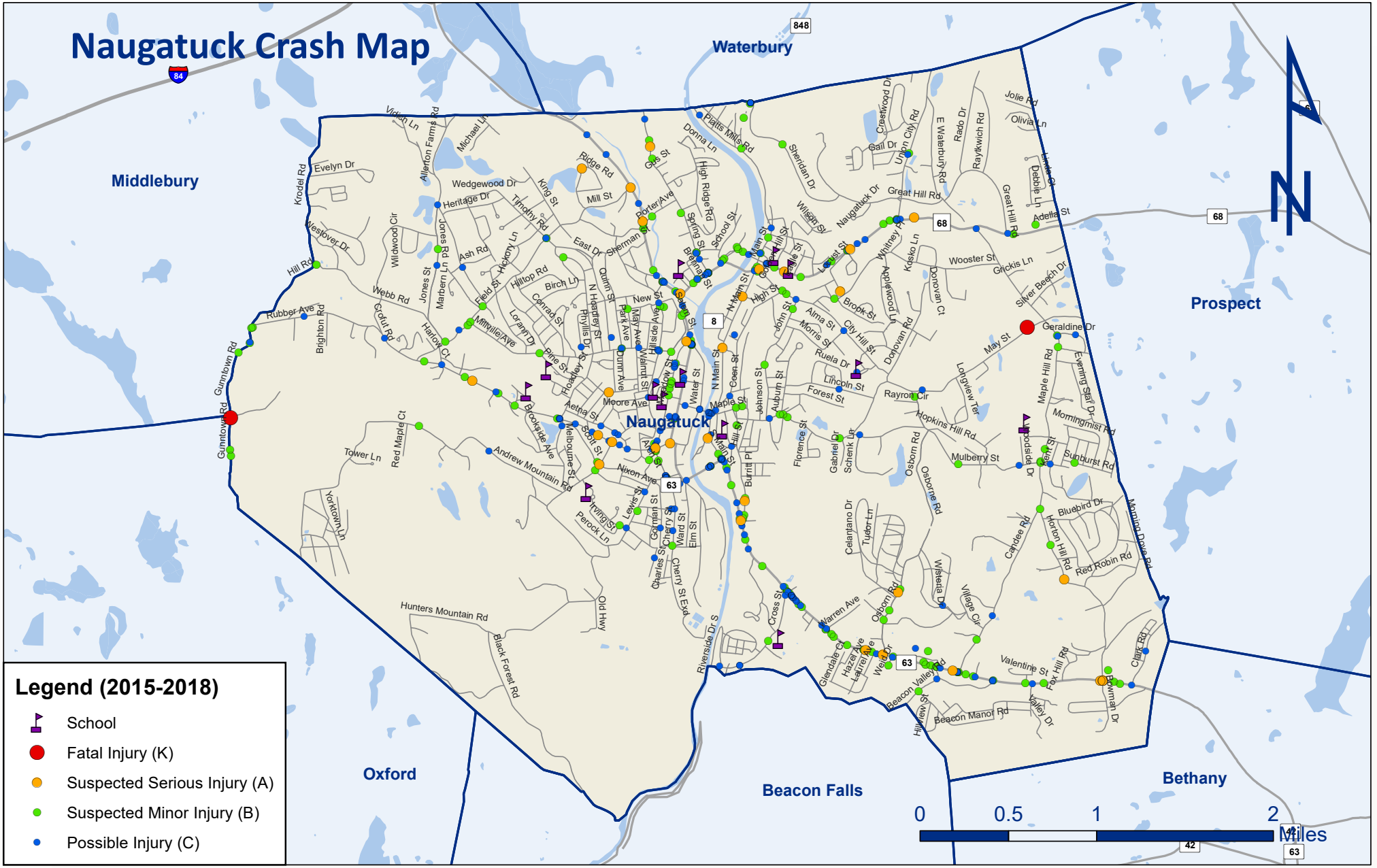
Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	1	1
Suspected Serious Injury (A)	7	4	10	10
Suspected Minor Injury (B)	40	59	49	45
Possible Injury (C)	27	53	68	50
Total Crashes	74	116	128	106



CT-63 and Cherry Street



Water Street


Naugatuck Crash Map
Waterbury
Middlebury
Prospect
Oxford
Beacon Falls
Bethany
Naugatuck
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles

Field Site Inventory

CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/Meadow Street

The intersection of CT-63 (Meadow Street/Church Street) and Water Street is a four-legged, unsignalized intersection with all approaches under stop control. The CT-63 southbound approach and departure lanes are separated by a landscaped island and a pedestrian crosswalk that traverses the Meadow Street approach to the intersection. The intersection is complicated by a short, one-way access lane from the adjacent intersection of Water Street and Church Street to CT-63 just 200 ft north of the intersection of CT-63 and Water Street. The one-way access lane intersects with CT-63 at a skew and is under stop control. This geometry forms a large island between Water Street, CT-63 and the one-way access lane.

Recommendation:

- Consider a roundabout and remove the one-way access lane from Water Street to CT-63 to eliminate sight-line restrictions associated with this skewed intersection.



CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/ Meadow Street

CT-63 and Cherry Street

The intersection of CT-63 and Cherry Street is three-way signalized intersection with the CT-63 westbound approach consisting of an exclusive left-turn lane, through lane and exclusive right-turn lane to access Scott Street. The CT-63 Southbound approach consists of single through lane and by-pass right-turn lane separated by a large grass island to access Cherry Street. The Cherry Street Northbound approach consists of a de facto exclusive left-turn lane to access CT-62 Westbound and a by-pass right-turn lane separate by a large grass island to access CT-63 Eastbound. The intersection is very large due to the large grass islands associated with the by-pass lanes and large median islands separated CT-63 approaches through the intersection.

Recommendations:

- Consider a roundabout to address confusing intersection geometry, reduce the footprint of the intersection and improve pedestrian and bicycle mobility.
- Signal coordination.



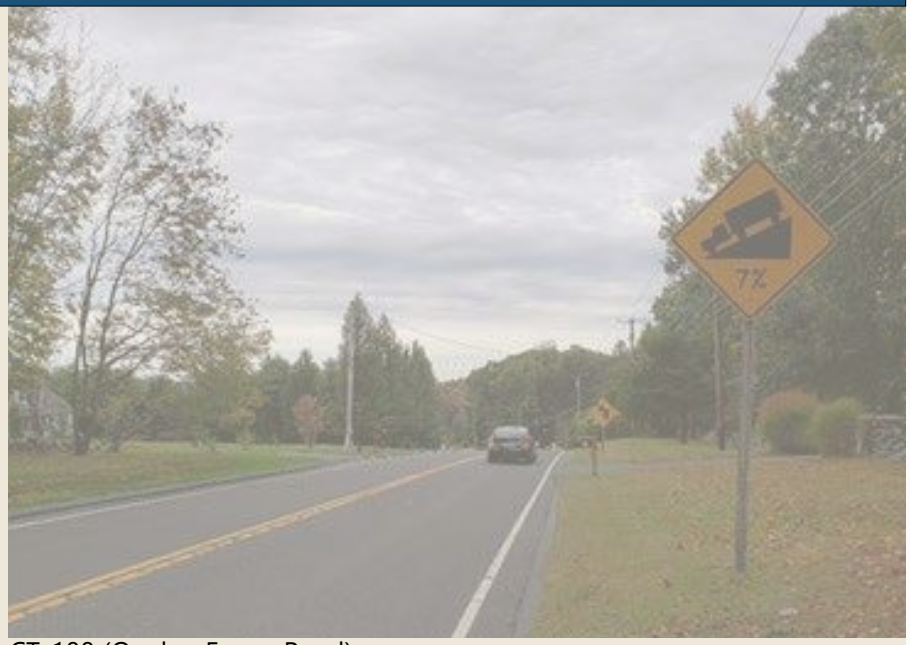
Aerial of CT-63 and Cherry St

Naugatuck Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-63 (Church Street/ Millville Avenue/Meadow Street) and Church Street/ Meadow Street	Multi-legged,stop-controlled inter-section decreases flow	Investigate roundabout potential	Medium-High
	High frequency of crashes		
CT-63 (New Haven Road)	Corridor wide speeding and congestion issues	Corridor study to determine issues and countermeasures	Medium
		Continued enforcement	Low
		Dynamic speed feedback signs	Low
CT-63 and Cherry Street	Traffic signals less than 300 feet away	Roundabout	Medium-High
	Reduced mobility	Signal coordination	Low-Medium
YMCA at Church Street and Cedar Street	Pedestrian crossing	Enhanced crosswalk	Low
		RRFB	Low
Town-wide	Intersection issues	Various projects already funded	Low-Medium
		Roundabout designed for CT-63 and Rubber Ave	Medium-High
		Increased roundabout education and outreach: https://safety.fhwa.dot.gov/intersection/ innovative/roundabouts/	Low

TOWN OF OXFORD

2016 US Census Population Estimate: 12,984
Area: 33.30 square miles
Population Density: 390 persons per square mile
2016 Vehicle Miles Traveled (VMT): 81,572,025
2016 VMT per Capita: 6,283
Setting: Rural/Suburban
Town and Regional Representatives: Wayne Watt (Town of Oxford), Kristyn Rosa (Town of Oxford), Keith Buinauskas (PD), Christian Meyer (NVCOG)
Data Identified High Crash Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Ped Injury and Fatal Crash Injuries: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 181



CT-188 (Quaker Farms Road)

Overview

Oxford is a residential town in New Haven County, bordered by Naugatuck and Middlebury to the north, Beacon Falls and Naugatuck to the east, Seymour and Monroe and Newtown (through Housatonic River) to the south, and Southbury to the west. The Town of Oxford's main thoroughfares are CT-42, CT-67, and CT-188.

Town Input

Fatal Crashes from 2015-2018

- Maple Tree Hill Road - Motorcycle fatal crash.
- CT-67 (Seymour Southbury Road) - Run-off-road fatal crash.

Kettletown Road and Maple Tree Hill Road
This is a severely skewed, three-way intersection with a center approach island. It has a challenging geometry due to elevation difference between the two roads and very poor sight lines.

CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road
This is a four-way, unsignalized intersection with a side street under stop control. High speeds on CT-188 (Quaker Farms Road) make it difficult to judge gaps. Sight distance from Silano Drive is limited due to the vertical crest curve on the CT-188 (Quaker Farms Road). The town has recently installed LED stop signs for the side street approaches.

CT-67 (Seymour Southbury Road/Oxford Road) and Old State Road 67: (Numerous locations)
Old State Road intersects with CT-67 (Seymour Southbury Road/Oxford Road) at skewed intersections with poor sight distances and challenging geometry at various locations, including:

- Near Hawley Road.
- Near Christian Street.
- Near CT-42.
- Near Chestnut Tree Hill Ext.
- Near Seth Den Road.
- Echo Valley Road.

Great Hill Road
This corridor has significant horizontal and vertical curvatures and speeding issues. The corridor may need additional enhanced curve warning signs or other warning signage.



Maple Tree Hill Road

CT-34 (Roosevelt Drive)
This corridor has significant horizontal and vertical curvatures and speeding issues. The corridor may need additional enhanced curve warning signs or other warning signage.

CT-67 (Oxford Road) and CT-42 (Chesnut Tree Hill Road Extension)
This intersection has heavy traffic congestion during peak periods. The intersection of Riggs Road is within 500 feet and further contributes to the corridor's congestion.

CT-188 (Quaker Farms Road) at Oxford High School
CT-188 (Quaker Farms Road) needs to be designated as a school zone with associated signage and speed limits.

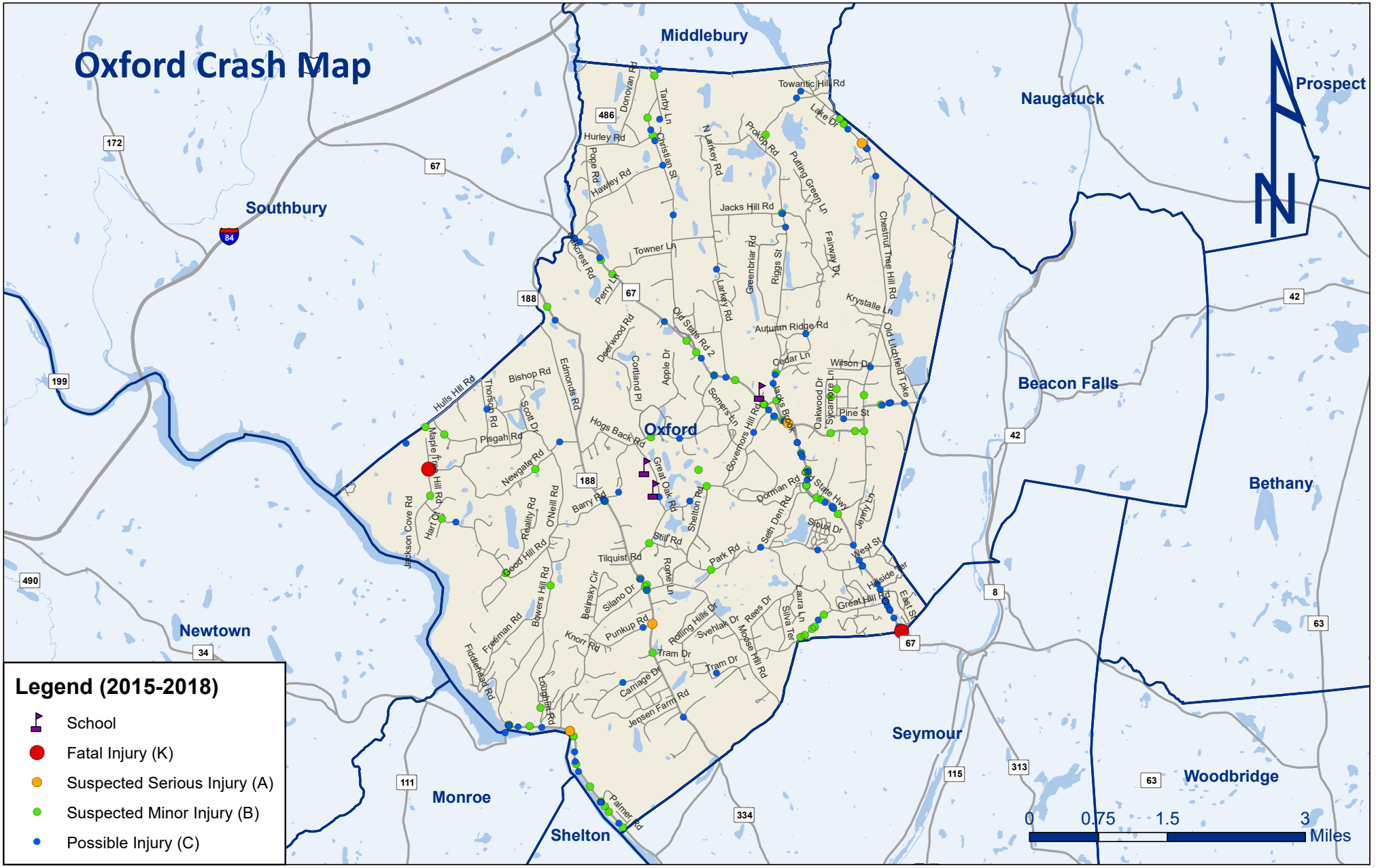
Center Line Rumble Strips
Center line rumble strips have been installed on portions of state corridors and have been effective.

Speeding
Speeding is an issue throughout the Town of Oxford. CT-188 (Quaker Farms Road) and CT-67 (Seymour Southbury Road/Oxford Road) have speeding issues and the town is considering various traffic calming measures to deter cut-through traffic.

Pedestrian and Bicyclists
The town has limited pedestrian and bicycle activity. NVCOG is administering a pedestrian and bicyclist focused corridor study along Oxford Road to improve safety and connectivity to existing non-motorized resources/ infrastructure.

Oxford Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	2	0	0
Suspected Serious Injury (A)	1	2	0	1
Suspected Minor Injury (B)	18	22	16	16
Possible Injury (C)	20	26	30	27
Total Crashes	39	52	46	44


Oxford Crash Map
Middlebury
Naugatuck
Prospect
Southbury
Beacon Falls
Oxford
Bethany
Newtown
Seymour
Woodbridge
Monroe
Shelton
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3 Miles

Field Site Inventory

Kettletown Road/Maple Tree Hill Road

Kettletown Road and Maple Tree Hill Road form a three-way, unsignalized intersection. Kettletown Road runs north-south through the intersection with Maple Tree Hill Road entering the intersection from the east at a severe skew, at higher elevation and under stop control. The Maple Tree Hill Road southbound approach is also split by a grass island to provide improved sight lines for motorists accessing Kettletown Road Northbound.

Recommendations:

- Consider lowering the Maple Tree Hill Road approach to address the elevation difference of the two roadways.
- Consider realigning the Maple Tree Hill Road approach to the north to address the severe skew.



Kettletown Rd/Maple Tree Hill Rd

CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road

The intersection of CT-188 (Quaker Farms Road), Silano Drive and Moose Hill Road is a four-way, unsignalized intersection with CT-188 (Quaker Farms Road) as the mainline and Silano Drive and Moose Hill Road under stop control. Through the intersection, CT-188 (Quaker Farms Road) presents a steep gradient/horizontal curve. The posted speed limit is 45 MPH with much higher speeds reported. For motorists exiting Silano Drive, sight lines are impeded to the south by a vertical crest curve and by wayfinding signage adjacent to the stop sign. The town recently installed LED stop signs for both side street approaches.

Recommendation:

- Consider adding retroreflective strips on stop sign posts and relocating wayfinding signage to the northwest corner of the intersection.


CT-188 (Quaker Farms Rd)/Silano Dr/Moose Hill Rd

Oxford Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Kettletown Road/Maple Tree Hill Road	Elevation differences	Consider lowering the Maple Tree Hill Road approach	Medium-High
	Skewed intersection	Consider realigning the Maple Tree Hill Road approach to the north	Medium-High
CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road	Limited sight distance	Consider adding retroreflective strips on stop sign posts and relocating wayfinding signage to the northwest corner of the intersection	Low
Great Hill Road	Speeding	Dynamic speed feedback signs	Low
	Horizontal curvature	Enhanced delineation	Low
		Centerline rumble strips	Low
CT-34 (Roosevelt Drive)	Speeding	Dynamic speed feedback signs	Low
	Horizontal curvature	Enhanced delineation	Low
		Centerline rumble strips	Low
CT-188 (Quaker Farms Road) at Oxford High School	Lack of school zone designation	Designate the area around the high school as a school zone with signage, pavement markings, and reduced speed limit	Low
Townwide	Speeding	Traffic calming	Low-Medium
		Dynamic speed feedback signs	Low

TOWN OF PLYMOUTH

2016 US Census Population Estimate: 11,749

Area: 22.30 square miles

Population Density: 527 persons per square mile

2016 Vehicle Miles Traveled (VMT): 56,634,495

2016 VMT per Capita: 4,820

Setting: Rural

Town and Regional Representatives: Christopher Latimer (PD)

Data Identified High Crash Corridors: US-6-Main Street (From North Riverside Avenue to Holt Street)

Data Identified High Crash Intersections: North Riverside Avenue and US-6-Main Street

Bike and Ped Injury and Fatal Crash Injuries: 4

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 264



US-6 (Main Street)

Overview

Plymouth is a rural town in Litchfield County, bordered by Harwinton to the north, Wolcott and Waterbury to the south, Thomaston and Watertown to the west, and Bristol to the east. The Town of Plymouth includes the Villages of Plymouth Center, Terryville and Pequabuck. The town's main thoroughfares are US-6, CT-72 and CT-262.

Town Input

Fatal Crashes from 2015-2018

- US-6 (Main Street) - Older person angle fatal crash.
- South Main Street - Substance-involved and speeding fatal crash.
- CT-262 (South Street/Mt Tobe Road/Spruce Brook Road) - Young driver, substance-impaired and speed-related roadway departure crash.

US-6 (Main Street)

Most crashes in the Town of Plymouth occur on US-6 (Main Street). This is a major connector for motorists travelling between CT-8 (James H Darcey Memorial Highway) and I-84 (Yankee Expressway). It is a two-lane east-west corridor with high volumes of traffic. The cross section is narrow with tight abutting physical constraints and intermittent sidewalks. The speed limit is posted from 30-40 MPH. The town uses speed trailers to collect data along US-6. Sun glare is an issue for drivers.

CT-72 (North Riverside Avenue/South Riverside Avenue) and US-6 (Main Street) intersection

This is a signalized intersection with a high frequency of crashes and limited sight distance. This intersection was recently updated and reconstructed by CTDOT. The current configuration for eastbound US-6 (Main Street) is a right and left through lane. The through traffic bypasses the left turning motorists as they queue, which causes angle crashes. CT-72 (North Riverside Avenue/South Riverside Avenue) is offset at the intersection.

US-6 (Main Street) and Carter Road

There are frequent roadway departure crashes near this intersection due to the horizontal curvature. US-6 (Main Street) eastbound traffic has two lanes and westbound has one. This intersection is a high-frequency crash location due the westbound traffic turning left onto Carter Road and roadway departure crashes along the horizontal curve. One utility pole on the south side has been struck and replaced several times, but some damaged poles are still there. Installing a guardrail for protection is a possible recommendation.

Bemis Street

This is a cut-through roadway (east-west road) that parallels US-6 (Main Street) and is used by drivers to avoid US-6 (Main Street). There are physical constraints and the cross section is narrow. The roadway was recently paved and frequent speeding has been observed. "No through truck" signs are posted on this roadway, but they are ignored.

CT-72 (Poland Brook Road/North Riverside Avenue/South Riverside Avenue)

Roadway departure crashes are common along this corridor. CT-72 (Poland Brook Road/North Riverside Avenue/South Riverside Avenue) has tight constraints in the section south of US-6 (Main Street) and has icy and slippery weather issues.

US-6 (Main Street) and North Main Street

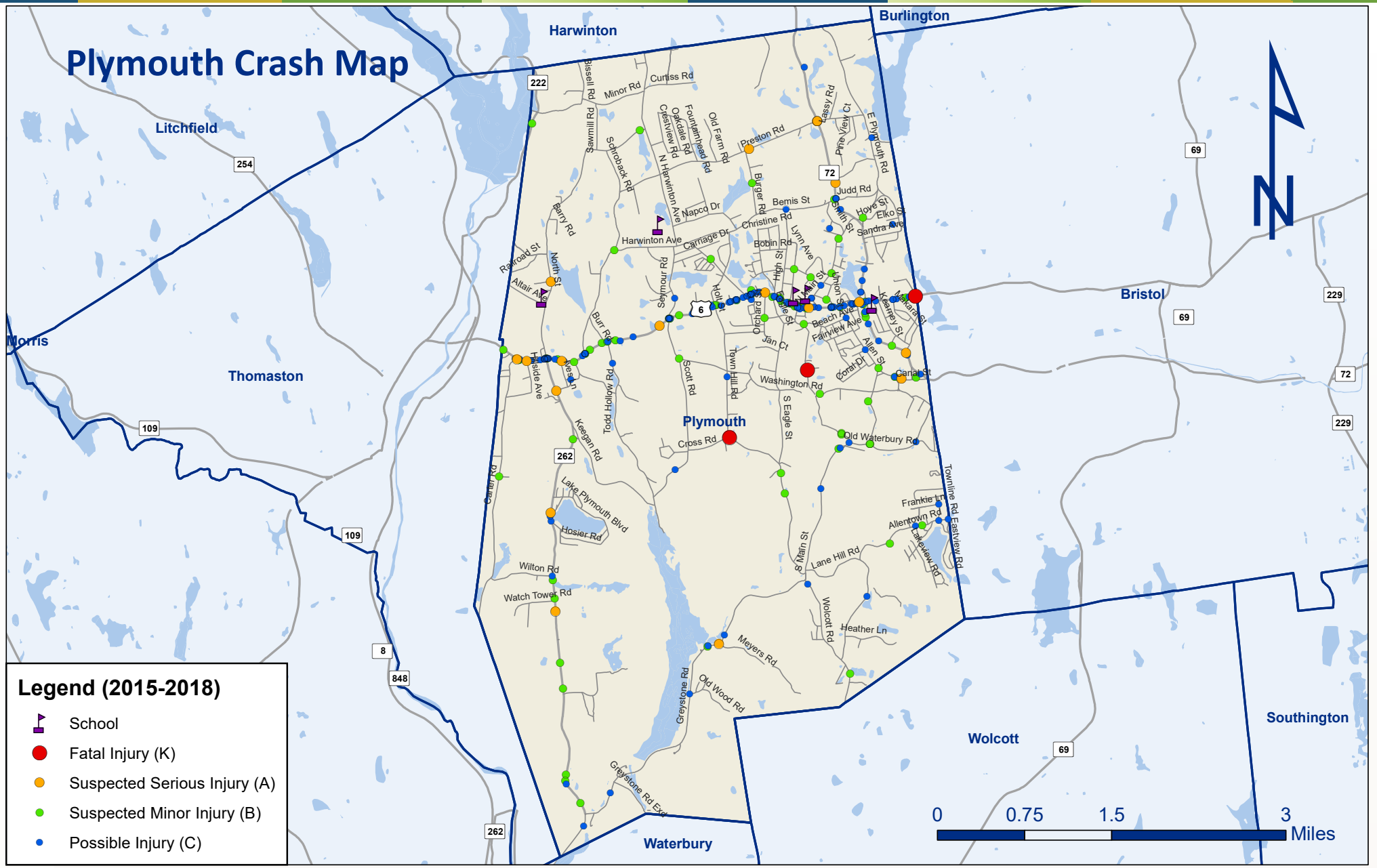
The State is planning to reconstruct this intersection, which has a triangle configuration with the town green in the center. The design is currently underway.

Pedestrians

Pedestrians walk on the shoulder on US-6 (Main Street) and on North Main Street at night.

Plymouth Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	1	1
Suspected Serious Injury (A)	0	10	4	4
Suspected Minor Injury (B)	20	21	30	21
Possible Injury (C)	26	39	45	41
Total Crashes	47	70	80	67


Plymouth Crash Map
Harwinton
Burlington
Litchfield
Morris
Thomaston
Bristol
Plymouth
Wolcott
Southington
Waterbury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles
N

Field Site Inventory

US-6 (Main Street)/Carter Road

This is a skewed T-intersection with Carter Road under stop control at US-6 (Main Street) and free flow along US-6. Carter Rd intersects US-6 along a horizontal and vertical curve. US-6 (Main Street) eastbound traffic has a two lane cross section and westbound has one. The US-6 (Main Street) speed limit is posted at 25 MPH, and there are enhanced horizontal curve warning signs at intersection. Five utility poles were replaced due to roadway departure crashes along the southside of US-6, but there were still a few damaged poles when this site visit was conducted.

Recommendations:

- Investigate application of high friction surface treatment.
- Consider reducing eastbound lanes to one lane and widen the shoulder.
- Add edge line rumble strips.
- Install Flashing LED on enhanced horizontal curve warning signs.

CT-72 (S. Riverside Avenue) from US-6 (Main Street) to Bristol Town Line

The intersection of CT-72 (S. Riverside Avenue) and US-6 (Main Street) is a four-way signalized intersection with atypical geometry. The section of CT-72 (S. Riverside Avenue) between this intersection and the Bristol town line is a winding section of road with one travel lane in each direction. Horizontal curve warning signs are provided along these curves. However, vegetation is overgrown in some areas, partially obscuring visibility of warning signs. Slippery road conditions have been noted as a contributing factor in multiple collisions along this corridor.

Recommendations:

- Trim vegetation to improve visibility of signs.
- Investigate need for application of high friction surface treatment.



Utility poles on US-6 (Main St) along horizontal curvature



CT-72 and US-6

Plymouth Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (Main Street)/Carter Road	Roadway departure crashes along horizontal curve	Enhanced delineation	Low
		High friction surface treatment	Low
		Eliminate climbing lane on US-6	Low-Medium
		Install edge line rumble strips if warranted	Low
CT-72 (S. Riverside Avenue) from US-6 (Main Street) to Bristol Town Line	High frequency crashes	High friction surface treatment	Low
	Horizontal curve signs blocked by vegetation	Vegetation management	Medium
US-6	High frequency of crashes	Dynamic speed feedback signs	Low
		Signal optimization	Medium
		Traffic signal retroreflective backplates	Low-Medium
Bemis Street	Speeding	Dynamic speed feedback signs	Low
		Narrow travel lanes if feasible	Low

TOWN OF PROSPECT

2016 US Census Population Estimate: 9,755

Area: 14.50 square miles

Population Density: 673 persons per square mile

2016 Vehicle Miles Traveled (VMT): 53,521,045

2016 VMT per Capita: 5,487

Setting: Rural

Town and Regional Representatives: Robert J. Chatfield (Mayor), Lt. Nelson J. Abaruza (Director of Public Safety)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 4

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 207



Talmadge Road

Overview

Prospect is a rural town located at the highest elevation in New Haven County, bordered by Waterbury to the north, Bethany to the south, Naugatuck to the west, and Cheshire to the east. The town's main thoroughfares are CT-42, CT-68, and CT-69.

Town Input

Fatal Crashes from 2015-2018

- Talmadge Hill Road and CT-68 (Cheshire Road) - Young driver, multi-car, angle crash resulting in one fatality.
- CT-68 (Union City Road) near Laura Avenue - Front-to-front lane departure fatal crash.
- Summit Road - Substance-involved roadway departure fatal crash.
- CT-69 (Waterbury Road) - Young driver lane departure fatal crash.

CT-68 (Cheshire Road)/Matthew Street/Talmadge Hill Road CT-68 (Cheshire Road)/Matthew Street/Talmadge Hill Road

This is a two-way stop-controlled intersection with sight distance issues from the local side streets. CT-68 (Cheshire Road) has vertical curvature that extends from Prospect east to Cheshire, and the speed limit is posted at 45 MPH. A crest in the roadway on CT-68 (Cheshire Road), just north of this intersection, limits the sight distance and the stopping time due to high speeds. There is a utility pole at Talmadge Hill Road and CT-68 (Cheshire Road) that is in the line of sight. The town installed stop ahead warning signs and pavement markings on Matthew Street and Talmadge Hill Road to alert drivers. This intersection is a site of a recent fatal crash.

Edge Line Pavement Markings

The Town of Prospect installed edge lines on most of their roads to help mitigate roadway departure crashes.

Summit Road and Peter Gilkey Road
This intersection had numerous crashes over the years. There is a steep downgrade into a horizontal curve at the unsignalized intersection. The geometry of the intersection can confuse the motorists travelling northbound on Summit Road, drawing them into Gilkey Road instead of keeping them on Summit Road through the horizontal curve.

CT-69 (Waterbury Road)
The town requested the state move the merge lane on CT-69 (Waterbury Road) farther north due to a concentration of crashes occurring at the previous merge location, in front of Oliver's Supermarket (closer to the Town Center), which the state did. The Town stated that the crash frequency has been reduced significantly since the state redesigned the merge lane.

Regional Middle School District
The middle school located behind the town hall on Center Street serves multiple towns and has a high percentage of students who use parent drop-off instead of school busses, resulting in congestion during the AM period.

Motorcycles
The town has had some issues with motorcycles speeding on CT-69 (Waterbury Road/New Haven Road).

Signs on CT-42 (Mountain Road)
The state repaved CT-42 (Mountain Road). The Town of Prospect border signs were not reinstalled in the correct locations; they are too far east into Cheshire. This has caused emergency response issues because there has been some confusion as to which town is responsible. The town wants the state to relocate signs at town lines.

Center Line Rumbles
The town has rumble strips on Straitsville Road and Scott Road. They would like them on CT-68 (Union City Road/Cheshire Road) and CT-69 (Waterbury Road/New Haven Road) and Summit Road as well.

Chevron Curve Signs
CTDOT is installing chevron curve signs along CT-68 (Cheshire Road) east of Roaring Brook Road where there have been a series of crashes.

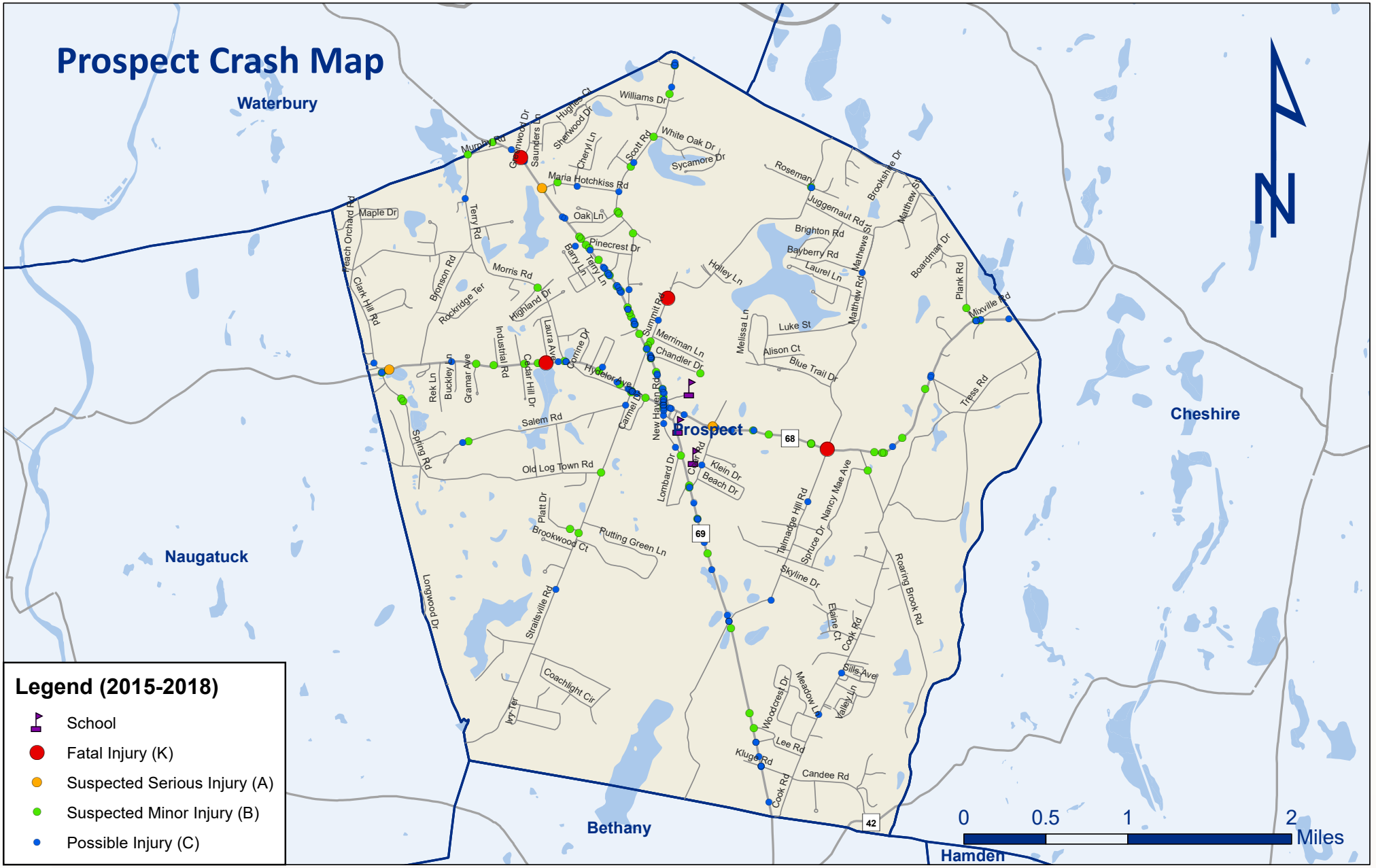
Dynamic Speed Feedback Signs
The town employs these signs on various roadways. Some of them are permanently mounted, and some are transferable and collect various traffic data.

Pedestrians
The Town of Prospect is using a LOTCIP grant to fund sidewalks on the west side of CT-69 (Waterbury Road) from the Center of Town to Hotchkiss Fields. In addition, they will be upgrading the current pedestrian crossings with ADA compliant ramps and pedestrian signals at CT-68 (Union City Road/Cheshire Road) and CT-69 (Waterbury Road/New Haven Road).

Bicycles
CT-69 (Waterbury Road/New Haven Road) and Straitsville Road in Prospect are used as a training route for cyclists in the warmer months. The intersection at CT-69 (New Haven Road) and Lee Road is of concern to cyclists since some have been hit there before due to the crest on CT-69 (New Haven Road).

Prospect Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	1	1	2
Suspected Serious Injury (A)	2	1	0	0
Suspected Minor Injury (B)	22	31	21	12
Possible Injury (C)	30	26	26	32
Total Crashes	54	59	48	46


Prospect Crash Map
Waterbury
Naugatuck
Prospect
Cheshire
Bethany
Hamden
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles
N
Williams Dr
White Oak Dr
Sycamore Dr
Maria Hotchkiss Rd
Oak Ln
Pinecrest Dr
Morris Rd
Highland Dr
Merriman Ln
Chandler Dr
Salem Rd
Old Log Town Rd
Rutting Green Ln
Skyline Dr
Lee Rd
Candee Rd
Cook Rd
Brighton Rd
Bayberry Rd
Laurel Ln
Luke St
Alison Ct
Blue Trail Dr
Plank Rd
Mixville Rd
Tress Rd
Klein Dr
Beach Dr
Roaring Brook Rd
Coachlight Cir
Meadow Ln
Valley Ln
Sills Ave
Elaine Ct
Spruce Dr
Nancy Mae Ave
Talmadge Hill Rd
Brookwood Ct
Platt Dr
Straitsville Rd
Longwood Dr
Spring Rd
Clark Hill Rd
Peach Orchard Rd
Maple Dr
Terry Rd
Bronson Rd
Rockridge Ter
Industrial Rd
Cedar Hill Dr
Laura Ave
Corinne Dr
Hyde Ln
Buckley Ln
Rek Ln
Gramar Ave
Carmel Dr
Lombard Dr
Cedar Rd
Woodcrest Dr
Kluge Rd
Cook Rd
Juggernaut Rd
Roseman
Brookshire Dr
Matthew St
Mathews St
Matthew Rd
Boardman Dr
Melissa Ln
Holley Ln
Summit Rd
Barry Ln
Terry Ln
Hughes Ct
Sherwood Dr
Cherylyn
Scott Rd
Saunders Ct
Greenwood Dr
Murphy Rd
68
69
42

Field Site Inventory

CT-68 (Cheshire Road)/Talmadge Hill Road/Matthew Road

This is a two-way intersection with a stop control at the Talmadge Hill Road and Matthew Road approaches. Stop pavement markings are present. The vegetation is managed on CT-68 (Cheshire Road); trees have been cut down recently. The crest on CT-68 (Cheshire Road) impedes the sight distance for the motorists heading east towards Cheshire from both side of the streets. The utility pole on the southeast corner is in the line of sight for the motorists on Talmadge Hill Road. There is a vertical curvature downslope for eastbound traffic. The CT-68 (Cheshire Road) speed limit is posted at 45 MPH, but the motorists travel at higher speeds.

Recommendations:

- Lower crest on CT-68 (Cheshire Road).
- Continue to manage vegetation.
- Install Dynamic Speed Feedback signs on CT-68 (Cheshire Road).

Summit Road/Peter Gilkey Road

The intersection of Summit Road and Peter Gilkey Road is a skewed, three-way, unsignalized intersection within a residential neighborhood with Summit Road as the mainline. Peter Gilkey Road is a dead-end road servicing four houses and is under stop control at Summit Road. Summit Road runs north/south as the main movement with a posted speed limit of 25 MPH. The Summit Road northbound approaches the intersection on a steep downgrade and into a sharp horizontal curve to the right beginning at the intersection. Due to the sharp horizontal curve, northbound motorists can be confused and continue straight onto Peter Gilkey Road crossing on-coming traffic. Antiquated warning and chevron signs are present on the northbound approach to alert motorists of the upcoming conditions.

Recommendations:

- Consider adding additional chevron signs and upgrading the warning signs with retroreflective signs and retroreflective signpost strips.
- Consider reducing the width of the Peter Gilkey Road approach and better align it with Summit Road to address the skew.



Talmadge Hill Rd/Matthew Rd/ CT-68 (Cheshire Rd)


Summit Rd/Peter Gilkey Rd

Prospect Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-68 (Cheshire Road)/Talmadge Hill Road/Matthew Road	Frequent site of angle crashes	Lower crest on CT-68 (Cheshire Road).	Medium
		Continue to manage vegetation.	Low
		Install Dynamic Speed Feedback signs on CT-68 (Cheshire Road)	Low
Summit Road/Peter Gilkey Road	Older chevron signs along horizontal curve	Add additional chevron signs and upgrading the warning signs with retroreflective signs and retroreflective sign-post strips.	Low
	Skewed intersection	Reduce the width of the Peter Gilkey Road approach and better align with Summit Road	Low
	Confusing roadway geometry	Reduce the Peter Gilkey Road approach cross section, additional chevrons can be installed in better line of sight for Summit Road northbound motorists.	Low
CT-42 (Mountain Road)	Town signs are not at town lines	Ask state to relocate signs along CT-42 on the town line	Medium
Various roadways (CT-68, CT-69 and Summit Rd)	Roadway departure crashes	Install centerline rumble strips	Low
Townwide	Motorcycle Crashes	Motorcycle education and outreach in local papers	Low
	Pedestrians	Install sidewalks	Low
	Bicycles	Sharrows and Share the Road signs	Low
	General Safety	Use variable message signs to alert motorists to pedestrians, bicyclists and motorcycles	Medium

TOWN OF SEYMOUR

2016 US Census Population Estimate: 16,553

Area: 15.00 square miles

Population Density: 1,104 persons per square mile

2016 Vehicle Miles Traveled (VMT): 153,687,630

2016 VMT per Capita: 9,285

Setting: Suburban

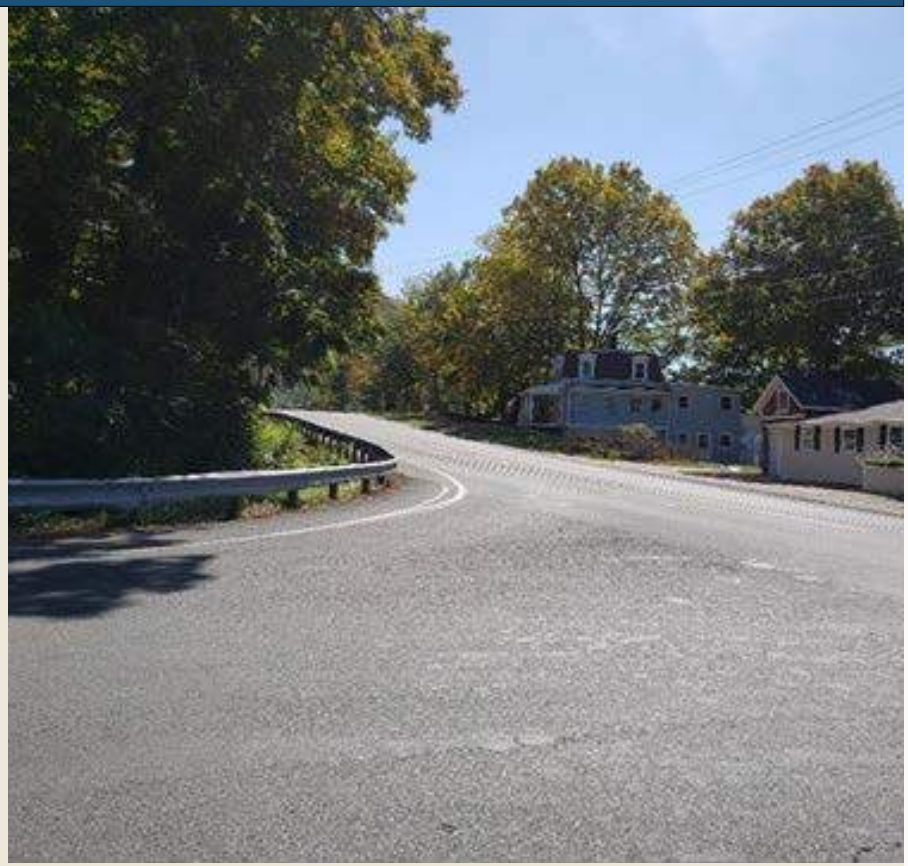
Town and Regional Representatives: Rory Burke (Town Administrative Assistant), Steve Prajer (PD), Roberto Rinaldi (PD)

Data Identified High Crash Corridors: Bank Street (From Wakeley Street Extension to Town Line)

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 7

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 276



Source: VN Engineers

Overview

Seymour is a rural town located in western New Haven County, bordered by Beacon Falls to the north, Bethany and Woodbridge to the east, Ansonia and Shelton (separated by Housatonic River) to the south, and Oxford to the west. The town's main thoroughfares are CT-8, CT-34, CT-67, CT-115, CT-188, CT-313, and CT-721.

Town Input

Fatal Crashes from 2015-2018

- Rimmon Street - Young driver, substance-impaired, fatal crash; the roadway was reconstructed by CTDOT in response to crash.

Holbrook Road
This corridor had a series of roadway departure crashes along its horizontal curvatures. Enhanced horizontal curve warning signs were installed, but no guiderails were added. The town applied for a LOTCIP grant to address the corridor's issues. The corridor project design is at 90%.

CT-313 (River Street/Broad Street/Maple Street/Rimmon Road)
This corridor has reported roadway departure crashes. There have been a series of crashes due to speeding and vertical/horizontal curvatures east of Clinton Road.

CT 313 (Maple Street/Rimmon Road) and Clinton Road
There is severe horizontal curvature along CT-313 (Maple Street/Rimmon Road) at the intersection with Clinton Road. This intersection has unconventional geometry with a high frequency of roadway departure and speed-related crashes.

CT-313 (Maple Street)/Old Ansonia Road/Haddard Road
This is an offset intersection with poor sight distance and a high concentration of crashes. The state will add reflective strips to the enhanced horizontal curve warning signs. The state did some vegetation management, but the town said that it still needs improvement.

Drainage Issues
The town has some drainage issues on the following roadways:

- Skokorat Street - Icing due to run-off seepage.
- CT-313 (Maple Street) - Between Warren Drive and Walnut Street - Drainage issue primarily in Spring.
- CT-313 (Maple Street/Rimmon Road) near Clinton Road - Fog and icing-related to nearby waterfall.

CT-8 (Ansonia-Derby-Shelton Expressway) Exit 19 SB Off-Ramp
This is a short, stop-controlled ramp with a high concentration of crashes. The town wants to shut this ramp down due to the limited sight distance at the off-ramp. The nearby off-ramp Exit 20 (approximately 1 mile away) provides adequate access.

Bungay Road
This corridor has vertical and horizontal curvatures. The vertical curvature creates a significant "dip" and the horizontal curvature has significant adjacent drop-off. The section of roadway north of Old Town Road has had a series of crashes.

CT-67 (New Haven Road/Derby Street/Bank Street/Oxford Road)
This corridor has the most crashes and the highest volume of traffic in the Town of Seymour. The state is improving the section of CT-67 (Bank Street) west of Stop and Shop. The Stop and Shop intersection has been redesigned as well.

CT-67 (New Haven Road) and Silvermine Road
There is a through truck prohibition on Silvermine Road with adequate signage, but trucks use it to access the industrial park. Silvermine Road has steep vertical curvature (18% grade) which is difficult for large trucks due to the transition in grade from CT-67 (New Haven Road). Cogwheel Lane runs parallel to Silvermine Road and was design for trucks associated with the industrial park. The town has a proposed design to impede truck access on Silvermine Road using a channelized island. The Town of Seymour has worked with various GPS systems to direct trucks from CT-8 up Cogwheel Lane which runs parallel, but every six months the GPS program resets and trucks are directed back to Silvermine Road.

Mountain Road and Brook Street
This intersection is a frequent roadway departure crash site. It has horizontal curvature and intermittent guiderails.

Speeding
Speeding is an issue throughout the town. The police have been using data, speed feedback trailers, radar, and enforcement to mitigate it.

CT-188 (Squantuck Road) and CT-34 (Roosevelt Drive)
This is a stop-controlled T-intersection. CT-188 (Squantuck Road) ends in a 9% downgrade at this junction. This is a site of various roadway departure crashes: some of them hitting a residence located on CT-34 (Roosevelt Drive), and others crashing into the Housatonic River.

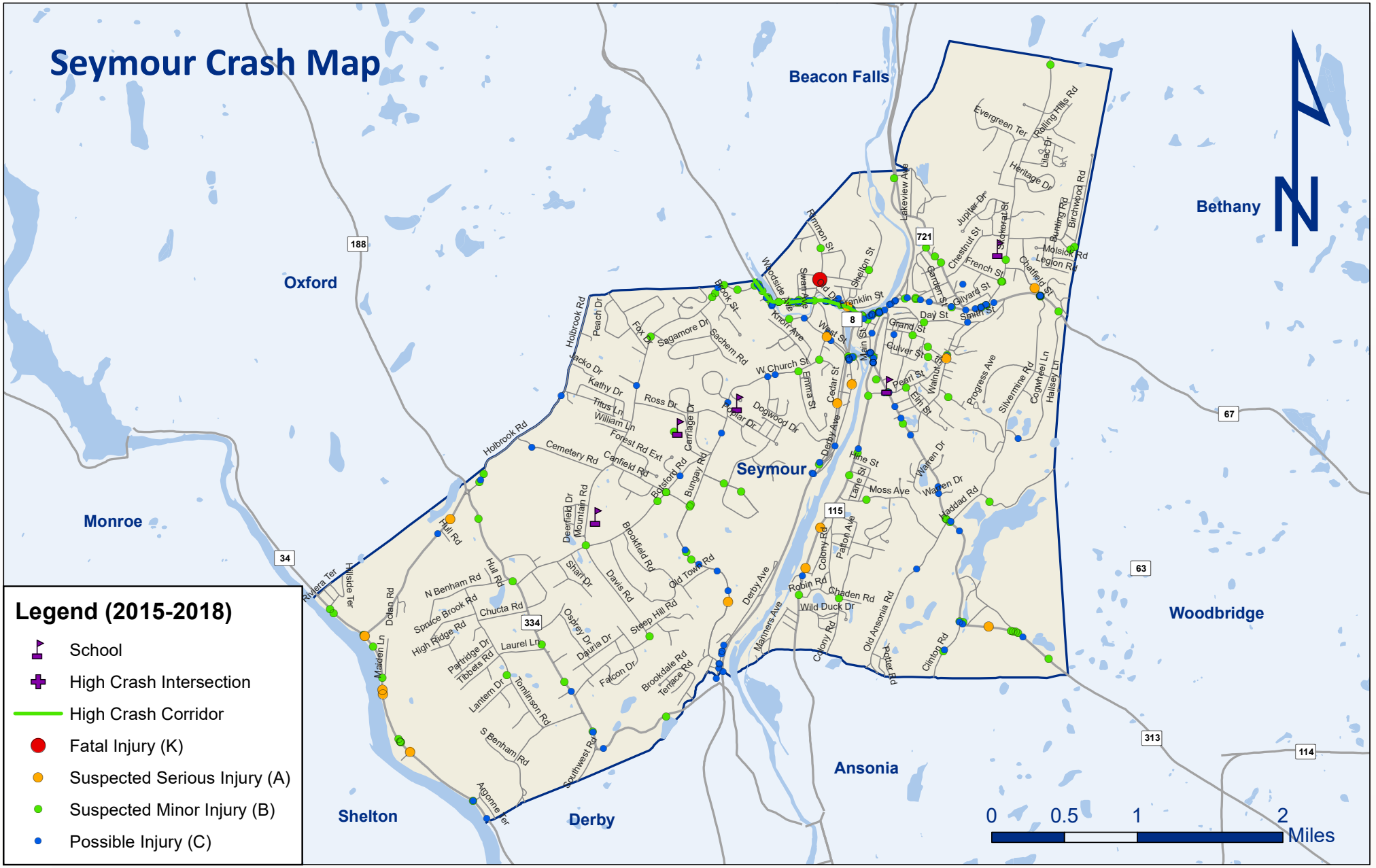
High Friction Surface Treatment
The town is interested in learning more about this countermeasure for possible spot installations at high crash locations along the curves. The town inquired into its long-term impacts on pavement.

Pedestrians and Bikes
The Town of Seymour is not typically a bicyclist destination. The town representatives wants to install more sidewalks and are seeking funding opportunities. There is CT Community Connectivity Grant for sidewalks on Woodside Avenue.


CT-313 (Clinton Road)

Seymour Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	1	0
Suspected Serious Injury (A)	2	2	7	4
Suspected Minor Injury (B)	29	49	28	25
Possible Injury (C)	22	27	44	36
Total Crashes	53	78	80	65


Seymour Crash Map
Beacon Falls
Bethany
Oxford
Monroe
Seymour
Woodbridge
Ansonia
Shelton
Derby
Legend (2015-2018)
School
High Crash Intersection
High Crash Corridor
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.5 1 2
Miles

Field Site Inventory

CT-313 (Maple Street/Rimmon Road)/Clinton Road

Clinton Road bisects CT-313 (Maple Street/Rimmon Road) along a sharp horizontal curve. Clinton Road has two-way legs: one is a stop-controlled, and the other is a yield-controlled. CT-313 (Maple Street/Rimmon Road) speed limit is posted at 20 MPH in this segment, but the motorists travel at higher speeds. The sight distance from Clinton Road looking west from the yield-controlled segment is inadequate. The cars making left turn from northbound CT-313 (Maple Street/Rimmon Road) should take the first leg of Clinton Road, due to the horizontal curvature. The second entrance does not provide the northbound CT-313 (Maple Street/Rimmon Road) approaching vehicles with adequate stopping distance.

Recommendations:

- Make stop-controlled leg on Clinton Rd one-way access.
- T-up yield controlled leg and convert to one-way egress under stop control.
- Dynamic speed feedback signs on CT-313.

CT-188 (Squantuck Road)/CT-34 (Roosevelt Drive)

The intersection of CT-188 (Squantuck Road) and CT-34 (Roosevelt Drive) is unsignalized three-way intersection with CT-34 (Roosevelt Drive) as the mainline and CT-188 (Squantuck Road) under stop control as the side street. There is a 9% downgrade on the CT-188 (Squantuck Road) southbound approach to the intersection with an appropriate stop ahead warning sign and oversize stop sign at the intersection. For motorists exiting CT-188 (Squantuck Road), sight lines are impeded to the west by vegetation and route signage and to the east by a crest vertical curve. Centerline rumble strips are present on all approaches to the intersection.

Recommendations:

- On the northwest corner trim vegetation and relocate route signage to improve sight lines for motorist making a left from CT-188 (Squantuck Road) to CT-34 (Roosevelt Drive).
- Consider a far side stop sign for the CT-188 (Squantuck Road) approach.



CT-313 (Maple St/Rimmon Rd)/Clinton Rd



CT-188 (Squantuck Rd) at CT-34 (Roosevelt Dr)

Seymour Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-313 (River Street/Broad Street/Maple Street /Rimmon Road	Roadway departure crashes along horizontal curvature	Enhanced delineation	Low
		High friction surface treatment	Low
	Vegetation overgrowth	Manage vegetation at CT-313 (Maple Street)/Old Ansonia Road/Haddard Road	Low-Medium
CT-313 (Maple Street/Rimmon Road)/Clinton Road	Skewed intersection along horizontal and vertical curvature with limited sight distance	Make stop-controlled leg on Clinton Rd one-way access	Medium
		T-up yield controlled leg and covert to one-way egress under stop control	Low
	Speeding on CT-313	Dynamic speed feedback signs on CT-313	Medium
Various locations on CT-313 and Skokorat St	Drainage Issues	Address with state or local public works	Low
CT-188 (Squantuck Road)/ CT-34 (Roosevelt Drive)	Roadway departure crashes from motorists continuing westbound from CT-188 at CT-34. CT-188 terminates at this intersection.	On the northwest corner trim vegetation and relocate route signage to improve sight lines for motorist making a left from CT-188 (Squantuck Road) to CT-34 (Roosevelt Drive)	Low
		Consider a far side stop sign for the CT-188 (Squantuck Road) approach	Low
Townwide	Roadway departure crashes	Enhanced delineation	Low
		High friction surface treatments	Low

CITY OF SHELTON

2016 US Census Population Estimate: 41,334

Area: 31.90 square miles

Population Density: 1,296 persons per square mile

2016 Vehicle Miles Traveled (VMT): 330,815,195

2016 VMT per Capita: 8,003

Setting: Urban

Town and Regional Representatives: Rimas Balsys (City Engineer), Mark Siglinger (PD), Mark Ptak (PD), Bob Kozlowsky (PD)

Data Identified High Crash Corridors: CT-110-Howe Avenue (From Myrtle Street to Canal Street West)

Data Identified High Crash Intersections: CT-110-Howe Avenue and Bridge Street

Bike and Ped Injury and Fatal Crash Injuries: 26

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 686



CT-110 (Howe Avenue)

Overview

Shelton is a city in Fairfield County, bordered by Seymour, Ansonia, and Derby to the north through the Housatonic River, Orange and Milford to the east through the Housatonic River, Trumbull and Stratford to the south and Monroe and Trumbull to the west. The city's main thoroughfares are CT-8, CT-108, CT-110, and CT-714.

City Input

Fatal Crashes from 2015-2018

The police representatives stated that the fatal crashes that occurred during the study period were due to behavioral issues, such as: impairment, distraction, medical issues, etc.

Population Growth

The City of Shelton is undergoing an increase in population and a corresponding increase in retail and housing developments. There has been an influx of residents and developers. This has put a strain on the city's infrastructure because most developments are too small to individually warrant infrastructure upgrades, but collectively they are impacting roadway and intersection capacity.

Huntington Street

This local road is used as a cut-through to access CT-8, and it has heavy volumes of traffic and frequent crashes.

CT-714 (Bridgeport Avenue)
This high-frequency crash corridor has high volumes of traffic and distracted drivers. The majority of these crashes are front-to-rear crashes according to the police. The increase in hotels and retail development along the corridor is creating spot congestions, and when CT-8 is congested or experiences an incident, the traffic diverts onto CT-714 (Bridgeport Avenue). The former UI building is being redeveloped in this corridor with the addition of a traffic signal at the CT-174 (Bridgeport Avenue) and Parrot Drive intersection. Center line rumble strips were installed.



CT 110 (Howe Avenue)

Downtown
There was a cluster of crashes along CT-110 (Howe Avenue) at the intersections with White Street, Bridge Street and Center Street. The area has experienced significant residential growth with new apartment complexes. Uncoordinated traffic signals, on-street parking, "No Right on Reds" signs and exclusive pedestrian phases are contributing to the traffic congestion. This area has capacity issues due to short blocks and narrow roadway cross sections. There is no CT-8 southbound entrance ramp at Exit 14, and the motorists divert through downtown to Bridge Street to access Exit 15 in Derby.

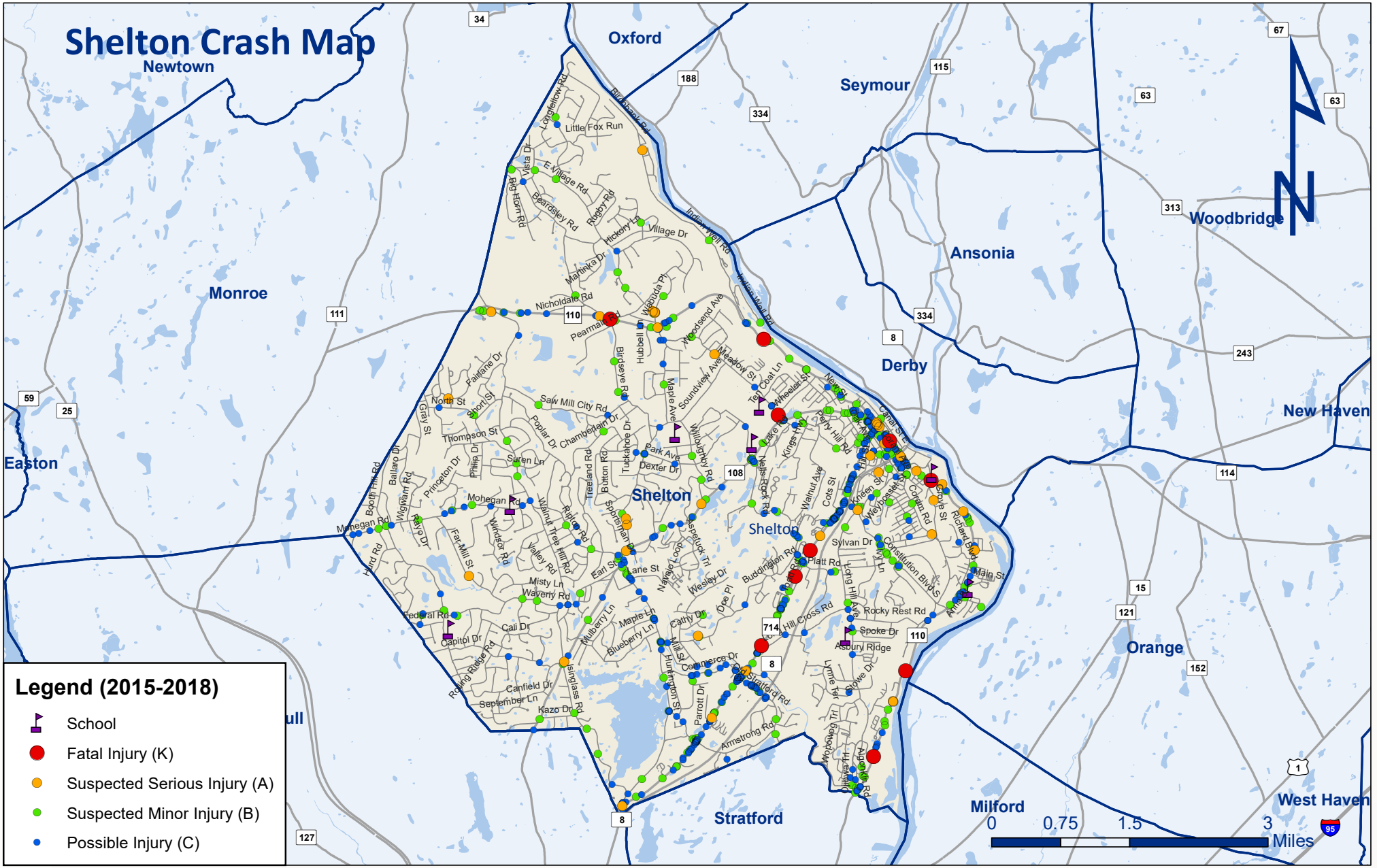
CT-108 (Shelton Avenue/Huntington Street/Nichols Avenue)
The City of Shelton participated in the CT Community Connectivity Program along CT-108 (Shelton Avenue/Huntington Street/Nichols Avenue) to connect the River Walk to the Naugatuck River Greenway, Senior Center and the high school. The recommendation was to install sidewalks along the corridor, but the city has not received funding. The city still would like to see the project move forward when other funding opportunities arise.

Huntington Street and Commerce Drive
This is a stop-controlled T-intersection with high volumes of traffic due to corporate office buildings on Commerce Drive to the east. There were high frequency of crashes. Commerce Drive is under a stop control and consists of a four-lane cross-section. The city is seeking funding sources for a potential roundabout at this intersection.

CT-110 (River Road)
The southside of CT-110, near the Stratford town line, has a concentration of crashes, and the city said these are attributable to the high volume of Sikorsky employees using CT-110 (River Road) for work home commute.

Shelton Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	2	4	3	1
Suspected Serious Injury (A)	10	15	9	8
Suspected Minor Injury (B)	75	65	75	57
Possible Injury (C)	79	104	85	94
Total Crashes	166	188	172	160


Shelton Crash Map
Newtown
Oxford
Seymour
Woodbridge
Ansonia
Monroe
Derby
New Haven
Easton
Shelton
Stratford
Orange
West Haven
Milford
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3 Miles

Field Site Inventory

CT-110 (Howe Avenue) from White Street to Center Street

CT-110 (Howe Avenue) is located in Shelton's downtown. It is a pedestrianized area with sidewalks on both sides of the roadway. The crosssection consists of on-street parking and travel lanes in both directions.
The primary intersection is the off set, signalized, four-way intersection with Bridge Street which connects to Derby. According to the town, this is a high frequency crash site. There are No turn on Red prohibitions for all approaches except northbound on Howe Avenue. The on-street parking just north of intersection is too close to the corner. There are crosswalks and an exclusive pedestrian phase at the signal. The buildings are built out to the sidewalk limiting sight distance. The intersections of Howe Avenue and Center Street and Howe Avenue and White Street and Howe Avenue and Bridge Street are all signalized and within less than 650 feet of each other.

Recommendations:

- Daylighting by removing parking spaces adjacent to signals
- Signal coordination to reduce congestion.
- Traffic signal retroreflective backplates.
- Concurrent pedestrian phase with LPI.

CT-714 (Bridgeport Avenue)

Bridgeport Avenue (CT-714) is a heavily commercialized corridor that experiences peak period traffic congestion. The corridor continues to experience additional commercial growth further contributing to corridor wide traffic congestion. In addition, Bridgeport Avenue parallels CT-8 and is often used to avoid congestion on CT-8. Bridgeport Avenue generally consists of one travel lane in each direction, multiple turn lanes at signalized intersections, wide shoulders, centerline rumble strips and a posted speed limit varying between 30 MPH and 40 MPH. Many side streets and driveways prohibit exiting left-turns due to the heavy congestion and associated lack of available gaps in traffic. In addition, the wide shoulders are often used to by-pass queued vehicles.

Recommendation:

- Consider installing center two-way left-turn lanes at key locations to address left-turn conflicts at numerous commercial driveways. Consider access management strategies to consolidate driveways to minimize access/egress points along the commercial corridor.



CT-110 (Howe Avenue)/Bridge Street



CT-714

Shelton Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-714 (Bridgeport Avenue)	High front to rear crashes	Traffic signal optimization	Medium
		Traffic signal retroreflective backplates	Low-Medium
CT-108 (Shelton Avenue/ Huntington Street/Nichols Avenue)	Lack of sidewalks and funding	Apply for alternative source of funding for sidewalks.	Low-Medium
CT-110 (Howe Avenue) from White Street to Center Street	Pedestrian safety	Daylighting by removing parking spaces adjacent to signals	Low
	Congestion	Signal coordination to reduce congestion.	Low-Medium
		Traffic signal retroreflective backplates.	Low-Medium
	Pedestrian safety and congestion	Concurrent pedestrian phase with LPI.	Low-Medium
CT-110 (River Road) near Stratford Town line	Cluster of crashes	Corridor Study	Low-Medium
Huntington Street and Commerce Drive	High frequency crash intersection	Roundabout	Medium-High
Citywide	Increased congestion due to development	City could enact zoning policy requiring developers to make transportation improvements affected by projects.	Low-Medium

TOWN OF SOUTHBURY

2016 US Census Population Estimate: 19,572

Area: 40.10 square miles

Population Density: 488 persons per square mile

2016 Vehicle Miles Traveled (VMT): 257,293,245

2016 VMT per Capita: 13,146

Setting: Rural Suburban

Town and Regional Representatives: Officer Robert Bette (PD), Cpt. Christopher Grillo (PD)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 8

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 274



CT-172 (South Britain Road)/CT-67 (Roxbury Road)

Overview

Southbury is a rural suburban town in New Haven County, bordered by Roxbury and Woodbury to the north, Middlebury and Oxford to the east, Newtown to the south through Housatonic River, and Bridgewater to the west. The town's main thoroughfares are I-84, US-6, CT-67, and CT-172.

Town Input

Fatal Crashes from 2015-2018

- Strongtown Road - Front-to-front, fog-related fatal crash.
- US-6 (Main Street North) and Old Waterbury Road - Angle fatal crash, a truck's failure to stop at signal.
- US-6 (Main Street North) - Front-to-front weather-related fatal crash.
- Heritage Road - Speed-related fatal crash.
- Purchase Brook Road - Roadway departure fatal crash.

Older Drivers

The Heritage Village is a fifty-five (55) and over community in the Town of Southbury with 6,000 residents. The troopers said that this population has unique challenges with driving, and many parking-lot crashes.

CT-67 (Southford Road) and CT-188 (Strongtown Road)

This is an offset signalized intersection with unique geometry and a high number of angle crashes. There are poor sight lines from Dunkin' Donuts on the western side of the intersection.

CT-67 (Southford Road) and US-6 (Main Street North)

This intersection has high traffic volume. The State has optimized and increased clearance time at the traffic signal.

Center Line Rumbles

The following corridors have center line rumble strips: CT-67 (Roxbury Road), Heritage Road, and Main Street South.

US-6 (Main Street North/Yankee Expressway)

This corridor has a wide cross section and front-to-rear crashes. The congestion at this corridor is associated with high volumes of traffic, which slow traffic but also minimize the severity of most crashes.

Main Street South/I-84 (Yankee Expressway) ramps/CT-172 (South Britain Road)

Sight distance is an issue at this intersection. It is adjacent to a commuter lot and has a No Turn on Red prohibition for US-6 (Yankee Expressway/ Main Street North) northbound. The police and town's foreman coordinate to manage the vegetation because it is a concern for the town.

Main Street South and Floodbridge Road

There were two pedestrian crashes at Main Street South and Floodbridge Road in front of the elementary school and the senior center. A crosswalk with an RRFB is on the north side of the intersection but may need to be relocated. The town representatives stated this was not the optimal location for the crossing. There are no school zone markings affiliated with school.

CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road

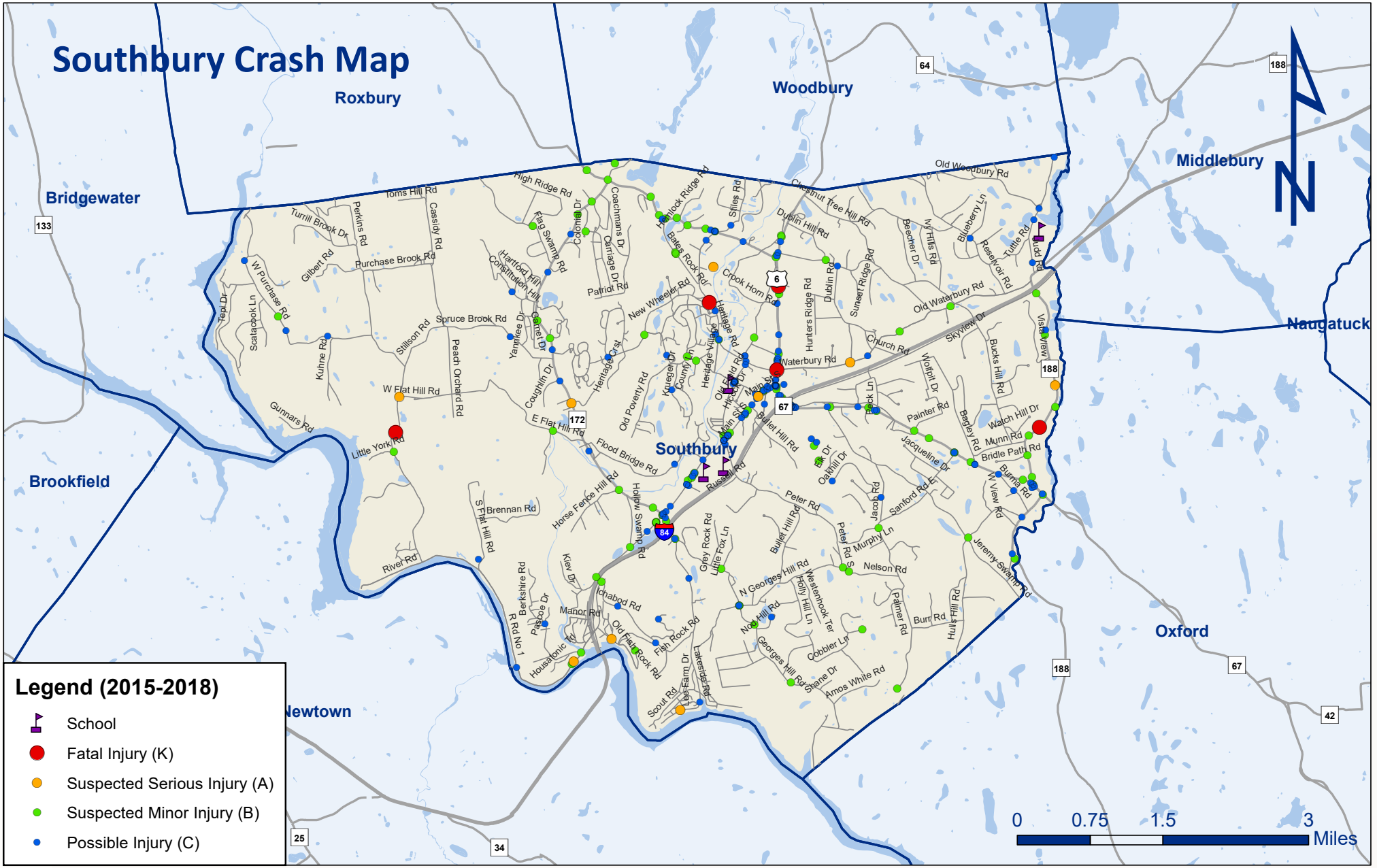
This is a four-way, offset stop-controlled intersection with frequent crashes. There is a private property on the northeast side of intersection that gets hit by the motorists who misjudge the skewed geometry of the roadway. The resident has installed reflective items and lights to try to alert drivers, but crashes are still prevalent.

Lakeside Road/Georges Hill Road/CT-172 (South Britain Road)

This is a skewed intersection and a possible roundabout location according to the town representatives.

Southbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	4	0	1
Suspected Serious Injury (A)	2	2	4	1
Suspected Minor Injury (B)	28	36	33	19
Possible Injury (C)	44	39	29	32
Total Crashes	74	81	66	53


Southbury Crash Map
Roxbury
Woodbury
Middlebury
Bridgewater
Naugatuck
Brookfield
Newtown
Oxford
Southbury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3
Miles

Field Site Inventory

CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road

This is a wide offset, four-way, stop-controlled intersection. The sight distance from CT-172 (Pierce Hollow Road) to the west is limited by a private home and by vegetation which abut the road. CT-172 ends and becomes Transylvania Road north of CT-67. The roadway veers to the left north of CT-67 and a property on the northeast corner has been hit many times. A fence with retroreflective items was installed by homeowner to try and prevent roadway departure crashes due to the skew.

Recommendations:

- Reduce the pavement width of CT-172 (Pierce Hollow Road).
- Add cat tracks along CT-67 (Roxbury Road).
- Add retroreflective and flashing beacons to the bidirectional arrows.
- Investigate lighting at intersection.
- Manage vegetation.

Main Street South/Flood Bridge Road - Pedestrian Crossing

The intersection of Main Street South and Flood Bridge Road is a four-way, unsignalized intersection with Main Street South as the main line and the Flood Bridge Road approach and the driveway from the Southbury Senior Center under stop control. The Main Street South approaches both consist of a through lane and exclusive left-turn lanes. Crosswalks are present across the Flood Road eastbound approach and the northbound approach of Main Street South. The crosswalk across the Main Street South northbound approach is accompanied by a push button Rectangular Rapid-Flashing Beacon (RRFB) on each side of the street. The local Police Department believes crosswalk and RRFBs should be relocated across the Main Street South southbound approach to better accommodate older drivers associated with the Senior Center. Field observations indicate the sidewalk approaches to the crosswalk and RRFBs push buttons are not ADA compliant.

Recommendations:

- Perform a traffic study to determine the best location of the crosswalk given the high user of older drivers exiting the Senior Center driveway.
- Upgrade the sidewalk approaches and RRFBs push button locations to meet ADA compliance. State has plan to update this RRFBs.



CT-172 (Pierce Hollow Rd)/CT-67 (Roxbury Rd)/Transylvania Rd



Main Street South at Flood Bridge Rd pedestrian crossing

Southbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road	Skewed intersection with roadway departures	Tighten up CT-172 (Pierce Hollow Road)	Low-Medium
		Add cat tracks along CT-67 (Roxbury Road)	Low
		Add retroreflective and flashing beacons to the bidirectional arrows	Low
		Investigate lighting at intersection	Low
	Sight distance from CT-172	Manage vegetation on southwest corner	Low
Lakeside Road/Georges Hill Road/CT-172 (South Britain Road)	High crash location	Investigate roundabout	Low-Medium
Main Street South/Flood Bridge Road - pedestrian crossing	Location of pedestrian crossing and ADA compliance	Perform a traffic study to determine the best location of the crosswalk given the high use of older drivers exiting the senior center driveway	Low
		Upgrade the sidewalk approaches and RRFBs push button locations to meet ADA compliance	Low-Medium
Main Street in front of Pomperaug Elementary School	Lack of school zone markings	Install School Zone signs and pavement markings	Low

TOWN OF THOMASTON

2016 US Census Population Estimate: 7,595

Area: 12.20 square miles

Population Density: 623 persons per square mile

2016 Vehicle Miles Traveled (VMT): 77,606,665

2016 VMT per Capita: 10,218

Setting: Rural

Town and Regional Representatives: Glenn Clark (PWD), Det. Keith Koval (PD)

Data Identified High Crash Corridors: CT-254-South Main Street/US-6-East Main Street (From Watertown Road to Town Line)

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 2

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 167



CT-254

Overview

Thomaston is a rural town in Litchfield County, bordered by Harwinton to the north, Plymouth to the east, Watertown to the south and Litchfield and Morris to the west. The town's main thoroughfares are US-6, CT-8, CT-109, CT-222, CT-254, and CT-848.

Thomaston Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	0	0
Suspected Serious Injury (A)	1	5	3	3
Suspected Minor Injury (B)	20	25	31	12
Possible Injury (C)	11	22	16	18
Total Crashes	32	52	50	33

Town Input

CT-222 (Hill Road)
The town said that there was a fatal crash along the horizontal curves near the Harwinton town line. This corridor has a series of horizontal curves through multiple bordering towns. The state has assessed the road to determine mitigation strategies, but the strategies have not been implemented.

US-6 (East Main Street)
The segment of US-6 designated as East Main Street is the highest crash corridor in Thomaston according to the town representatives. It is a confluence of the Route 8 Exit 39 ramps, local side streets, a Park and Ride and a Dunkin' Donuts. The town stated that some factors contribute to this area's high crash numbers: the two through-lanes along eastbound US-6, the vertical curvature, insufficient gaps for side-street motorists, speeds and the speed differentials between off-ramp traffic and through traffic. The Town of Thomaston said that this corridor is their top priority for roadway improvements.

CT-8 (James H. Darcey Memorial Highway) Exit 38 Off-Ramp and Reynolds Bridge Road
This is a high-crash intersection with unconventional geometry.

CT-109 (Branch Road) over the Wigwam Reservoir
This bridge was reconstructed without the town's input, and a sharp horizontal curve on the northbound approach to the bridge is a concern for the town.

CT-109 (Watertown Road/Branch Road)
The posted speed limit is 40 MPH on CT-109, but speeding is an issue along the corridor. The town said that they want to lower the posted speed to 35 MPH because there are two schools located west of US-6 on CT-109. There is a school zone arrival and dismissal speed limit, but there are school related activities outside of these hours that require reduced vehicle speeds. The town representatives stated they have been working with the state to establish school zones along both the US-6 (Watertown Road) and CT-109 (Branch Road) approaches to the two schools. They said that the state did not endorse a school zone designation for the high school (which also has a middle school in the facility). In addition, the town representatives stated that the crosswalks on CT-109 (Branch Road) are not in the most optimal locations.

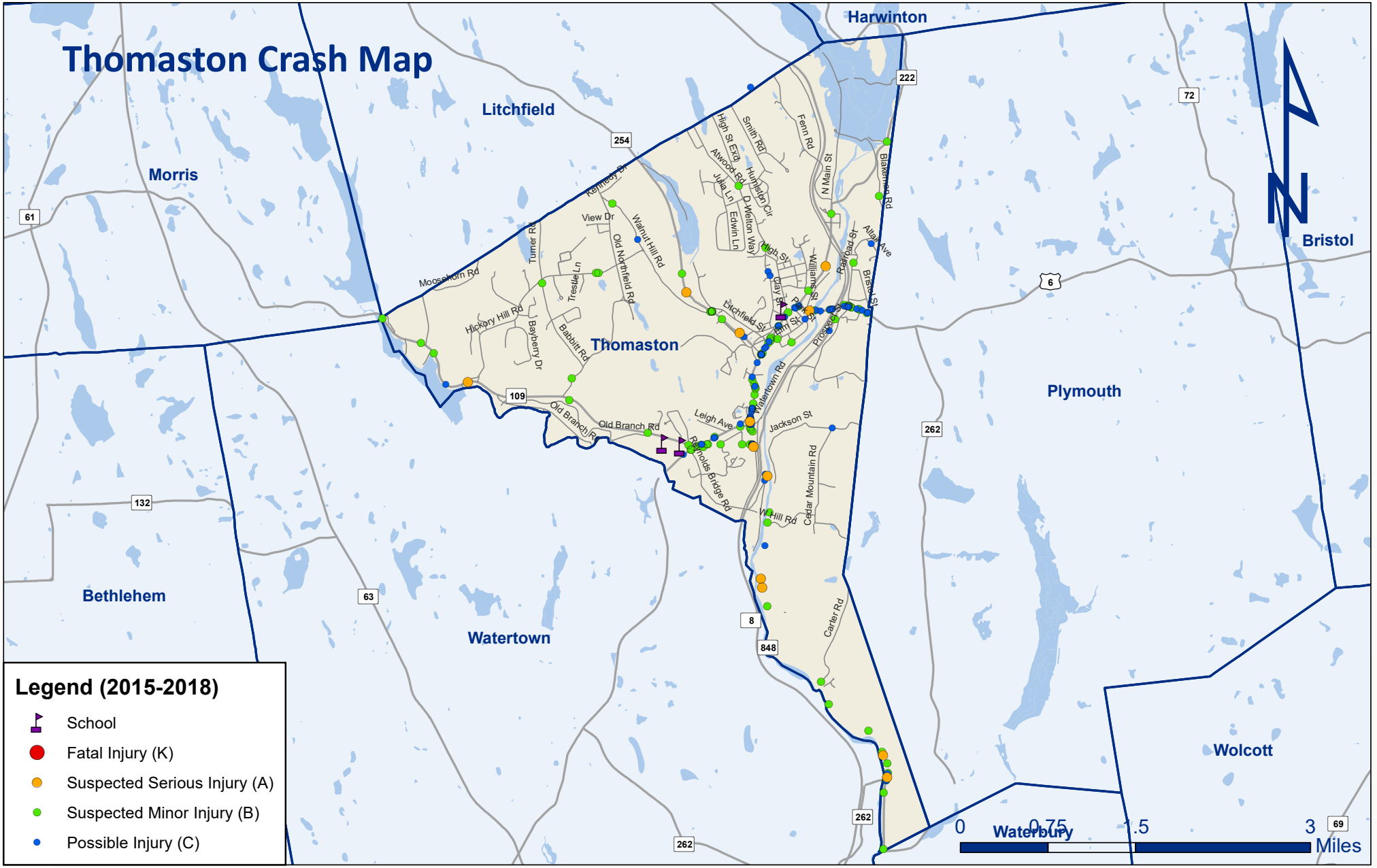
CT-848 (Old Route 8 or Waterbury Road)
Speeding along the corridor and sight distance at Frost Bridge Road are issues. The corridor has a concentration of crashes along challenging horizontal curves. There was a recent fatal crash in 2019 on this corridor.

CT-254 (Northfield Road)/Walnut Hill Road/Litchfield Street
This skewed intersection has a posted speed limit of 45 MPH, but speeding is common. The limited sight distance and speeding make it difficult for the traffic to exit Walnut Hill Road which has been the site of several crashes. The town believes a roundabout would be a good gateway treatment to reduce the crash frequency and severity at this intersection.

CT-254 (Northfield Road) and South Main Street
This is a signalized, T-intersection and the state is redesigning the traffic signal.

Center Line Rumble Strips
Thomaston's local roadways didn't meet the requirement for the state's installation of centerline rumble strips. The town would like to see them installed at appropriate locations along the state roads.

Bike and Pedestrians
The Town of Thomaston is not a destination for cyclists and there have not been many crashes. The Naugatuck River Greenway section is being built from the Watertown town line north to Thomaston.


Thomaston Crash Map
Harwinton
Litchfield
Morris
Bristol
Plymouth
Thomaston
Watertown
Bethlehem
Wolcott
Waterbury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles

Field Site Inventory

CT-254 (Northfield Road)/Walnut Hill Road/Litchfield Street

The intersection of CT-254 (Northfield Road) Walnut Hill Road and Litchfield Street is a rural,unsignalized, four-way intersection with CT-254 (Northfield Road) as the mainline, the Walnut Hill Road approach is under stop control and the Litchfield Street approach is one-way away from the intersection. Sight distances from Walnut Hill Road are compromised by the CT-254 (Northfield Road) horizontal curve to the east. CT-254 (Northfield Road) has a posted speed limit of 45 MPH, however much higher speeds are reported,further contributing to the sight distance challenges for gap acceptance.

Recommendations:

- Consider centerline rumble strips on the CT-254 (Northfield Road) approaches to assist in addressing high speeds.
- Consider a roundabout at this location as a gateway treatment to the downtown area and to address high travel speeds.

US-6 (East Main Street)/CT-8 (James H. Darcey Memorial Highway) interchange

US-6 consists of a four lane cross section along vertical curvature at the CT-8 (James H. Darcey Memorial Highway) interchange. Motorists exiting onto US-6 from the northbound CT-8 off- ramp have to navigate an unsignalized merge on an upgrade for eastbound travel. In addition, the US-6 westbound cross section widens from one travel lane to two at this junction making it hard for motorists to take a left to head east on US-6. To further exacerbate the challenging intersection there is a Dunkin Donuts on the northeast side of US-6 and Pleasant St and a Park and Ride lot on the northwest side of US-6 and Pleasant St. The combination of high speeds, vertical curvature, the addition of another travel lane on US-6 at the off-ramp and the high turning movements make this interchange difficult to navigate.

Recommendations:

- Consider relocating the additional lane on US-6 farther west past the CT-8 off-ramp.
- Dynamic speed feedback signs.
- Consider a signal at the off-ramp.



CT-254



US-6 (East Main Street)/CT-8 (James H. Darcey Memorial Highway) interchange

Thomaston Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (East Main Street) and the CT-8 off ramps	Insufficient gaps for motorists on off-ramp	Consider relocating the additional lane on US-6 farther west past the CT-8 off-ramp	Low-Medium
		Consider a signal at the off-ramp	Medium-High
	Speeding	Dynamic speed feedback signs	Low
CT-222 (Hill Road)	Horizontal curves	Enhanced delineation through curves	Low-Medium
		High friction surface treatment	Low
CT-109 (Watertown Road/ Branch Road)	School zones without school zone designations	Designate school zones and add pavement markings	Low
	After school hour events	Manually activate school zone speed limit	Low
	Pedestrian crossing locations	Conduct study to determine if these need to be relocated	Low-Medium
CT-848 (Old Route 8 or Waterbury Road)	Horizontal curves	High friction surface treatment	Low
	Speeding	Narrow travel lanes	Low
		Dynamic speed feedback signs	Low

CITY OF WATERBURY

2016 US Census Population Estimate: 108,272

Area: 29.00 square miles

Population Density: 3,734 persons per square mile

2016 Vehicle Miles Traveled (VMT): 729,166,705

2016 VMT per Capita: 6,735

Setting: Urban

Town and Regional Representatives: Ken Stanco (Mayor's Office), Mackenzie Demac (Mayor's Office), Gardo Garabedian (DPW), Christian Meyer (NVCOG)

Data Identified High Crash Corridors: Chase Avenue from Cooke Street to North Main Street; CT-69 (Wolcott Street) from Sharon Road to Pritchard Road); West Main Street from Meadow Street to Highland Avenue

Data Identified High Crash Intersections: CT-69 (Wolcott Street) and Lakewood Road; Wolcott Street and CT-69 ; Thomaston Avenue and West Main Street; East Main Street and Baldwin Street; East Main Street and CT-69 (Meriden Road); Washington Avenue and Union Street

Bike and Ped Injury and Fatal Crash Injuries: 435

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 5,355



CT-69 (Stillson Road)

Overview

Waterbury is the second-largest city in New Haven County, bordered by Plymouth to the north, Wolcott and Cheshire to the east, Prospect and Naugatuck to the south and Watertown and Middlebury to the west. The city's main thoroughfares are I-84, CT-8, CT-69, CT-73, CT-801, and CT-844.

Waterbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	15	8	12	9
Suspected Serious Injury (A)	48	59	47	50
Suspected Minor Injury (B)	433	555	548	522
Possible Injury (C)	648	740	839	822
Total Crashes	1,144	1,362	1,446	1,403

City Input

Downtown Signalization Improvements
There is an ongoing project to improve and coordinate fifteen traffic signal in the downtown area. This should improve mobility and lessen crashes.

Wolcott Street/CT-69 (Stillson Road) and Wolcott Street/Lakewood Road
The city said that this high frequency crash intersection has turning movement issues due to signal timing.

East Main Street and Brass Mill Drive
This high-crash intersection is considered dangerous for pedestrians (one fatal pedestrian crash occurred). The CTDOT is redesigning the intersection through the Local Road Accident Reduction Program (LRARP).

Watertown Avenue and East Aurora Street
This intersection is used as a detour for I-84 (Yankee Expressway) east from CT-8 (James H. Darcey Memorial Highway) northbound. It has speed-related crashes due to the detour.

Chase Avenue
This was identified as a high-frequency crash corridor. The CTDOT has made improvements to this corridor by widening the cross section from two to four lanes, optimizing traffic signals and adding left-turn lanes. This should lessen the frequency of crashes.

Thomaston Ave and West Main Street
This is a signalized intersection with a high concentration of crashes. The city wants to redesign the traffic signal at this intersection to incorporate turn movements since there are no turning lanes or exclusive left-turn signals.

CT-8 (James H. Darcey Memorial Highway) Off Ramp and Huntington Avenue
The City of Waterbury has conceptual plans for improvements at this intersection but the current status of the project is uncertain. The intersection has capacity issues with various interdependent traffic signals at the CT-8 (James H. Darcey Memorial Highway) off-ramp/Huntington Avenue, Chase River Road, and Colonial Avenue/Huntington Avenue that cause the traffic to back up onto CT-8 (James H. Darcey Memorial Highway).

Scoville Street and Baldwin Street
This is a signalized intersection with high concentration of crashes. According to the city, the crashes are due to a lack of a left-turn phase.

CT-69 (Meriden Road) and East Main Street
This high-crash signalized intersection has capacity issues, resulting in traffic back ups. The right lane was closed years ago, and the crashes have since increased in frequency.

CT-69 (Meriden Road/Woodtick Road) and Southmayd Road
This intersection has a lane configuration issue.

Chase Avenue and North Main Street/Farmwood Road and Lakewood Road
This off-set, signalized intersection has a high concentration of crashes.

Pedestrians and Bicyclists
The City of Waterbury has a high volume of pedestrian and bicyclists and high frequency non-motorized crashes. The city thinks that the Watch for Me CT campaign might benefit the community. The pedestrian and bicyclist safety projects might be developed through the Department of Health and NVCOG funds, if they are available. Pedestrian safety is included in the NVCOG Pedestrian Plan.

West Main Street
This is a high frequency crash corridor. NVCOG is conducting a corridor study focusing on pedestrian safety.

Chase Parkway
The city wants a project that would extend the Chase Parkway to CT-64 (Middlebury Road), and alleviate the capacity at CT-63 (Straits Turnpike) and CT-64 (Middlebury Road) intersection.

Captain Neville Drive and Austin Road
NVCOG is conducting an intersection safety study to address the high number of crashes.

Walnut Street/East farm Street and Walnut Street/North Walnut Street
Currently these intersections are under redesign using LRARP funds.

Field Site Inventory

CT-69 (Meriden Road)/East Main Street/Sylver Street Expressway

This is a wide, four-way, signalized intersection with crosswalks and pedestrian beacons on all four corners. CT-69 (Meriden Road) narrows down to one lane westbound and has restricted left turns. East Main Street has no edge lines and restricted and permissive left turns. There are businesses on two sides of intersection. A high volume of pedestrians and motorized vehicles, a wide cross section, vertical curvature, pedestrians crossing midblock and aggressive driving create conflict.

Recommendations:

- Consider installing No Right on Red at all approaches.
- Install traffic signal retroreflective backplates.
- Restripe edge lines on East Main Street.
- Reduce lane widths at intersection.
- Investigate exclusive pedestrian phase.
- Access management from Walgreens Pharmacy.

CT-69 (Wolcott Street and Stillson Road)

The intersection of CT-69 (Wolcott Street and Stillson Road) is a four-way, signalized intersection surrounded by commercial uses. The CT-69 (Wolcott Street) northbound approach consists of an exclusive left lane, two through lanes and an exclusive right lane. The CT-69 (Wolcott Street) Southbound approach consists an exclusive left-lane, a through lane and a shared through-right turn lane. The CT-69 (Stillson Road) approach (westbound) enters the intersection at a skew and consists of an exclusive right-turn lane and a shared through-left turn lane. The eastbound approach serves a large retail plaza and has no clearly defined lane designation. The intersection experiences high levels of congestion during peak periods further exasperated by numerous curb-cuts to adjacent high turnover commercial uses.

Recommendations:

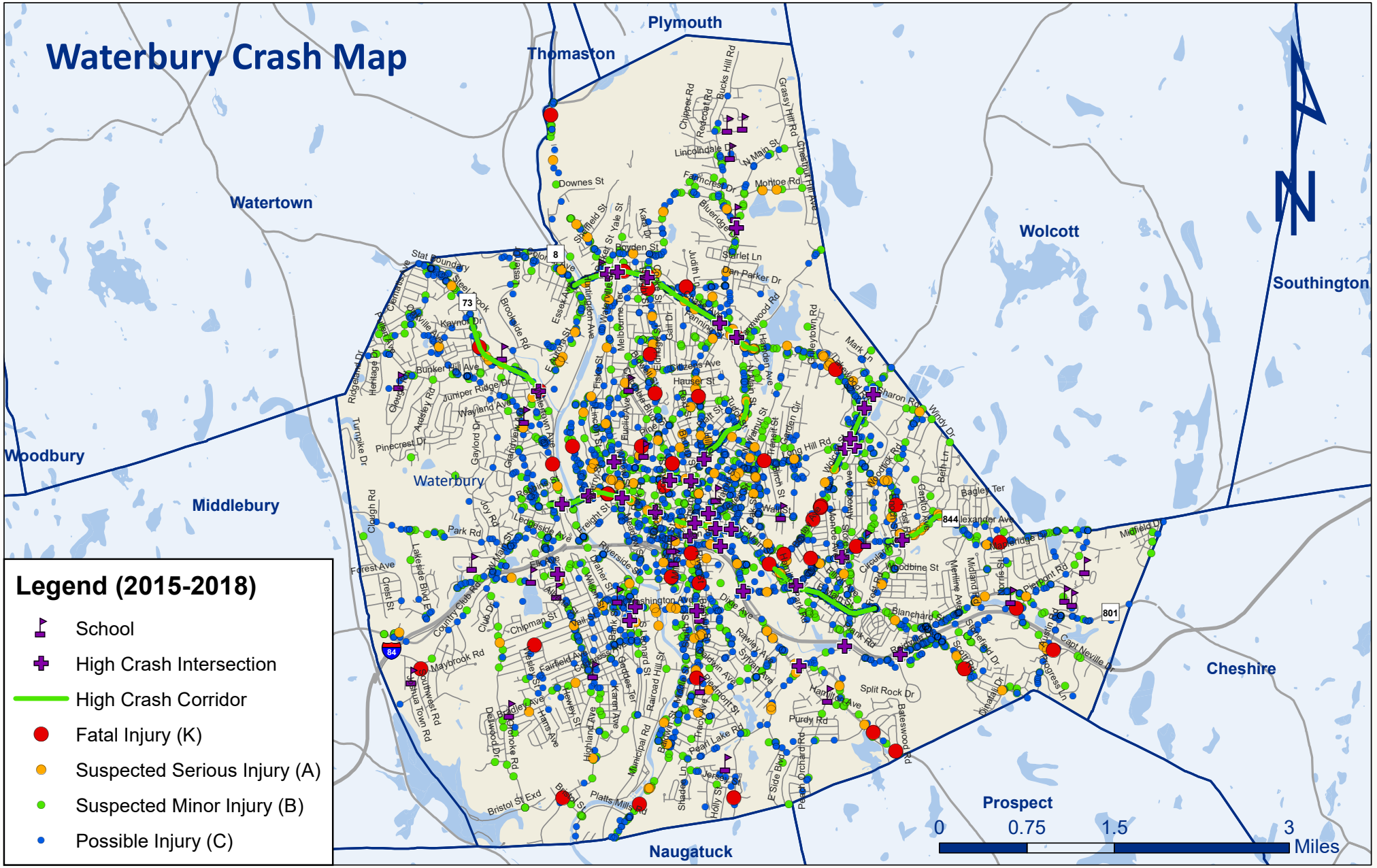
- Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes.
- Consider access management techniques to address numerous commercial curb-cuts on CT-69 (Wolcott Street).



CT-69 (Meriden Rd)/East Main St/Sylver St Expy



CT-69 (Wolcott St/Stillson Rd)


Waterbury Crash Map
Plymouth
Thomaston
Watertown
Wolcott
Southington
Woodbury
Middlebury
Waterbury
Cheshire
Prospect
Naugatuck
Legend (2015-2018)
School
High Crash Intersection
High Crash Corridor
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
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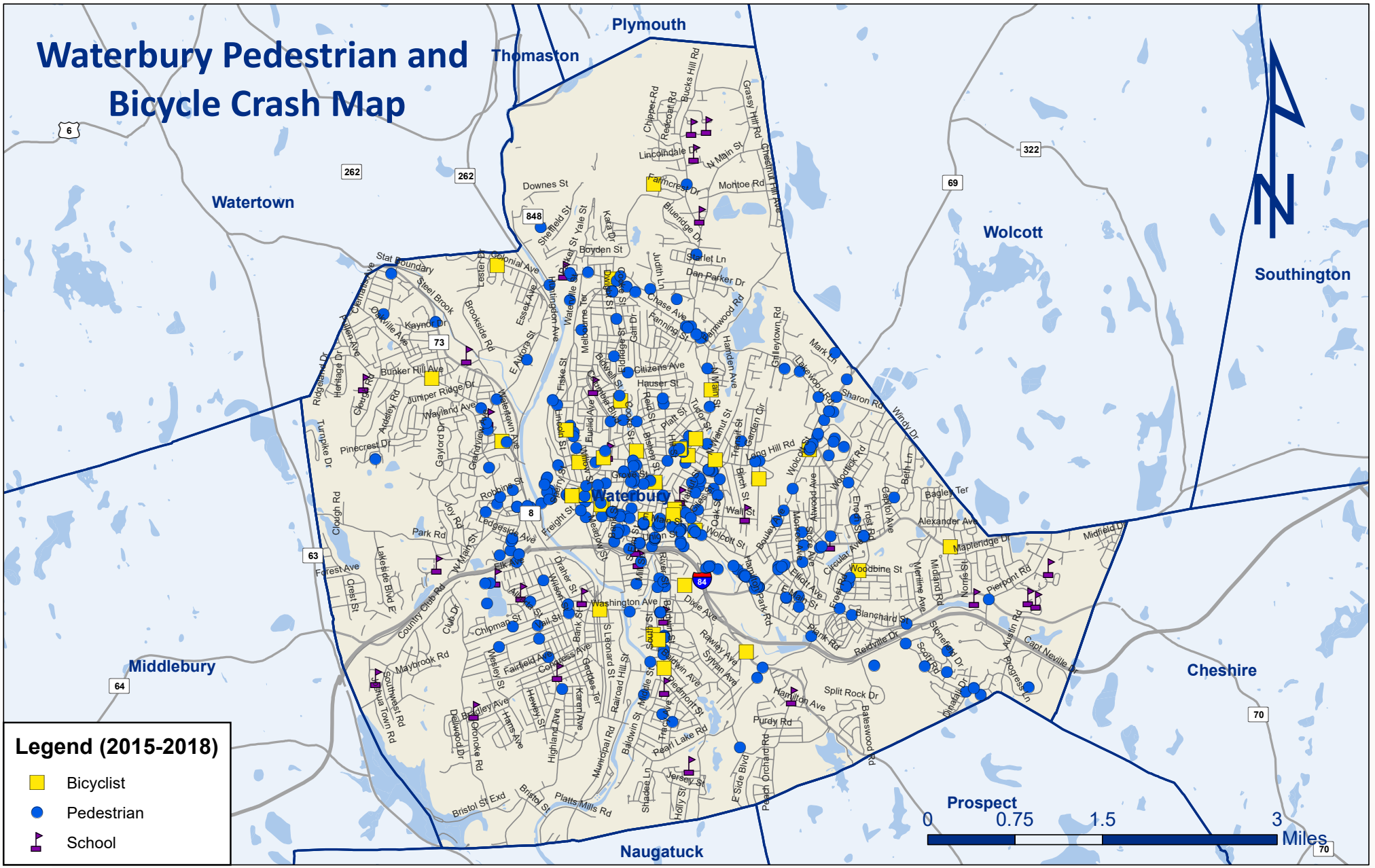
Miles


Waterbury Pedestrian and Bicycle Crash Map
Plymouth
Thomaston
Watertown
Wolcott
Southington
Middlebury
Cheshire
Naugatuck
Prospect
Waterbury
Legend (2015-2018)
Bicyclist
Pedestrian
School
0
0.75
1.5
3
Miles
N

Waterbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Thomaston Ave and West Main Street	Angle crashes at signalized intersection	Upgrade signal and include left turn clearance phase	Medium-High
CT-8 (James H. Darcey Memorial Highway) Off Ramp and Huntington Avenue	Capacity issues and congestion due to signal timing	City has signal design to address this intersection	Medium
West Main Street	High frequency crash corridor	NVCOG conducting a study on West Main St and focusing on pedestrians	Low-Medium
CT-63 (Straits Turnpike) and CT-64 (Middlebury Road) intersection.	Capacity issue	Extend the Chase Parkway to CT-64 (Middlebury Road)	Medium-High
Scoville Street and Baldwin Street	Angle crashes	Redesign signal to include a left turn phase	Medium-High
CT-69 (Meriden Road)/East Main Street/Sylver Street Expressway	High frequency crashes intersection	Consider installing No Right on Red at all approaches	Low
		Install traffic signal retroreflective backplates	Low-Medium
		Restripe edge lines at East Main Street	Low
		Tighten up intersection	Medium
		Investigate exclusive pedestrian phase with LPI	Low
		Restrict egress and ingress at gas station and Walgreens	Low
CT-69 (Wolcott Street) and Stillson Road	High frequency crash intersection	Modernize the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes	Medium
		Traffic signal retroreflective backplates	Low-Medium
	High turning movements	Access management techniques to address numerous commercial curb-cuts on CT-69 (Wolcott Street)	Low-Medium
Citywide	Pedestrian and bicyclist crashes	Develop a pedestrian and bike master plan using Dept of Health and NVCOG guidance	Medium
	Signal timing related crashes	Review and revise signal timings	Low-Medium

TOWN OF WATERTOWN

2016 US Census Population Estimate: 21,790

Area: 29.60 square miles

Population Density: 736 persons per square mile

2016 Vehicle Miles Traveled (VMT): 173,295,430

2016 VMT per Capita: 7,953

Setting: Suburban

Town and Regional Representatives: Roy Cavanaugh (DPW), Tim Gavallas (PD), John Gavallas (PD), Joshua Bernegger (PD)

Data Identified High Crash Corridors: CT-63 (Main Street) from US-6 (Deforest Street) to CT-63 (Straits Turnpike)

Data Identified High Crash Intersections: CT-262 (Frost Bridge Road) and CT-8 (James H. Darcey Memorial Highway) off-ramp

Bike and Ped Injury and Fatal Crash Injuries: 8

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 417



CT-262 (Buckingham Street)

Overview

Watertown is a suburban town in Litchfield County, bordered by Morris, Litchfield and Thomaston to the north, Plymouth and Waterbury to the east, Middlebury to the south and Woodbury and Bethlehem to the west. Oakville is located in the southeast and it is the most populous community in the Town of Watertown. The Town's main thoroughfares are US-6, CT-8, CT-63, CT-73, CT-132, and CT-262.

Watertown Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	2	0	2
Suspected Serious Injury (A)	1	5	10	6
Suspected Minor Injury (B)	49	50	57	34
Possible Injury (C)	46	58	49	48
Total Crashes	96	115	116	90

Town Input

Fatal Crashes from 2015-2018

- CT-63 (Main Street) - This corridor was the site of two fatal pedestrian crashes:
  1. Substance-impaired, motorist-pedestrian fatal crash.
  2. Pedestrian fatal crash at mid-block crossing.

Note: The Main Street Committee is still planning to meet. The municipality is working with a consulting engineering firm to present safety options to the public. Watertown was awarded a Small Town Economic Assistance Program (STEAP) grant to install 2 RRFBs on CT-63 (Main Street), modify the signalization of CT-63 (Main St) at Woodruff Avenue, and install new sidewalks on the west side of CT-63 (Main Street) from Woodruff Avenue to French Street.

- CT-262 (Frost Bridge Road) and Echo Lake Road – Weather-related angle fatal crash.
- Echo Lake Road - Motorcycle fatal crash in driveway.

CT-262 (Buckingham Street) and Nova Scotia Hill Road

This is a high frequency crash location. It is a four-legged intersection with two-way stop control on Nova Scotia Hill Road. There is limited sight distance due to the horizontal and vertical curvature. The posted speed limit is 40 MPH on CT-262 (Buckingham Street), but the motorists travel at higher speeds. The Veteran's Memorial Park which hosts many youth sporting events. The Local Traffic Authority (LTA) submitted a request to CTDOT to convert this intersection to a four-way stop, but no response has been provided.

CT-63 (Straits Turnpike) and CT-73 (Main Street)

The town said that this intersection is over its capacity.

Lake Winnemaug Road and Sperry Road

This is a skewed intersection and the site of a fatal crash prior to study period. The town will realign the intersection to fix the skewed angle.

Colonial Street and Davis Street

This is an off-set intersection with a high concentration of crashes. The previous two-way stop-controlled intersection has been modified to four-way.

Echo Lake Road and CT-262 (Frost Bridge Road)

CT-262 (Frost Bridge Road) is stop-controlled with very limited sight distance looking west due to the overpass structures from CT-8 (James H. Darcey Memorial Highway), and the horizontal curvature on Echo Lake Road. CT-262 (Frost Bridge Road) runs parallel to CT-8 (James H. Darcey Memorial Highway). This was the site of a fatal crash, and the town wants to mitigate the limited sight distance issue.

CT-63 (Litchfield Road/Main Street/Straits Turnpike)

This corridor has some issues that are affecting the mobility along the corridor. The traffic backs up all the way south to CT-73 (Main Street) due to a lack of traffic signal optimization. This situation forces the motorists onto more local roadways, causing speeding from frustration due to congestion. There is a new traffic signal at the Starbucks on CT-63 (Main Street) and French Street, but the cycles are too quick for northbound travel. Cherry Avenue at CT-63 (Main Street) was recently converted to a right turn only to improve the traffic flow.

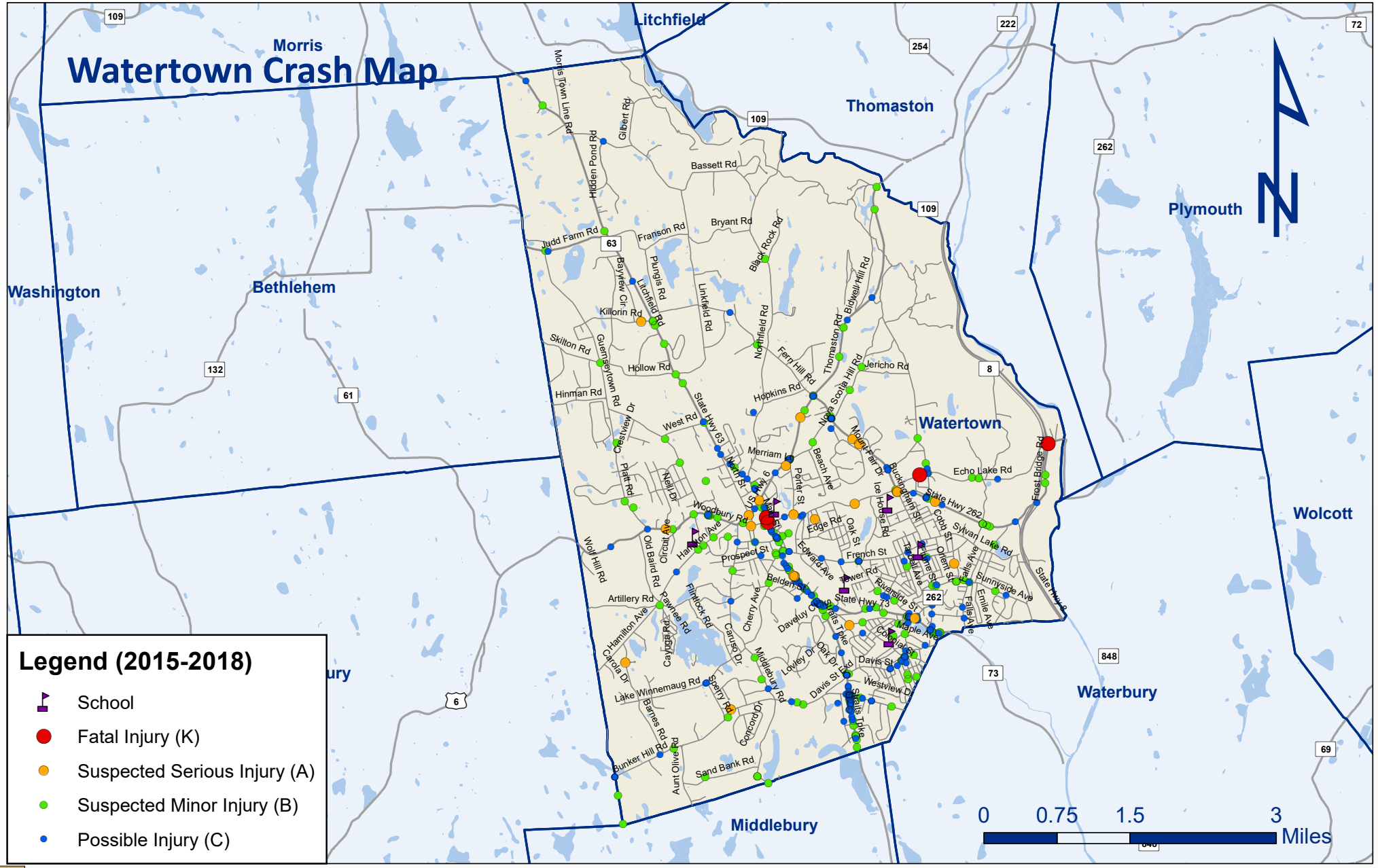
The town would like Edgewood Avenue to be converted to one way out towards CT-63 (Main Street) to help alleviate some of the issues along the corridor. The southern segment of CT-63 (Straits Turnpike) near the Middlebury town line has a concentration of minor injury crashes. The Town is considering adding a two-way center left-turn lane, because the current cross section is sufficiently wide for an additional lane. In the last few years, this corridor had two pedestrian fatal crashes in two mid-block crossings. The town is supportive of bump outs if state will plow, and it is unsure when the CTDOT is going to optimize the traffic signals.

State systemic improvements

The state installed enhanced horizontal curve warning signs and center line rumble strips on town roadways as part of their statewide program. Residents initially complained to the town, but now the town representatives stated there has been no recent comments.

Origin and Destination Study

NVCOG has a one-year subscription to monitor the motorists' origin and destination patterns which the town is going to use to help determine traffic generators. They hope to use this information to improve traffic flow.


Watertown Crash Map
Morris
Litchfield
Thomaston
Plymouth
Washington
Bethlehem
Watertown
Wolcott
Waterbury
Middlebury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3
Miles

Field Site Inventory

CT-262 (Buckingham Street) and Nova Scotia Hill Road

This intersection has stop-controls on both legs of Nova Scotia Hill Road when approaching CT-262 (Buckingham Street) and vertical curvatures on both approaches. There is limited sight distance from Nova Scotia Hill Road and flashing yellow signals at CT-262 (Buckingham Street). CT-262 (Buckingham Street) has a horizontal curvature at this intersection.

Recommendations:

- Monitor vegetation all year round, especially late summer.
- Investigate four-way stop and signal warrant.
- Install dynamic speed feedback signs on CT-262 (Buckingham Street).

CT-262 (Frost Bridge Road)/CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp

The intersection of Frost Bridge Road and the CT-8 (James H Darcey Memorial Hwy) Exit 37 Northbound off-ramp is an unsignalized, three-way intersection with Frost Bridge Road as the mainline and the CT-8 (James H Darcey Memorial Hwy) off-ramp under stop control. The off-ramp approaches Frost Bridge Road at a significant skew with a raised island separating left-turns and right-turns, each under their own stop control. Frost Bridge Road has a posted speed limit of 30 MPH, with much higher speeds potentially associated with wide shoulders and a steep downgrade on the eastbound approach to the intersection. Sight distance is compromised for motorists making a left-turn from the ramp to Frost Bridge Road by the CT-8 (James H Darcey Memorial Hwy) bridge abutment, horizontal curvature, vegetation overgrowth and regulatory signage immediately adjacent to the stop sign.

Recommendations:

- Trim overgrown vegetation and relocate regulatory signs obstructing sight lines looking to the west.
- Consider center line rumble strip along Frost Bridge Road to potentially address high speeds through the intersection.
- Install intersection ahead warning sign on the Frost Bridge Road Eastbound approach to the intersection.



CT-262 (Buckingham St)/Nova Scotia Hill Rd



CT-262 (Frost Bridge Rd)/CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp

Watertown Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-262 (Buckingham Street) and Nova Scotia Hill Road	Vegetation overgrowth	Monitor vegetation all year round, especially late summer.	Low
	High frequency crashes	Investigate four-way stop and signal warrant.	Low
	Speeding	Install dynamic speed feedback signs on CT-262 (Buckingham Street).	Low
CT-262 (Frost Bridge Road)/ CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp	Obstructed sight distance	Trim overgrown vegetation and relocate regulatory signs obstructing sight lines looking to the west.	Low
	Speeding	Consider center line rumble strip along Frost Bridge Road to potentially address high speeds through the intersection.	Low
	Intersection related crashes	Install intersection ahead warning sign on the Frost Bridge Road eastbound approach to the intersection.	Low
CT-63 (Litchfield Road/Main Street/Straits Turnpike)	Congestion	Convert Edgewood Ave to one way towards CT-63	Low-Medium
		Two way center left turn lane	Low-medium
	Pedestrian crashes	Curb Extensions	Low-Medium
Townwide	Congestion	NVCOG origin and destination study assistance	Low

TOWN OF WOLCOTT

2016 US Census Population Estimate: 16,643

Area: 21.10 square miles

Population Density: 789 persons per square mile

2016 Vehicle Miles Traveled (VMT): 74,859,310

2016 VMT per Capita: 4,498

Setting: Suburban

Town and Regional Representatives: Thomas G Dunn (Mayor), Mark Possidento (Town Engineer), Patrick Malloy (PD), David Kalinowski (DPW)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 7

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 306



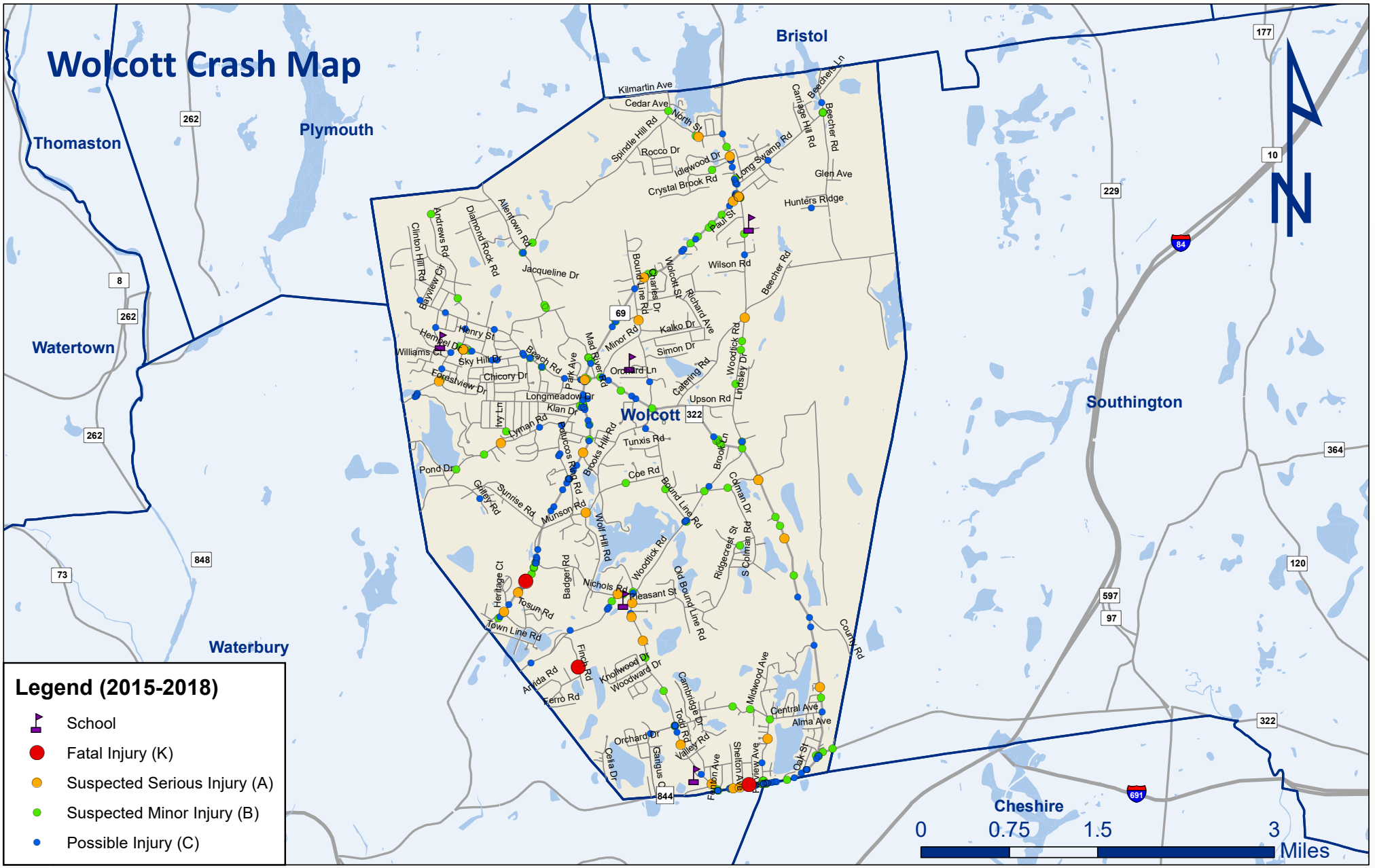
Spindle Hill Road

Overview

Wolcott is a suburban town in New Haven County, bordered by Bristol to the north, Southington to the east, Waterbury and Cheshire to the south and Waterbury and Plymouth to the west. The town's main thoroughfares are CT-69, CT-322, and CT-844.

Wolcott Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	1	1
Suspected Serious Injury (A)	14	6	2	8
Suspected Minor Injury (B)	18	28	34	31
Possible Injury (C)	36	50	38	39
Total Crashes	68	84	75	79


Wolcott Crash Map
Bristol
Plymouth
Thomaston
Watertown
Waterbury
Southington
Cheshire
Wolcott
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles
N

Town Input

Fatal Crash from 2015-2018

- CT-69 (Wolcott Road) - Fatal front-to-front crash, but not coded as fatal.

State Systemic Program

Center Line Rumble Strips
The centerline rumble strips on CT-69 (Wolcott Road) are currently ground down due to repaving, but the State is reinstalling them. Woodtick Road and Long Swamp Road have centerline rumble strips.

Pedestrian Crossings Signs
Pedestrian crossing signage and markings were were installed in front of the schools on Woodtick Road.

Horizontal Curve Signs
The town has installed horizontal curve signs along local roads.

CT-69 (Wolcott Road) and Woodtick Road

This is a high-frequency crash, stop-controlled intersection. It has horizontal curvature prior to the stop sign on Woodtick Road at CT-69 (Wolcott Road), with the side street in the middle of curve. The crashes along the curve are not due to the intersection with CT-69 (Wolcott Road), but rather the atypical geometry of the intersection approach. The state previously realigned the skewed intersection in 2012, but the crashes have increased according to the town representatives. The town just installed guardrails and LED lights to the chevron curve signs. They said that since this recent upgrade there have been no crashes at this location. They are going to wait and see if these improvements reduce crash frequency and severity. If not, they are open to further countermeasure recommendations.

Todd Road

This is a high-frequency crash roadway. The town is addressing the sight distance issues due to the vegetation and icing condition from the pitch of the roadway by proposing a four-way stop sign on Todd Road and Central Avenue. The Town of Wolcott is using LOTCIP funding to work on some of this roadway issues, one solution being a reduction of the posted speed limit to 25 MPH.

Spindle Hill Road

This roadway has a series of reverse curves with some weather-related roadway departure crashes.

CT-322 (Meriden Road/East Street) and CT-844 (Meriden Road)

This intersection is near a bus stop and a housing complex area. There was a pedestrian fatal crash at the midblock crossing near 1585 Meriden Road. The State eliminated one of the three midblock crossings in this area, because they said it had no purpose.

Community Connectivity Grant

The Town is using a community connectivity grant to add sidewalks on North Street.



Spindle Hill Road

Field Site Inventory

Spindle Hill Road reverse curves

Spindle Hill Road is a rural road located in a residential area with a two lane cross-section and no shoulders. The roadway has vertical and horizontal curvature, including reverse curves. The speed limit is posted at 25 MPH.

Recommendations:

- Enhanced delineation through curves (including wider edge lines and chevron signs).
- High friction surface pavement friction treatment through curvature.
- Dynamic speed feedback signs.

CT-69 (Wolcott Road)/Woodtick Road

The intersection of CT-69 (Wolcott Road) and Woodtick Road is an unsignalized three-way intersection with CT-69 (Wolcott Road) as the mainline and the Northbound Woodtick Road approach under stop control. Prior to the intersection, Woodtick Road is a major north-south local road with a posted speed of 25 MPH as it approaches CT-69 (Wolcott Road) through a school zone. After the school zone the posted speed limit further reduces to 20 MPH as it enters a sharp horizontal curve through the unsignalized intersection of Clark Road and finally to its junction with CT-69 (Wolcott Road). The unsignalized intersection of Clark Road is at the terminus of the horizontal curve and set back approximately 100 ft from the intersection of Woodtick Road and CT-69 (Wolcott Road). The location of Clark Road can confuse motorists traveling through the horizontal curve at higher speeds causing roadway departure crashes. Due to high frequency of crashes at this location, the town has recently installed additional solar powered flashing LED chevron signs (non-MUTCD compliant) through the horizontal curve to reduce speeds and further delineate the curve.

Recommendations:

- Continue to monitor the effectiveness of the flashing LED chevron signs and consider installing an additional chevron sign closer to the intersection of Clark Road.
- Consider other traffic calming measures to address high travel speeds approaching the horizontal curve. These could include rumble strip bars, optical speed bars, neckdowns, enforcement, etc.



Spindle Hill Rd reverse curves



Woodtick Rd approaching CT-69 (Wolcott Rd)

Wolcott Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Spindle Hill Road reverse curves	Roadway departure crashes through curves	Enhanced delineation through curves (including wider edge lines, chevron signs).	Low
		High friction surface treatment through curvature.	Low
		Dynamic speed feedback signs.	Low
CT-69 (Wolcott Road)/Woodtick Road	Crashes along horizontal curve prior to stop sign	Continue to monitor the effectiveness of the flashing LED chevron signs and consider installing an additional chevron sign closer to the intersection of Clark Road.	Low
		Consider other traffic calming measures to address high travel speeds including edge line rumble strips, high friction surface treatment	Low
Todd Road	Drainage issue and icing	Investigate roadway pitch	Medium
	Crashes at Todd Road and Central Ave	Investigate four-way stop	Low

TOWN OF WOODBURY

2016 US Census Population Estimate: 9,591

Area: 36.70 square miles

Population Density: 261 persons per square mile

2016 Vehicle Miles Traveled (VMT): 67,608,585

2016 VMT per Capita: 7,079

Setting: Rural

Town and Regional Representatives: Barbara Perkinson (First Selectman), Rich Lamothe (DPW), Joseph Roden (Resident State Trooper)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 6

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 154



Source: VN Engineers

Overview

Woodbury is a rural town in Litchfield County, bordered by Washington and Bethlehem to the north, Watertown and Middlebury to the east, Southbury to the south and Roxbury to the west. The town's main thoroughfares are US-6, CT-47, CT-61, CT-64, CT-132, and CT-317.

Woodbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	2	1
Suspected Serious Injury (A)	2	3	1	0
Suspected Minor Injury (B)	19	23	18	18
Possible Injury (C)	23	17	12	14
Total Crashes	45	43	33	33

Town Input

Fatal Crashes from 2015-2018

- CT-317 (Good Hill Road) - Young driver roadway departure fatal crash.
- CT-64 (Sherman Hill Road) - Substance-involved fatal crash.
- CT-61 (Quassapaug Road) - Young driver fatal crash.
- CT-61 (Quassapaug Road/Bethlehem Road) and US-6 (Main Street North) - Speed-related fatal crash.

US-6 (Main Street North/Main Street South)

This corridor has the highest volume of crashes and the highest ADT. The state is redoing the signal at US-6 (Main Street South) and CT-317 (Sycamore Avenue), including the pedestrian signals. The state is planning on narrowing travel lanes on US-6 (Main Street South) and is considering adding a left turn lane at this intersection. The town has parking spaces close to this intersection, which they hope will be unaffected. These parking lots have been used by the affiliates of the Church and other downtown businesses.

CT-64 (Sherman Hill Road) and Old Sherman Hill Road

The town said that the sight distance and the vertical curvature on CT-64 (Sherman Hill Road) are concerns at this unsignalized intersection. The state trooper said that this intersection is his top safety concern.

Mountain Road

This roadway is used as a by-pass for US-6 (Main Street South) and the town representatives stated that speed is a concern. The town repaved this roadway and added a double-yellow centerline to reduce speeding, and the DPW plans on adding edge lines. The speed limit was reduced from 30 to 25 MPH.

US-6 (Main Street North) and Quanopaug Trails

The roadway elevation differentials impede the sight distance for motorists on Quanopaug Trail. The State already lowered the roadway once to try to remedy the issue, but the elevation disparity still impedes sight distance.

US-6 (Main Street North) and CT-61 (Bethlehem Road)

This is a four-way intersection with stop-control on CT-61. It was the site of a fatal crash. Speed-related crashes and sight distance issues from CT-61 (Bethlehem Road) were cited as concerns.

Center and Edge Line Rumble Strips

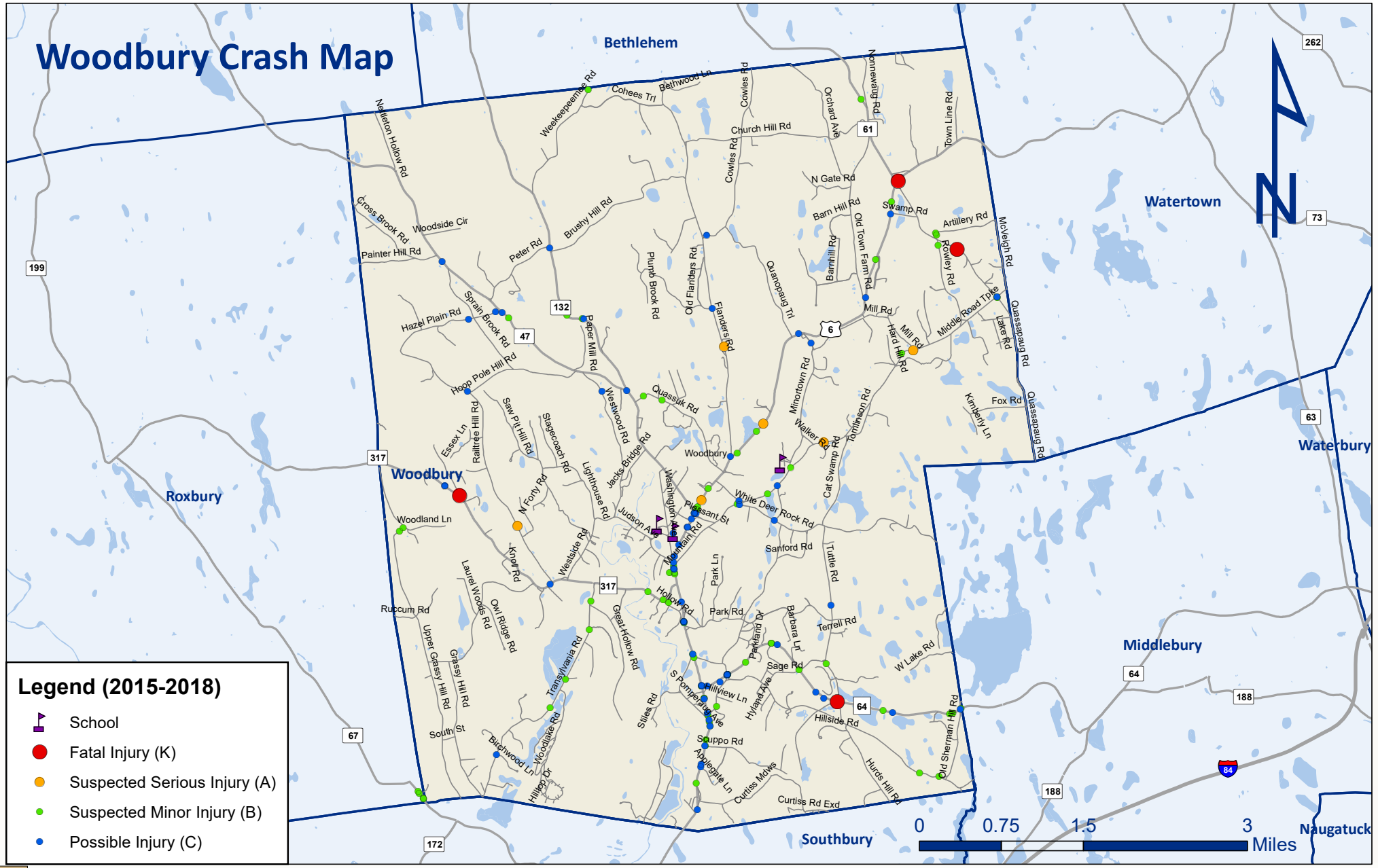
Center line rumble strips have been installed on US-6 (Main Street North) from CT-47 (Washington Road) to Watertown town line. The edge lines on US-6 (Main Street South) are on the southern segment towards Southbury.

Speeding

Speeding is an issue throughout the town. The Police are collecting ADT and travel speeds for enforcement strategies. The state trooper does not think that the speed feedback signs are effective enough, and he stated there are currently no grant opportunities to assist the town.

Pedestrians and Bicyclists

The Town of Woodbury has a historic Main Street with high volumes of pedestrian traffic. The town had moved the pedestrian crossing signs on Mountain Road to improve pedestrian sight distance. The state installed RRFBs on US-6 (Main Street North/Main Street South), but the town is still concerned that motorists don't yield to pedestrians in crosswalks. Bicyclists are common in the town in summer months due to the nearby triathlons.


Woodbury Crash Map
Bethlehem
Watertown
Roxbury
Woodbury
Middlebury
Waterbury
Southbury
Naugatuck
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles

Field Site Inventory

US-6 (Main Street North)/CT-61 (Bethlehem Road and Quassapaug Rd)

This is a two-way intersection with stop control on CT-61(Bethlehem Road/Quassapaug Rd). The CT-61 approach lanes are divided by a grassy median for both northbound and southbound traffic. In addition, there is a sweeping off-ramp for westbound US-6 motorists who turn onto CT-61 northbound. There is vertical and horizontal curvature on the US-6 (Main Street North) approaches to CT-61. CT-61 (Bethlehem Road) Northbound has a sight distance issue due to horizontal curvature on US-6 (Main Street North). The sight distance from CT-61 (Main Street North) southbound is adequate.

Recommendations:

- Trim vegetation especially along the southside of US-6 (Main Street North) eastbound.
- Install flashing yellow beacons on the intersection ahead warning signs.
- Eliminate the grassy median and the most western legs of the CT-61 approaches. Realign both CT-61 approach farther east to improve sight distance.
- Install Dynamic Speed Feedback signs on US-6 (Main Street North).

US-6 (Main Street South)/CT-317 (Sycamore Avenue)

The intersection of US-6 (Main Street South) and CT-317 (Sycamore Avenue) is a four-way signalized intersection in the center of town. All approaches to the intersection consist of a single general-purpose lane. The US-6 (Main Street South) northbound approach includes a wide shoulder and the US-6 (Main Street South) southbound approach has adjacent perpendicular parking accommodating approximately 16 vehicles. This parking is important to the surrounding businesses and community. The traffic signal equipment is antiquated and the intersection experiences significant congestion during the morning and evening peak periods. Pedestrian crosswalks are located across all approaches with the crosswalks across US-6 (Main Street South) supported by pedestrian activated push buttons, while the side streets are not.

Recommendations:

- Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes.
- If geometry improvements are needed, consider complete street design solutions that maintain the adjacent on-street parking.



US-6 (Main St North)/CT-61 (Bethlehem Rd)



Aerial of US-6 (Main St South)/CT-317 (Sycamore Ave)

Woodbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (Main Street North)/ CT-61 (Bethlehem Road/ Quassapaug Road)	Horizontal and vertical curvature at intersection	Trim vegetation especially along US-6 (Main Street North) eastbound.	Low
	Intersection crashes	Install yellow flashers on the intersection warning signs	Low
		Realign CT-61 approaches farther east	Medium
	Speeding	Install Dynamic Speed Feedback signs on US-6 (Main Street North) approach	Low-Medium
US-6 (Main Street South)/ CT-317 (Sycamore Avenue)	Congestion	Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes	Medium
Mountain Road	Speeding	Narrow travel lanes	Medium
		Enforcement	Low-Medium
Townwide	Pedestrians and bicyclists	Watch for Me CT	Low
		Curb extensions at crosswalks	Low-Medium
		Sharrows on popular bicycle routes	Medium

Appendix B: Emphasis Areas

INTERSECTION FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	29	39	21	36
Beacon Falls	3	6	4	3
Bethlehem	2	1	6	3
Bristol	168	190	189	165
Cheshire	43	51	50	52
Derby	35	49	40	16
Middlebury	19	32	23	33
Naugatuck	31	54	65	36
Oxford	7	9	15	9
Plymouth	13	20	18	25
Prospect	20	20	20	12
Seymour	22	36	32	24
Shelton	68	78	81	79
Southbury	38	39	26	21
Thomaston	12	18	12	10
Waterbury	468	577	604	594
Watertown	36	51	51	44
Wolcott	22	28	23	17
Woodbury	11	14	10	14
NVCOG Totals	**1047**	**1312**	**1290**	**1193**

ROADWAY DEPARTURE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	18	20	18	20
Beacon Falls	10	5	5	5
Bethlehem	7	4	3	3
Bristol	63	79	70	72
Cheshire	17	27	19	21
Derby	14	9	13	4
Middlebury	12	20	8	8
Naugatuck	14	31	21	25
Oxford	13	20	19	19
Plymouth	16	20	27	14
Prospect	9	14	10	10
Seymour	18	18	14	22
Shelton	36	42	33	32
Southbury	13	19	27	14
Thomaston	5	18	19	6
Waterbury	154	216	227	193
Watertown	21	18	28	17
Wolcott	18	21	12	18
Woodbury	18	15	16	10
NVCOG Totals	**476**	**616**	**589**	**513**

AGGRESSIVE DRIVING (SPEEDING) FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	18	13	7	13
Beacon Falls	7	3	0	0
Bethlehem	3	4	3	1
Bristol	39	45	52	41
Cheshire	10	15	15	12
Derby	10	10	6	3
Middlebury	3	13	4	6
Naugatuck	15	20	20	14
Oxford	8	14	6	10
Plymouth	6	22	18	12
Prospect	9	11	9	9
Seymour	7	9	11	6
Shelton	16	23	17	15
Southbury	5	14	21	4
Thomaston	5	13	14	7
Waterbury	133	159	188	164
Watertown	13	14	28	20
Wolcott	10	12	9	16
Woodbury	8	11	7	6
NVCOG Totals	**325**	**425**	**435**	**359**

UNRESTRAINED OCCUPANT FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	6	5	3	6
Beacon Falls	3	5	1	0
Bethlehem	2	1	1	1
Bristol	21	26	17	18
Cheshire	12	10	12	7
Derby	8	9	13	2
Middlebury	12	7	8	6
Naugatuck	10	36	38	13
Oxford	1	4	2	2
Plymouth	15	16	18	16
Prospect	4	1	2	0
Seymour	12	8	22	9
Shelton	5	13	2	4
Southbury	0	1	5	4
Thomaston	1	5	7	6
Waterbury	51	51	54	53
Watertown	8	9	9	5
Wolcott	22	15	15	18
Woodbury	3	3	0	1
NVCOG Totals	**196**	**225**	**229**	**171**

SUBSTANCE-IMPAIRED FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	6	12	7	11
Beacon Falls	1	1	1	0
Bethlehem	2	1	1	1
Bristol	36	41	37	11
Cheshire	8	5	5	6
Derby	8	8	6	2
Middlebury	0	2	0	1
Naugatuck	8	17	6	15
Oxford	2	6	2	2
Plymouth	4	4	1	8
Prospect	3	1	3	0
Seymour	3	4	7	12
Shelton	9	11	11	11
Southbury	5	7	7	2
Thomaston	0	6	2	0
Waterbury	34	50	56	40
Watertown	5	6	6	9
Wolcott	3	9	7	5
Woodbury	2	4	4	1
NVCOG Totals	**139**	**195**	**169**	**137**

DISTRACTED DRIVING FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	13	8	8	5
Beacon Falls	1	0	0	1
Bethlehem	0	1	0	1
Bristol	35	37	27	24
Cheshire	20	25	18	15
Derby	9	7	12	6
Middlebury	9	14	6	5
Naugatuck	8	14	17	12
Oxford	6	5	5	0
Plymouth	9	6	9	7
Prospect	6	13	7	5
Seymour	4	4	7	8
Shelton	16	19	14	11
Southbury	12	13	5	5
Thomaston	11	7	6	4
Waterbury	70	72	65	50
Watertown	7	8	9	8
Wolcott	8	7	5	1
Woodbury	6	5	8	4
NVCOG Totals	**250**	**265**	**228**	**172**

OLDER DRIVER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	14	9	7	11
Beacon Falls	1	0	1	0
Bethlehem	0	1	1	2
Bristol	52	37	54	47
Cheshire	14	12	24	13
Derby	4	8	11	5
Middlebury	9	11	7	10
Naugatuck	4	9	12	10
Oxford	9	5	9	8
Plymouth	2	3	5	13
Prospect	7	9	5	7
Seymour	5	6	11	8
Shelton	32	22	24	24
Southbury	12	19	10	7
Thomaston	7	4	4	5
Waterbury	70	88	98	87
Watertown	12	20	14	15
Wolcott	6	14	5	14
Woodbury	10	11	9	8
NVCOG Totals	**270**	**288**	**311**	**294**

YOUNG DRIVER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	28	19	19	19
Beacon Falls	7	6	1	2
Bethlehem	1	3	4	2
Bristol	79	89	87	82
Cheshire	33	21	17	34
Derby	18	20	19	5
Middlebury	14	21	14	11
Naugatuck	9	24	19	17
Oxford	13	16	15	15
Plymouth	10	17	18	16
Prospect	8	12	12	8
Seymour	17	18	16	12
Shelton	36	46	29	34
Southbury	13	20	15	8
Thomaston	6	8	10	5
Waterbury	243	287	263	238
Watertown	26	27	30	20
Wolcott	23	24	17	16
Woodbury	12	11	8	12
NVCOG Totals	**596**	**689**	**613**	**556**

PEDESTRIAN FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	3	7	2	7
Beacon Falls	1	0	1	0
Bethlehem	0	1	0	0
Bristol	21	21	20	20
Cheshire	2	2	6	16
Derby	8	8	5	2
Middlebury	1	1	2	2
Naugatuck	11	7	7	6
Oxford	0	0	1	0
Plymouth	0	3	0	0
Prospect	2	1	1	0
Seymour	2	0	1	1
Shelton	4	9	7	2
Southbury	1	3	1	1
Thomaston	1	0	0	0
Waterbury	90	76	109	115
Watertown	0	3	2	1
Wolcott	0	3	1	2
Woodbury	2	1	1	1
NVCOG Totals	**149**	**146**	**167**	**176**

BICYCLE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	0	1	0	0
Beacon Falls	0	0	0	1
Bethlehem	0	0	1	0
Bristol	7	5	5	3
Cheshire	6	5	4	5
Derby	1	0	0	0
Middlebury	0	1	0	0
Naugatuck	4	0	3	0
Oxford	0	0	1	0
Plymouth	0	0	1	0
Prospect	0	0	0	0
Seymour	0	0	2	1
Shelton	1	0	3	0
Southbury	1	0	1	0
Thomaston	0	1	0	0
Waterbury	9	19	10	7
Watertown	1	0	1	0
Wolcott	0	0	1	0
Woodbury	0	1	0	0
NVCOG Totals	**30**	**33**	**33**	**17**

MOTORCYCLE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	3	4	1	5
Beacon Falls	1	0	0	0
Bethlehem	2	1	0	2
Bristol	28	29	41	26
Cheshire	5	3	5	4
Derby	5	3	8	2
Middlebury	3	3	2	3
Naugatuck	10	8	4	5
Oxford	3	5	1	5
Plymouth	3	8	8	2
Prospect	4	6	1	1
Seymour	4	7	4	5
Shelton	10	13	14	8
Southbury	4	4	5	2
Thomaston	4	7	8	2
Waterbury	40	46	32	52
Watertown	5	11	4	5
Wolcott	3	6	3	3
Woodbury	5	1	1	2
NVCOG Totals	**142**	**165**	**142**	**134**

Emphasis Areas by Municipalities

Town	Intersection Crashes		Roadway Departure Crashes		Aggressive Driving Crashes		Unrestrained Occupant Crashes		Substance-Impaired Crashes		Distracted Driving Crashes		Older Driver Crashes		Young Driver Crashes		Pedestrian Crashes		Bicycle Crashes		Motorcycle Crashes	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Ansonia	125	0.21	76	0.30	51	0.55	20	0.37	36	1.03	34	0.91	41	0.39	85	0.38	19	0.36	1	0.06	13	0.32
Beacon Falls	16	0.03	25	0.10	10	0.11	9	0.17	3	0.09	2	0.05	2	0.02	16	0.07	2	0.04	1	0.06	1	0.02
Bethlehem	12	0.02	17	0.07	11	0.12	5	0.09	5	0.14	2	0.05	4	0.04	10	0.05	1	0.02	1	0.06	5	0.12
Bristol	712	1.20	284	1.14	177	1.90	82	1.51	125	3.58	123	3.29	190	1.79	337	1.52	82	1.57	20	1.24	124	3.07
Cheshire	196	0.33	84	0.34	52	0.56	41	0.76	24	0.69	78	2.08	63	0.59	105	0.47	26	0.50	20	1.24	17	0.42
Derby	140	0.24	40	0.16	29	0.31	32	0.59	24	0.69	34	0.91	28	0.26	62	0.28	23	0.44	1	0.06	18	0.45
Middlebury	107	0.18	48	0.19	26	0.28	33	0.61	3	0.09	34	0.91	37	0.35	60	0.27	6	0.11	1	0.06	11	0.27
Naugatuck	186	0.31	91	0.36	69	0.74	97	1.79	46	1.32	51	1.36	35	0.33	69	0.31	31	0.59	7	0.43	27	0.67
Oxford	40	0.07	71	0.28	38	0.41	9	0.17	12	0.34	16	0.43	31	0.29	59	0.27	1	0.02	1	0.06	14	0.35
Plymouth	76	0.13	77	0.30	58	0.62	65	1.20	17	0.49	31	0.83	23	0.22	61	0.27	3	0.06	1	0.06	21	0.52
Prospect	72	0.12	43	0.17	38	0.41	7	0.13	7	0.20	31	0.83	28	0.26	40	0.18	4	0.07	0	0.00	12	0.30
Seymour	114	0.19	72	0.29	33	0.35	51	0.94	26	0.75	23	0.61	30	0.28	63	0.28	4	0.07	3	0.06	20	0.50
Shelton	306	0.52	143	0.57	71	0.76	24	0.44	42	1.20	60	1.60	102	0.96	145	0.65	22	0.42	4	0.25	45	1.11
Southbury	124	0.21	73	0.29	44	0.47	10	0.18	21	0.60	35	0.93	48	0.45	56	0.25	6	0.11	2	0.12	15	0.37
Thomaston	52	0.09	48	0.19	39	0.42	19	0.35	8	0.23	28	0.75	20	0.19	29	0.13	1	0.02	1	0.06	21	0.52
Waterbury	2,243	3.80	790	3.17	644	6.89	209	3.85	180	5.16	257	6.86	343	3.23	1,031	4.64	390	0.07	45	2.80	170	4.21
Watertown	182	0.31	84	0.34	75	0.80	31	0.57	26	0.75	32	0.85	61	0.58	103	0.46	6	0.11	2	0.12	25	0.62
Wolcott	90	0.15	69	0.28	47	0.50	70	1.29	24	0.69	21	0.56	39	0.37	80	0.36	6	0.11	1	0.06	15	0.37
Woodbury	49	0.08	59	0.24	32	0.34	7	0.13	11	0.32	23	0.61	38	0.36	43	0.19	5	0.10	1	0.06	9	0.22
NVCOG Totals	4,842	8.18	2,194	8.80	1,544	16.5	821	15.14	640	18.34	915	24.44	1,163	10.97	2,454	11.05	638	12.18	113	7.02	583	14.43

Appendix C: Infrastructure Countermeasure Table

The countermeasures included in this report were determined based on an analysis of historical data for crashes involving injuries or fatalities, discussions with Region and town officials, the Connecticut Strategic Highway Safety Plan, FHWA's List of Proven Countermeasures and NHTSA's Countermeasures that Work, 8th edition.

	Measure	Description	Application
Signage	**Speed Feedback Signs**[1,2] Cost: Low	A changeable message sign that displays the speed of approaching vehicles.	To be used where motorized vehicle speed is a concern.
Signage	**Retroreflective Signal Backplates** Cost: Low-Medium	Improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a retroreflective border.	Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions. Cost may depend on the need to replace span wire with mast arms.
Signal	**Change Left-Turn Phase to Protected Phasing** Cost: Low	Modify existing phasing to a protected phase.	"Protected-only" phasing consists of providing a separate phase for left-turning traffic and allowing left turns to be made only on a green left arrow signal indication, with no pedestrian movement or vehicular traffic conflicting with the left turn. As a result, left-turn movements with "protected-only" phasing have a higher capacity than those with "permissive-only" phasing due to fewer conflicts.[3]
Signage	**Flashing Advance Warning Beacons** Cost: Low to Medium	A beacon that provides a warning to motorists about an intersection ahead.	To be used in advance of an intersection.
Signage	**No Right Turn on Red** Cost: Low	A sign that prohibits right turns during the red phase due to exclusive pedestrian phases, high traffic or pedestrian volumes, or inadequate visibility.	Together with a leading pedestrian interval, the restriction can benefit pedestrians with minimal impact on traffic. Part-time prohibitions during the busiest times of the day may be adequate to address the problem.
Signage	**Additional Horizontal Curve Warning and Chevron Signs** Cost: Low	Additional signs help to increase the noticeability of signage in situations where standard signage is insufficient.	While agencies apply signing devices uniformly, adding additional signs may be necessary depending on an assessment of speed, unexpected geometric features, traffic volume, and crash data.

1 Federal Highway Administration. (2009). Engineering Countermeasures for Reducing Speeds: A Desktop Reference of Potential Effectiveness. Washington, D.C.: Federal Highway Administration.
2 Overuse of signs and pavement markings may reduce their effectiveness. These devices should be used in locations where the needs are greatest.
3 Federal Highway Administration. (2004). Signalized Intersections: Informational Guide. https://www.fhwa.dot.gov/publications/research/safety/04091/04.cfm

	Measure	Description	Application
Pavement Markings	**Regulatory Pavement Markings**[1] Cost: Low	Pavement markings, such as "25 MPH", that emphasize regulatory signage (MUTCD Section 3B.20).	To be used as a supplement to regulatory signs.
Pavement Markings	**Crosswalks** Cost: Varies, Low -markings only Medium -markings and simple ADA landings; High-significant pedestrian safety features required	Pavement markings delineating a portion of the roadway that is designated for pedestrian or bicycle crossing. There are several types including: continental, zebra, and standard (MUTCD Section 3B.18).	To be used at intersections or mid-block crossings. Crosswalks may be used in areas with lower traffic volumes, lower speeds, and a limited number of travel lanes. See Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations for additional guidance regarding when to install a marked crosswalk.
Pavement Markings	**Road Reconfigurations** Cost: Low to High	Roadway retrofit techniques designed to produce a wide variety of benefits including reduced traffic speeds, reduced crashes, improved access management, improved accessibility for pedestrians or bicyclists, improved parking utilization, as well as improved economic vitality for businesses along those streets. Can include a variety of measures such as road diets and lane narrowing to include bike lanes.	For use in areas where speed and pedestrian and bicycle accessibility are a concern.
Physical Environment	**Buffered Shoulders** Cost: Low for restriping existing paved shoulder, high for constructing new paved shoulder	A paved shoulder that is separated by a pavement marking to create a buffer from the vehicle travel lanes. The buffer space may be marked with diagonal pavement markings and ranges from 1 to 4 feet wide.	To be used in areas where pedestrian, bicycle, and/or horse-drawn vehicle volumes and motor vehicle volumes and speeds combine to create the need for separated and buffered space along the roadway.
Physical Environment	**Bike Lanes**[2] Cost: *Varies	A lane in the roadway designated for bicycle use with striping, signing, and pavement markings (MUTCD Chapter 9B and 9C).	To be used in areas with high volumes and speeds of motor vehicles and bicycles (RV).
Physical Environment	**Roadway Surface Improvements** Cost: Varies greatly based on conditions present	Roadway surface improvements include maintenance and paving activities to provide a smooth and slip-resistant traveling surface for pedestrians and cyclists.	Facilities used by pedestrians and cyclists should be smoother than those deemed acceptable for motorized traffic to maintain stability. Therefore, it is important that debris be cleared from facilities used by pedestrians and cyclists. If rumble strips are present, sufficient gaps should be provided for cyclists to move from the shoulder to the travel lane. Additionally, there should be sufficient width for cyclists to ride between the edge of the rumble strip and the edge of the shoulder.

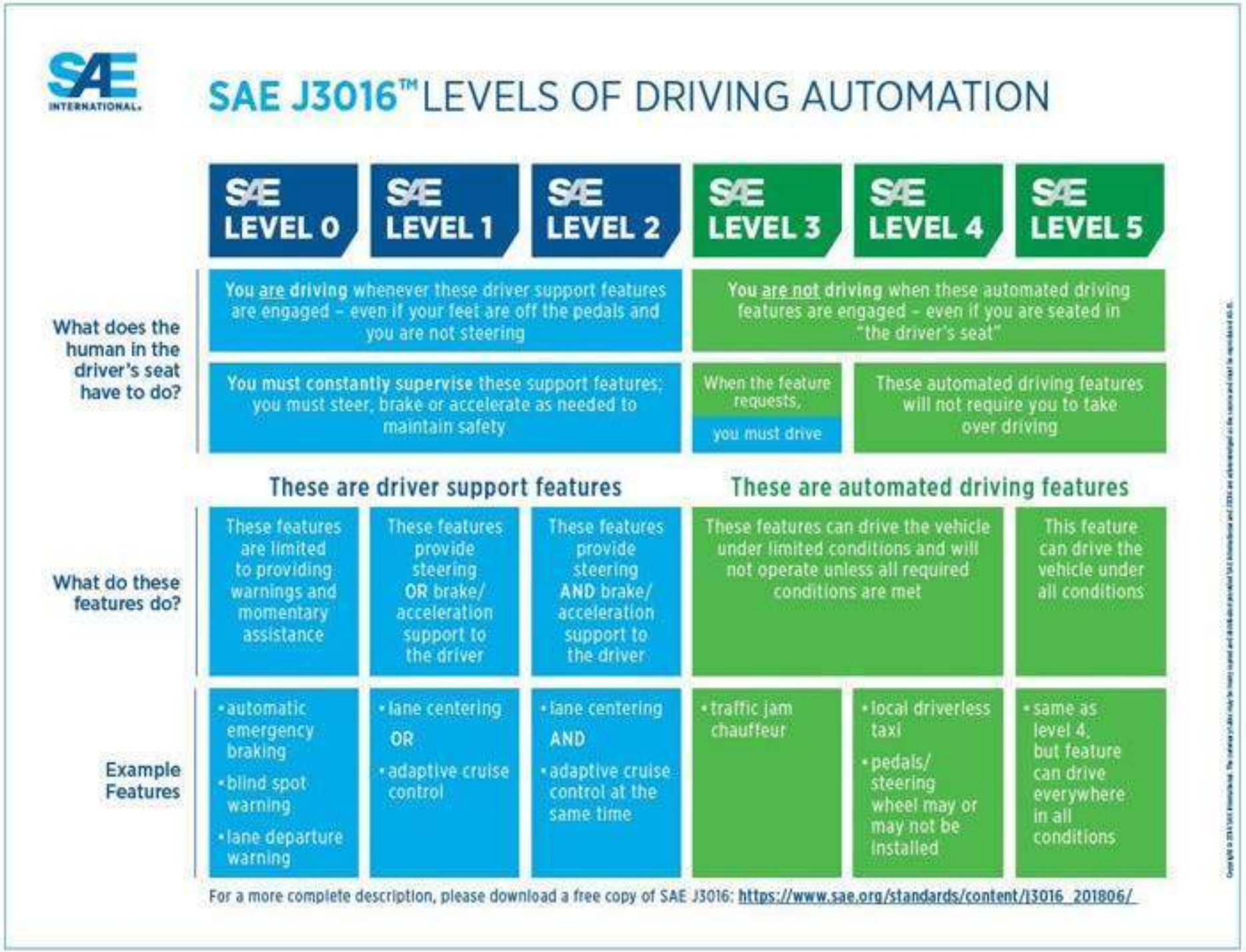
1 Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration.
2 American Association of State Highway Safety Officials. (1999). Guide for the Development of Bicycle Facilities. Washington, D.C.: American Association of State Highway Safety Officials.

	Measure	Description	Application
Physical Environment	**Median Crossing Islands** Cost: Medium	A raised island in the center of the roadway with a refuge area that is accessible for pedestrians of all abilities. Can also provide a refuge area for cyclists, especially at locations where a shared use path crosses a roadway. The island allows pedestrians and cyclists to cross one direction of traffic at a time.	To be used when pedestrians and cyclists have to cross high-volume, multilane roadways (MUTCD Chapter 3I), (RV).
Physical Environment	**Rectangular Rapid Flash LED Beacons**[1] Cost: Medium	A beacon that provides a warning to motorists about the presence of a crosswalk. Beacon is yellow, rectangular, and has a rapid "wig-wag" flash like police lights. Beacon should operate only when a pedestrian is present; utilize either push button or passive detection.	For use at mid-block crossings and intersections that do not warrant a signal.
Physical Environment	**Roadway Illumination**[2] Cost: Medium	Lighting directed to illuminate the roadway.	To be used on sections of roadway with high volumes of nighttime non-motorized activity.
Physical Environment	**Road Diets** Cost: Low to Medium	A redistribution of space in the roadway leading to a reduction in the number of travel lanes for motor vehicles on a roadway. The road diet is one of FHWA's Proven Safety Countermeasures and may provide space for bike lanes, sidewalk, or medians, and can help to reduce motor vehicle speed.	For use in areas with pedestrian crossings, multiple lanes of traffic, and high vehicle speeds.
Physical Environment	**Gateways** Cost: Low to High	Visual or physical markers to serve as an indicator to motorists that they are entering an urbanized area and to slow down.	For use at the entrance of a residential or commercial area.
Physical Environment	**Shared Use Paths** Cost: Medium to High	A facility separated from motorized vehicular traffic by a landscaped space or barrier. Shared use paths may be used by cyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Such facilities are often referred to as "trails."	To be used in areas with a high volume of pedestrians and bicyclists and high motor vehicle speeds or volumes.

1 Federal Highway Administration. (2008). Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures. Retrieved August 29, 2011 from Federal Highway Administration: http://safety.fhwa.dot.gov/policy/memo071008.
2 Hall, J. W., Brogan, J. D., & Kondreddi, M. (2004). Pedestrian Safety on Rural Highways. FHWA-SA-04-008. Washington, D.C.: Federal Highway Administration.

	Measure	Description	Application
Signage	**Pedestrian Hybrid Beacons** Cost: High	The pedestrian hybrid beacons (PHB) is a traffic control device designed to help pedestrians safely cross busy or higher-speed roadways at mid-block crossings and uncontrolled intersections.	The PHB is an intermediate option between a flashing beacon and a full pedestrian signal because it assigns right of way and provides positive stop control. It also allows motorists to proceed once the pedestrian has cleared their side of the travel lane, reducing vehicle delay.
Pavement Markings	**Roadway (or Transverse) Rumble Strips** Cost: Low	Raised bars or grooves placed across the travel lane that can be either black or white.	To be used to alert drivers of the need to reduce speed in locations where other measures cannot be applied or have been tested and have not succeeded in addressing speeding issues. Bicyclist (and motorcyclist) concerns should be addressed by a break in the strips and installing a warning sign reading "RUMBLE STRIPS AHEAD." May have limited use because of citizens concerns over noise from vehicles driving over.
Pavement Markings	**Shoulder Rumble Strips** Cost: Low	Raised bars or grooves placed at the edge of the travel lane.	Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway
Pavement Markings	**Centerline Rumble Strips** Cost: Low	Raised bars or grooves placed at or near the centerline travel lane.	Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway.
Pavement Markings	**Lane Narrowing** Cost: Low to High	The narrowing of travel lanes—either visually (by using pavement markings) or physically narrowing (with measures such as curb extensions). One example of visually narrowing lanes is a painted island that is an island defined by pavement markings and created with the function of reducing lane widths for traffic calming purposes.[1]	For use in areas with wide travel lanes and where speed is a concern (MUTCD Chapter 3I).

1 Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration


SAE INTERNATIONAL
SAE J3016™ LEVELS OF DRIVING AUTOMATION
SAE LEVEL 0
SAE LEVEL 1
SAE LEVEL 2
SAE LEVEL 3
SAE LEVEL 4
SAE LEVEL 5
What does the human in the driver's seat have to do?
You are driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering
You are not driving when these automated driving features are engaged – even if you are seated in "the driver's seat"
You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety
When the feature requests, you must drive
These automated driving features will not require you to take over driving
These are driver support features
These are automated driving features
What do these features do?
These features are limited to providing warnings and momentary assistance
These features provide steering OR brake/ acceleration support to the driver
These features provide steering AND brake/ acceleration support to the driver
These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met
This feature can drive the vehicle under all conditions
Example Features
• automatic emergency braking
• blind spot warning
• lane departure warning
• lane centering OR
• adaptive cruise control
• lane centering AND
• adaptive cruise control at the same time
• traffic jam chauffeur
• local driverless taxi
• pedals/ steering wheel may or may not be installed
• same as level 4, but feature can drive everywhere in all conditions
For a more complete description, please download a free copy of SAE J3016: https://www.sae.org/standards/content/j3016_201806/

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Source: VN Engineers

REGIONAL TRANSPORTATION SAFETY PLAN
2022 ADDENDUM



NAUGATUCK VALLEY
COUNCIL of GOVERNMENTS

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VN Engineers, Inc. (VN), in collaboration with the Connecticut Department of Transportation (CTDOT) and the Naugatuck Valley Council of Governments (NVCOG), completed the first Regional Transportation Safety Plan (RTSP) in 2019. This plan used a data-based approach to identify the locations in the region which presented the greatest safety risk for users of the transportation system, and through a broad set of engagement developed mitigation actions for these locations. It also identified solutions for enforcement, education, and emergency response to supplement the engineering solution, taking a full system approach to system safety. This first plan was adopted by the NVCOG Policy Board on June 11, 2021.

The RTSP is intended to be updated every five years. However, this mid-term addendum has been compiled to support the region's Vision Zero policy and goal, which was adopted by the NVCOG Policy Board on September 9, 2022.

The 2025 RTSP update will integrate the region's Vision Zero policies, but, until that document is compiled, this addendum adds an expanded project list, based both on data and on the input from municipal leaders and the public. An expanded public engagement strategy was developed for this update and is detailed in this section as well. Updated crash data for the region, looking at the three full years of 2019, 2020, and 2021, were analyzed. COVID-19 has had a significant impact on traffic patterns and safety within the region, so updated data was a critical element of updating the action plan items. Finally, a more thorough equity analysis was completed, ensuring that the 2022 project listing update programmed a fair amount into the Environmental Justice and Equity areas of concern within the region. These added sections, on the following pages, serve as an addition to the 2020 RTSP and provide the region with a Vision Zero Action Plan that meets the region's new policies and goals.

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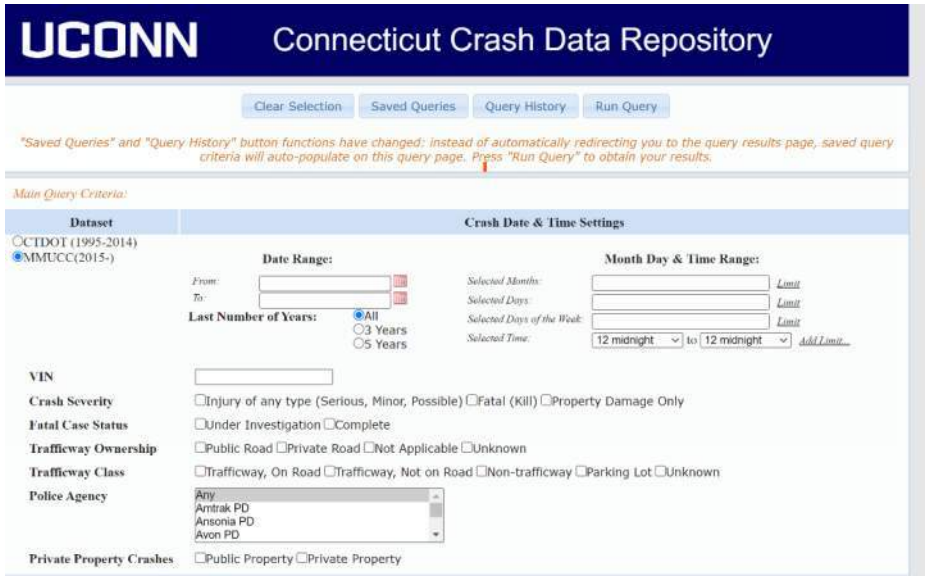
Regional Crash Data Update

The following shows the updated crash data for the region as provided by the University of Connecticut Crash Data Repository. This system provides detailed crash data records for the full state of Connecticut and allows for review of all relevant factors. This section begins with a review of the high intensity network within each NVCOG municipality, utilizing tables and maps provided directly by the UConn system. The second part of this section are tables reviewing crash data by location and cause.



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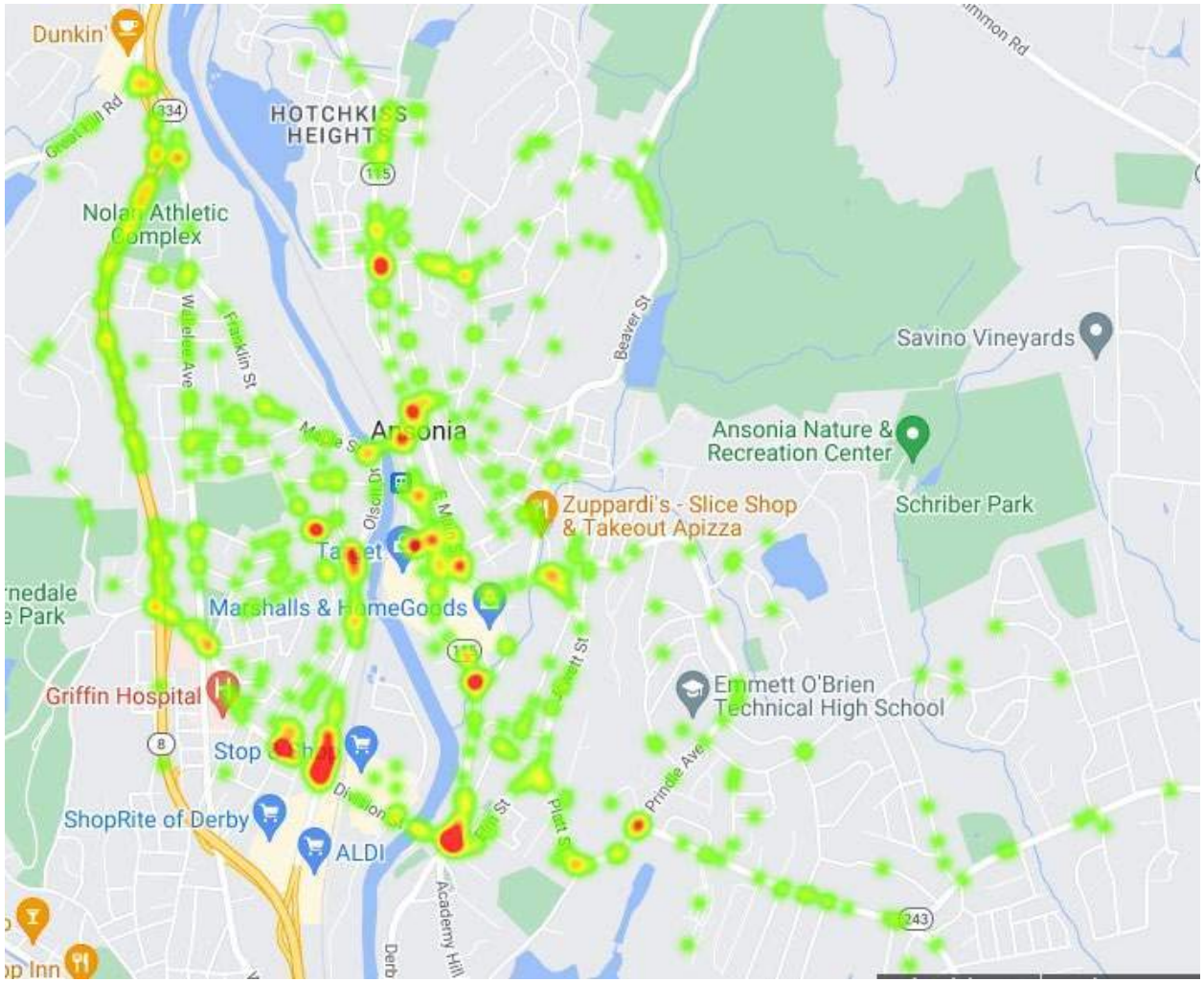

Ansonia

Between January 1st 2019 and December 31st 2021, Ansonia had 970 crashes. Ansonia's high crash intensity network includes:

1. Division Street between Elm Street and Clifton Avenue
2. Route 243 between Division Street and the intersection of Pindle Avenue and Pulaski Highway
3. Main Street at Father Salemi Drive and Henry Healey Drive
4. Howard Avenue at Grove Street
5. Pershing Drive between Division Street and Olson Drive
6. Entire length of Bridge Street
7. Main Street between State Street and Tremont Street
8. Main Street at 4th Street
9. Route 8 within Ansonia

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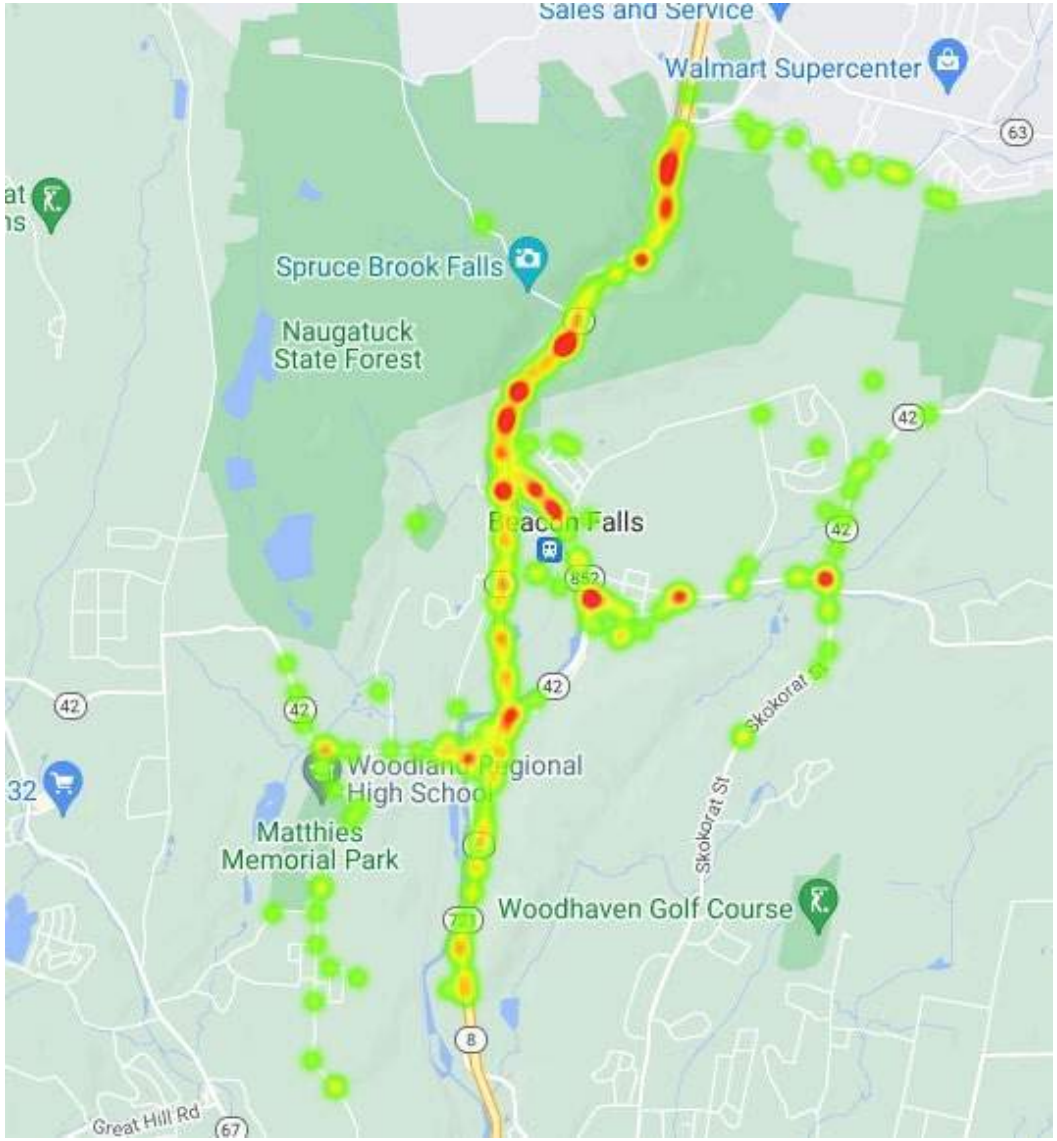

Beacon Falls

Between January 1st 2019 and December 31st 2021, Beacon Falls had 348 crashes. Beacon Falls' high crash intensity network includes:

1. Route 8 within Beacon Falls
2. Route 42 between Breault Road and the Route 8 Northbound off-ramp
3. Route 852 from downtown Beacon Falls to the intersection Route 42
4. Route 42 from Route 852 to Skokorat Street

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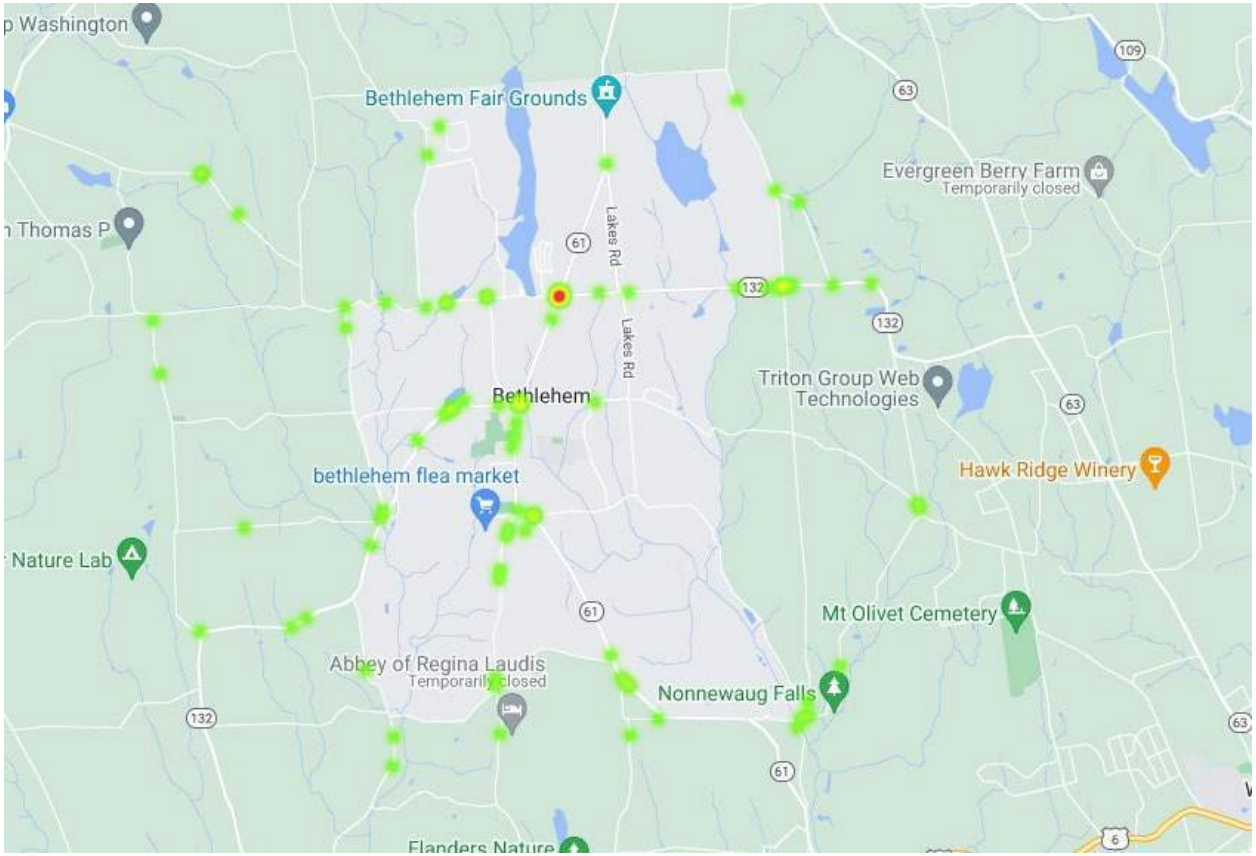
Bethlehem

Between January 1st 2019 and December 31st 2021, Bethlehem had 92 crashes. Bethlehem's high crash intensity network includes:

1. Main Street North at Bellamy Lane and Kasson Road
2. Main Street North at West Road and East Street



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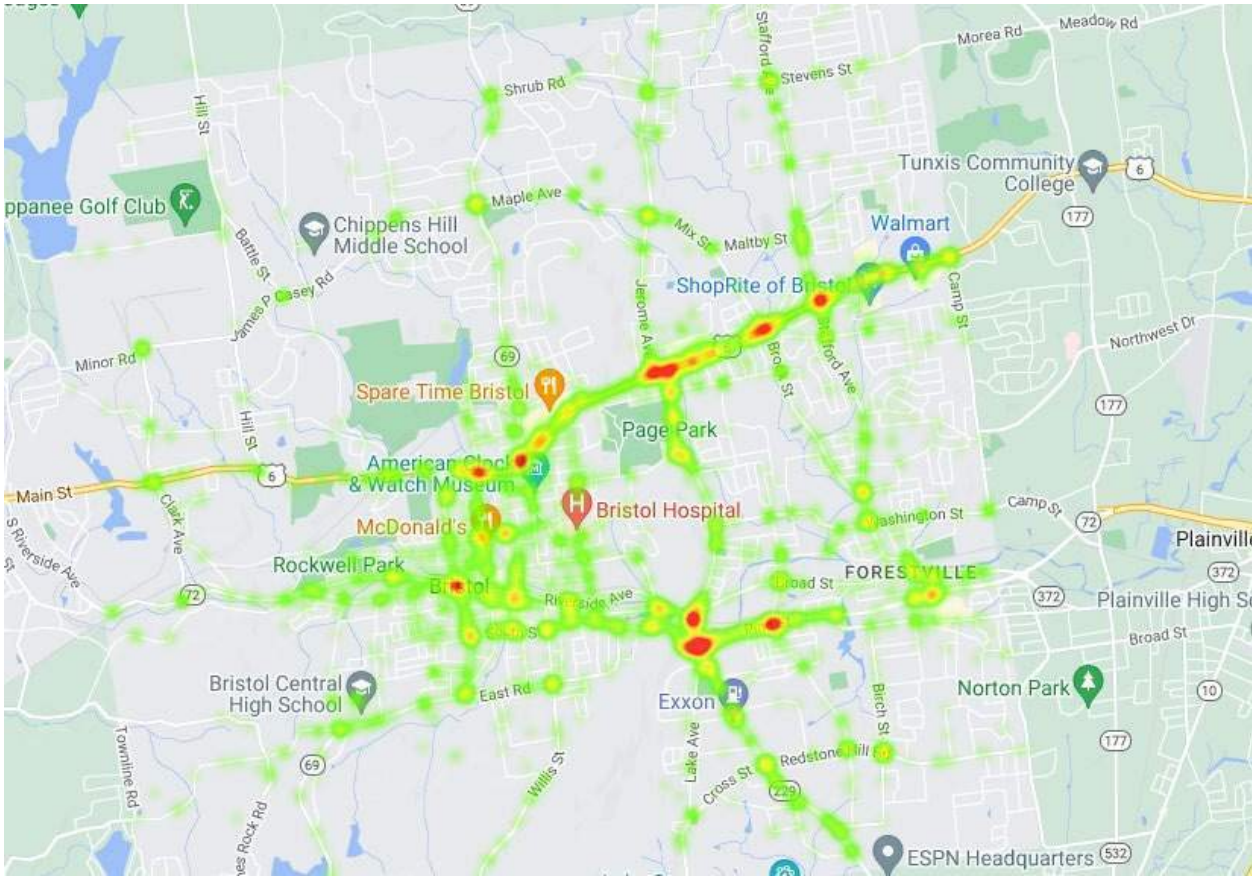
Bristol

Between January 1st 2019 and December 31st 2021, Bristol had 4,384 crashes. Bristol's high crash intensity network includes:

1. Route 229 from the Bristol city line to Route 6
2. Entire length of South Street
3. Entire length of Mountain Road
4. Route 6 between Route 69 and the Bristol city line
5. North Main Street between North Street and South Street
6. Route 72 between Divinity Street and East Bartlett Barns Highway



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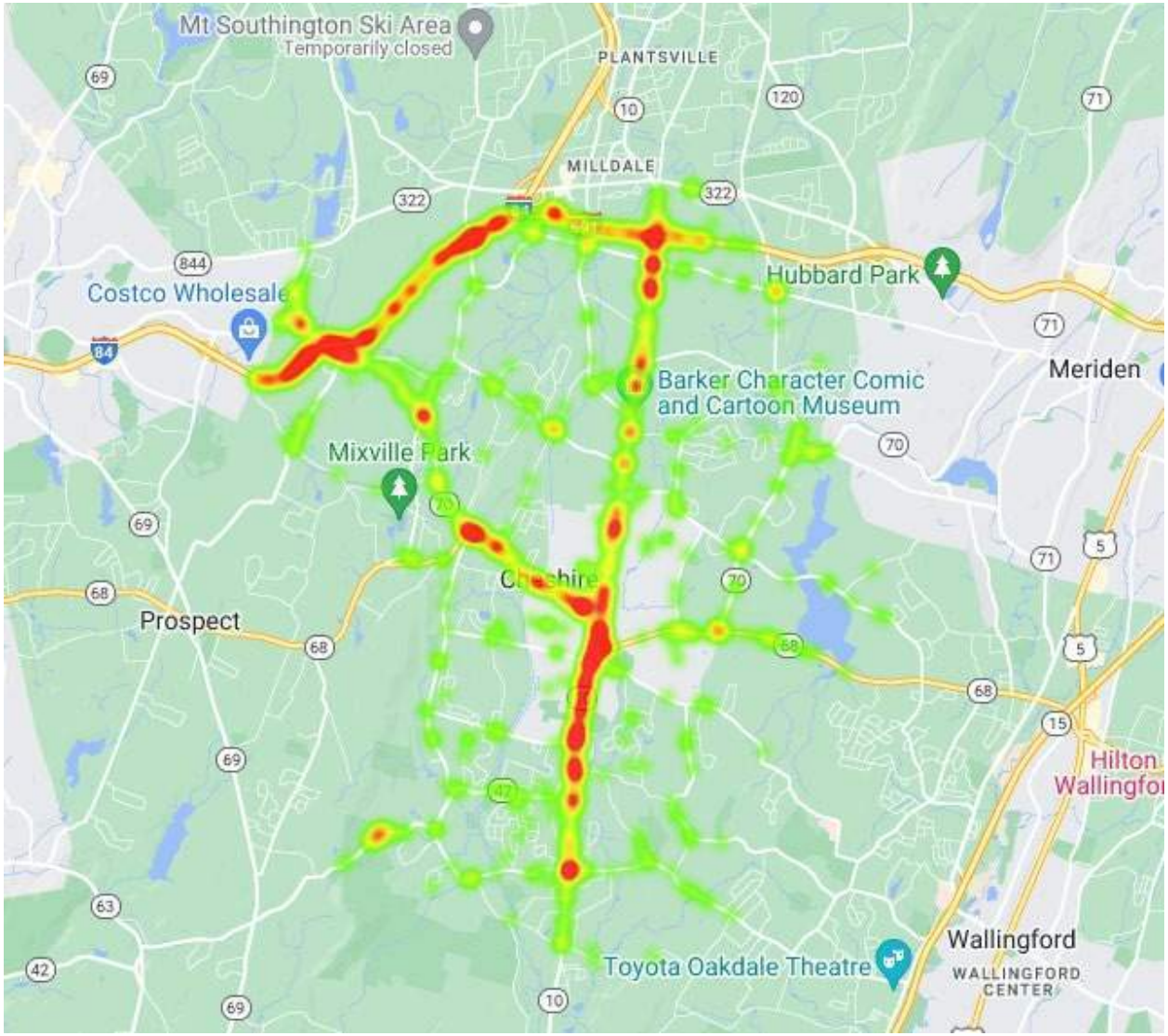
Cheshire

Between January 1st 2019 and December 31st 2021, Cheshire had 1,815 crashes. Cheshire's high crash intensity network includes:

1. I-84 within Cheshire
2. I-691 within Cheshire
3. Length of Byam Road
4. Route 810/Route 70 west of Route 10
5. Route 10 within Cheshire
6. Route 42 west of South Brooksvale Road
7. Intersection of Route 70 and Route 68 east of Route 10



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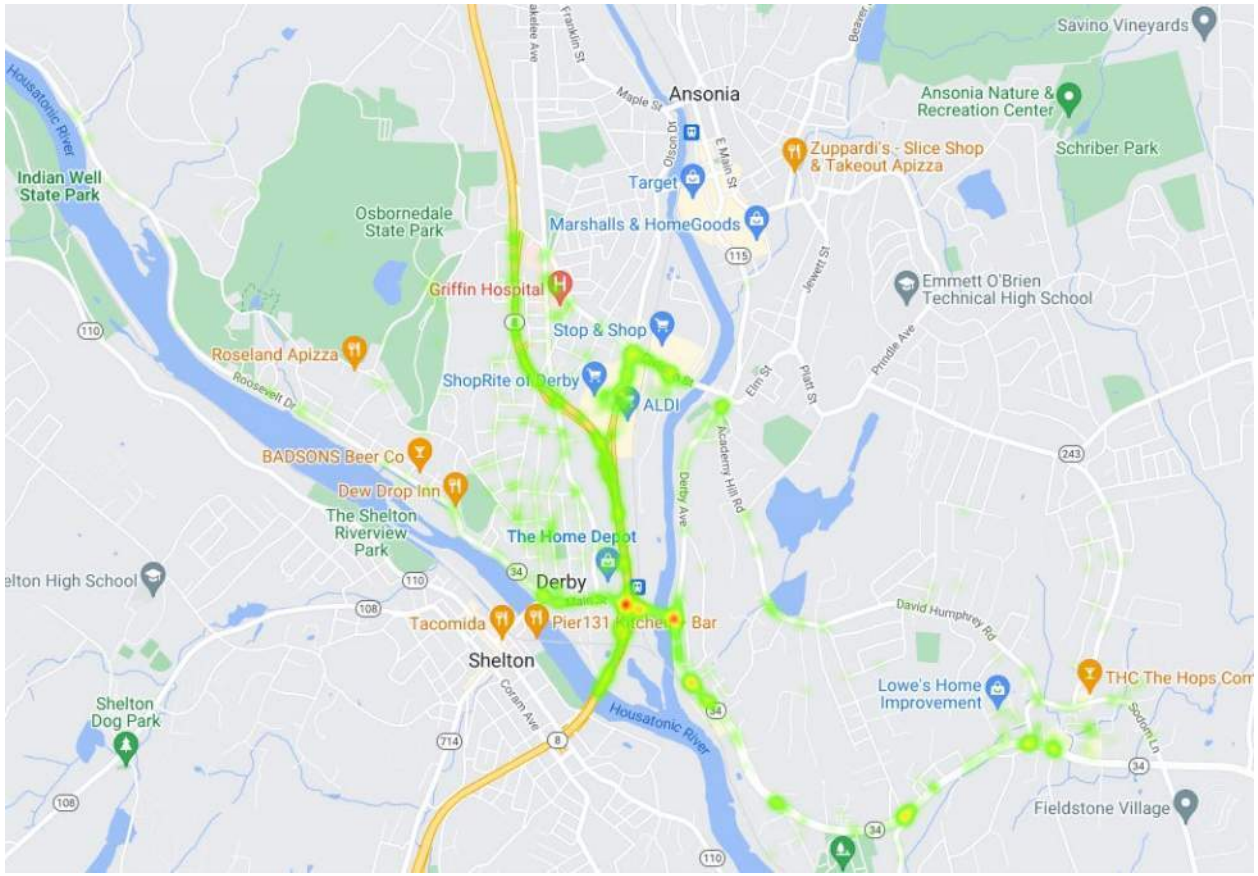

Derby

Between January 1st 2019 and December 31st 2021, Derby had 1,414 crashes. Derby's high crash intensity network includes:

1. Route 8 within Derby
2. Pershing Drive between Division Street to Route 8
3. Division Street between Pershing Drive to Naugatuck River
4. Route 34 between Derby-Shelton Bridge and Derby City and Orange Town line
5. Intersection of Derby Avenue at Academy Hill Road

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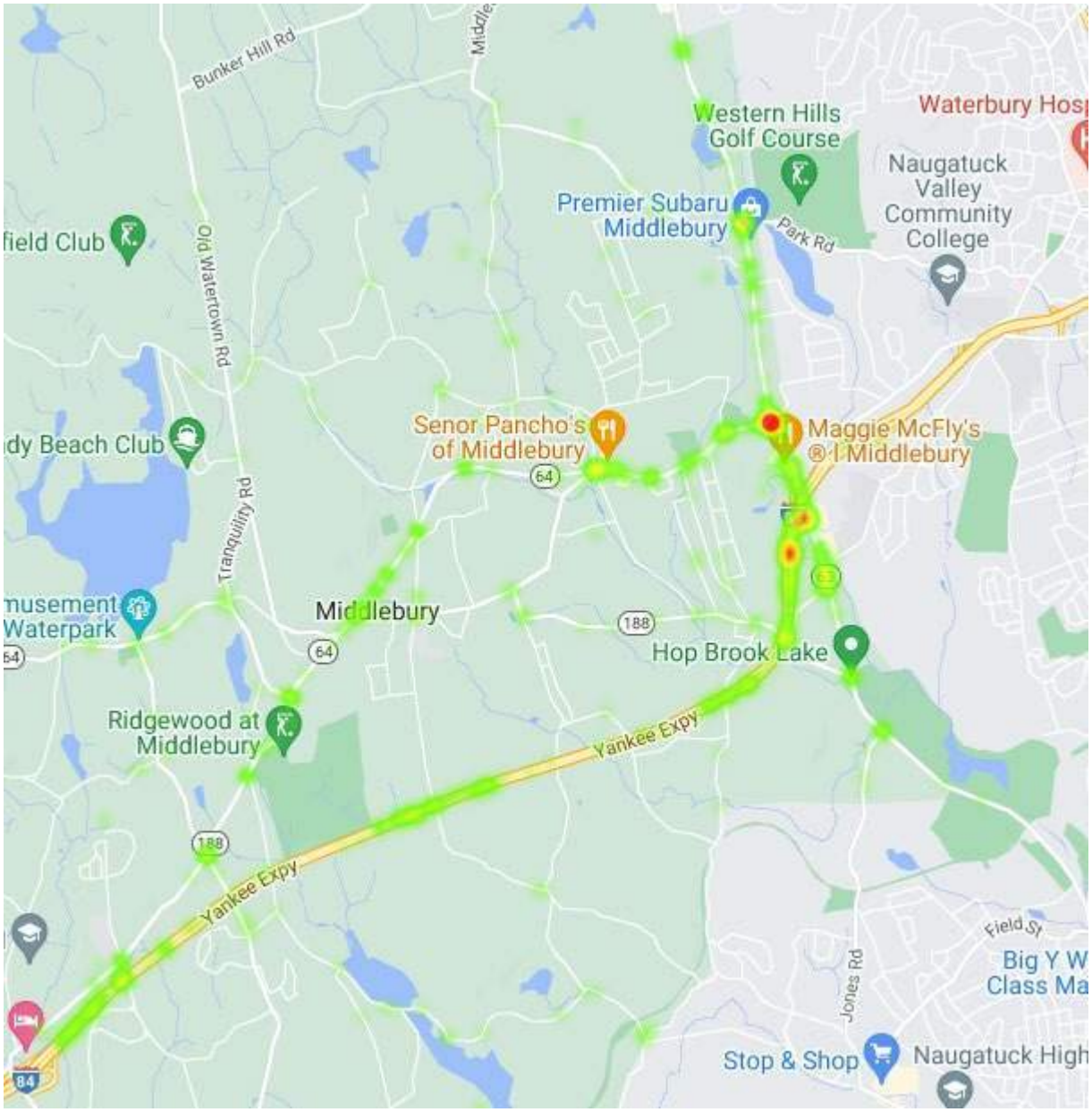
Middlebury

Between January 1st 2019 and December 31st 2021, Middlebury had 778 crashes. Middlebury's high crash intensity network includes:

1. I-84 within Middlebury
2. Route 64 between Route 188 to Route 63
3. Route 63 between Park Road to Allerton Farms Road



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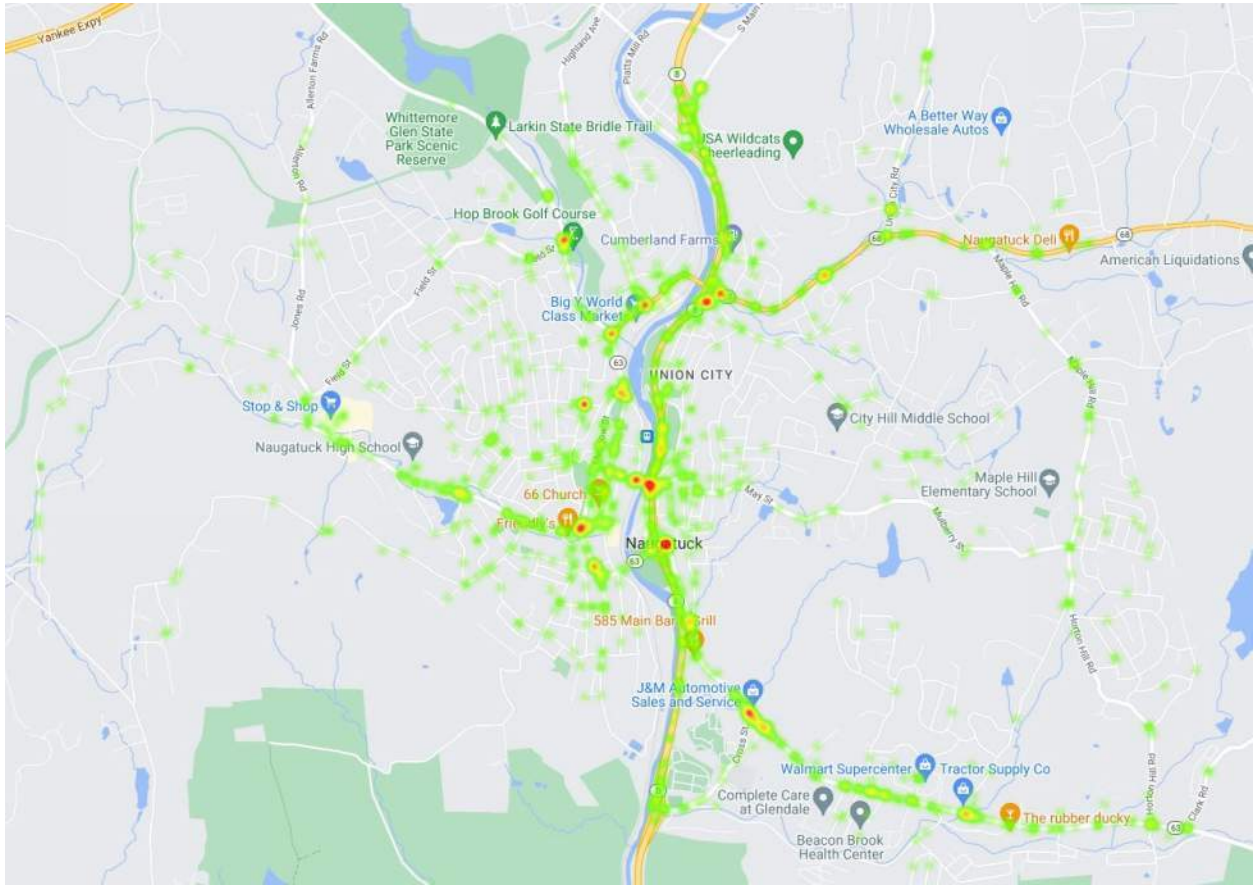

Naugatuck

Between January 1st 2019 and December 31st 2021, Naugatuck had 969 crashes. Naugatuck's high crash intensity network includes:

1. Route 8 within Naugatuck
2. Maple Street Between Church Street and Route 8 Interchange
3. Route 63 between Route 68 and Naugatuck borough line and Bethany town line
4. Rubber Avenue Between Neumann Street and Old Firehouse Road
5. Intersection of Route 8 Ramps, Union Street, City Hill Street, North Main Street
6. Route 68 between Route 63 and Union City Road
7. Intersection of Millville Avenue at Hillside Avenue
8. Intersection of Route 63 at Porter Avenue

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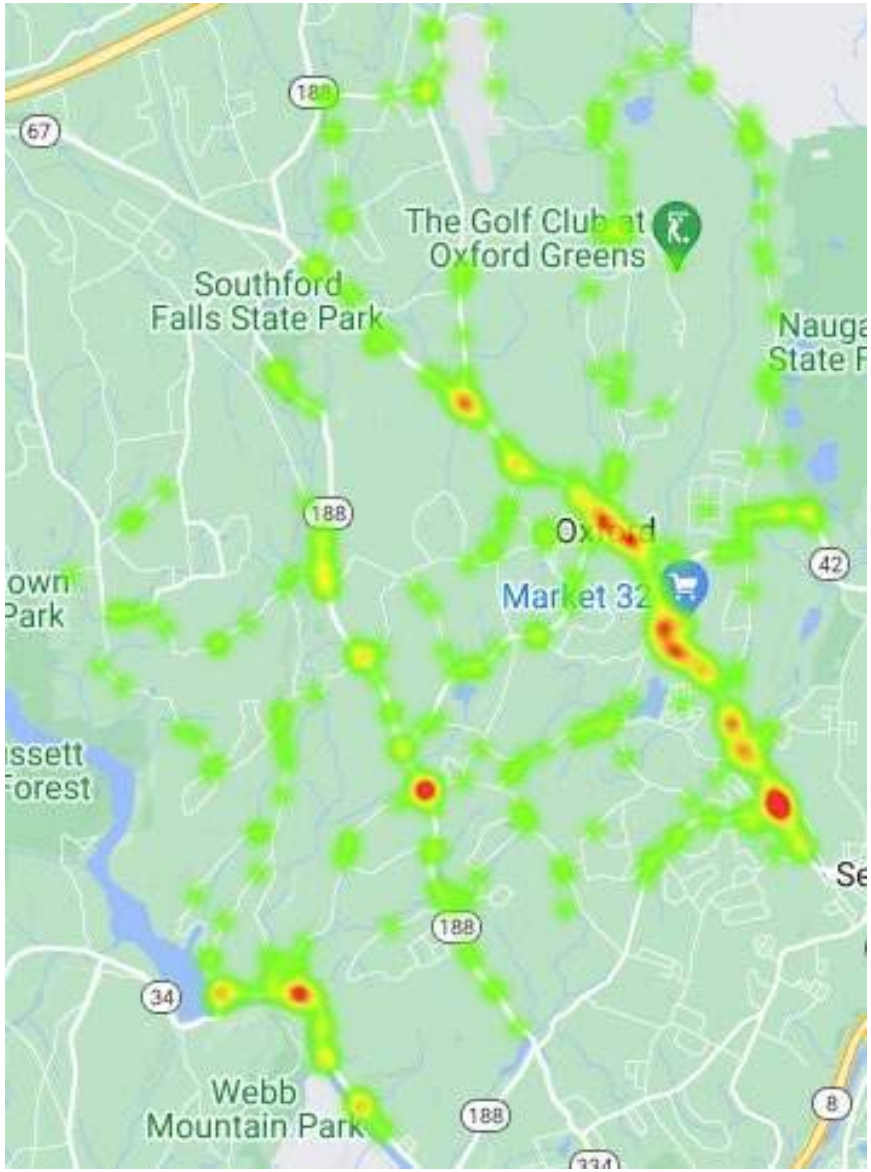

Oxford

Between January 1st 2019 and December 31st 2021, Oxford had 518 crashes. Oxford's high crash intensity network includes:

1. Route 67 within Oxford
2. Route 188 between Moose Hill Road and the north of Edmonds Road
3. Route 34 within Oxford

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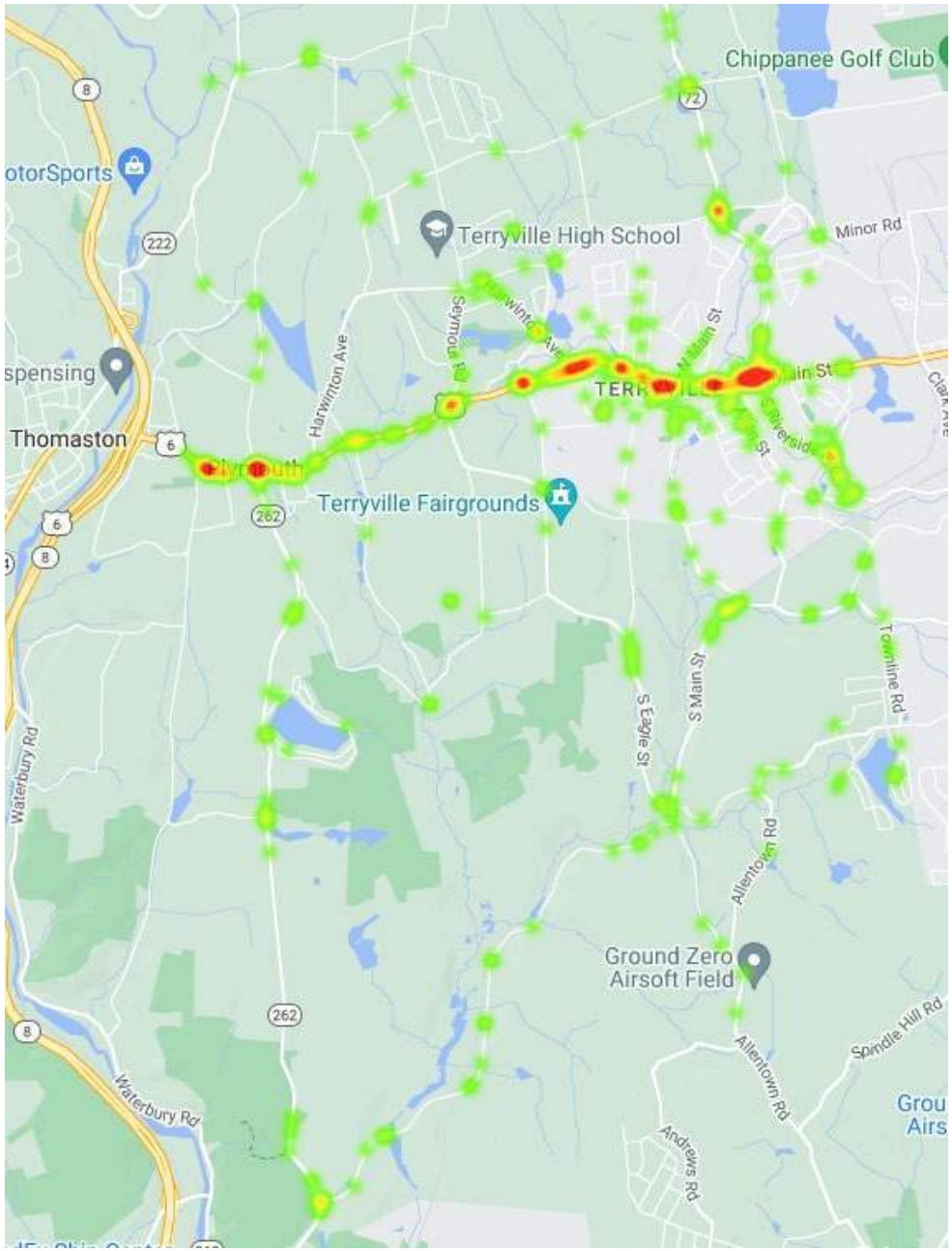

Plymouth

Between January 1st 2019 and December 31st 2021, Plymouth had 602 crashes. Plymouth's high crash intensity network includes:

1. Route 6 within Plymouth
2. Intersection of Poland Brook Road at Judd Road
3. Route 72 between Route 6 and the Plymouth town line/Bristol city line

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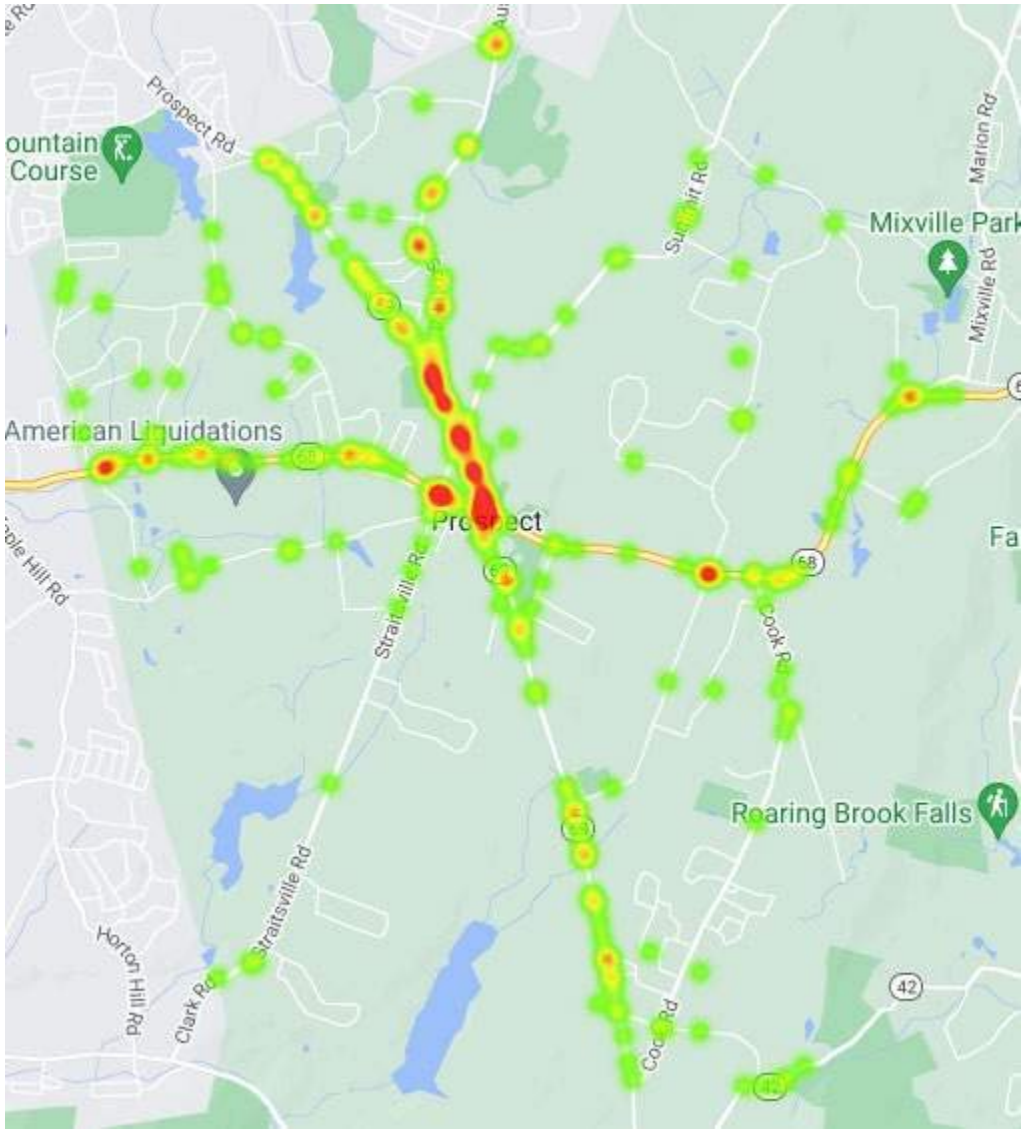

Prospect

Between January 1st 2019 and December 31st 2021, Prospect had 419 crashes. Prospect's high crash intensity network includes:

1. Route 69 within Prospect
2. Route 68 Within Prospect
3. Scott Road between Route 69 and Prospect town line and Waterbury city line

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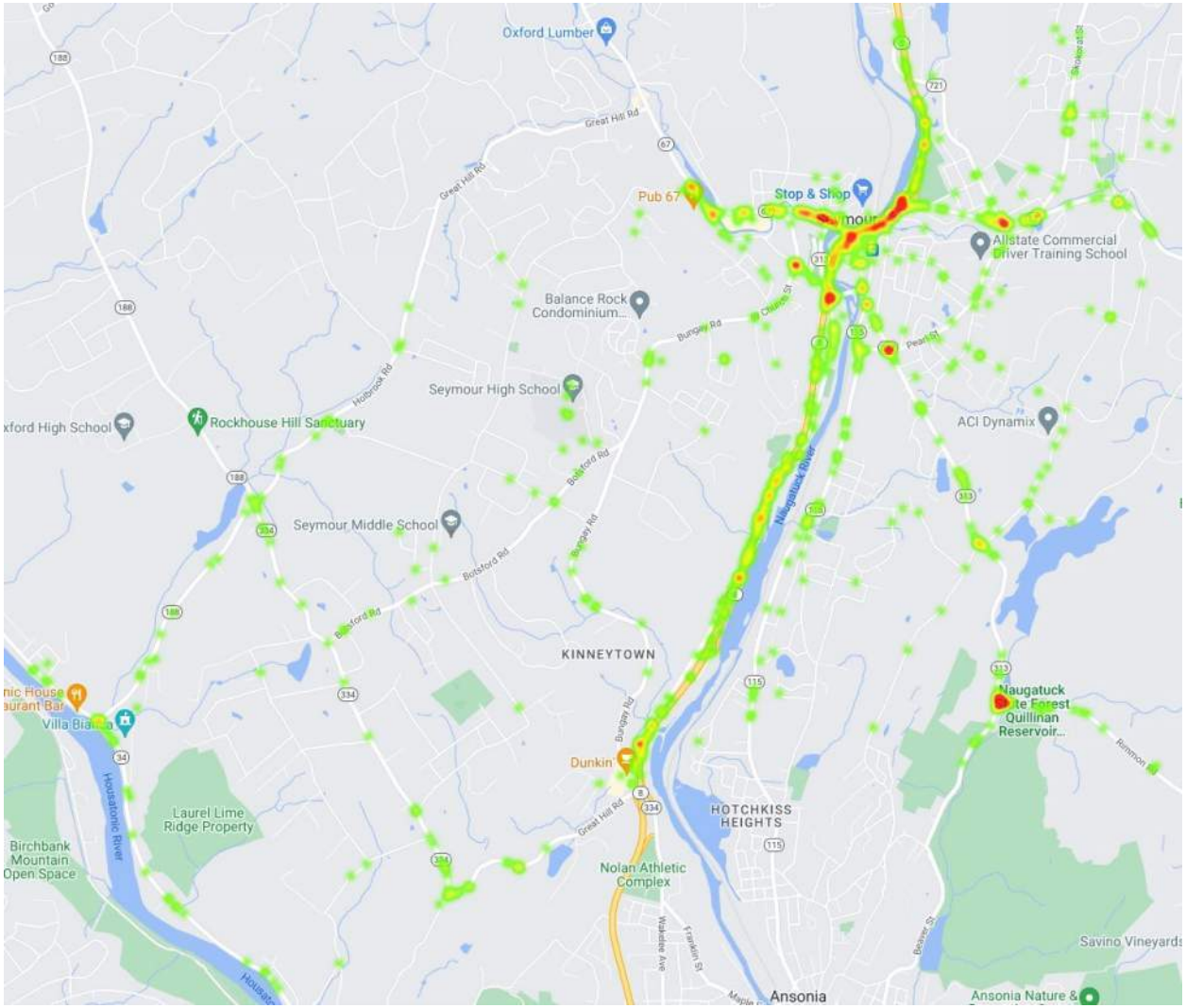
Seymour

Between January 1st 2019 and December 31st 2021, Seymour had 1,204 crashes. Seymour's high crash intensity network includes:

1. Route 8 within Seymour
2. Route 67 within Seymour
3. Intersection of West Church Street, Church Street, and West Street
4. Route 313 within Seymour



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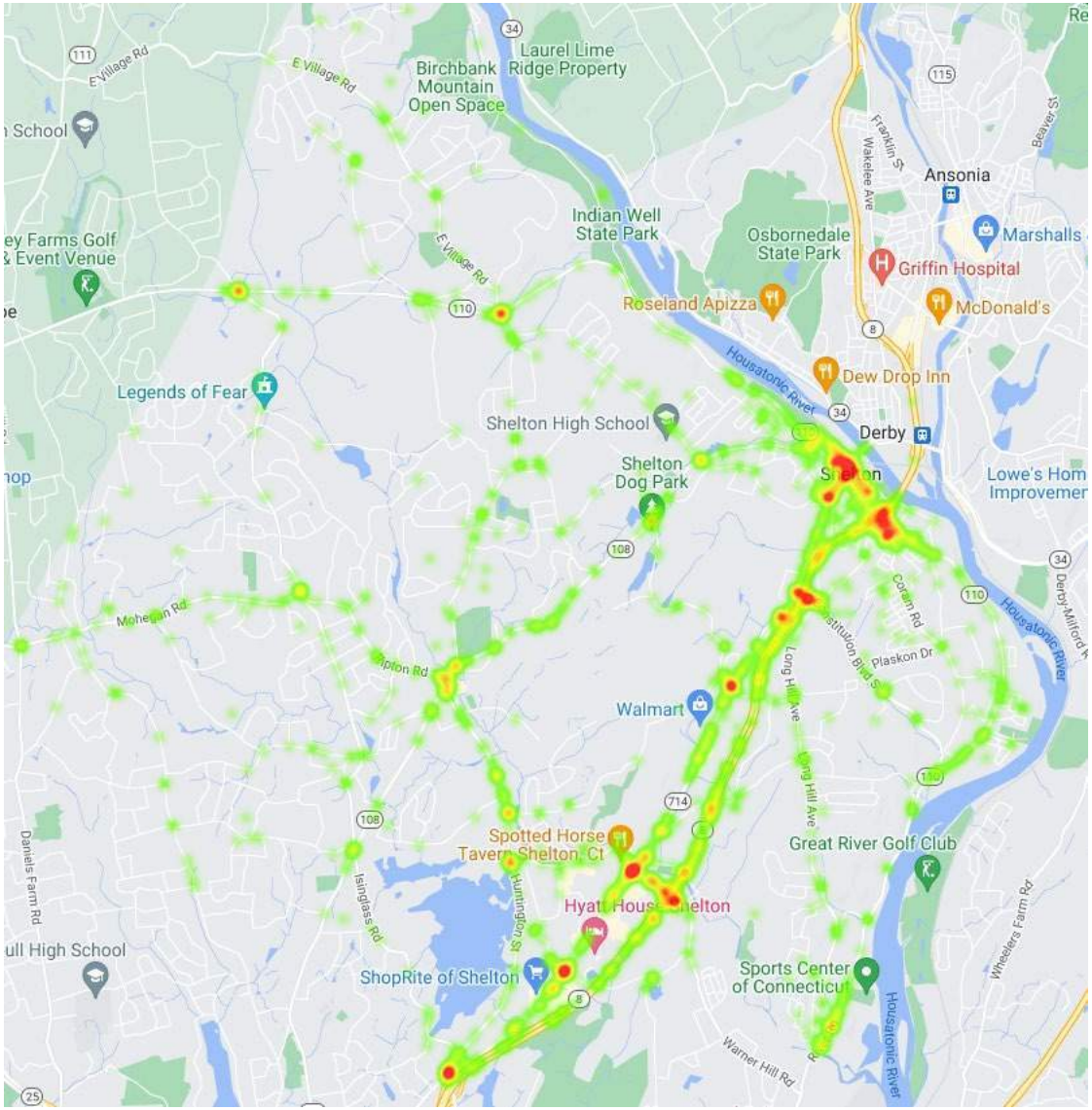
Shelton

Between January 1st 2019 and December 31st 2021, Shelton had 2,314 crashes. Shelton's high crash intensity network includes:

1. Route 8 within Shelton
2. Route 110 between Roberts Street and Grove Street
3. Route 714 between Route 110 and Huntington Road
4. Intersection of Route 110 at Long Hill Avenue
5. Intersection of Route 110 at Seneca Road
6. Roads circling the Huntington Green
7. Intersection of Route 110 at Walnut Tree Hill Road
8. Intersection of Route 110 at East Village Road and Maple Avenue
9. Huntington Street between the Huntington Green and Commerce Drive



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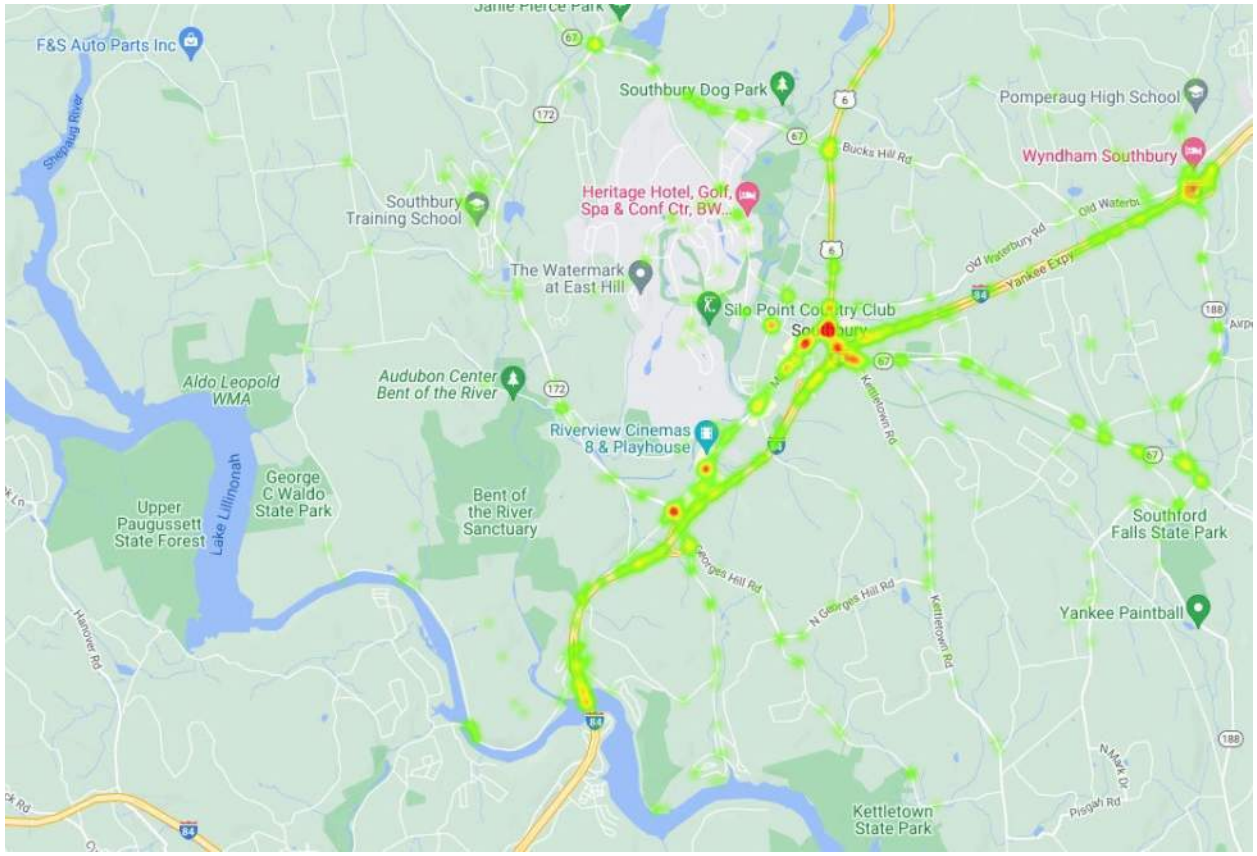

Southbury

Between January 1st 2019 and December 31st 2021, Southbury had 1,355 crashes. Southbury's high crash intensity network includes:

1. I-84 within Southbury
2. Intersection of Main Street South at Brown Road
3. Intersection of Route 172 and Main Street South
4. Intersection of Main Street South at Poverty Road and Oak Tree Road
5. Route 6 within Southbury
6. Route 67 within Southbury

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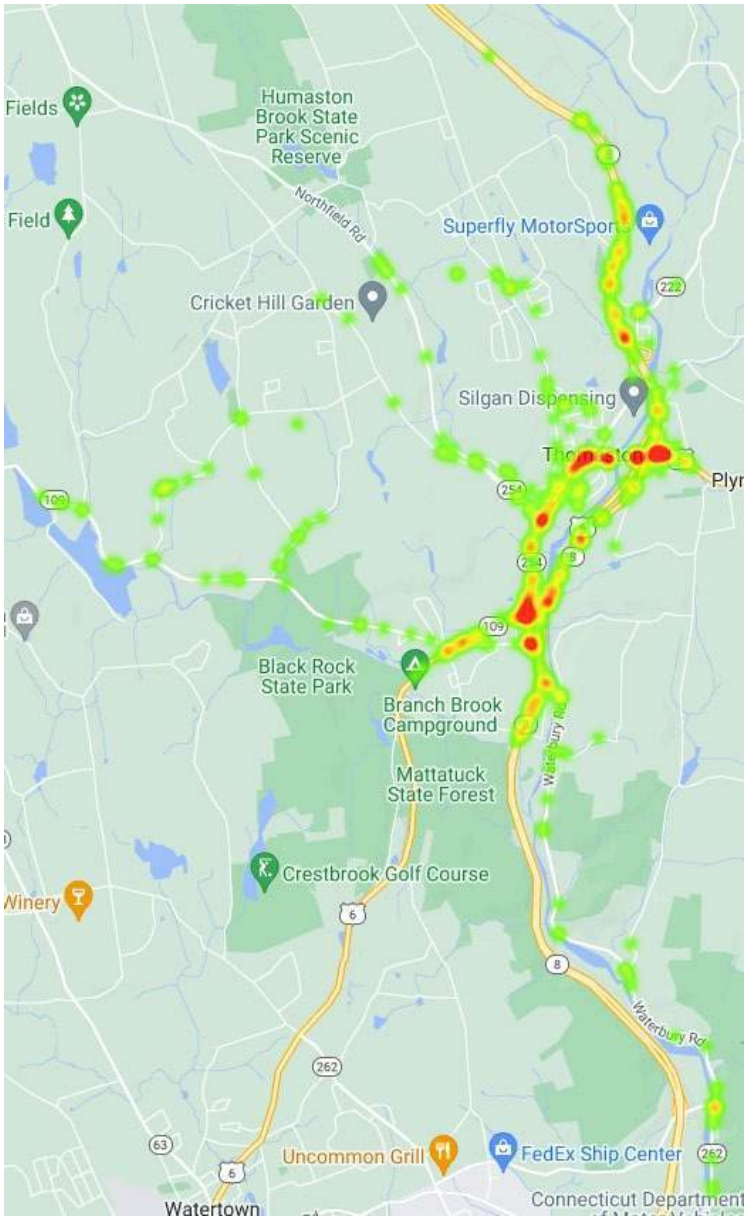

Thomaston

Between January 1st 2019 and December 31st 2021, Thomaston had 619 crashes. Thomaston's high crash intensity network includes:

1. Route 8 within Thomaston
2. Route 6 within Thomaston
3. Route 109 between Route and Route 224
4. Route 254 between Route 109 and Route 6
5. Intersection of Route 262 and Waterbury Road

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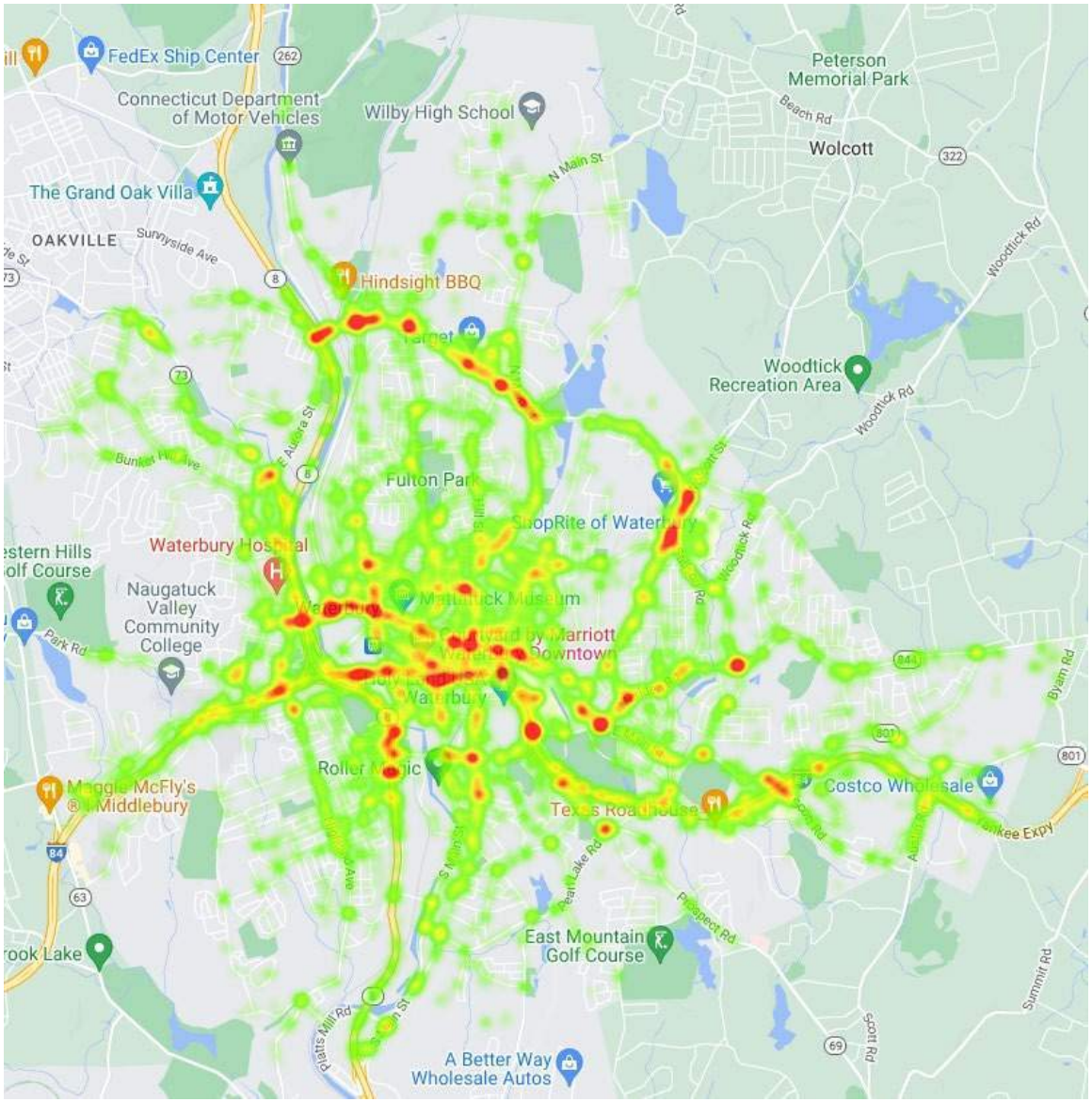

Waterbury

Between January 1st 2019 and December 31st 2021, Waterbury had 15,980 crashes. Waterbury's high crash intensity network includes:

1. Route 8 within Waterbury
2. I-84 within Waterbury
3. West Main Street between Route 8 and Main Street Confluence
4. East Main Street between Main Street Confluence and Waterbury city line/ Cheshire town line
5. North Main Street between Main Street Confluence and Wolcott town line/ Waterbury city line
6. South Main Street between Main Street Confluence and Naugatuck borough line/ Waterbury city line
7. Route 844 within Waterbury
8. Route 69 within Waterbury
9. Highland Avenue between Bristol Street and West Main Street
10. Intersection of Rudy Avenue at Aurora Street, East Aurora Street, and Route 8 Ramps
11. Intersection of Willow Street at Hillside Avenue
12. Huntingdon Avenue between Colonial Avenue and Thomaston Avenue

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13. Homer Street between Thomaston Avenue and Cooke Street
14. Chase Avenue between Cooke Street and North Main Street
15. Lakewood Road between North Main Street and Route 69
16. Baldwin Street between South Main Street and East Main Street
17. Washington Street between South Main Street and Hamilton Avenue
18. Bank Street between Riverside Street and South Main Street
19. Entire length of Grand Street
20. Union Street between South Main Street and Hamilton Avenue
21. Meadow Street between West Main Street and Bank Street
22. Scott Road between East Main Street and Schraffts Drive
23. Entire length of Brass Mill Drive

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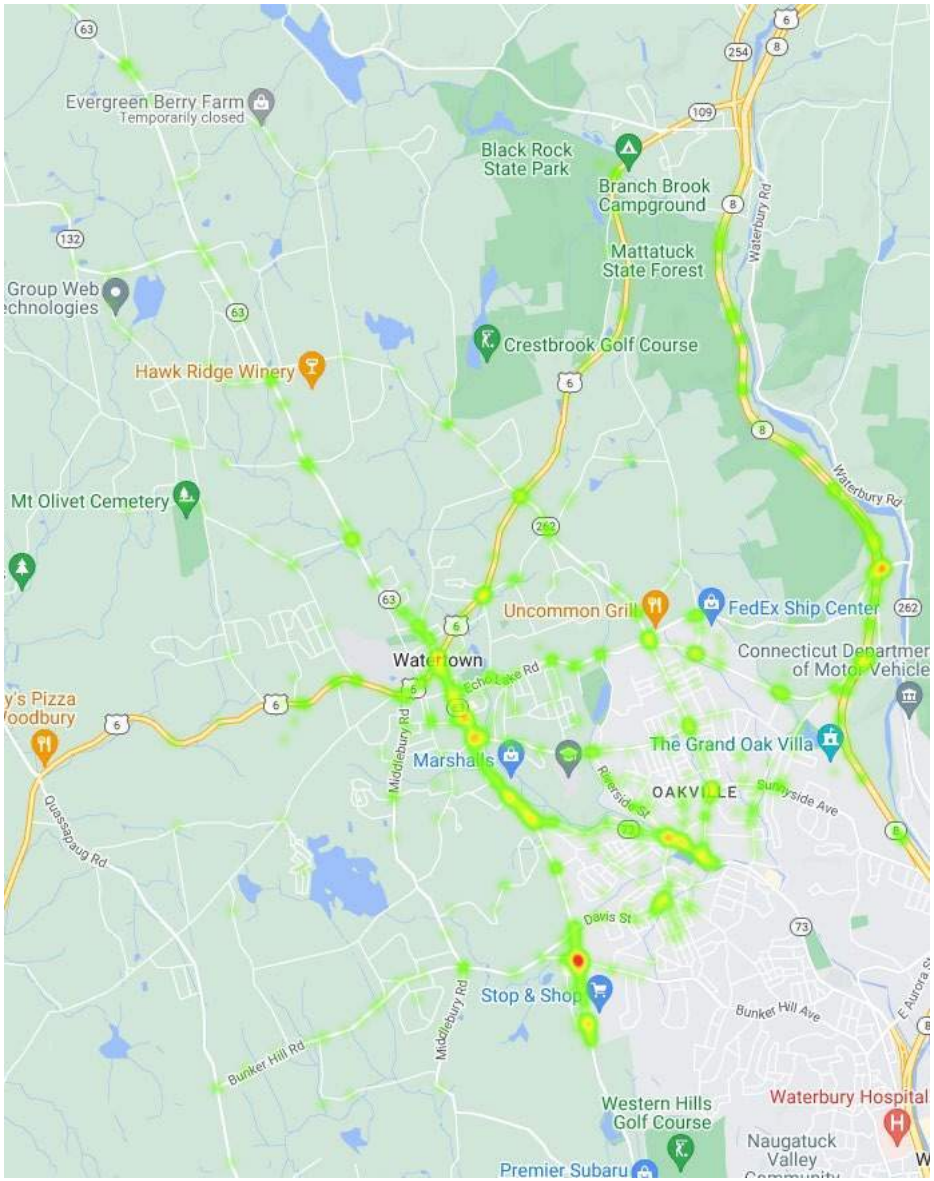
Watertown

Between January 1st 2019 and December 31st 2021, Watertown had 1,201 crashes. Watertown's high crash intensity network includes:

1. Route 8 within Watertown
2. Route 63 within Watertown
3. Route 73 within Watertown
4. Intersection of Buckingham Street at Ball Farm Road and Sunnyside Avenue



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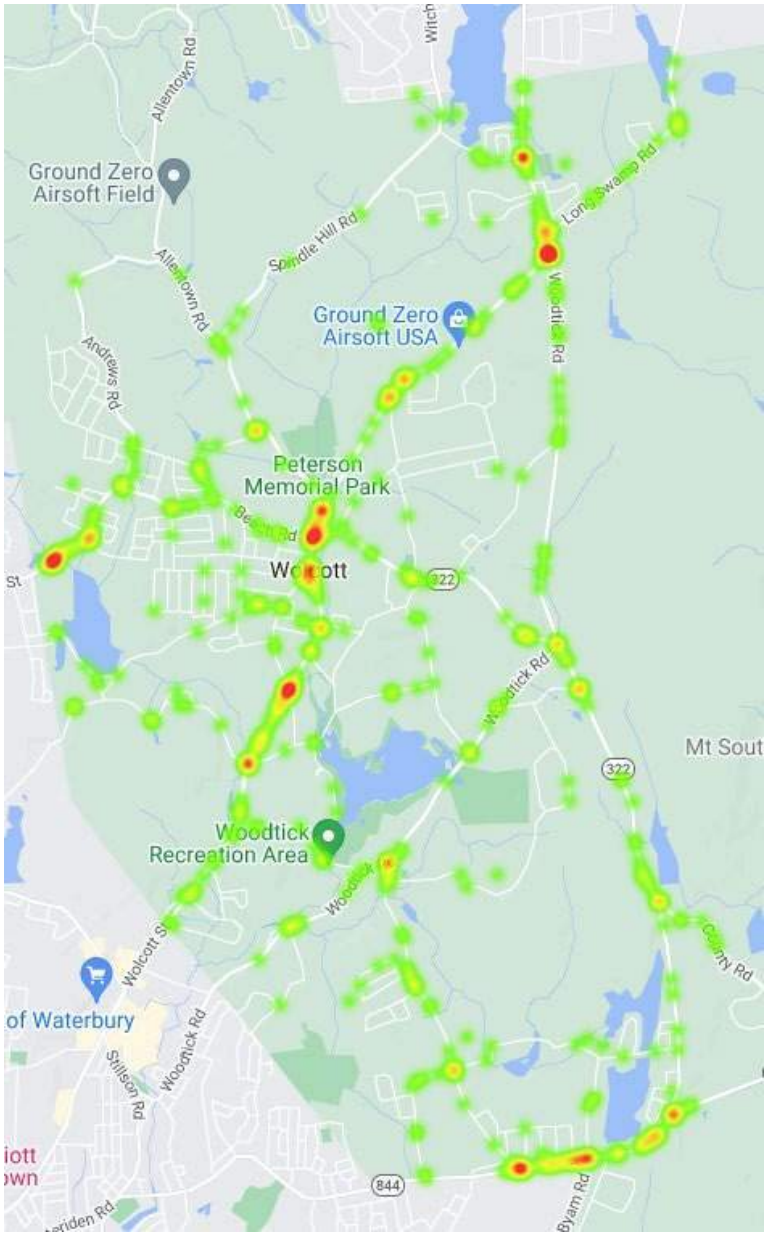

Wolcott

Between January 1st 2019 and December 31st 2021, Wolcott had 670 crashes. Wolcott's high crash intensity network includes:

1. Route 69 within Wolcott
2. Route 322 within Wolcott
3. Spindle Hill Road between Waterbury city line/Wolcott town line and Allentown Road
4. Route 844 between Waterbury city line/Wolcott town line and Southington town line/Wolcott town line
5. Intersection of Woodtick Road at Scovill Road and Todd Road

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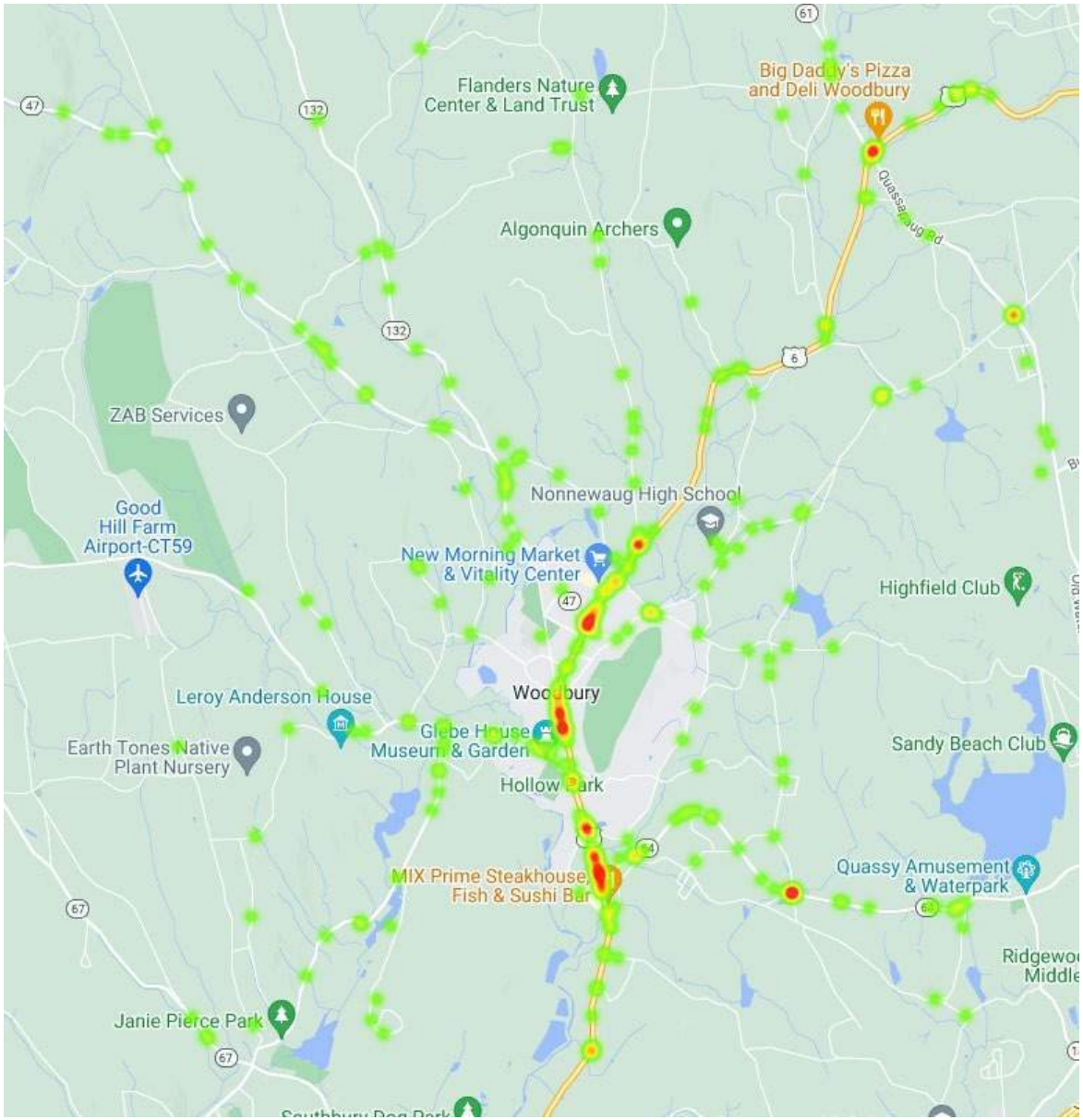
Woodbury

Between January 1st 2019 and December 31st 2021, Woodbury had 390 crashes. Woodbury's high crash intensity network includes:

1. Route 6 within Woodbury
2. Route 64 within Woodbury
3. Intersection of Quassapaug Road and Middle Road Turnpike



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Regional Crash Data Summary

The following tables summarize the full series of crash data available from January 1, 2019, through December 31, 2021. These tables break out crash data by municipality, then separately break down crashes involving pedestrians and cyclists. Across all 19 towns, data was then rationalized to show a crash and fatality rate per 100,000 people.

The raw data tables, directly as provided by the UConn Crash Data Repository, are attached to this document as appendix A.



Figure 1 The Derby-Shelton Bridge from the Shelton Waterfront. The bridge is currently undergoing an update to better connect the Derby Greenway with the Shelton Riverwalk.

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Municipality	Total Crashes	Fatalities	Serious Injury	Total Fatalities + Serious Injuries	Fatalities as a % of Total Crashes	Serious Injuries as a % of Total Crashes	Total Fatalities + Serious Injuries as a % of Total Crashes
Ansonia	970	1	15	16	0.10%	1.55%	1.65%
Beacon Falls	345	3	2	5	0.87%	0.58%	1.45%
Bethlehem	92	2	0	2	2.17%	0.00%	2.17%
Bristol	4,381	8	80	88	0.18%	1.83%	2.01%
Cheshire	1,814	5	22	27	0.28%	1.21%	1.49%
Derby	1,408	3	16	19	0.21%	1.14%	1.35%
Middlebury	775	4	7	11	0.52%	0.90%	1.42%
Naugatuck	1,822	2	21	23	0.11%	1.15%	1.26%
Oxford	518	1	7	8	0.19%	1.35%	1.54%
Plymouth	603	0	14	14	0.00%	2.32%	2.32%
Prospect	420	2	3	5	0.48%	0.71%	1.19%
Seymour	1,207	6	12	18	0.50%	0.99%	1.49%
Shelton	2,313	7	35	42	0.30%	1.51%	1.82%
Southbury	1,361	9	13	22	0.66%	0.96%	1.62%
Thomaston	619	2	7	9	0.32%	1.13%	1.45%
Waterbury	15,976	31	166	197	0.19%	1.04%	1.23%
Watertown	1,204	6	26	32	0.50%	2.16%	2.66%
Wolcott	668	1	23	24	0.15%	3.44%	3.59%
Woodbury	392	1	5	6	0.26%	1.28%	1.53%
NVCOG Total	36,888	94	474	568	0.25%	1.28%	1.54%

Table 1 Breakdown of 3-year crash history by municipality. Data source: UConn Crash Data Repository

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Municipality	2020 Population	Crash per 100,000 Population
Ansonia	18,918	5.3
Beacon Falls	6,000	16.7
Bethlehem	3,385	29.5
Bristol	60,833	1.6
Cheshire	28,733	3.5
Derby	12,325	8.1
Middlebury	7,574	13.2
Naugatuck	31,519	3.2
Oxford	12,706	7.9
Plymouth	11,671	8.6
Prospect	9,401	10.6
Seymour	16,748	6.0
Shelton	40,869	2.4
Southbury	19,879	5.0
Thomaston	7,442	13.4
Waterbury	114,403	0.9
Watertown	22,105	4.5
Wolcott	16,142	6.2
Woodbury	9,723	10.3
NVCOG Total	450,376	0.2

Table 2 Crash rates per 100,000 residents. Data Source: UConn Crash Data Repository; 2020 US Census

Municipality	DUI	Speeding
Ansonia	44	87
Beacon Falls	5	89
Bethlehem	6	19
Bristol	170	241
Cheshire	28	202
Derby	30	147
Middlebury	20	78
Naugatuck	105	190
Oxford	8	92
Plymouth	32	90
Prospect	10	53
Seymour	82	194
Shelton	74	262
Southbury	34	154
Thomaston	14	120
Waterbury	299	1,240
Watertown	39	151
Wolcott	28	148
Woodbury	16	71
NVCOG Total	1,044	3,628

Table 3 Significant contributing factor as determined by on-site officer. Data Source: UConn Crash Data Repository

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Pedestrian Crash Data

Municipality	Total Crashes	Fatalities	Serious Injury	Total Fatalities + Serious Injuries	Fatalities as a % of Total Crashes	Serious Injuries as a % of Total Crashes	% Fatality and Serious Injury
Ansonia	13	0	3	3	0.0%	23.1%	23.1%
Beacon Falls	0	0	0	0	N/A	N/A	N/A
Bethlehem	0	0	0	0	N/A	N/A	N/A
Bristol	55	3	12	15	5.5%	21.8%	27.3%
Cheshire	10	1	1	2	10.0%	10.0%	20.0%
Derby	9	1	3	4	11.1%	33.3%	44.4%
Middlebury	2	1	0	1	50.0%	0.0%	50.0%
Naugatuck	24	0	4	4	0.0%	16.7%	16.7%
Oxford	2	0	0	0	0.0%	0.0%	0.0%
Plymouth	7	0	2	2	0.0%	28.6%	28.6%
Prospect	3	0	0	0	0.0%	0.0%	0.0%
Seymour	14	1	3	4	7.1%	21.4%	28.6%
Shelton	12	0	4	4	0.0%	33.3%	33.3%
Southbury	5	2	0	2	40.0%	0.0%	40.0%
Thomaston	0	0	0	0	N/A	N/A	N/A
Waterbury	328	11	42	53	3.4%	12.8%	16.2%
Watertown	4	0	1	1	0.0%	25.0%	25.0%
Wolcott	4	0	1	1	0.0%	25.0%	25.0%
Woodbury	4	1	1	2	25.0%	25.0%	50.0%
NVCOG Total	496	21	77	98	4.2%	15.5%	19.8%

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Bicyclist Crash Data

Municipality	Total Crashes	Fatalities	Serious Injury	Total Fatalities + Serious Injuries	Fatalities as a % of Total Crashes	Serious Injuries as a % of Total Crashes	% Fatality and Serious Injury
Ansonia	4	0	0	0	0.0%	0.0%	0.0%
Beacon Falls	0	0	0	0	N/A	N/A	N/A
Bethlehem	0	0	0	0	N/A	N/A	N/A
Bristol	20	0	4	4	0.0%	20.0%	20.0%
Cheshire	13	0	1	1	0.0%	7.7%	7.7%
Derby	4	0	0	0	0.0%	0.0%	0.0%
Middlebury	1	0	0	0	0.0%	0.0%	0.0%
Naugatuck	5	0	1	1	0.0%	20.0%	20.0%
Oxford	2	0	0	0	0.0%	0.0%	0.0%
Plymouth	3	0	0	0	0.0%	0.0%	0.0%
Prospect	0	0	0	0	N/A	N/A	N/A
Seymour	1	0	0	0	0.0%	0.0%	0.0%
Shelton	5	0	0	0	0.0%	0.0%	0.0%
Southbury	2	0	0	0	0.0%	0.0%	0.0%
Thomaston	2	0	0	0	0.0%	0.0%	0.0%
Waterbury	47	0	1	1	0.0%	2.1%	2.1%
Watertown	3	0	0	0	0.0%	0.0%	0.0%
Wolcott	0	0	0	0	N/A	N/A	N/A
Woodbury	0	0	0	0	N/A	N/A	N/A
NVCOG Total	112	0	7	7	0.0%	6.3%	6.3%



Figure 2 The City of Ansonia recently began a shared Micro Mobility Program, placing electric scooters throughout the city.

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Public Engagement Strategy

Regional Stakeholders

The 2019 Regional Transportation Safety Plan, completed by VN Engineers, Inc (VN), in collaboration with the Naugatuck Valley Council of Governments (NVCOG) and Connecticut Department of Transportation (CTDOT) engaged in a thorough public engagement process. This process will be detailed below, followed by a description of the NVCOG's efforts to produce a 2022 update to this plan that includes updated crash data, an expanded list of regional safety priorities, and integrates into the 2023 update of the CNVMPO and GBVMPO Metropolitan Transportation Plans.

To accurately build a picture of safety within the region, critical stakeholders were identified early in the process and engaged regularly throughout development of the high intensity crash network and mitigation strategies. First, the Local Traffic Authority (LTA) from each town was contacted to serve as the primary representative in the data collection process. In many NVCOG municipalities, the LTA is a member of the local police department, but this is not universally true. The LTAs provided VN with significant detail about crash hot spots within the town, potential contributing factors, and mitigation factors that the municipality believed would be helpful. These concerns and recommendations were critical to the development of the list of mitigation actions.

In each town, regardless of the LTA's affiliation with the police department, local law enforcement was included to discuss potential education and enforcement opportunities. Individual meetings with each local police department provided the means for an in-depth conversation about driver behavior concerns, potential for stepped-up enforcement, and education campaigns. In addition to the nineteen local police departments, the Connecticut State Police provided valuable input on the region's freeway network.

In the subsequent years, the NVCOG has maintained an open line of communication with LTAs and police departments. Through regular data exchanges and consultation about specific mitigation solutions, the 2022 update continued to place significant value in the concerns and proposals of local police, who will continue to be a vital part of the ongoing work to end traffic fatalities and serious injuries within the region.

In addition to police departments, fire and EMS services also provided input into the region's safety issues and potential solutions. As those tasked with responding when crashes occur, these departments were able to provide invaluable information about the post-crash scene, risks to them.

The regional Transportation Technical Advisory Committee (TTAC) serves as a long-standing group of public works directors, city engineers, and other appointed members from member municipalities. The TTAC provides expertise and an opportunity for collaboration on transportation related issues and holds open meetings during which public comment is accepted. The NVCOG aims to expand the TTAC to include non-voting representatives from local transit agencies and freight carriers. This expanded group will dedicate an agenda item to regional safety concerns and best practices as a standing item.

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Going forward, the NVCOG is working to establish a traffic enforcement working group, made up of LTAs from each town as well as designated officers from each municipal police department that can serve as a clearing house of best practices and an opportunity to continue gathering data on the most dangerous locations within the region. This committee will be a part of the region's overall Vision Zero effort, seeking to advise the region's policy board on issues related to education and enforcement.

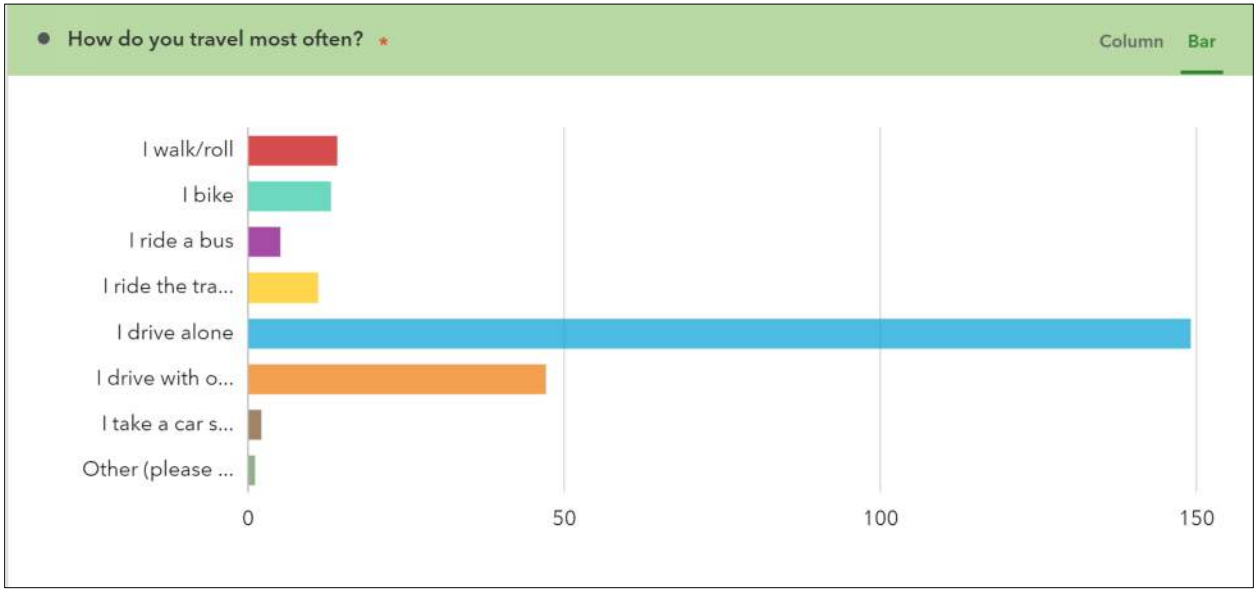
Public Survey

To ensure broader public participation in the 2022 update, the NVCOG created an online survey. This survey, promoted through local media, social media, and through in-person attendance at local events, was aimed at anyone living or working within the region. Originally designed to have a conclusion, the survey will remain active in some form more permanently to allow for constant feedback from the region. In addition to the survey focused on broader safety concerns and issues, the NVCOG website does continually host a form within which anyone can report specific safety concerns, whether it be as simple as a broken or malfunctioning signal to a lack of adequate pedestrian facilities.

As of the adoption of this plan, 180 survey responses have been received. Though the survey will continue on beyond this plan and help direct the region's Metropolitan Transportation Plan, the results received to date were utilized to help inform the safety actions identified in this plan and shape the strategy for safety in the future. Graphs portraying results of select questions are presented below:

This question helps to identify the means by which most residents are traveling. With 84% of respondents saying they travel often by driving alone, and an additional 24% saying they travel often in a car with at least one other person, the impact of cars to the safety of our transportation system becomes immediately apparent. This allows us to focus our attention on reducing vehicle on vehicle crashes while also seeing the need to reduce the impact of crashes between one car and a non-motorized user.

The next chart shows responses to a question asking about mobility. With nearly 20% of respondents (18.64%) responding that



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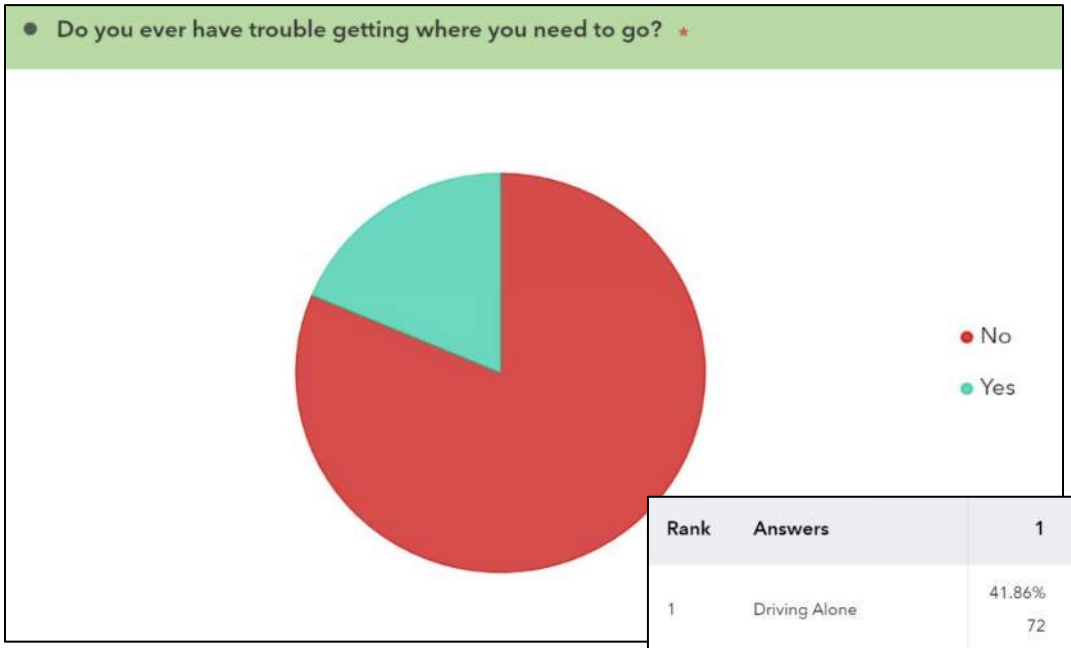

they have difficulty traveling the region at least some of the time. Many of the respondents who expanded on their answer identified traffic as the first most common issue they experience, followed by a lack of public transit. Several respondents, however, mentioned that they felt unsafe walking/rolling or biking within their community which made short trips difficult, especially within urban areas.

While understanding current travel trends helps identify the most pressing safety needs, looking to how people would like to travel in the future ensures that our safety enhancements remain relevant and offer expanded mode choice in addition to reducing fatalities and severe injuries. The below table shows the responses to a ranked choice question regarding desired future mode choice.

With many respondents identifying walking/rolling, cycling, and other micromobility options highly, planning for the safety of these modes is essential. Riding the train also is a popular choice,

Rank	Answers	1	2	3	4	5	6	7	Average score
1	Driving Alone	41.86% 72	13.37% 23	9.88% 17	5.81% 10	6.98% 12	8.72% 15	13.37% 23	4.98
2	Train	14.53% 25	22.09% 38	20.35% 35	13.95% 24	9.3% 16	11.05% 19	8.72% 15	4.51
3	Walking/Rolling	11.63% 20	16.28% 28	13.37% 23	18.02% 31	17.44% 30	15.12% 26	8.14% 14	4.09
4	Bicycle	10.47% 18	14.53% 25	14.53% 25	15.7% 27	15.7% 27	17.44% 30	11.63% 20	3.90
5	Electric scooter/bicycle	6.4% 11	10.47% 18	13.37% 23	20.35% 35	20.93% 36	12.79% 22	15.7% 27	3.60
6	Carpooling/Ride sharing	3.49% 6	17.44% 30	18.02% 31	5.81% 10	15.12% 26	19.19% 33	20.93% 36	3.47

so ensuring that access is easy and on-board safety is considered will also ensure a safer system going forward.

All respondents were asked about how comfortable they were walking/rolling within their communities. Only respondents who said they rode a bike regularly were asked about their comfort level while riding.



Finally, a series of demographic questions were asked to ensure that a broad range of the population is represented, or that responses can be viewed through the lens of the typical respondent and adjusted accordingly. The results of this survey, to date, represent a fairly equal breakdown of those identifying themselves as men, woman, and those who selected non-binary or other. Respondents, however, tended to be older and wealthier than the regional average, and a majority of respondents held a bachelor's degree or above, so additional emphasis was placed on the responses of lower income and high school graduate respondents to accurately reflect the region's demographics.

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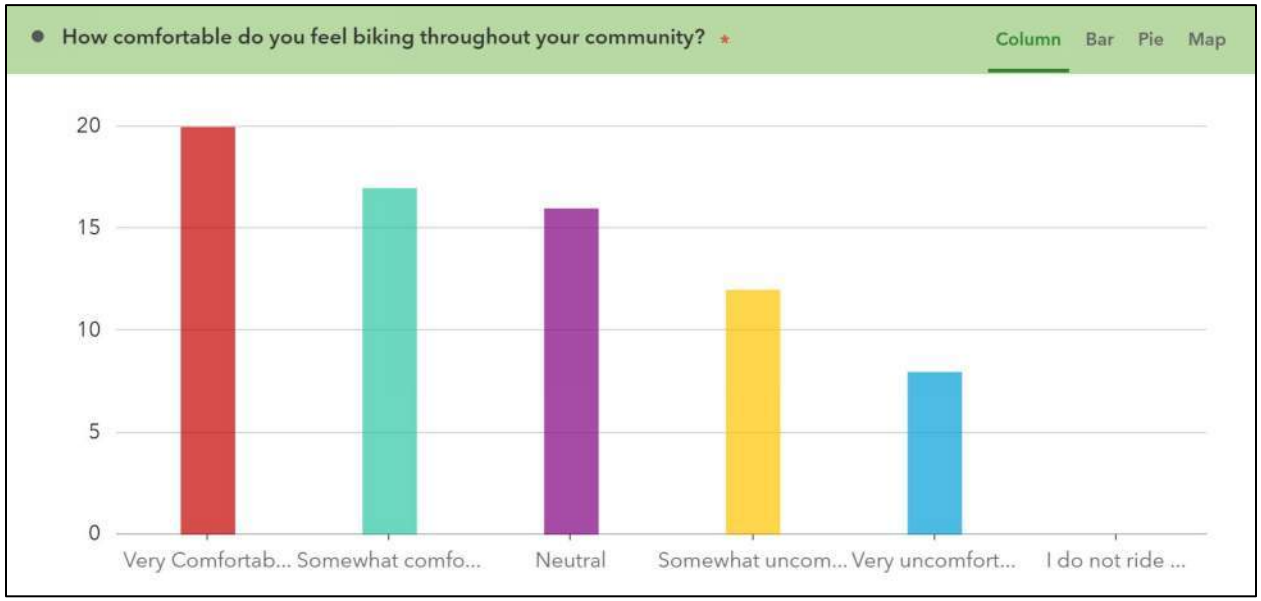

Public Meetings

Over the course of 2022, public meetings held for specific safety actions included broader conversations about safety goals within the region. Meetings held for projects including the CT Route 229 Corridor Study, Waterbury West Main Street Corridor Study, and Oxford Main Street Alternative Transportation Study, have included opportunities for broader discussions around future transportation needs, identify safety hazards, and present desired safety improvements.

Detailed meeting summaries for these can be found on the NVCOG website associated with the respective projects, as well as full video recordings are available on the NVCOG's YouTube channel. Since these projects were focused on complete streets and non-motorized improvements, many of the comments received were focused on these topics. Most comments at these events focused on the need for safer routes for pedestrians and cyclists. These studies covered the full range of development patterns in the region, with West Main Street being an urban street within the region's largest and most densely populated city, Route 229 covering a more suburban part of Bristol, and Main Street in Oxford traveling through both suburban and rural parts of the town, and the comments in support of safer routes for non-motorized users were echoed in all development patterns. The primary concern brought forward against these improvements was a loss to public parking, particularly on-street parking in the urban setting of West Main Street. All of these comments are factored in to the region's action plans, and ensuring that the proposed safety enhancements compliment and improve our communities rather than reducing access or alienate the public.

The public is also invited to comment at the regularly scheduled meetings of the NVCOG's Transportation Technical Advisory Committee and full Policy Board meetings. Prior to the adoption of the region's Complete Streets Policy, adoption of this Regional Transportation Safety Plan, and endorsement of the region's Vision Zero strategy, the public was presented the opportunity to comment to these boards. No comments, either for or against, were received from the public during these meetings.

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Key Takeaways

Based on the outreach undertaken to prepare this plan, NVCOG staff believes that the action items highlighted in the proposed project and systemic action list will not only be the most effective based on crash history and safety data but also based on the input from residents and visitors to the region. There is a clear desire, demonstrated by the comments made in public meetings and many of the survey responses, for safer, more connected bicycle facilities and improved sidewalks, which fits our own understanding of the region as having gaps in the network for non-motorized users. In line with this, as shown by data from the UConn Crash Data Repository, Waterbury has the highest pedestrian crash and fatality rate in Connecticut, further demonstrating the need for these non-motorized user enhancements.

Though pedestrians account for an outsized share of fatalities in the region, the great majority of people still drive as their primary form of transportation, and typically cover far more distance and spend far more time in a car than any other method, so safety improvements for drivers are also critical. Additional enforcement is the most cited desired improvement, but there are patterns of requests for intersection improvements, addressing dangerous merges and weaves, and improving lane markings.

The NVCOG has committed to expanding public outreach efforts. As such, the work done to compile this safety plan update is considered to be only the start to a larger and ongoing regional effort to engage and educate about roadway safety. In line with the region's Vision Zero commitment, new reporting tools will be created and maintained by the NVCOG to share progress and safety information with the general public. The Transportation Technical Advisory Committee will take on a more active role in hearing safety concerns from the general public. Finally, the NVCOG will maintain several means of providing feedback about safety issues within the region, including a map on which individuals can report issues, a comment system by which concerns can be submitted, and an ongoing effort to increase access to public meetings.



Figure 3 The Derby Greenway provides an off-road alternative for pedestrians and cyclists between Downtown Derby and commercial areas along the Derby/Ansonia town line

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Project Additions

Municipality	Project Description
Ansonia	Convert Main St and East Main St to one-way couplets between Maple St and Tremont St; implement road diet to reduce travel lanes and expand sidewalk area; install curb extensions, upgrade pedestrian signals and enhance crosswalks with visibility markings. Upgrade and improve the crosswalks and pedestrian signal at the Division St and North Division St intersection and crossing of the NRG Trail.
Ansonia	Provides improvements to the CT-115 (North Main Street)/North State Street. Includes the installation of new pedestrian accommodations, RRFBs, signage, and restriping.
Ansonia	Provide access management at the commercial driveway at SR-727 (Pershing Drive)/Division Street, mainly restricting left turns
Ansonia	T up intersection of N Main Street and Colony Road
Beacon Falls	Implement a road diet along North Main Street from Church Street south to Depot street, constructing multi-use trail, improving pedestrian crossings at Burton Road, including replacing the signals with an MUTCD compliant signal with pedestrian heads at Bethany Road. Improve interchange crosswalks and extend splitter island to provide pedestrian refuge at all of the locations.
Beacon Falls	Install safety improvements along Blackberry Road including signage, centerline rumble strips, intersection realignment, and high friction pavement.
Beacon Falls	Install a crosswalk on Rimmon Hill Road at the Woodland Regional High School. Includes vegetation management, crosswalk visibility, and pedestrian crossing signage.
Bethlehem	Improve the CT-61 (Main Street North)/Bellamy Lane/Kasson Road intersection by relocating a utility pole, manage vegetation management, analyze roadway geometry, and install dynamic feedback signs
Bethlehem	Improve CT-132 (Kasson Road)/Woodland Road intersection with a stop sign and narrowing intersection by eliminating the passing zone.
Bristol	Construct a pedestrian and bicycle sidepath along Park St and Memorial Blvd between Rockwell Park and Route 229; implement road diets along several roads and install traffic calming measures
Bristol	Planned improvements along Route 229 will address the existing safety and operational deficiencies, including an incomplete sidewalk network, lack of safe cyclist facilities, and several dangerous pedestrian crossings.
Bristol	Along Shrub Road, install sidewalks and traffic calming measures to improve user safety.
Bristol	Along Redstone Hill Road between Birch Street and the Plainville town line, construct sidewalks on both sides of the roadway with traffic calming elements.
Bristol	Along East Road located between Route 69 and South Street, complete sidewalks on both sides,

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	traffic calming, and install a pedestrian crossing at South Street and East Street
Cheshire	Investigate and/or install two-way center turning lanes along Route 10 south of the Route 70 intersection
Derby	Replace and upgrade the traffic signals at the Route 8 on and off ramps, at Seymour Ave and Atwater Ave, including pedestrian signals and crosswalks with high visibility markings. Includes improving sidewalks, reducing pavement area, and adding islands as necessary to better control traffic flow and define how vehicles should move through the intersection.
Derby	Improve Academy Hill Road/CT-115 (Derby Avenue) intersection by realigning Route 115, removing nearby parking spaces, and install dynamic speed feedback signs
	Install traffic signal retroreflective backplates along Route 63 north of intersection with Route 64. Add turning lanes by restriping roadway and two-way turn lanes as needed
Middlebury	Install intersection warning signs at CT-188 (Southford Road)/Christian Road. Clear vegetation at the intersection and narrow lanes at this location
Middlebury	Install various pedestrian safety features along Church Street through the downtown area south of Maple Street, including curb extensions, enhanced crosswalks, pedestrian signals and traffic signal upgrades.
Naugatuck	Construct a roundabout at the intersection of CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/Meadow Street.
Naugatuck	Construct a roundabout at the intersection of CT-63 and Cherry Street.
Oxford	Install bollards along the recently completed section of Oxford Main Street sidepath to delineate non-motorized spaces. Extend the planned sidepath from Quarry Walk to the Seymour town line.
Oxford	Reconfigure intersection of Kettletown Road/Maple Tree Hill Road to address elevation differences between the two roadways. Realign intersection to remove skew.
Oxford	Install wayfinding signage and retroreflective strips on signs located at the intersection of CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road.
Plymouth	Install high friction pavement at the intersection of US-6 (Main Street)/Carter Road. Reduce number of eastbound lanes, install edge line rumble strips, and install flashing LED signs.
Plymouth	Trim vegetation to improve sign visibility along CT Route 72 from US Route 6 to Bristol town line. Install high friction pavement if needed.
Prospect	At the intersection of CT-68 (Cheshire Road)/Talmadge Hill Road/Matthew Road, lower crest on CT 68 and install dynamic feedback signs.
Prospect	Install chevron signs and update warning signs at the intersection of Summit Road/Peter

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	Gilkey Road. Reduce lane width on Peter Gilkey Road on the approach with the intersection.
Seymour	Reconfigure intersection of CT-313 (Maple Street/Rimmon Road)/Clinton Road by changing stop controlled leg on Clinton Road one way access, T up yield controlled leg and convert to one way stop control, and install dynamic feedback signs.
Seymour	Trim vegetation at intersection of CT-188 (Squantuck Road)/CT-34 (Roosevelt Drive) and add stop sign for CT 188 approach.
Shelton	Along Howe Avenue between White Street to Center Street, remove parking spaces near intersections, coordinate signals, install traffic signal retroreflective backplates, and install pedestrian concurrent phasing.
Shelton	Consolidate access driveways and install two-way turning lanes as needed along Bridgeport Avenue.
Shelton	Reconfigure Howe Avenue to reduce speeds and to utilize space such as angled parking.
Shelton	Reconfigure intersection of Howe Avenue and Derby Shelton Bridge. Mainly reduce the crossing width along Derby Shelton Bridge leg.
Southbury	At the intersection of CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road, reduce pavement width, install retroreflective signs and flashing beacons, and improve lighting in the area.
Southbury	Replace and upgrade five traffic signals along Main Street South between US Route 6 and Route 172 to meet current MUTCD standards.
	These include the intersections of Main Street and Depot Hill, Peter Road, Brown Road, Shop Rite Plaza, and a signal at the Intersection of Heritage and Old Field Roads. Includes enhancing crosswalks with high visibility markings and adding and/or upgrading pedestrian signals.
Southbury	At the Main Street South/Flood Bridge Road - Pedestrian Crossing, upgrade the sidewalk approaches, and push button locations to meet ADA compliance.
Thomaston	Enhance and improve pedestrian features along South Main St, Main St and North Main St through the downtown area, including improving sidewalks, upgrading pedestrian signals and upgrading crosswalks with high visibility markings.
Thomaston	Install a roundabout at the intersection of CT-254 (Northfield Road)/Walnut Hill Road/Litchfield Street and install centerline rumble strips along CT 254
Thomaston	Install a traffic signal on the US-6 (East Main Street)/CT-8 (James H. Darcey Memorial Highway) interchange northbound off ramp. Shorten the additional lane along route 6. Install dynamic feedback signs.
Waterbury	Implement various pedestrian enhancements at high crash incident locations throughout the city, including upgrading crosswalks with high visibility markings or installing in-ground crosswalk lighting, adding Rectangular Rapid Flashing Beacons at some mid-block crosswalk locations, and enhancing pedestrian signals to

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	comply with current MUTCD standards. Upgrade traffic signals at various locations, including Lakewood Avenue and Route 63 to provide safer pedestrian crossing.
Waterbury	Construct various road improvements along West Main Street between Riverside Drive and the Waterbury Green ("The Green"), including rationalizing the number of travel lanes, reducing road width, enhancing pedestrian safety, and improving connectivity and mobility.
Waterbury	At the intersection of CT-69 (Meriden Road)/East Main Street/Sylver Street Express-way, install No Right on Red for all approaches, install traffic signal retroreflective backplates, restripe the intersection, reduce lane widths, include an exclusive pedestrian phase, and provide driveway access management.
Waterbury	At the intersection of CT-69 (Wolcott Street and Stillson Road), provide access management near the intersection and modernize/replace the existing signal
Waterbury	Two lane roundabout at the intersection of Lakewood Road, North Main, and Farmwood Road.
Waterbury	Remove one lane in each direction along Baldwin Street between East Main Street and the I-84 EB on-ramp. Perform road diet along entire street length and install multimodal accommodations with potential streetscape. Reduce intersection sizes the majority of intersections along the corridor.
Waterbury	Perform road diet along Cherry Street. Reduce lane withs and provide streetscape and/or multimodal accommodations. Reduce intersection sizes where appropriate.
Waterbury	Provide access management by removing driveways along Route 69 between Manor Avenue and Woodward Avenue. Install traffic calming measures. Install a new traffic signal.
Waterbury	Implement a road diet along North Main Street, and Chase Avenue, starting from the intersection of North Main Street and Lakewood Avenue and heading west. Remove a travel lane form each direction and install multimodal accommodations. T up intersections and reduce intersection footprints if possible.
Waterbury	Narrow lane widths along Silver Street Parkway to reduce travel speeds. Remove turn only lanes along the corridor if possible. Shorten crossing distance over Brass Mill Driveway.
Waterbury	T up intersection of Hamilton Avenue and Prospect Road. Reduce intersection footprint if possible. Install high friction pavement if needed.
Watertown	Implement various pedestrian enhancements at high crash incident locations along Route 63 through the downtown area and along Route 73 through the Oakville section, including upgrading crosswalks with high visibility markings or installing in-ground crosswalk lighting, adding Rectangular Rapid Flashing Beacons at some mid-block crosswalk locations, enhancing pedestrian signals to comply with

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	current MUTCD standards, and installing curb extensions.
Watertown	Install dynamic feedback signs on CT 262 near the intersection of CT 262 and Nova Scotia Hill Road
Watertown	At the CT-262 (Frost Bridge Road)/CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp, install intersection ahead warning signs on the Frost Bridge Eastbound approach and install centerline rumble strips within the vicinity of the intersection.
Wolcott	Along Spindle Hill Road, install turn signage, high friction pavement, and dynamic feedback signs to increase roadway safety.
Wolcott	Consider installing traffic calming measures such as rumble strips, speed bars, neckdowns, signage, etc.
Woodbury	Install a roundabout at the intersection of US-6 (Main Street North)/CT-61 (Bethlehem Road and Quassapaug Rd).
Woodbury	Upgrade traffic signal at US-6 (Main Street South)/CT-317 (Sycamore Avenue) by installing traffic signal retroreflective backplates, and signal retiming. Perform geometric improvements if needed.
Waterbury, Middlebury, Southbury	Illumination along I-84 in both directions. Investigate the impact of illumination along the highway in rural areas.
Ansonia, Beacon Falls, Derby, Naugatuck, Seymour, Shelton, Thomaston, Waterbury, Watertown	Illumination along Route 8 in both directions. Investigate the impact of illumination along the highway in rural areas.
Seymour, Ansonia, Derby	Highway safety improvements along Route 8.
All municipalities	Upgrade Pedestrian Signal heads at intersections within the region to new technology and standards
All municipalities	Install traffic signal retroreflective backplates on all signals. Upgrade signal timings and install traffic cameras and other safety features as needed.
All municipalities	Install retroreflective crosswalk striping at all crosswalks within the region.
All municipalities	Install and repaint roadway striping within the region including but not limited to center lines, edge lines, and epoxy symbols and legends.
All municipalities	Install Centerline Rumble Strips along roadways with higher speeds and/or volumes where appropriate within the region.
All municipalities	Install High Friction Pavement on roadways along curves with crashes that can be easily mitigated with this treatment.
All municipalities	Install RRFBs at midblock crossings or HAWKs at midblock crossings with higher vehicle volumes within the region.
All municipalities	Install bollards and bollard flexposts as needed to provide roadway users separation from vehicles.

All municipalities	Upgrade and update signage to MUTCD compliance for all signs within the region.
All municipalities	Install bicycle lanes along roadways demarcated by pavement striping or physical separation within the region.
All municipalities	Construct sidewalk bumpouts and/or raised crosswalks at several crossing locations to lower vehicle speeds at crossings and to reduce crossing lengths.
All municipalities	Provide vegetation removal/trimming to improve sight distances around intersections, crosswalks, and roadway signage.
All municipalities	Road diet program with quick implementation with aspects including restriping, curbing, and other means to minimize roadway width.
All municipalities	Region wide program to upgrade streetlights to improve lighting and to replace older lights to LEDs.
All municipalities	Upgrade sidewalks and sidewalk ramps to meet ADA compliance for sidewalks within the region.



Figure 4 Waterbury Line train stopped at the Waterbury station

Equity and Inclusion Analysis

In developing this plan, the NVCOG put an extra focus on ensuring that the suggested improvements not only occurred on the high intensity network of crashes, but also were distributed fairly amongst municipalities within the region and within distressed communities. Two methodologies were utilized for this analysis to ensure that project distribution was truly equitable. Those methods are discussed below.

Justice40

First, the region developed a map identifying census tracts meeting the criteria for historically disadvantaged communities using the Biden Administration's Justice40 initiative definition. Using this definition, communities within the cities of Ansonia, Bristol, Derby, Shelton, and Waterbury were recognized, and an analysis was done to ensure that a fair percentage of proposed improvements occurred within these regions. This represents 20.56% of the region's population, or a total of 91,492 residents. In the expanded project listing, 28.23% of the total project funds are spent within one of these census tracts, exceeding the share of the population.

To calculate this result fairly, the NewMix project, which is the Connecticut Department of Transportation's project to replace the elevated highways and interchange of Interstate 84 and CT Route 8, was excluded. At an estimated price of between $3 and $9 Billion, this project represents an extreme amount compared to the estimated $255.2 Million of other projects. As such, though this number occurs within a disadvantaged tract, it was not included in our analysis.

Environmental Justice Communities

In addition to the analysis utilizing the Justice40 definition, actions within the plan were reviewed in accordance with environmental justice areas as identified in the 2022 update of the NVCOG Title VI plan. To develop this analysis data from the American Community Survey (ACS) 2020 was utilized to identify block groups that had significant non-English speaking or minority populations, were historically economically disadvantaged, and suffered an unfair burden of environmental degradation. Though the environmental damage in most of these areas was caused by the region's industrial past, many of these areas also face burdens from the transportation system, particularly by proximity to highways. This list included most of the area covered by the Justice40 census tracts, added additional areas in the five cities with Justice40 tracts, as well as added territory within Cheshire, Naugatuck, and Seymour.

Utilizing the NVCOG methodology, 24.5% of the region's population lives within a block group identified as an area of environmental justice concern. Without expanding the analysis to include projects programmed for within the additional areas, this still shows more dollars programed into these areas than the percentage of population. Adding the estimated costs of projects in the added area, the total expenditures within EJ block groups increases to 32.02%, still meeting the goal of matching or exceeding investments into areas of concern.

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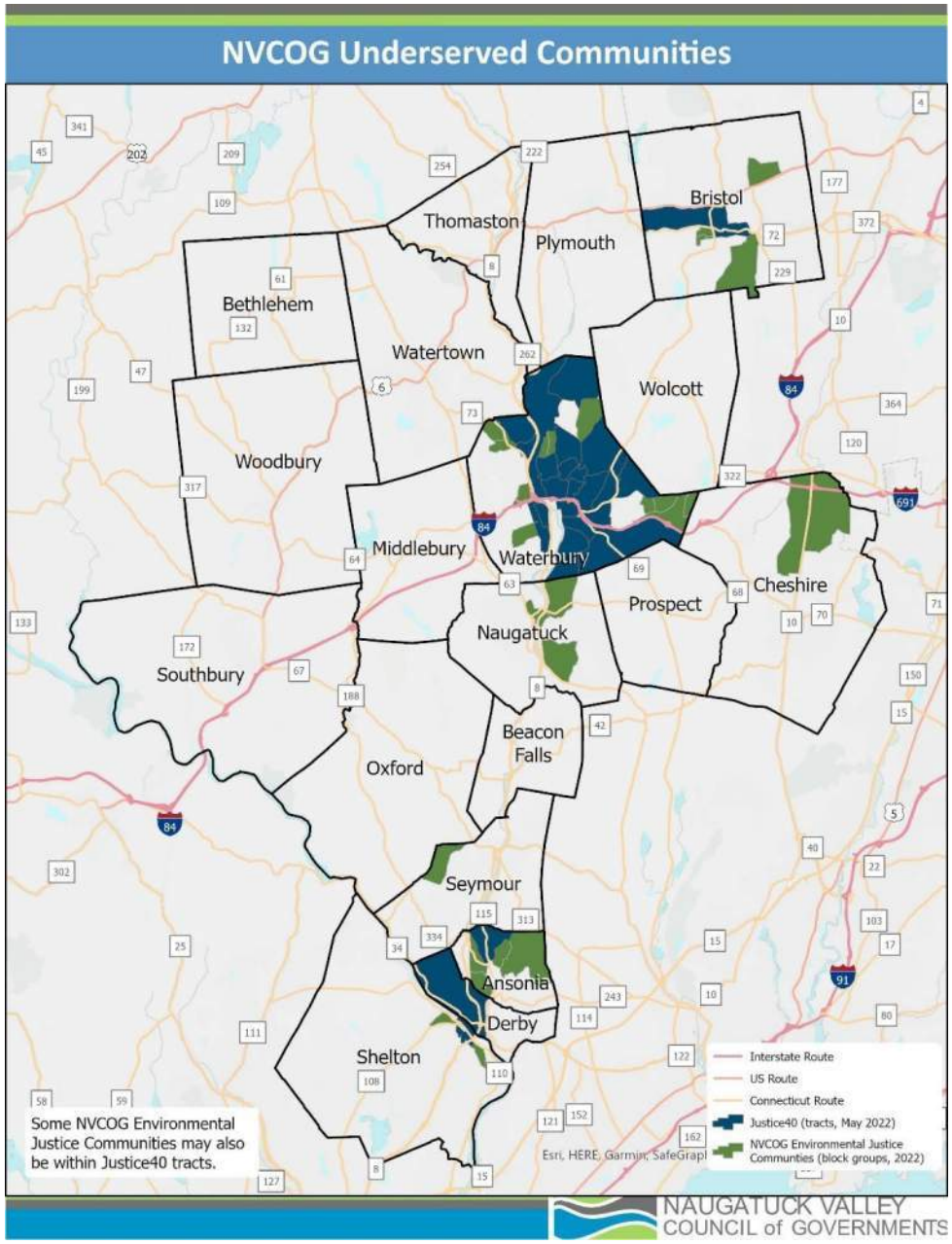

None of this analysis takes into account the various regional items, such as region wide signal enhancement funding, striping and crosswalk improvement projects, or illumination. Because these projects are designed to mostly upgrade or rehabilitate existing facilities, specific locations have yet to be identified and will be included in analysis as they move to design and implementation.

*Addendum Map 1, right, is attached as a full page in appendix X

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Potential Effectiveness of Countermeasures

- **Action**: Implement revisions and upgrades to traffic signal equipment to increase visibility and driver awareness and bring signals into compliance with the *MUTCD*.
    - Add backplates with retroreflective borders to traffic signal heads; increase visibility and driver awareness:
        - 15% reduction in total crashes.
    - Signal timing and sequencing of the cycle to better balance yellow interval and reduce red light running which will substantially reduce the potential and exposure of crashes:
        - 36-to-50% reduction in red-light running
        - 8-to-14% reduction in total crashes
        - 12%. Reduction in injury crashes
    - Signal locations will also be evaluated for adding a Leading Pedestrian Interval to give pedestrians the opportunity to enter the crosswalk earlier than the vehicles are permitted to move and increases visibility:
        - 13% reduction in pedestrian-vehicle crashes at intersections

- **Action**: Increase visibility at crosswalks throughout the region. Poor lighting conditions, obstructions such as parked cars, and horizontal or vertical roadway curvature can reduce visibility at crosswalks. Countermeasures to address visibility at crosswalks include high visibility markings, new signage and markings to provide advance warning to drivers and alert them of the possible presence of pedestrians crossing the street, and assess the need for and install Rectangular Rapid Flashing Beacons at high activity and uncontrolled crossing,
    - 25-to-42% reduction in pedestrian-vehicle crashes for actions that improve visibility
    - 47%reduction in pedestrian-vehicle crashes at locations where RRFBs are installed
    - Increases motorist yield rates to about 97% where RRFBs are installed

- **Action**: Provide dedicated physical spaces for pedestrians and bicyclists to use, including sidewalks, bike lanes and sidepaths. Data indicate that many fatal and injury crashes involving pedestrians and bicyclists occur because of the lack of proper separation from motorized vehicles. A high percentage of bicycle-vehicle crashes occur while a vehicle is over-taking a bicyclist along a road. Because of the size and speed differential, severe injuries often result.
    - 65-to-89% reduction in crashes involving pedestrians walking along the road by installing sidewalks or closing gaps in the sidewalk network
    - 30% reduction in bicyclist-vehicle crashes along two-lane roads by providing adequate shoulder width or a dedicated bicycle lane.

- **Action**: Narrow the road width or reduce the number of travel lanes help lower travel speeds and enhance pedestrian safety. Road diets can improve safety, calm traffic, result in more consistent speeds, and provide better mobility and access for all road users. Reduced road width also provides the opportunity to convert the street environment to function as a more “complete street” area that better accommodates all users. Road diets reduce the distance pedestrians have to traverse

when crossing the street, minimizing their exposure to vehicle traffic.
    - 19-to-47% reduction in crashes

- **Action**: Apply Pavement Friction Management at locations where vehicles are frequently turning, slowing, and stopping to prevent roadway departure, intersection, and pedestrian-related crashes. These include along horizontal curves, interchange ramps, intersection approaches, higher-speed signalized and stop-controlled intersections, crosswalk approaches. Specific locations throughout the region will be determined and the treatment will be applied at locations that would realize the most benefit.
    - 20% reduction in crashes at intersections
    - 48% reduction in crashes along horizontal curves

- **Action**: Enhance delineation at horizontal curves to alert drivers of a sharp curve and possible safety hazard that requires a reduction in travel speed.
    -
- **Action**: Install longitudinal center line rumble strips to alert drivers of an inadvertent crossing into the opposite lane
    - 44% and 64% reduction in fatal head-on crashes where center line rumble strips have been installed

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BL Companies



ATESD MUNICIPAL SELF-CERTIFICATION

STATE OF CONNECTICUT

OFFICE OF THE STATE TRAFFIC ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
2800 BERLIN TURNPIKE
NEWINGTON, CT 06111
Email: DOT.OSTA@ct.gov

AUTOMATED TRAFFIC ENFORCEMENT SAFETY DEVICE (ATESD)
MUNIPICAL SELF-CERTIFICATION

I, THE UNDERSIGNED _____, hereby certify that I have read Sections 14-307b through 14-307h of the General Statutes of Connecticut concerning municipal use of Automated Traffic Enforcement Safety Devices (ATESD). I understand that the requirements associated with implementation of an ATESD program include, but are not limited to, the following:

- The municipality cannot install an ATESD until its ATESD Plan has been approved by CTDOT's Office of the State Traffic Administration (OSTA).
- That the municipality shall develop a public awareness campaign to educate the public concerning ATESDs and that the campaign be implemented at least 30 days ***before*** the first ATESD is operational.
- The municipality may enter into agreements with vendors for the design, installation, operation or maintenance, or any combination thereof, of automated traffic enforcement safety devices. If a vendor designs, installs, operates, or maintains an automated traffic enforcement safety device, the vendor's fee may ***not*** be contingent on the number of citations issued or fines paid.
- For the first 30 days the ATESD is operational, only a written warning can be issued by the municipality. After 30 days, the municipality may establish a fine not more than fifty dollars for a first violation and not more than seventy-five dollars for a second or subsequent violation.
- The municipality may impose a reasonable fee, not to exceed fifteen dollars, for the costs associated with the electronic processing of the payment of any such fine.
- Any funds received by a municipality from fines imposed shall be used for the purposes of improving transportation mobility, investing in transportation infrastructure improvements, or paying the costs associated with the use of automated traffic enforcement safety devices in the municipality.
- The municipality shall ensure each ATESD undergoes an annual calibration check performed at a calibration laboratory. The calibration laboratory shall issue a signed certificate of calibration after the annual calibration check.

Signature of Chief Elected Official

Waterbury Police Department
Name of Municipality

6.12.26
Date

Equal Opportunity Employer

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TRAFFIC DATA

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	9	7	16	12:00 PM	58	67	125
12:15	7	4	11	12:15	84	91	175
12:30	3	4	7	12:30	80	93	173
12:45	5	5	10	12:45	81	84	165
1:00	4	5	9	1:00	80	85	165
1:15	4	2	6	1:15	81	107	188
1:30	1	3	4	1:30	91	78	169
1:45	1	0	1	1:45	119	127	246
2:00	4	5	9	2:00	96	105	201
2:15	0	3	3	2:15	95	109	204
2:30	1	2	3	2:30	111	131	242
2:45	2	3	5	2:45	120	147	267
3:00	1	4	5	3:00	112	147	259
3:15	4	2	6	3:15	119	106	225
3:30	2	3	5	3:30	103	113	216
3:45	6	8	14	3:45	108	111	219
4:00	5	3	8	4:00	109	115	224
4:15	8	13	21	4:15	100	108	208
4:30	14	21	35	4:30	90	96	186
4:45	22	28	50	4:45	95	93	188
5:00	22	22	44	5:00	89	97	186
5:15	26	38	64	5:15	99	100	199
5:30	51	64	115	5:30	86	86	172
5:45	50	56	106	5:45	82	84	166
6:00	40	50	90	6:00	71	80	151
6:15	71	84	155	6:15	65	76	141
6:30	94	101	195	6:30	64	70	134
6:45	87	98	185	6:45	61	68	129
7:00	105	113	218	7:00	50	54	104
7:15	142	161	303	7:15	50	62	112
7:30	142	176	318	7:30	55	52	107
7:45	153	180	333	7:45	51	64	115
8:00	145	161	306	8:00	51	52	103
8:15	135	161	296	8:15	46	46	92
8:30	121	147	268	8:30	36	31	67
8:45	119	132	251	8:45	39	48	87
9:00	94	107	201	9:00	33	42	75
9:15	92	93	185	9:15	32	38	70
9:30	86	88	174	9:30	27	25	52
9:45	99	109	208	9:45	29	32	61
10:00	73	78	151	10:00	31	32	63
10:15	65	68	133	10:15	17	18	35
10:30	63	65	128	10:30	14	24	38
10:45	69	70	139	10:45	18	20	38
11:00	63	84	147	11:00	13	16	29
11:15	61	64	125	11:15	10	16	26
11:30	66	94	160	11:30	8	9	17
11:45	75	80	155	11:45	5	11	16
Total	**2512**	**2869**	**5381**	**Total**	**3164**	**3466**	**6630**
				Total All	**5676**	**6335**	**12011**

Avg ADT	12544

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	8	16	12:00 PM	80	91	171
12:15	3	9	12	12:15	84	97	181
12:30	9	3	12	12:30	87	100	187
12:45	5	4	9	12:45	89	104	193
1:00	1	1	2	1:00	97	123	220
1:15	0	3	3	1:15	96	109	205
1:30	2	0	2	1:30	102	133	235
1:45	1	2	3	1:45	116	128	244
2:00	1	4	5	2:00	107	115	222
2:15	2	5	7	2:15	115	130	245
2:30	1	4	5	2:30	103	114	217
2:45	2	5	7	2:45	111	112	223
3:00	2	4	6	3:00	116	144	260
3:15	3	3	6	3:15	94	94	188
3:30	3	4	7	3:30	98	102	200
3:45	5	8	13	3:45	99	103	202
4:00	6	7	13	4:00	98	125	223
4:15	7	8	15	4:15	109	115	224
4:30	11	21	32	4:30	103	112	215
4:45	13	16	29	4:45	96	98	194
5:00	23	45	68	5:00	100	109	209
5:15	33	32	65	5:15	105	112	217
5:30	43	54	97	5:30	114	117	231
5:45	51	64	115	5:45	97	83	180
6:00	58	57	115	6:00	95	105	200
6:15	74	87	161	6:15	82	67	149
6:30	82	98	180	6:30	87	95	182
6:45	102	112	214	6:45	76	78	154
7:00	111	117	228	7:00	75	81	156
7:15	158	162	320	7:15	61	69	130
7:30	134	153	287	7:30	59	59	118
7:45	167	170	337	7:45	65	67	132
8:00	156	169	325	8:00	51	53	104
8:15	165	190	355	8:15	51	49	100
8:30	148	153	301	8:30	44	40	84
8:45	121	132	253	8:45	44	49	93
9:00	87	91	178	9:00	39	37	76
9:15	82	87	169	9:15	41	40	81
9:30	76	80	156	9:30	37	34	71
9:45	87	97	184	9:45	26	34	60
10:00	74	80	154	10:00	28	44	72
10:15	81	86	167	10:15	23	28	51
10:30	85	99	184	10:30	27	24	51
10:45	72	85	157	10:45	22	24	46
11:00	77	77	154	11:00	19	24	43
11:15	70	78	148	11:15	10	16	26
11:30	76	85	161	11:30	11	5	16
11:45	72	74	146	11:45	11	16	27
Total	**2650**	**2933**	**5583**	**Total**	**3500**	**3808**	**7308**
				Total All	**6150**	**6741**	**12891**

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	4	10	14	12:00 PM	69	75	144
12:15	7	4	11	12:15	77	95	172
12:30	6	8	14	12:30	76	74	150
12:45	8	5	13	12:45	67	77	144
1:00	2	2	4	1:00	72	95	167
1:15	2	4	6	1:15	70	85	155
1:30	3	4	7	1:30	67	83	150
1:45	1	1	2	1:45	69	74	143
2:00	2	3	5	2:00	77	90	167
2:15	0	3	3	2:15	80	97	177
2:30	3	0	3	2:30	104	127	231
2:45	4	6	10	2:45	96	106	202
3:00	3	4	7	3:00	105	131	236
3:15	5	6	11	3:15	92	104	196
3:30	4	5	9	3:30	89	96	185
3:45	8	10	18	3:45	88	89	177
4:00	6	8	14	4:00	89	85	174
4:15	8	10	18	4:15	108	107	215
4:30	16	20	36	4:30	110	100	210
4:45	17	22	39	4:45	91	89	180
5:00	24	29	53	5:00	92	99	191
5:15	27	37	64	5:15	91	100	191
5:30	45	48	93	5:30	98	98	196
5:45	63	71	134	5:45	99	79	178
6:00	67	73	140	6:00	84	90	174
6:15	89	92	181	6:15	88	97	185
6:30	92	100	192	6:30	74	73	147
6:45	106	114	220	6:45	76	72	148
7:00	101	111	212	7:00	62	68	130
7:15	119	127	246	7:15	63	71	134
7:30	146	152	298	7:30	66	61	127
7:45	127	129	256	7:45	53	54	107
8:00	116	70	186	8:00	59	57	116
8:15	111	131	242	8:15	52	51	103
8:30	128	140	268	8:30	52	51	103
8:45	119	122	241	8:45	49	67	116
9:00	107	107	214	9:00	41	47	88
9:15	90	47	137	9:15	48	45	93
9:30	81	64	145	9:30	43	41	84
9:45	82	84	166	9:45	40	37	77
10:00	80	103	183	10:00	21	25	46
10:15	79	77	156	10:15	19	27	46
10:30	80	84	164	10:30	22	23	45
10:45	65	58	123	10:45	19	19	38
11:00	65	103	168	11:00	14	22	36
11:15	72	92	164	11:15	17	12	29
11:30	65	67	132	11:30	11	15	26
11:45	75	93	168	11:45	11	17	28
Total	**2530**	**2660**	**5190**	**Total**	**3160**	**3397**	**6557**
				Total All	**5690**	**6057**	**11747**

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	10	14	24	12:00 PM	91	94	185
12:15	2	8	10	12:15	82	89	171
12:30	8	6	14	12:30	77	76	153
12:45	6	1	7	12:45	79	76	155
1:00	5	3	8	1:00	70	78	148
1:15	5	4	9	1:15	60	50	110
1:30	4	2	6	1:30	72	92	164
1:45	4	5	9	1:45	89	90	179
2:00	3	2	5	2:00	90	97	187
2:15	5	1	6	2:15	81	80	161
2:30	2	3	5	2:30	104	124	228
2:45	2	3	5	2:45	112	99	211
3:00	3	4	7	3:00	101	110	211
3:15	5	10	15	3:15	102	114	216
3:30	2	3	5	3:30	120	121	241
3:45	4	5	9	3:45	124	137	261
4:00	6	7	13	4:00	100	104	204
4:15	4	9	13	4:15	99	98	197
4:30	10	17	27	4:30	98	108	206
4:45	11	16	27	4:45	87	97	184
5:00	24	33	57	5:00	106	110	216
5:15	34	52	86	5:15	113	134	247
5:30	48	52	100	5:30	101	98	199
5:45	50	64	114	5:45	92	94	186
6:00	59	64	123	6:00	97	101	198
6:15	92	111	203	6:15	91	103	194
6:30	99	92	191	6:30	84	80	164
6:45	106	115	221	6:45	73	76	149
7:00	73	79	152	7:00	64	66	130
7:15	118	127	245	7:15	61	66	127
7:30	126	162	288	7:30	58	60	118
7:45	124	139	263	7:45	59	72	131
8:00	108	128	236	8:00	44	49	93
8:15	114	130	244	8:15	46	47	93
8:30	123	139	262	8:30	45	66	111
8:45	106	109	215	8:45	41	46	87
9:00	98	104	202	9:00	43	47	90
9:15	99	100	199	9:15	42	41	83
9:30	84	83	167	9:30	38	45	83
9:45	76	81	157	9:45	26	30	56
10:00	88	90	178	10:00	28	34	62
10:15	86	109	195	10:15	27	32	59
10:30	76	76	152	10:30	28	26	54
10:45	79	87	166	10:45	26	30	56
11:00	80	85	165	11:00	16	21	37
11:15	84	90	174	11:15	8	9	17
11:30	88	67	155	11:30	4	9	13
11:45	81	91	172	11:45	5	10	15
Total	**2524**	**2782**	**5306**	**Total**	**3304**	**3536**	**6840**
				Total All	**5828**	**6318**	**12146**

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	8	16	12:00 PM	85	79	164
12:15	7	12	19	12:15	98	101	199
12:30	2	4	6	12:30	92	96	188
12:45	5	5	10	12:45	91	95	186
1:00	4	5	9	1:00	106	104	210
1:15	5	5	10	1:15	105	108	213
1:30	3	4	7	1:30	107	108	215
1:45	3	2	5	1:45	114	115	229
2:00	5	4	9	2:00	132	140	272
2:15	1	6	7	2:15	128	115	243
2:30	3	2	5	2:30	136	148	284
2:45	2	4	6	2:45	126	125	251
3:00	3	1	4	3:00	130	162	292
3:15	2	8	10	3:15	114	121	235
3:30	3	4	7	3:30	129	133	262
3:45	5	4	9	3:45	127	136	263
4:00	7	5	12	4:00	109	104	213
4:15	8	10	18	4:15	108	111	219
4:30	10	17	27	4:30	119	117	236
4:45	14	21	35	4:45	114	110	224
5:00	24	35	59	5:00	118	121	239
5:15	35	33	68	5:15	117	116	233
5:30	48	52	100	5:30	116	116	232
5:45	54	52	106	5:45	120	116	236
6:00	76	76	152	6:00	116	112	228
6:15	87	96	183	6:15	103	95	198
6:30	83	90	173	6:30	97	99	196
6:45	87	96	183	6:45	96	109	205
7:00	88	94	182	7:00	90	80	170
7:15	123	155	278	7:15	86	73	159
7:30	134	140	274	7:30	86	79	165
7:45	144	168	312	7:45	76	69	145
8:00	131	146	277	8:00	72	66	138
8:15	134	168	302	8:15	63	68	131
8:30	131	156	287	8:30	61	39	100
8:45	124	133	257	8:45	49	29	78
9:00	111	112	223	9:00	38	43	81
9:15	105	103	208	9:15	31	42	73
9:30	98	81	179	9:30	37	41	78
9:45	101	103	204	9:45	38	41	79
10:00	97	86	183	10:00	37	44	81
10:15	105	101	206	10:15	27	34	61
10:30	91	104	195	10:30	24	31	55
10:45	85	67	152	10:45	29	30	59
11:00	99	101	200	11:00	21	32	53
11:15	97	104	201	11:15	22	25	47
11:30	92	91	183	11:30	18	21	39
11:45	88	92	180	11:45	14	15	29
Total	**2772**	**2966**	**5738**	**Total**	**4072**	**4114**	**8186**
				Total All	**6844**	**7080**	**13924**

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
Average Total	**0**	**42**	**114**	**278**	**660**	**1350**	**1995**	**1506**	**83**	**8**	**6038**

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/23/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	1	5	6	8	4	0	24
1:00	0	0	0	0	0	1	2	7	0	0	10
2:00	0	0	0	0	0	4	1	1	1	0	7
3:00	0	0	1	1	0	2	5	3	1	0	13
4:00	0	0	1	0	0	10	19	18	1	0	49
5:00	0	0	0	0	0	26	67	56	0	0	149
6:00	0	2	0	1	14	41	144	77	12	1	292
7:00	0	0	11	26	83	112	189	99	22	0	542
8:00	0	2	13	32	78	118	174	95	8	0	520
9:00	0	0	11	22	64	83	105	83	3	0	371
10:00	0	0	1	11	45	70	84	57	2	0	270
11:00	0	0	0	10	35	68	86	60	6	0	265
12:00 PM	0	0	1	3	36	84	92	83	4	0	303
1:00	0	0	1	13	30	93	117	110	7	0	371
2:00	0	0	1	4	23	94	150	138	12	0	422
3:00	0	1	3	10	20	91	162	143	11	1	442
4:00	0	0	0	2	23	82	147	128	12	0	394
5:00	0	0	0	4	16	70	131	123	11	1	356
6:00	0	0	0	2	8	36	95	106	14	0	261
7:00	0	0	0	0	3	20	85	88	10	0	206
8:00	0	0	1	0	7	17	68	78	1	0	172
9:00	0	0	0	1	5	11	47	52	4	1	121
10:00	0	0	0	1	1	7	29	37	3	2	80
11:00	0	0	0	0	0	7	16	10	3	0	36
Total	**0**	**5**	**45**	**143**	**492**	**1152**	**2021**	**1660**	**152**	**6**	**5676**

Percentile	15th	50th	85th	95th
Speed	24	30	36	39

Mean Speed (Average) 31.5
10 MPH Pace Speed 26-35
Number in Pace 3633
Percent in Pace 64.0%

Avg 85th 34.5

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/24/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	0	3	9	8	4	1	25
1:00	0	0	0	0	0	1	1	2	0	0	4
2:00	0	0	0	0	0	2	1	2	1	0	6
3:00	0	0	0	0	0	1	5	6	1	0	13
4:00	0	0	1	0	1	2	14	17	2	0	37
5:00	0	0	0	1	1	13	67	65	2	1	150
6:00	0	0	0	0	18	56	121	111	10	0	316
7:00	0	0	2	21	86	131	184	138	6	2	570
8:00	0	0	10	20	43	123	197	185	12	0	590
9:00	0	0	11	31	33	54	114	82	7	0	332
10:00	0	0	1	22	24	50	120	92	2	1	312
11:00	0	0	1	10	21	45	119	94	3	2	295
12:00 PM	0	0	2	11	26	63	130	96	10	2	340
1:00	0	0	1	14	34	96	150	114	2	0	411
2:00	0	0	4	15	33	99	155	119	11	0	436
3:00	0	2	3	10	28	95	164	102	3	0	407
4:00	0	0	1	3	23	88	176	112	3	0	406
5:00	0	0	1	10	28	95	151	126	5	0	416
6:00	0	0	0	0	18	77	123	118	4	0	340
7:00	0	0	0	5	7	68	83	94	3	0	260
8:00	0	0	0	0	5	29	63	84	9	0	190
9:00	0	0	0	0	7	18	50	63	4	1	143
10:00	0	0	0	0	4	18	28	44	6	0	100
11:00	0	0	0	1	2	8	16	21	2	1	51
Total	**0**	**2**	**38**	**174**	**442**	**1235**	**2241**	**1895**	**112**	**11**	**6150**

Percentile	15th	50th	85th	95th
Speed	24	31	36	40

Mean Speed (Average)	32.2
10 MPH Pace Speed	27-36
Number in Pace	3875
Percent in Pace	63.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/25/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	4	2	8	8	2	1	25
1:00	0	0	0	0	0	0	4	2	1	1	8
2:00	0	0	0	0	0	4	1	2	1	1	9
3:00	0	0	0	0	0	1	10	8	1	0	20
4:00	0	0	1	0	1	2	20	23	0	0	47
5:00	0	0	1	1	4	13	70	68	1	1	159
6:00	0	1	1	5	23	66	139	116	2	1	354
7:00	0	10	19	21	27	104	181	131	0	0	493
8:00	0	10	22	43	8	111	150	130	0	0	474
9:00	0	10	8	14	12	104	112	100	0	0	360
10:00	0	10	10	16	15	81	92	80	0	0	304
11:00	0	12	21	37	20	72	64	51	0	0	277
12:00 PM	0	14	19	28	23	84	71	50	0	0	289
1:00	0	20	24	47	15	68	63	41	0	0	278
2:00	0	13	22	73	75	83	61	30	0	0	357
3:00	0	11	61	91	80	71	50	10	0	0	374
4:00	0	11	24	63	76	97	90	35	2	0	398
5:00	0	8	12	57	67	95	101	40	0	0	380
6:00	0	7	19	29	42	78	105	42	0	0	322
7:00	0	2	4	17	13	62	98	45	3	0	244
8:00	0	0	0	2	7	38	95	66	4	0	212
9:00	0	0	0	1	4	26	68	68	4	1	172
10:00	0	0	0	0	1	14	31	31	4	0	81
11:00	0	0	0	0	3	9	20	13	6	2	53
Total	**0**	**139**	**268**	**545**	**520**	**1285**	**1704**	**1190**	**31**	**8**	**5690**

Percentile	15th	50th	85th	95th
Speed	19	23	30	36

Mean Speed (Average)	22.2
10 MPH Pace Speed	12-21
Number in Pace	2561
Percent in Pace	45.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/26/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	1	1	10	13	1	0	26
1:00	0	0	0	0	1	1	6	6	4	0	18
2:00	0	0	0	0	1	2	4	5	0	0	12
3:00	0	0	0	0	0	0	7	6	1	0	14
4:00	0	1	1	0	1	4	10	11	2	1	31
5:00	0	0	1	0	0	14	60	78	3	0	156
6:00	0	0	2	9	21	58	149	113	3	1	356
7:00	0	4	24	35	45	97	131	104	1	0	441
8:00	0	11	19	18	50	111	121	121	0	0	451
9:00	0	2	3	7	37	96	112	98	2	0	357
10:00	0	7	3	8	26	92	103	90	0	0	329
11:00	0	3	14	17	19	84	115	81	0	0	333
12:00 PM	0	10	5	15	23	92	112	72	0	0	329
1:00	0	8	12	17	37	45	101	70	0	1	291
2:00	0	10	31	44	67	73	90	71	0	1	387
3:00	0	5	29	45	86	110	120	51	1	0	447
4:00	0	0	10	32	95	103	93	40	11	0	384
5:00	0	0	20	49	104	110	74	50	5	0	412
6:00	0	0	1	29	80	98	82	48	6	1	345
7:00	0	0	0	2	30	80	85	41	4	0	242
8:00	0	0	0	1	14	43	72	45	1	0	176
9:00	0	0	2	4	2	29	57	53	2	0	149
10:00	0	0	0	3	1	16	35	50	3	1	109
11:00	0	0	0	0	2	3	9	17	2	0	33
Total	**0**	**61**	**177**	**335**	**743**	**1362**	**1758**	**1334**	**52**	**6**	**5828**

Percentile	15th	50th	85th	95th
Speed	20	26	34	38

Mean Speed (Average)	27.6
10 MPH Pace Speed	26-35
Number in Pace	2681
Percent in Pace	46.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/27/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	1	0	3	6	10	2	0	22
1:00	0	0	0	0	0	0	4	6	5	0	15
2:00	0	0	0	0	1	1	5	3	1	0	11
3:00	0	0	0	0	1	2	3	6	1	0	13
4:00	0	0	1	0	0	3	16	18	1	0	39
5:00	0	0	0	0	0	19	67	68	5	2	161
6:00	0	2	0	0	11	64	155	101	0	0	333
7:00	0	0	1	11	58	106	180	128	4	1	489
8:00	0	1	12	23	75	117	175	115	2	0	520
9:00	0	0	2	17	66	83	157	89	1	0	415
10:00	0	0	0	10	54	94	130	84	5	1	378
11:00	0	0	0	1	52	99	123	98	2	1	376
12:00 PM	0	0	0	2	60	89	132	81	2	0	366
1:00	0	0	2	20	90	118	126	74	2	0	432
2:00	0	2	9	26	111	164	128	80	1	1	522
3:00	0	0	0	23	113	163	130	70	1	0	500
4:00	0	0	2	20	97	124	141	64	1	1	450
5:00	0	0	10	22	103	144	133	52	7	0	471
6:00	0	0	3	11	96	118	122	57	5	0	412
7:00	0	0	0	1	70	90	106	68	2	1	338
8:00	0	0	1	3	37	60	80	59	5	0	245
9:00	0	0	0	2	5	28	54	50	5	0	144
10:00	0	0	1	1	3	18	52	35	6	1	117
11:00	0	0	0	0	2	10	24	37	1	1	75
Total	**0**	**5**	**44**	**194**	**1105**	**1717**	**2249**	**1453**	**67**	**10**	**6844**

Percentile	15th	50th	85th	95th
Speed	24	31	36	39

Mean Speed (Average)	31.9
10 MPH Pace Speed	27-36
Number in Pace	4243
Percent in Pace	62.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
Average Total	**0**	**27**	**92**	**464**	**1235**	**1523**	**1793**	**1067**	**261**	**45**	**6506**

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/23/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	1	1	1	5	8	3	1	20
1:00	0	0	0	0	2	2	0	3	3	0	10
2:00	0	0	0	0	0	2	4	6	1	0	13
3:00	0	0	0	0	1	3	5	3	4	1	17
4:00	0	1	0	0	1	6	18	28	8	3	65
5:00	0	0	0	7	14	36	71	45	6	1	180
6:00	0	4	7	31	35	82	121	47	6	0	333
7:00	0	1	6	24	113	211	211	57	7	0	630
8:00	0	3	15	26	121	179	191	57	9	0	601
9:00	0	0	3	9	38	90	161	81	13	2	397
10:00	0	0	1	7	27	56	105	65	17	3	281
11:00	0	0	1	12	27	63	123	76	18	2	322
12:00 PM	0	0	1	6	23	70	123	91	18	3	335
1:00	0	3	3	30	31	83	163	68	13	3	397
2:00	0	3	8	17	84	123	158	75	21	3	492
3:00	0	6	14	31	79	115	139	75	15	3	477
4:00	0	1	1	8	26	105	160	90	16	5	412
5:00	0	0	4	17	20	71	139	92	19	5	367
6:00	0	0	0	5	22	55	106	82	19	5	294
7:00	0	0	0	4	19	45	75	67	20	2	232
8:00	0	0	0	8	12	41	57	42	10	7	177
9:00	0	0	0	3	11	16	52	41	11	3	137
10:00	0	0	0	6	9	15	27	27	7	3	94
11:00	0	0	0	1	4	6	22	13	5	1	52
Total	**0**	**22**	**64**	**253**	**720**	**1476**	**2236**	**1239**	**269**	**56**	**6335**

Percentile	15th	50th	85th	95th
Speed	25	31	35	39

Mean Speed (Average)	31.4
10 MPH Pace Speed	26-35
Number in Pace	3738
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/24/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	3	2	7	8	2	2	24
1:00	0	0	0	0	3	0	1	1	0	1	6
2:00	0	0	0	1	0	4	5	7	1	0	18
3:00	0	0	0	1	1	4	3	6	3	1	19
4:00	0	0	0	0	1	3	15	21	8	4	52
5:00	0	0	0	4	11	24	63	61	24	8	195
6:00	0	6	7	30	55	58	101	78	17	2	354
7:00	0	0	1	14	74	162	194	124	31	2	602
8:00	0	2	18	25	70	134	225	138	29	3	644
9:00	0	0	0	6	25	54	131	110	27	2	355
10:00	0	0	2	11	27	64	102	125	15	4	350
11:00	0	0	1	7	29	54	113	81	27	2	314
12:00 PM	0	1	2	1	21	86	154	95	26	6	392
1:00	0	1	0	9	68	141	171	85	15	3	493
2:00	0	0	1	17	65	136	155	79	16	2	471
3:00	0	4	12	27	59	106	153	62	18	2	443
4:00	0	0	2	14	46	83	172	107	23	3	450
5:00	0	0	0	14	27	77	158	108	32	5	421
6:00	0	0	0	7	29	51	119	107	28	4	345
7:00	0	1	3	6	25	54	109	64	13	1	276
8:00	0	0	0	5	19	33	72	49	11	2	191
9:00	0	0	0	2	19	29	47	41	6	1	145
10:00	0	0	0	1	9	21	34	38	12	5	120
11:00	0	0	0	3	6	12	16	15	9	0	61
Total	**0**	**15**	**49**	**205**	**692**	**1392**	**2320**	**1610**	**393**	**65**	**6741**

Percentile	15th	50th	85th	95th
Speed	26	31	36	39

Mean Speed (Average)	32.2
10 MPH Pace Speed	31-40
Number in Pace	3917
Percent in Pace	58.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/25/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	1	0	4	8	8	6	0	27
1:00	0	0	0	0	1	0	0	7	2	1	11
2:00	0	0	0	0	0	2	7	3	0	0	12
3:00	0	0	0	0	1	2	8	5	6	3	25
4:00	0	0	2	1	2	5	13	26	9	2	60
5:00	0	0	0	2	13	17	61	64	22	6	185
6:00	0	7	3	39	81	102	87	46	10	4	379
7:00	0	0	25	80	242	139	32	1	0	0	519
8:00	0	10	24	104	214	96	13	2	0	0	463
9:00	0	0	9	38	119	116	19	1	0	0	302
10:00	0	2	2	23	133	124	36	1	1	0	322
11:00	0	1	8	47	147	123	28	1	0	0	355
12:00 PM	0	1	7	31	154	98	29	1	0	0	321
1:00	0	0	2	41	184	94	16	0	0	0	337
2:00	0	6	15	102	183	107	7	0	0	0	420
3:00	0	6	20	157	180	49	8	0	0	0	420
4:00	0	3	10	90	183	78	17	0	0	0	381
5:00	0	1	18	85	169	88	14	1	0	0	376
6:00	0	0	6	39	178	104	5	0	0	0	332
7:00	0	0	0	25	55	67	65	33	9	0	254
8:00	0	0	0	6	28	45	82	54	10	1	226
9:00	0	1	3	6	19	37	51	35	13	5	170
10:00	0	0	2	1	5	21	30	25	8	2	94
11:00	0	0	0	1	1	9	25	18	8	4	66
Total	**0**	**38**	**156**	**919**	**2292**	**1527**	**661**	**332**	**104**	**28**	**6057**

Percentile	15th	50th	85th	95th
Speed	13	19	32	36

Mean Speed (Average)	25.5
10 MPH Pace Speed	21-30
Number in Pace	3819
Percent in Pace	63.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/26/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	0	6	6	13	1	3	29
1:00	0	0	0	1	1	5	2	3	2	0	14
2:00	0	0	0	0	0	1	6	2	0	0	9
3:00	0	0	0	0	1	4	5	6	3	3	22
4:00	0	0	1	1	1	6	13	20	7	0	49
5:00	0	0	0	6	18	21	76	61	16	3	201
6:00	0	6	11	35	61	115	117	33	3	1	382
7:00	0	6	38	104	215	125	17	1	1	0	507
8:00	0	2	17	84	262	123	18	0	0	0	506
9:00	0	0	2	36	87	182	57	4	0	0	368
10:00	0	0	1	23	114	183	39	2	0	0	362
11:00	0	0	1	33	128	135	35	1	0	0	333
12:00 PM	0	2	10	27	128	138	30	0	0	0	335
1:00	0	0	0	39	168	93	8	1	1	0	310
2:00	0	4	13	112	173	87	11	0	0	0	400
3:00	0	11	21	84	138	113	71	38	5	1	482
4:00	0	0	3	16	43	90	160	79	14	2	407
5:00	0	0	1	13	44	88	168	99	23	0	436
6:00	0	0	1	17	21	66	133	92	26	4	360
7:00	0	0	0	6	21	69	86	66	13	3	264
8:00	0	0	0	7	22	41	69	52	13	4	208
9:00	0	0	0	3	17	28	59	42	12	2	163
10:00	0	0	0	2	4	19	42	37	17	1	122
11:00	0	0	0	0	4	9	14	13	8	1	49
Total	**0**	**31**	**120**	**649**	**1671**	**1747**	**1242**	**665**	**165**	**28**	**6318**

Percentile	15th	50th	85th	95th
Speed	16	28	34	38

Mean Speed (Average)	27.8
10 MPH Pace Speed	21-30
Number in Pace	3418
Percent in Pace	54.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/27/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	Total
12:00 AM	0	0	0	0	1	3	13	7	3	2	29
1:00	0	0	0	0	0	4	5	5	1	1	16
2:00	0	0	0	0	0	6	4	4	2	0	16
3:00	0	0	0	1	2	3	2	5	4	0	17
4:00	0	0	0	0	2	5	15	18	8	5	53
5:00	0	0	0	8	13	20	58	51	20	2	172
6:00	0	0	1	25	46	81	120	62	21	2	358
7:00	0	0	3	27	88	137	199	89	12	2	557
8:00	0	4	14	35	83	158	191	97	20	1	603
9:00	0	0	1	16	36	76	152	95	22	1	399
10:00	0	0	1	6	24	55	142	97	33	0	358
11:00	0	0	4	19	23	91	146	89	14	2	388
12:00 PM	0	0	2	4	27	78	130	94	33	3	371
1:00	0	8	14	26	52	86	143	87	16	3	435
2:00	0	4	13	39	123	182	129	31	5	2	528
3:00	0	10	11	42	99	142	170	60	16	2	552
4:00	0	1	3	12	58	69	173	106	16	4	442
5:00	0	0	1	15	38	67	190	129	29	0	469
6:00	0	0	0	7	34	54	170	111	32	7	415
7:00	0	0	0	5	19	57	122	80	16	2	301
8:00	0	0	0	3	12	42	73	50	21	1	202
9:00	0	0	0	4	6	22	74	46	11	4	167
10:00	0	0	0	2	7	25	50	45	7	3	139
11:00	0	0	1	0	5	11	33	33	10	0	93
Total	**0**	**27**	**69**	**296**	**798**	**1474**	**2504**	**1491**	**372**	**49**	**7080**

Percentile	15th	50th	85th	95th
Speed	24	31	36	39

Mean Speed (Average)	31.5
10 MPH Pace Speed	26-35
Number in Pace	3965
Percent in Pace	56.0%

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/23/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	22	1	0	1	0	24
1:00	0	10	0	0	0	0	10
2:00	0	5	1	0	1	0	7
3:00	0	12	1	0	0	0	13
4:00	0	48	1	0	0	0	49
5:00	0	146	2	0	1	0	149
6:00	0	286	3	0	3	0	292
7:00	1	529	6	0	5	1	542
8:00	0	504	7	6	3	0	520
9:00	1	360	7	1	2	0	371
10:00	0	254	6	7	3	0	270
11:00	0	252	8	3	2	0	265
12:00 PM	0	288	5	3	6	1	303
1:00	0	357	8	2	4	0	371
2:00	0	402	14	3	3	0	422
3:00	1	430	8	1	1	1	442
4:00	0	375	13	4	2	0	394
5:00	0	341	13	0	2	0	356
6:00	0	249	12	0	0	0	261
7:00	0	203	3	0	0	0	206
8:00	0	167	3	2	0	0	172
9:00	0	112	8	1	0	0	121
10:00	0	76	3	1	0	0	80
11:00	0	32	3	0	1	0	36
Total	**3**	**5460**	**136**	**34**	**40**	**3**	**5676**
Percent	0.1%	96.2%	2.4%	0.6%	0.7%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	24	1	0	0	0	25
1:00	0	4	0	0	0	0	4
2:00	0	5	1	0	0	0	6
3:00	0	13	0	0	0	0	13
4:00	0	35	2	0	0	0	37
5:00	0	133	16	0	1	0	150
6:00	0	296	16	1	3	0	316
7:00	1	534	28	1	5	1	570
8:00	0	555	27	3	4	1	590
9:00	0	310	16	6	0	0	332
10:00	0	291	17	3	1	0	312
11:00	0	277	14	4	0	0	295
12:00 PM	0	304	21	11	4	0	340
1:00	1	373	25	9	3	0	411
2:00	0	393	27	8	7	1	436
3:00	0	375	23	6	3	0	407
4:00	0	378	23	3	2	0	406
5:00	1	389	23	0	2	1	416
6:00	0	323	14	2	1	0	340
7:00	0	248	8	4	0	0	260
8:00	0	179	10	0	1	0	190
9:00	0	136	6	1	0	0	143
10:00	0	91	8	0	1	0	100
11:00	0	47	4	0	0	0	51
Total	**3**	**5713**	**330**	**62**	**38**	**4**	**6150**
Percent	0.0%	92.9%	5.4%	1.0%	0.6%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/25/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	22	3	0	0	0	25
1:00	0	8	0	0	0	0	8
2:00	0	8	0	0	1	0	9
3:00	0	19	1	0	0	0	20
4:00	0	44	1	1	1	0	47
5:00	0	155	2	2	0	0	159
6:00	0	338	14	1	1	0	354
7:00	1	464	19	1	7	1	493
8:00	0	453	15	3	3	0	474
9:00	0	336	17	6	1	0	360
10:00	0	286	15	1	2	0	304
11:00	2	250	19	5	1	0	277
12:00 PM	0	261	23	4	1	0	289
1:00	0	250	26	2	0	0	278
2:00	0	325	27	4	0	1	357
3:00	0	348	21	4	1	0	374
4:00	0	376	19	3	0	0	398
5:00	1	358	18	2	0	1	380
6:00	0	313	7	1	1	0	322
7:00	0	231	9	2	2	0	244
8:00	0	197	14	1	0	0	212
9:00	0	157	13	0	2	0	172
10:00	0	75	3	2	1	0	81
11:00	0	47	5	1	0	0	53
Total	**4**	**5321**	**291**	**46**	**25**	**3**	**5690**
Percent	0.1%	93.5%	5.1%	0.8%	0.4%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/26/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	26	0	0	0	0	26
1:00	0	17	0	1	0	0	18
2:00	0	12	0	0	0	0	12
3:00	0	14	0	0	0	0	14
4:00	0	27	2	1	1	0	31
5:00	0	151	5	0	0	0	156
6:00	1	328	19	3	5	0	356
7:00	0	414	19	5	2	1	441
8:00	0	426	17	3	4	1	451
9:00	0	331	23	2	0	1	357
10:00	0	307	21	0	1	0	329
11:00	0	307	21	3	2	0	333
12:00 PM	0	306	20	3	0	0	329
1:00	0	264	25	1	0	1	291
2:00	0	362	21	1	3	0	387
3:00	0	411	26	5	4	1	447
4:00	0	350	27	4	3	0	384
5:00	0	383	25	2	2	0	412
6:00	1	322	17	3	2	0	345
7:00	0	229	12	0	1	0	242
8:00	0	163	7	5	1	0	176
9:00	1	141	6	1	0	0	149
10:00	0	101	6	2	0	0	109
11:00	0	32	0	0	1	0	33
Total	**3**	**5424**	**319**	**45**	**32**	**5**	**5828**
Percent	0.1%	93.1%	5.5%	0.8%	0.5%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	19	2	1	0	0	22
1:00	0	15	0	0	0	0	15
2:00	0	10	0	1	0	0	11
3:00	0	13	0	0	0	0	13
4:00	0	34	3	1	1	0	39
5:00	0	151	9	0	1	0	161
6:00	0	310	20	0	3	0	333
7:00	1	458	23	2	5	0	489
8:00	0	488	25	3	3	1	520
9:00	1	383	26	2	2	1	415
10:00	0	344	29	3	2	0	378
11:00	0	348	22	5	1	0	376
12:00 PM	0	340	25	1	0	0	366
1:00	0	400	25	2	5	0	432
2:00	0	487	27	1	6	1	522
3:00	1	471	24	3	1	0	500
4:00	0	423	23	2	2	0	450
5:00	1	440	28	1	1	0	471
6:00	0	384	24	2	1	1	412
7:00	0	309	29	0	0	0	338
8:00	1	230	14	0	0	0	245
9:00	0	127	15	2	0	0	144
10:00	0	104	10	2	1	0	117
11:00	0	67	7	1	0	0	75
Total	**5**	**6355**	**410**	**35**	**35**	**4**	**6844**
Percent	0.1%	92.9%	6.0%	0.5%	0.5%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/23/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	20	0	0	0	0	20
1:00	0	10	0	0	0	0	10
2:00	0	12	0	0	1	0	13
3:00	0	15	2	0	0	0	17
4:00	0	58	7	0	0	0	65
5:00	0	161	16	0	3	0	180
6:00	0	297	29	2	5	0	333
7:00	1	552	50	4	22	1	630
8:00	1	538	43	6	12	1	601
9:00	0	360	33	2	2	0	397
10:00	1	250	27	1	2	0	281
11:00	0	284	29	5	4	0	322
12:00 PM	1	303	24	2	4	1	335
1:00	0	345	34	7	10	1	397
2:00	3	442	34	2	11	0	492
3:00	2	432	25	5	12	1	477
4:00	0	374	28	2	8	0	412
5:00	0	348	12	0	6	1	367
6:00	0	275	16	0	3	0	294
7:00	1	220	10	0	1	0	232
8:00	0	163	11	0	3	0	177
9:00	0	128	8	0	1	0	137
10:00	0	89	4	0	1	0	94
11:00	0	49	2	1	0	0	52
Total	**10**	**5725**	**444**	**39**	**111**	**6**	**6335**
Percent	0.2%	90.4%	7.0%	0.6%	1.8%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/24/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	24	0	0	0	0	24
1:00	0	6	0	0	0	0	6
2:00	0	17	1	0	0	0	18
3:00	0	19	0	0	0	0	19
4:00	0	49	3	0	0	0	52
5:00	0	181	13	0	1	0	195
6:00	0	304	36	3	11	0	354
7:00	0	517	54	7	23	1	602
8:00	1	587	44	3	9	0	644
9:00	2	318	25	3	6	1	355
10:00	1	313	24	5	7	0	350
11:00	1	266	35	6	6	0	314
12:00 PM	2	364	20	2	4	0	392
1:00	1	433	40	7	11	1	493
2:00	1	432	25	5	7	1	471
3:00	2	392	32	6	11	0	443
4:00	0	417	24	2	6	1	450
5:00	0	397	19	0	4	1	421
6:00	0	323	20	0	2	0	345
7:00	0	253	20	0	3	0	276
8:00	0	180	10	0	1	0	191
9:00	0	134	10	0	1	0	145
10:00	0	114	4	1	1	0	120
11:00	0	58	2	0	1	0	61
Total	**11**	**6098**	**461**	**50**	**115**	**6**	**6741**
Percent	0.2%	90.5%	6.8%	0.7%	1.7%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/25/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	27	0	0	0	0	27
1:00	0	9	2	0	0	0	11
2:00	0	10	1	0	1	0	12
3:00	1	21	3	0	0	0	25
4:00	0	57	3	0	0	0	60
5:00	1	165	16	1	2	0	185
6:00	0	340	30	2	6	1	379
7:00	0	459	36	4	19	1	519
8:00	1	425	22	4	10	1	463
9:00	0	277	19	2	4	0	302
10:00	1	292	19	3	7	0	322
11:00	1	309	25	6	14	0	355
12:00 PM	2	294	17	4	4	0	321
1:00	0	310	17	7	2	1	337
2:00	2	378	25	2	11	2	420
3:00	2	377	22	6	12	1	420
4:00	0	363	13	2	3	0	381
5:00	0	345	21	4	6	0	376
6:00	0	315	13	1	3	0	332
7:00	0	235	16	0	3	0	254
8:00	0	213	11	1	1	0	226
9:00	0	159	9	0	2	0	170
10:00	0	88	5	0	1	0	94
11:00	0	63	2	0	1	0	66
Total	**11**	**5531**	**347**	**49**	**112**	**7**	**6057**
Percent	0.2%	91.3%	5.7%	0.8%	1.8%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/26/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	29	0	0	0	0	29
1:00	0	13	1	0	0	0	14
2:00	0	8	1	0	0	0	9
3:00	0	19	2	0	0	1	22
4:00	0	44	5	0	0	0	49
5:00	0	176	22	1	2	0	201
6:00	1	318	50	2	8	3	382
7:00	0	446	35	6	20	0	507
8:00	0	467	27	3	7	2	506
9:00	0	338	24	1	5	0	368
10:00	1	332	21	4	4	0	362
11:00	0	296	28	7	2	0	333
12:00 PM	0	301	26	4	4	0	335
1:00	0	282	18	5	5	0	310
2:00	1	359	22	5	11	2	400
3:00	1	438	28	7	8	0	482
4:00	0	379	20	2	5	1	407
5:00	0	418	10	1	7	0	436
6:00	1	338	18	0	3	0	360
7:00	0	247	15	1	1	0	264
8:00	0	198	9	0	1	0	208
9:00	1	154	7	0	1	0	163
10:00	0	115	6	0	1	0	122
11:00	0	48	0	0	1	0	49
Total	**6**	**5763**	**395**	**49**	**96**	**9**	**6318**
Percent	0.1%	91.2%	6.3%	0.8%	1.5%	0.1%	

Project #: 1803_BL
ID#: ATR 1
City/Town: Waterbury, CT
Location: N Main Street, south of Bucks HI Road

Direction: SB

3/27/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	26	2	0	0	1	29
1:00	0	15	0	0	1	0	16
2:00	0	14	1	1	0	0	16
3:00	1	14	2	0	0	0	17
4:00	0	49	3	0	1	0	53
5:00	0	158	13	0	1	0	172
6:00	0	314	30	4	9	1	358
7:00	0	488	40	8	21	0	557
8:00	0	547	40	3	13	0	603
9:00	0	357	34	2	6	0	399
10:00	1	330	22	1	4	0	358
11:00	3	341	37	5	2	0	388
12:00 PM	0	347	16	3	4	1	371
1:00	0	382	32	9	12	0	435
2:00	1	489	20	5	12	1	528
3:00	1	490	41	7	8	5	552
4:00	0	409	25	4	4	0	442
5:00	0	435	26	2	6	0	469
6:00	1	387	22	3	2	0	415
7:00	0	282	16	2	1	0	301
8:00	0	195	5	1	1	0	202
9:00	0	153	13	0	1	0	167
10:00	0	131	7	1	0	0	139
11:00	0	88	5	0	0	0	93
Total	**8**	**6441**	**452**	**61**	**109**	**9**	**7080**
Percent	0.1%	91.0%	6.4%	0.9%	1.5%	0.1%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	EB	WB	Total	Time	EB	WB	Total
12:00 AM	21	14	35	12:00 PM	140	128	268
12:15	18	13	31	12:15	126	116	242
12:30	11	13	24	12:30	154	123	277
12:45	11	12	23	12:45	141	97	238
1:00	11	13	24	1:00	140	108	248
1:15	10	9	19	1:15	166	129	295
1:30	6	12	18	1:30	120	110	230
1:45	9	13	22	1:45	114	145	259
2:00	10	8	18	2:00	137	131	268
2:15	6	7	13	2:15	160	139	299
2:30	2	8	10	2:30	160	126	286
2:45	8	9	17	2:45	169	138	307
3:00	5	7	12	3:00	184	127	311
3:15	4	5	9	3:15	171	129	300
3:30	8	10	18	3:30	179	152	331
3:45	7	12	19	3:45	186	149	335
4:00	19	8	27	4:00	187	140	327
4:15	11	19	30	4:15	159	164	323
4:30	8	22	30	4:30	191	151	342
4:45	18	28	46	4:45	174	169	343
5:00	18	24	42	5:00	180	162	342
5:15	23	28	51	5:15	159	162	321
5:30	29	55	84	5:30	159	116	275
5:45	42	63	105	5:45	145	134	279
6:00	43	54	97	6:00	168	131	299
6:15	43	52	95	6:15	152	131	283
6:30	74	82	156	6:30	140	91	231
6:45	65	71	136	6:45	130	91	221
7:00	73	95	168	7:00	117	109	226
7:15	79	70	149	7:15	124	97	221
7:30	67	78	145	7:30	114	99	213
7:45	117	62	179	7:45	111	75	186
8:00	104	88	192	8:00	90	82	172
8:15	112	98	210	8:15	99	76	175
8:30	113	95	208	8:30	84	78	162
8:45	109	90	199	8:45	77	71	148
9:00	117	99	216	9:00	63	78	141
9:15	136	97	233	9:15	47	47	94
9:30	134	87	221	9:30	55	63	118
9:45	145	101	246	9:45	64	61	125
10:00	109	96	205	10:00	54	58	112
10:15	121	108	229	10:15	49	52	101
10:30	111	104	215	10:30	42	46	88
10:45	112	114	226	10:45	33	32	65
11:00	124	103	227	11:00	34	35	69
11:15	121	101	222	11:15	41	25	66
11:30	126	98	224	11:30	31	26	57
11:45	136	110	246	11:45	20	20	40
Total	**2806**	**2565**	**5371**	**Total**	**5740**	**4919**	**10659**
				Total All	**8546**	**7484**	**16030**

Average ADT	17255

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

3/24/2026				3/24/2026			
Time	EB	WB	Total	Time	EB	WB	Total
12:00 AM	17	14	31	12:00 PM	138	173	311
12:15	13	19	32	12:15	144	129	273
12:30	23	10	33	12:30	146	148	294
12:45	19	11	30	12:45	177	139	316
1:00	7	12	19	1:00	154	128	282
1:15	6	12	18	1:15	153	130	283
1:30	9	4	13	1:30	138	132	270
1:45	8	9	17	1:45	163	145	308
2:00	6	5	11	2:00	147	136	283
2:15	6	7	13	2:15	167	148	315
2:30	4	5	9	2:30	181	133	314
2:45	3	7	10	2:45	170	119	289
3:00	6	6	12	3:00	172	134	306
3:15	6	4	10	3:15	164	110	274
3:30	6	9	15	3:30	170	149	319
3:45	9	14	23	3:45	186	147	333
4:00	17	11	28	4:00	167	142	309
4:15	9	16	25	4:15	175	141	316
4:30	8	30	38	4:30	185	123	308
4:45	19	27	46	4:45	179	148	327
5:00	24	21	45	5:00	196	144	340
5:15	31	28	59	5:15	149	140	289
5:30	31	59	90	5:30	164	128	292
5:45	45	62	107	5:45	156	138	294
6:00	45	60	105	6:00	163	119	282
6:15	50	70	120	6:15	133	122	255
6:30	85	84	169	6:30	152	126	278
6:45	117	78	195	6:45	163	121	284
7:00	113	79	192	7:00	138	127	265
7:15	80	79	159	7:15	133	110	243
7:30	112	87	199	7:30	125	107	232
7:45	122	76	198	7:45	97	85	182
8:00	126	75	201	8:00	97	118	215
8:15	112	107	219	8:15	112	97	209
8:30	114	92	206	8:30	101	83	184
8:45	124	123	247	8:45	104	82	186
9:00	137	123	260	9:00	92	58	150
9:15	126	122	248	9:15	97	70	167
9:30	128	107	235	9:30	74	59	133
9:45	134	105	239	9:45	50	64	114
10:00	136	105	241	10:00	53	59	112
10:15	141	110	251	10:15	52	63	115
10:30	128	111	239	10:30	42	43	85
10:45	137	114	251	10:45	39	34	73
11:00	162	134	296	11:00	31	38	69
11:15	150	136	286	11:15	51	24	75
11:30	152	114	266	11:30	31	20	51
11:45	163	106	269	11:45	28	16	44
Total	**3226**	**2799**	**6025**	**Total**	**6099**	**5149**	**11248**
				Total All	**9325**	**7948**	**17273**

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

3/25/2026				3/25/2026			
Time	EB	WB	Total	Time	EB	WB	Total
12:00 AM	22	18	40	12:00 PM	152	136	288
12:15	22	18	40	12:15	149	138	287
12:30	16	11	27	12:30	133	116	249
12:45	19	11	30	12:45	157	129	286
1:00	7	7	14	1:00	149	133	282
1:15	13	10	23	1:15	134	141	275
1:30	7	8	15	1:30	152	119	271
1:45	4	4	8	1:45	143	130	273
2:00	4	8	12	2:00	151	140	291
2:15	3	4	7	2:15	164	149	313
2:30	5	3	8	2:30	180	134	314
2:45	11	14	25	2:45	175	124	299
3:00	10	5	15	3:00	170	132	302
3:15	7	11	18	3:15	163	147	310
3:30	6	7	13	3:30	182	151	333
3:45	9	8	17	3:45	170	149	319
4:00	13	12	25	4:00	174	141	315
4:15	8	13	21	4:15	167	108	275
4:30	7	33	40	4:30	184	149	333
4:45	15	32	47	4:45	186	126	312
5:00	28	21	49	5:00	190	161	351
5:15	22	26	48	5:15	163	119	282
5:30	34	66	100	5:30	174	136	310
5:45	39	65	104	5:45	160	149	309
6:00	37	61	98	6:00	178	125	303
6:15	69	55	124	6:15	164	132	296
6:30	64	91	155	6:30	136	128	264
6:45	75	81	156	6:45	176	107	283
7:00	75	68	143	7:00	152	125	277
7:15	90	82	172	7:15	103	112	215
7:30	91	89	180	7:30	120	128	248
7:45	113	78	191	7:45	120	112	232
8:00	140	89	229	8:00	112	122	234
8:15	122	98	220	8:15	96	109	205
8:30	132	99	231	8:30	98	122	220
8:45	142	105	247	8:45	90	96	186
9:00	170	88	258	9:00	90	85	175
9:15	121	79	200	9:15	79	90	169
9:30	131	117	248	9:30	81	74	155
9:45	131	93	224	9:45	66	62	128
10:00	130	92	222	10:00	54	60	114
10:15	115	109	224	10:15	45	55	100
10:30	111	110	221	10:30	31	49	80
10:45	114	109	223	10:45	37	32	69
11:00	139	102	241	11:00	48	29	77
11:15	118	105	223	11:15	41	32	73
11:30	134	121	255	11:30	38	22	60
11:45	146	107	253	11:45	17	19	36
Total	**3041**	**2643**	**5684**	**Total**	**6094**	**5284**	**11378**
				Total All	**9135**	**7927**	**17062**

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

3/26/2026				3/26/2026			
Time	EB	WB	Total	Time	EB	WB	Total
12:00 AM	19	22	41	12:00 PM	142	132	274
12:15	24	17	41	12:15	148	127	275
12:30	18	11	29	12:30	141	132	273
12:45	15	15	30	12:45	145	112	257
1:00	7	7	14	1:00	152	134	286
1:15	15	7	22	1:15	150	151	301
1:30	13	15	28	1:30	148	148	296
1:45	16	5	21	1:45	153	144	297
2:00	4	10	14	2:00	153	134	287
2:15	5	6	11	2:15	164	138	302
2:30	4	10	14	2:30	163	133	296
2:45	6	6	12	2:45	159	148	307
3:00	4	6	10	3:00	154	126	280
3:15	10	9	19	3:15	189	127	316
3:30	11	3	14	3:30	163	153	316
3:45	11	13	24	3:45	159	162	321
4:00	7	9	16	4:00	173	136	309
4:15	8	14	22	4:15	190	135	325
4:30	11	28	39	4:30	165	168	333
4:45	18	40	58	4:45	172	156	328
5:00	20	21	41	5:00	185	150	335
5:15	30	31	61	5:15	194	157	351
5:30	35	44	79	5:30	195	150	345
5:45	45	69	114	5:45	193	144	337
6:00	41	64	105	6:00	191	132	323
6:15	49	69	118	6:15	171	138	309
6:30	68	81	149	6:30	172	145	317
6:45	78	92	170	6:45	173	124	297
7:00	70	61	131	7:00	161	104	265
7:15	86	80	166	7:15	156	127	283
7:30	99	75	174	7:30	148	107	255
7:45	107	77	184	7:45	140	109	249
8:00	136	90	226	8:00	119	116	235
8:15	123	89	212	8:15	104	86	190
8:30	118	110	228	8:30	87	100	187
8:45	148	94	242	8:45	106	85	191
9:00	114	92	206	9:00	101	102	203
9:15	125	115	240	9:15	77	69	146
9:30	123	79	202	9:30	75	89	164
9:45	128	102	230	9:45	71	72	143
10:00	124	108	232	10:00	74	74	148
10:15	112	96	208	10:15	62	66	128
10:30	123	106	229	10:30	39	44	83
10:45	138	103	241	10:45	48	36	84
11:00	142	94	236	11:00	48	33	81
11:15	140	126	266	11:15	48	36	84
11:30	148	128	276	11:30	40	27	67
11:45	150	104	254	11:45	32	25	57
Total	**3046**	**2653**	**5699**	**Total**	**6393**	**5443**	**11836**
				Total All	**9439**	**8096**	**17535**

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

3/27/2026				3/27/2026			
Time	EB	WB	Total	Time	EB	WB	Total
12:00 AM	25	25	50	12:00 PM	147	134	281
12:15	21	21	42	12:15	165	136	301
12:30	27	17	44	12:30	181	121	302
12:45	8	15	23	12:45	184	132	316
1:00	10	15	25	1:00	151	174	325
1:15	14	8	22	1:15	168	161	329
1:30	4	8	12	1:30	188	160	348
1:45	8	7	15	1:45	173	140	313
2:00	8	4	12	2:00	172	157	329
2:15	7	2	9	2:15	168	147	315
2:30	12	9	21	2:30	179	132	311
2:45	3	10	13	2:45	178	141	319
3:00	9	7	16	3:00	181	149	330
3:15	12	12	24	3:15	199	135	334
3:30	4	5	9	3:30	184	170	354
3:45	3	13	16	3:45	184	142	326
4:00	8	10	18	4:00	192	152	344
4:15	7	17	24	4:15	190	135	325
4:30	16	25	41	4:30	188	160	348
4:45	20	36	56	4:45	184	145	329
5:00	19	29	48	5:00	190	156	346
5:15	24	36	60	5:15	184	162	346
5:30	44	69	113	5:30	172	156	328
5:45	45	61	106	5:45	185	161	346
6:00	33	54	87	6:00	154	143	297
6:15	54	64	118	6:15	170	125	295
6:30	66	75	141	6:30	146	131	277
6:45	73	71	144	6:45	160	139	299
7:00	69	64	133	7:00	159	126	285
7:15	73	76	149	7:15	144	119	263
7:30	87	70	157	7:30	145	108	253
7:45	116	81	197	7:45	117	95	212
8:00	114	66	180	8:00	143	110	253
8:15	107	87	194	8:15	110	97	207
8:30	110	106	216	8:30	106	98	204
8:45	134	125	259	8:45	105	93	198
9:00	129	103	232	9:00	97	90	187
9:15	135	103	238	9:15	97	81	178
9:30	131	93	224	9:30	90	77	167
9:45	145	86	231	9:45	92	105	197
10:00	149	98	247	10:00	68	77	145
10:15	127	115	242	10:15	70	68	138
10:30	145	107	252	10:30	69	60	129
10:45	152	128	280	10:45	59	61	120
11:00	149	117	266	11:00	61	38	99
11:15	147	138	285	11:15	41	56	97
11:30	157	117	274	11:30	59	44	103
11:45	186	128	314	11:45	26	21	47
Total	**3146**	**2733**	**5879**	**Total**	**6775**	**5720**	**12495**
				Total All	**9921**	**8453**	**18374**

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**78**	**132**	**330**	**1003**	**2308**	**2780**	**1750**	**653**	**176**	**52**	**9**	**1**	**0**	**0**	**0**	**9273**

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/23/2026 Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	1	13	12	18	12	2	2	0	0	0	0	0	61
1:00	0	0	0	0	2	5	7	15	4	3	0	0	0	0	0	0	36
2:00	0	0	0	0	1	4	9	5	5	2	0	0	0	0	0	0	26
3:00	0	0	1	0	0	4	9	4	4	2	0	0	0	0	0	0	24
4:00	0	0	0	0	2	6	7	17	19	3	1	1	0	0	0	0	56
5:00	0	0	0	0	2	16	35	30	21	8	0	0	0	0	0	0	112
6:00	0	0	0	3	11	55	39	65	38	8	6	0	0	0	0	0	225
7:00	0	0	1	0	15	64	91	99	40	16	9	1	0	0	0	0	336
8:00	0	0	1	6	20	80	179	101	45	3	1	2	0	0	0	0	438
9:00	0	1	4	13	52	124	206	97	31	2	1	1	0	0	0	0	532
10:00	0	0	1	9	48	123	137	84	42	7	2	0	0	0	0	0	453
11:00	0	1	2	15	38	136	180	104	27	4	0	0	0	0	0	0	507
12:00 PM	0	0	2	16	63	139	176	112	44	7	1	1	0	0	0	0	561
1:00	0	2	2	13	48	157	183	94	30	11	0	0	0	0	0	0	540
2:00	0	6	15	18	115	187	157	100	25	3	0	0	0	0	0	0	626
3:00	0	3	10	19	84	232	212	128	23	5	2	2	0	0	0	0	720
4:00	0	2	10	52	104	208	188	102	37	7	0	1	0	0	0	0	711
5:00	0	5	11	27	107	183	175	103	27	5	0	0	0	0	0	0	643
6:00	0	6	9	12	63	160	187	112	34	7	0	0	0	0	0	0	590
7:00	0	1	0	13	46	120	139	102	36	7	2	0	0	0	0	0	466
8:00	0	0	3	5	18	60	126	91	35	11	0	1	0	0	0	0	350
9:00	0	0	3	9	21	30	75	57	27	3	2	2	0	0	0	0	229
10:00	0	0	0	1	1	26	49	56	28	14	3	0	0	0	0	0	178
11:00	0	0	0	1	1	19	35	44	15	9	2	0	0	0	0	0	126
Total	**0**	**27**	**75**	**233**	**863**	**2151**	**2613**	**1740**	**649**	**149**	**34**	**12**	**0**	**0**	**0**	**0**	**8546**

Percentile	15th	50th	85th	95th
Speed	24	31	37	41

Mean Speed (Average) 32.3
10 MPH Pace Speed 26-35
Number in Pace 4763
Percent in Pace 56.0%

Average 85th 37.6

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	3	8	20	27	9	3	1	1	0	0	0	0	72
1:00	0	0	0	0	5	5	8	5	2	2	3	0	0	0	0	0	30
2:00	0	0	0	0	1	6	6	2	4	0	0	0	0	0	0	0	19
3:00	0	0	0	0	0	2	6	8	8	3	0	0	0	0	0	0	27
4:00	0	0	1	0	0	6	12	14	15	4	1	0	0	0	0	0	53
5:00	0	0	0	0	4	16	36	29	31	12	3	0	0	0	0	0	131
6:00	0	0	0	2	15	52	87	79	42	11	7	2	0	0	0	0	297
7:00	0	0	0	4	18	59	134	114	60	31	6	1	0	0	0	0	427
8:00	0	0	3	17	29	102	143	106	63	9	3	1	0	0	0	0	476
9:00	0	4	6	8	53	133	172	92	47	8	2	0	0	0	0	0	525
10:00	0	0	2	17	57	137	175	105	32	12	5	0	0	0	0	0	542
11:00	0	9	4	34	67	178	186	98	40	8	3	0	0	0	0	0	627
12:00 PM	0	6	9	21	78	175	196	85	26	8	1	0	0	0	0	0	605
1:00	0	5	4	26	82	174	176	105	28	8	0	0	0	0	0	0	608
2:00	0	5	17	32	77	226	182	88	34	2	1	1	0	0	0	0	665
3:00	0	8	4	40	100	204	199	106	25	2	4	0	0	0	0	0	692
4:00	0	1	6	23	85	203	234	125	26	2	0	1	0	0	0	0	706
5:00	0	27	21	41	75	174	195	102	24	5	1	0	0	0	0	0	665
6:00	0	126	110	113	132	91	24	12	3	0	0	0	0	0	0	0	611
7:00	0	9	30	66	120	139	90	26	8	3	1	1	0	0	0	0	493
8:00	0	0	1	11	29	104	151	77	31	7	3	0	0	0	0	0	414
9:00	0	0	2	6	19	56	115	75	26	10	4	0	0	0	0	0	313
10:00	0	0	0	3	9	22	66	47	22	10	6	1	0	0	0	0	186
11:00	0	1	0	1	9	14	39	40	28	6	3	0	0	0	0	0	141
Total	**0**	**201**	**220**	**465**	**1067**	**2286**	**2652**	**1567**	**634**	**166**	**58**	**9**	**0**	**0**	**0**	**0**	**9325**

Percentile	15th	50th	85th	95th
Speed	23	29	37	41
Mean Speed (Average)	30.8			
10 MPH Pace Speed	26-35			
Number in Pace	4938			
Percent in Pace	53.0%			

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	4	9	13	28	12	7	5	0	0	0	0	0	79
1:00	0	0	0	0	3	4	5	7	5	6	1	0	0	0	0	0	31
2:00	0	0	0	1	2	2	4	7	3	3	1	0	0	0	0	0	23
3:00	0	0	0	0	0	2	8	12	8	2	0	0	0	0	0	0	32
4:00	0	0	0	0	1	4	11	10	10	6	1	0	0	0	0	0	43
5:00	0	0	0	0	1	8	31	47	23	11	1	1	0	0	0	0	123
6:00	0	2	2	3	7	40	63	65	45	15	3	0	0	0	0	0	245
7:00	0	0	3	8	13	56	111	87	63	21	7	0	0	0	0	0	369
8:00	0	0	2	4	40	110	172	138	55	10	4	1	0	0	0	0	536
9:00	0	0	3	21	33	137	182	123	41	13	0	0	0	0	0	0	553
10:00	0	0	4	7	48	113	168	97	31	2	0	0	0	0	0	0	470
11:00	0	0	3	13	39	106	206	127	41	2	0	0	0	0	0	0	537
12:00 PM	0	1	6	11	59	168	190	109	33	12	1	1	0	0	0	0	591
1:00	0	0	0	14	65	158	201	110	22	5	3	0	0	0	0	0	578
2:00	0	1	10	16	91	212	222	75	39	3	0	1	0	0	0	0	670
3:00	0	4	6	27	91	199	195	124	30	8	0	1	0	0	0	0	685
4:00	0	6	23	36	106	191	227	85	25	10	2	0	0	0	0	0	711
5:00	0	4	15	46	122	206	199	75	15	2	3	0	0	0	0	0	687
6:00	0	3	15	22	86	198	173	115	35	6	1	0	0	0	0	0	654
7:00	0	3	9	11	44	138	139	107	37	6	1	0	0	0	0	0	495
8:00	0	0	1	14	37	84	135	90	21	9	5	0	0	0	0	0	396
9:00	0	0	1	7	20	48	115	71	37	11	4	2	0	0	0	0	316
10:00	0	0	1	0	10	19	60	44	19	7	7	0	0	0	0	0	167
11:00	0	0	0	2	6	24	33	42	24	9	3	1	0	0	0	0	144
Total	**0**	**24**	**104**	**264**	**928**	**2236**	**2863**	**1795**	**674**	**186**	**53**	**8**	**0**	**0**	**0**	**0**	**9135**

	15th	50th	85th	95th
Percentile				
Speed	24	31	38	42

Mean Speed (Average)	32.2
10 MPH Pace Speed	26-35
Number in Pace	5099
Percent in Pace	56.0%

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	15	22	24	10	2	2	0	0	0	0	0	76
1:00	0	0	0	0	1	6	9	13	18	2	2	0	0	0	0	0	51
2:00	0	0	0	0	0	2	5	7	5	0	0	0	0	0	0	0	19
3:00	0	0	0	0	2	6	7	15	5	1	0	0	0	0	0	0	36
4:00	0	1	0	0	0	6	5	11	16	2	3	0	0	0	0	0	44
5:00	0	0	0	1	3	12	27	42	29	7	9	0	0	0	0	0	130
6:00	0	0	0	3	13	59	58	62	26	13	2	0	0	0	0	0	236
7:00	0	0	0	1	11	46	115	114	50	17	8	0	0	0	0	0	362
8:00	0	1	0	13	42	106	134	161	51	14	3	0	0	0	0	0	525
9:00	0	6	10	15	41	116	157	108	30	5	2	0	0	0	0	0	490
10:00	0	5	1	10	47	116	167	110	35	4	1	1	0	0	0	0	497
11:00	0	1	10	17	61	140	202	112	27	8	2	0	0	0	0	0	580
12:00 PM	0	4	5	18	71	177	167	95	28	6	4	1	0	0	0	0	576
1:00	0	2	10	21	83	160	181	107	31	8	0	0	0	0	0	0	603
2:00	0	2	5	27	94	174	185	105	38	5	4	0	0	0	0	0	639
3:00	0	1	2	32	70	180	209	128	29	12	2	0	0	0	0	0	665
4:00	0	9	7	20	83	196	212	127	33	8	3	2	0	0	0	0	700
5:00	0	11	16	45	116	192	231	118	30	6	0	2	0	0	0	0	767
6:00	0	4	8	27	87	209	237	102	26	6	1	0	0	0	0	0	707
7:00	0	0	8	35	92	187	150	96	26	11	0	0	0	0	0	0	605
8:00	0	0	3	11	35	99	145	78	33	11	1	0	0	0	0	0	416
9:00	0	0	0	3	27	60	122	62	29	15	4	2	0	0	0	0	324
10:00	0	0	1	2	3	51	72	51	28	10	4	1	0	0	0	0	223
11:00	0	0	0	1	6	21	49	52	25	13	1	0	0	0	0	0	168
Total	**0**	**47**	**86**	**302**	**989**	**2336**	**2868**	**1900**	**658**	**186**	**58**	**9**	**0**	**0**	**0**	**0**	**9439**

Percentile	15th	50th	85th	95th
Speed	24	31	37	41
Mean Speed (Average)	32.1			
10 MPH Pace Speed	26-35			
Number in Pace	5204			
Percent in Pace	55.0%			

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	5	11	26	15	11	7	4	0	0	0	0	0	81
1:00	0	0	0	0	4	2	4	12	5	7	2	0	0	0	0	0	36
2:00	0	0	0	0	1	4	8	7	6	3	1	0	0	0	0	0	30
3:00	0	0	0	0	2	4	6	7	6	1	2	0	0	0	0	0	28
4:00	0	0	0	1	2	4	7	13	15	7	2	0	0	0	0	0	51
5:00	0	0	0	0	1	13	38	52	16	12	0	0	0	0	0	0	132
6:00	0	0	0	2	20	55	49	49	37	10	3	1	0	0	0	0	226
7:00	0	0	0	3	13	45	112	101	51	16	3	1	0	0	0	0	345
8:00	0	1	4	5	24	98	159	104	47	19	4	0	0	0	0	0	465
9:00	0	5	3	11	40	138	194	108	34	5	2	0	0	0	0	0	540
10:00	0	1	6	11	55	139	197	126	26	9	3	0	0	0	0	0	573
11:00	0	6	14	21	73	138	205	139	34	7	2	0	0	0	0	0	639
12:00 PM	0	1	15	31	94	201	202	97	28	7	1	0	0	0	0	0	677
1:00	0	13	7	39	131	179	174	105	27	4	1	0	0	0	0	0	680
2:00	0	12	9	33	110	201	186	99	30	12	5	0	0	0	0	0	697
3:00	0	6	14	37	116	225	222	87	35	4	2	0	0	0	0	0	748
4:00	0	19	28	38	130	214	186	98	30	9	2	0	0	0	0	0	754
5:00	0	13	26	44	92	216	201	107	21	6	3	2	0	0	0	0	731
6:00	0	11	25	36	76	187	176	84	28	6	1	0	0	0	0	0	630
7:00	0	0	6	28	84	165	166	74	32	9	1	0	0	0	0	0	565
8:00	0	1	10	24	39	143	128	73	33	9	2	2	0	0	0	0	464
9:00	0	3	7	10	27	68	126	79	39	14	3	0	0	0	0	0	376
10:00	0	1	3	10	16	56	72	63	32	3	6	2	2	0	0	0	266
11:00	0	0	0	2	13	26	62	49	27	6	0	1	1	0	0	0	187
Total	**0**	**93**	**177**	**388**	**1168**	**2532**	**2906**	**1748**	**650**	**192**	**55**	**9**	**3**	**0**	**0**	**0**	**9921**

Percentile	15th	50th	85th	95th
Speed	23	30	37	41
Mean Speed (Average)	31.3			
10 MPH Pace Speed	26-35			
Number in Pace	5349			
Percent in Pace	55.0%			

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**28**	**15**	**138**	**799**	**2069**	**2447**	**1572**	**646**	**202**	**53**	**12**	**0**	**0**	**0**	**0**	**7982**

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	2	7	15	16	8	3	0	0	0	0	0	0	52
1:00	0	0	0	0	3	10	11	12	10	1	0	0	0	0	0	0	47
2:00	0	0	0	0	2	7	5	8	5	2	2	1	0	0	0	0	32
3:00	0	0	0	4	0	2	12	4	6	6	0	0	0	0	0	0	34
4:00	0	0	0	0	4	10	13	23	17	6	3	1	0	0	0	0	77
5:00	0	0	0	3	8	31	34	55	28	7	4	0	0	0	0	0	170
6:00	0	0	0	2	10	43	56	76	47	21	4	0	0	0	0	0	259
7:00	0	1	0	2	12	52	77	83	64	10	4	0	0	0	0	0	305
8:00	0	0	0	5	22	83	118	90	35	14	4	0	0	0	0	0	371
9:00	0	1	0	3	41	94	114	83	36	9	2	1	0	0	0	0	384
10:00	0	1	0	2	57	112	151	70	24	2	2	1	0	0	0	0	422
11:00	0	0	1	8	43	115	129	78	26	7	4	1	0	0	0	0	412
12:00 PM	0	1	1	8	46	139	144	89	24	11	1	0	0	0	0	0	464
1:00	0	1	3	8	61	149	157	64	42	5	2	0	0	0	0	0	492
2:00	0	0	0	7	67	166	176	88	26	4	0	0	0	0	0	0	534
3:00	0	1	1	8	47	170	196	103	22	9	0	0	0	0	0	0	557
4:00	0	0	0	6	67	210	227	81	22	9	2	0	0	0	0	0	624
5:00	0	5	2	11	77	173	197	76	25	5	3	0	0	0	0	0	574
6:00	0	3	0	9	61	105	134	85	36	10	1	0	0	0	0	0	444
7:00	0	1	1	3	51	122	106	70	20	4	2	0	0	0	0	0	380
8:00	0	0	1	6	24	85	92	67	28	2	2	0	0	0	0	0	307
9:00	0	0	0	3	20	55	69	67	27	4	3	1	0	0	0	0	249
10:00	0	0	0	3	12	30	42	58	26	13	3	1	0	0	0	0	188
11:00	0	0	0	1	4	19	25	33	14	5	3	2	0	0	0	0	106
Total	**0**	**15**	**10**	**103**	**741**	**1989**	**2300**	**1479**	**618**	**169**	**51**	**9**	**0**	**0**	**0**	**0**	**7484**

Percentile	15th	50th	85th	95th
Speed	25	31	38	42

Mean Speed (Average)	32.7
10 MPH Pace Speed	26-35
Number in Pace	4288
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	4	0	10	11	10	10	8	1	0	0	0	0	0	54
1:00	0	0	0	0	1	11	8	9	5	1	2	0	0	0	0	0	37
2:00	0	0	0	0	2	5	2	8	4	3	0	0	0	0	0	0	24
3:00	0	0	0	0	1	6	6	9	7	4	0	0	0	0	0	0	33
4:00	0	0	0	0	1	9	20	24	17	11	2	0	0	0	0	0	84
5:00	0	1	0	0	9	33	43	53	14	12	5	0	0	0	0	0	170
6:00	0	0	0	0	13	48	59	96	46	23	5	2	0	0	0	0	292
7:00	0	0	0	1	6	52	85	102	56	16	3	0	0	0	0	0	321
8:00	0	1	0	5	13	73	130	107	58	9	1	0	0	0	0	0	397
9:00	0	1	0	6	46	84	177	100	35	8	0	0	0	0	0	0	457
10:00	0	3	0	8	26	90	183	89	29	11	1	0	0	0	0	0	440
11:00	0	1	0	8	48	178	135	79	34	5	2	0	0	0	0	0	490
12:00 PM	0	1	1	7	56	164	185	120	43	11	1	0	0	0	0	0	589
1:00	0	3	0	10	52	180	155	99	31	4	1	0	0	0	0	0	535
2:00	0	1	1	3	77	167	182	71	21	12	1	0	0	0	0	0	536
3:00	0	4	1	7	74	181	163	72	30	8	0	0	0	0	0	0	540
4:00	0	1	0	3	53	189	167	105	23	10	3	0	0	0	0	0	554
5:00	0	1	0	21	59	179	165	102	12	10	1	0	0	0	0	0	550
6:00	0	5	9	66	146	190	56	12	3	0	1	0	0	0	0	0	488
7:00	0	3	5	42	97	145	103	27	6	1	0	0	0	0	0	0	429
8:00	0	0	0	11	37	93	136	69	26	6	1	1	0	0	0	0	380
9:00	0	0	2	4	15	50	57	75	35	11	2	0	0	0	0	0	251
10:00	0	1	1	3	14	37	68	41	30	4	0	0	0	0	0	0	199
11:00	0	0	0	1	6	21	26	23	14	4	3	0	0	0	0	0	98
Total	**0**	**27**	**20**	**210**	**852**	**2195**	**2322**	**1502**	**589**	**192**	**36**	**3**	**0**	**0**	**0**	**0**	**7948**

Percentile	15th	50th	85th	95th
Speed	24	30	38	42
Mean Speed (Average)	32.2			
10 MPH Pace Speed	26-35			
Number in Pace	4518			
Percent in Pace	57.0%			

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	6	8	18	19	5	2	0	0	0	0	0	0	58
1:00	0	0	1	2	1	2	8	8	4	2	1	0	0	0	0	0	29
2:00	0	0	0	0	2	5	7	8	6	1	0	0	0	0	0	0	29
3:00	0	0	0	0	3	2	10	6	6	3	1	0	0	0	0	0	31
4:00	0	0	0	2	4	11	14	16	23	11	6	3	0	0	0	0	90
5:00	0	0	0	2	6	16	48	44	34	15	9	4	0	0	0	0	178
6:00	0	0	0	1	10	34	81	81	56	16	7	2	0	0	0	0	288
7:00	0	0	0	3	16	38	94	86	48	19	9	4	0	0	0	0	317
8:00	0	1	0	4	24	72	104	117	43	20	5	1	0	0	0	0	391
9:00	0	2	0	12	28	69	107	104	45	8	2	0	0	0	0	0	377
10:00	0	2	4	0	29	98	141	92	41	10	2	1	0	0	0	0	420
11:00	0	1	1	7	44	99	145	93	38	6	1	0	0	0	0	0	435
12:00 PM	0	2	1	3	63	134	192	83	31	6	3	1	0	0	0	0	519
1:00	0	2	0	6	52	152	174	91	39	3	4	0	0	0	0	0	523
2:00	0	2	1	12	73	138	169	103	33	16	0	0	0	0	0	0	547
3:00	0	0	1	6	66	174	161	118	40	10	3	0	0	0	0	0	579
4:00	0	2	0	12	45	161	192	80	27	5	0	0	0	0	0	0	524
5:00	0	2	0	7	85	178	158	94	36	5	0	0	0	0	0	0	565
6:00	0	4	1	14	56	118	160	98	31	7	3	0	0	0	0	0	492
7:00	0	1	2	5	50	129	156	97	29	3	3	2	0	0	0	0	477
8:00	0	0	0	4	31	113	149	111	36	4	1	0	0	0	0	0	449
9:00	0	0	0	2	20	67	106	63	32	14	5	2	0	0	0	0	311
10:00	0	0	2	1	6	33	59	50	27	15	3	0	0	0	0	0	196
11:00	0	0	0	0	14	18	21	28	13	7	1	0	0	0	0	0	102
Total	**0**	**21**	**14**	**105**	**734**	**1869**	**2474**	**1690**	**723**	**208**	**69**	**20**	**0**	**0**	**0**	**0**	**7927**

Percentile	15th	50th	85th	95th
Speed	25	31	38	43

Mean Speed (Average)	33.3
10 MPH Pace Speed	26-35
Number in Pace	4342
Percent in Pace	55.0%

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	1	2	4	12	24	13	6	1	1	1	0	0	0	0	65
1:00	0	0	0	0	3	4	6	16	5	0	0	0	0	0	0	0	34
2:00	0	0	0	0	5	5	8	10	3	0	1	0	0	0	0	0	32
3:00	0	0	0	0	1	5	6	11	7	0	0	1	0	0	0	0	31
4:00	0	1	0	1	4	12	17	20	22	8	5	1	0	0	0	0	91
5:00	0	0	1	2	7	21	46	39	23	20	3	3	0	0	0	0	165
6:00	0	0	0	0	12	51	72	107	40	18	6	0	0	0	0	0	306
7:00	0	0	0	2	14	42	79	94	42	16	4	0	0	0	0	0	293
8:00	0	0	0	1	28	88	119	88	43	13	3	0	0	0	0	0	383
9:00	0	5	1	5	27	83	128	87	40	9	3	0	0	0	0	0	388
10:00	0	4	0	5	57	97	125	89	22	8	5	1	0	0	0	0	413
11:00	0	4	1	7	36	143	134	92	28	7	0	0	0	0	0	0	452
12:00 PM	0	1	0	7	38	162	167	79	34	13	2	0	0	0	0	0	503
1:00	0	6	0	8	65	181	170	100	41	5	1	0	0	0	0	0	577
2:00	0	1	0	12	85	135	172	107	34	5	2	0	0	0	0	0	553
3:00	0	2	0	6	62	204	189	60	37	5	2	1	0	0	0	0	568
4:00	0	3	0	6	49	176	188	113	43	15	2	0	0	0	0	0	595
5:00	0	2	2	20	85	194	162	94	31	9	1	1	0	0	0	0	601
6:00	0	3	0	7	74	146	142	108	41	13	4	1	0	0	0	0	539
7:00	0	0	2	14	56	121	133	99	18	2	2	0	0	0	0	0	447
8:00	0	1	1	10	41	75	134	87	26	10	2	0	0	0	0	0	387
9:00	0	0	1	4	27	60	117	75	33	6	6	3	0	0	0	0	332
10:00	0	0	1	2	12	48	67	50	30	8	1	1	0	0	0	0	220
11:00	0	0	0	1	8	21	43	26	12	7	3	0	0	0	0	0	121
Total	**0**	**33**	**11**	**122**	**800**	**2086**	**2448**	**1664**	**661**	**198**	**59**	**14**	**0**	**0**	**0**	**0**	**8096**

Percentile	15th	50th	85th	95th
Speed	25	31	38	42

Mean Speed (Average)	32.8
10 MPH Pace Speed	26-35
Number in Pace	4532
Percent in Pace	56.0%

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	6	15	20	13	15	4	3	0	0	0	0	0	78
1:00	0	0	0	2	5	3	9	11	5	2	0	1	0	0	0	0	38
2:00	0	0	0	1	4	4	2	8	4	2	0	0	0	0	0	0	25
3:00	0	0	0	0	4	6	9	9	8	1	0	0	0	0	0	0	37
4:00	0	0	0	0	5	7	20	25	16	13	2	0	0	0	0	0	88
5:00	0	0	0	1	11	23	47	54	38	15	6	0	0	0	0	0	195
6:00	0	0	0	1	6	26	92	68	44	19	7	1	0	0	0	0	264
7:00	0	0	0	3	11	44	90	54	67	15	5	2	0	0	0	0	291
8:00	0	1	0	6	25	90	99	85	47	26	3	2	0	0	0	0	384
9:00	0	1	1	10	23	83	132	78	33	20	4	0	0	0	0	0	385
10:00	0	1	2	2	39	117	158	87	35	7	0	0	0	0	0	0	448
11:00	0	2	0	9	35	120	192	107	25	8	2	0	0	0	0	0	500
12:00 PM	0	3	2	5	67	151	170	93	23	9	0	0	0	0	0	0	523
1:00	0	3	0	21	72	186	226	88	25	14	0	0	0	0	0	0	635
2:00	0	5	2	6	61	172	225	75	20	7	4	0	0	0	0	0	577
3:00	0	5	2	5	89	178	198	85	19	13	1	1	0	0	0	0	596
4:00	0	5	1	10	80	196	177	89	25	8	1	0	0	0	0	0	592
5:00	0	5	3	25	87	195	186	94	36	4	0	0	0	0	0	0	635
6:00	0	8	0	14	42	172	189	61	34	15	2	1	0	0	0	0	538
7:00	0	3	4	8	70	136	115	72	24	12	2	2	0	0	0	0	448
8:00	0	0	0	7	68	102	116	73	22	8	1	1	0	0	0	0	398
9:00	0	0	1	6	27	96	111	78	28	5	1	0	0	0	0	0	353
10:00	0	0	1	5	19	57	76	66	29	10	1	2	0	0	0	0	266
11:00	0	0	2	3	13	29	34	52	17	5	3	1	0	0	0	0	159
Total	**0**	**42**	**21**	**152**	**869**	**2208**	**2693**	**1525**	**639**	**242**	**48**	**14**	**0**	**0**	**0**	**0**	**8453**

Percentile	15th	50th	85th	95th
Speed	24	31	38	42
Mean Speed (Average)	32.5			
10 MPH Pace Speed	26-35			
Number in Pace	4837			
Percent in Pace	58.0%			

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	60	1	0	0	0	61
1:00	0	34	0	0	1	1	36
2:00	0	24	1	0	1	0	26
3:00	0	19	4	1	0	0	24
4:00	0	37	7	1	11	0	56
5:00	0	94	9	2	7	0	112
6:00	0	172	19	8	21	5	225
7:00	0	267	47	9	10	3	336
8:00	1	351	56	11	17	2	438
9:00	2	418	77	17	16	2	532
10:00	0	363	57	15	16	2	453
11:00	1	410	64	16	13	3	507
12:00 PM	1	431	82	17	24	6	561
1:00	0	432	64	15	25	4	540
2:00	0	508	79	17	15	7	626
3:00	0	569	101	18	27	5	720
4:00	1	559	98	21	21	11	711
5:00	1	526	72	22	18	4	643
6:00	0	489	71	12	16	2	590
7:00	0	402	45	8	10	1	466
8:00	0	310	36	3	1	0	350
9:00	0	203	18	2	6	0	229
10:00	0	162	10	4	2	0	178
11:00	1	118	6	1	0	0	126
Total	**8**	**6958**	**1024**	**220**	**278**	**58**	**8546**
Percent	0.1%	81.4%	12.0%	2.6%	3.3%	0.7%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	69	0	3	0	0	72
1:00	0	25	2	2	1	0	30
2:00	0	16	2	1	0	0	19
3:00	0	25	1	0	0	1	27
4:00	0	48	4	0	1	0	53
5:00	0	107	16	2	6	0	131
6:00	0	204	48	12	29	4	297
7:00	0	324	60	17	20	6	427
8:00	0	361	71	19	22	3	476
9:00	0	397	76	28	19	5	525
10:00	1	433	69	21	17	1	542
11:00	2	484	87	26	19	9	627
12:00 PM	1	473	78	25	25	3	605
1:00	1	487	71	22	24	3	608
2:00	0	532	86	19	20	8	665
3:00	1	542	96	22	25	6	692
4:00	1	578	74	20	28	5	706
5:00	0	525	82	23	24	11	665
6:00	1	444	112	26	25	3	611
7:00	2	394	62	16	15	4	493
8:00	3	351	41	6	10	3	414
9:00	0	283	20	2	5	3	313
10:00	0	166	14	3	2	1	186
11:00	0	133	4	1	2	1	141
Total	**13**	**7401**	**1176**	**316**	**339**	**80**	**9325**
Percent	0.1%	79.4%	12.6%	3.4%	3.6%	0.9%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/25/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	74	1	3	0	1	79
1:00	0	31	0	0	0	0	31
2:00	0	22	1	0	0	0	23
3:00	0	28	3	0	1	0	32
4:00	0	37	3	1	2	0	43
5:00	2	100	13	1	6	1	123
6:00	0	190	22	5	23	5	245
7:00	1	287	51	11	14	5	369
8:00	0	409	80	18	24	5	536
9:00	0	430	73	22	24	4	553
10:00	1	366	72	12	16	3	470
11:00	0	441	58	19	15	4	537
12:00 PM	0	457	88	15	23	8	591
1:00	0	452	71	20	26	9	578
2:00	0	543	76	33	11	7	670
3:00	2	553	79	24	22	5	685
4:00	3	571	83	25	20	9	711
5:00	1	537	87	34	25	3	687
6:00	0	534	73	21	20	6	654
7:00	1	412	54	14	11	3	495
8:00	0	340	45	5	5	1	396
9:00	0	276	27	8	5	0	316
10:00	0	152	14	1	0	0	167
11:00	1	135	8	0	0	0	144
Total	**12**	**7377**	**1082**	**292**	**293**	**79**	**9135**
Percent	0.1%	80.8%	11.8%	3.2%	3.2%	0.9%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	73	2	0	1	0	76
1:00	1	45	1	2	0	2	51
2:00	0	19	0	0	0	0	19
3:00	0	33	2	1	0	0	36
4:00	0	36	5	1	1	1	44
5:00	0	111	10	0	9	0	130
6:00	1	168	21	16	26	4	236
7:00	0	300	42	7	12	1	362
8:00	1	402	81	12	25	4	525
9:00	1	378	75	16	14	6	490
10:00	0	400	63	14	18	2	497
11:00	2	453	87	22	12	4	580
12:00 PM	3	455	74	20	16	8	576
1:00	1	482	70	18	21	11	603
2:00	0	513	75	23	18	10	639
3:00	0	539	74	21	28	3	665
4:00	1	571	81	21	18	8	700
5:00	0	619	98	28	20	2	767
6:00	2	578	83	18	23	3	707
7:00	0	503	73	13	16	0	605
8:00	0	359	37	10	7	3	416
9:00	0	282	27	9	5	1	324
10:00	2	203	15	0	3	0	223
11:00	1	153	10	1	3	0	168
Total	**16**	**7675**	**1106**	**273**	**296**	**73**	**9439**
Percent	0.2%	81.3%	11.7%	2.9%	3.1%	0.8%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: EB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	73	6	1	0	1	81
1:00	0	35	1	0	0	0	36
2:00	0	29	0	1	0	0	30
3:00	0	25	2	0	0	1	28
4:00	0	38	9	2	2	0	51
5:00	0	116	8	1	7	0	132
6:00	0	164	24	10	25	3	226
7:00	0	268	50	7	13	7	345
8:00	0	382	46	15	22	0	465
9:00	3	434	65	19	17	2	540
10:00	1	471	77	14	10	0	573
11:00	0	514	77	19	27	2	639
12:00 PM	1	535	84	25	23	9	677
1:00	0	528	85	25	35	7	680
2:00	0	559	81	30	17	10	697
3:00	1	596	88	27	29	7	748
4:00	2	602	94	29	25	2	754
5:00	0	596	97	14	22	2	731
6:00	0	515	77	24	9	5	630
7:00	0	453	69	20	15	8	565
8:00	1	398	44	6	12	3	464
9:00	1	314	40	16	4	1	376
10:00	0	237	22	5	2	0	266
11:00	0	168	15	2	2	0	187
Total	**10**	**8050**	**1161**	**312**	**318**	**70**	**9921**
Percent	0.1%	81.1%	11.7%	3.1%	3.2%	0.7%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	42	8	2	0	0	52
1:00	0	36	7	4	0	0	47
2:00	0	28	3	1	0	0	32
3:00	0	28	3	1	1	1	34
4:00	0	62	11	0	4	0	77
5:00	0	138	18	6	5	3	170
6:00	1	208	29	9	10	2	259
7:00	0	236	47	15	4	3	305
8:00	1	270	58	20	16	6	371
9:00	1	274	66	24	15	4	384
10:00	0	306	70	27	15	4	422
11:00	1	296	71	22	18	4	412
12:00 PM	1	330	74	39	9	11	464
1:00	1	349	77	38	21	6	492
2:00	1	348	84	54	36	11	534
3:00	0	388	91	42	22	14	557
4:00	2	420	111	52	23	16	624
5:00	0	395	107	46	19	7	574
6:00	1	312	72	38	15	6	444
7:00	0	286	57	24	11	2	380
8:00	0	233	49	19	4	2	307
9:00	0	197	38	11	3	0	249
10:00	0	154	24	7	1	2	188
11:00	0	84	21	1	0	0	106
Total	**10**	**5420**	**1196**	**502**	**252**	**104**	**7484**
Percent	0.1%	72.4%	16.0%	6.7%	3.4%	1.4%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	42	7	2	3	0	54
1:00	0	32	3	2	0	0	37
2:00	0	20	3	1	0	0	24
3:00	0	29	2	2	0	0	33
4:00	0	66	16	0	0	2	84
5:00	0	138	17	9	4	2	170
6:00	0	196	62	19	10	5	292
7:00	0	226	50	24	10	11	321
8:00	0	260	61	43	24	9	397
9:00	0	327	80	29	14	7	457
10:00	0	283	84	51	18	4	440
11:00	0	327	95	39	18	11	490
12:00 PM	2	391	105	49	24	18	589
1:00	0	359	96	51	19	10	535
2:00	0	385	74	52	18	7	536
3:00	1	356	102	50	17	14	540
4:00	0	385	94	44	19	12	554
5:00	2	385	90	44	20	9	550
6:00	1	370	74	26	16	1	488
7:00	0	316	75	26	5	7	429
8:00	0	274	63	24	14	5	380
9:00	0	212	23	11	3	2	251
10:00	0	165	21	10	2	1	199
11:00	0	83	11	3	0	1	98
Total	**6**	**5627**	**1308**	**611**	**258**	**138**	**7948**
Percent	0.1%	70.8%	16.5%	7.7%	3.2%	1.7%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	47	8	1	2	0	58
1:00	0	21	4	2	2	0	29
2:00	0	23	3	0	1	2	29
3:00	0	26	3	2	0	0	31
4:00	0	70	14	2	2	2	90
5:00	0	143	26	4	5	0	178
6:00	0	217	47	11	9	4	288
7:00	0	223	54	27	10	3	317
8:00	0	269	53	45	15	9	391
9:00	0	245	73	32	19	8	377
10:00	0	283	79	40	12	6	420
11:00	0	289	69	44	20	13	435
12:00 PM	0	335	103	50	20	11	519
1:00	0	341	86	61	23	12	523
2:00	1	365	108	53	13	7	547
3:00	1	391	89	58	33	7	579
4:00	1	358	90	50	16	9	524
5:00	0	399	91	48	15	12	565
6:00	1	361	79	34	10	7	492
7:00	0	338	81	37	10	11	477
8:00	0	332	64	32	12	9	449
9:00	1	251	31	21	2	5	311
10:00	0	156	28	7	3	2	196
11:00	0	85	13	3	1	0	102
Total	**5**	**5568**	**1296**	**664**	**255**	**139**	**7927**
Percent	0.1%	70.2%	16.3%	8.4%	3.2%	1.8%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	58	4	1	2	0	65
1:00	0	31	3	0	0	0	34
2:00	0	28	2	1	0	1	32
3:00	0	25	3	1	1	1	31
4:00	0	73	14	3	0	1	91
5:00	0	130	25	2	6	2	165
6:00	0	226	59	9	10	2	306
7:00	0	200	53	29	9	2	293
8:00	0	270	62	29	15	7	383
9:00	0	263	66	38	17	4	388
10:00	1	282	76	30	18	6	413
11:00	1	310	77	39	14	11	452
12:00 PM	2	316	102	48	24	11	503
1:00	0	354	127	58	25	13	577
2:00	0	355	101	58	29	10	553
3:00	1	372	90	51	34	20	568
4:00	1	407	96	58	24	9	595
5:00	0	390	123	56	24	8	601
6:00	2	364	96	48	22	7	539
7:00	2	318	77	33	10	7	447
8:00	1	266	63	37	15	5	387
9:00	0	264	38	17	5	8	332
10:00	0	183	26	7	2	2	220
11:00	0	108	10	1	2	0	121
Total	**11**	**5593**	**1393**	**654**	**308**	**137**	**8096**
Percent	0.1%	69.1%	17.2%	8.1%	3.8%	1.7%	

Project #: 1803_BL
ID#: ATR 2
City/Town: Waterbury, CT
Location: Chase Ave, west of Hill Street

Direction: WB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	68	4	2	3	1	78
1:00	0	31	3	3	0	1	38
2:00	1	23	0	0	1	0	25
3:00	0	33	3	0	1	0	37
4:00	0	68	18	2	0	0	88
5:00	1	159	22	8	3	2	195
6:00	0	211	36	8	5	4	264
7:00	0	201	47	23	15	5	291
8:00	0	246	81	32	16	9	384
9:00	0	273	54	35	12	11	385
10:00	0	294	83	35	24	12	448
11:00	0	339	88	41	22	10	500
12:00 PM	1	348	89	58	14	13	523
1:00	2	428	136	28	29	12	635
2:00	2	392	76	72	22	13	577
3:00	0	409	102	48	21	16	596
4:00	0	396	99	56	24	17	592
5:00	0	440	114	49	16	16	635
6:00	4	386	83	39	14	12	538
7:00	0	341	64	34	5	4	448
8:00	1	307	51	24	10	5	398
9:00	0	281	47	13	10	2	353
10:00	0	219	34	6	3	4	266
11:00	1	126	23	7	2	0	159
Total	**13**	**6019**	**1357**	**623**	**272**	**169**	**8453**
Percent	0.2%	71.2%	16.1%	7.4%	3.2%	2.0%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	11	5	16	12:00 PM	37	31	68
12:15	8	5	13	12:15	34	31	65
12:30	5	9	14	12:30	45	45	90
12:45	6	4	10	12:45	44	36	80
1:00	3	3	6	1:00	40	21	61
1:15	5	3	8	1:15	35	54	89
1:30	5	4	9	1:30	47	47	94
1:45	5	4	9	1:45	60	40	100
2:00	0	2	2	2:00	70	45	115
2:15	2	3	5	2:15	55	38	93
2:30	2	2	4	2:30	48	54	102
2:45	5	2	7	2:45	74	77	151
3:00	0	3	3	3:00	86	57	143
3:15	0	1	1	3:15	58	47	105
3:30	4	2	6	3:30	55	52	107
3:45	1	1	2	3:45	52	47	99
4:00	2	2	4	4:00	94	51	145
4:15	1	4	5	4:15	83	42	125
4:30	3	7	10	4:30	70	46	116
4:45	7	8	15	4:45	70	60	130
5:00	3	6	9	5:00	65	60	125
5:15	5	12	17	5:15	68	57	125
5:30	11	10	21	5:30	62	58	120
5:45	9	16	25	5:45	50	25	75
6:00	5	23	28	6:00	53	40	93
6:15	11	23	34	6:15	45	25	70
6:30	25	29	54	6:30	53	39	92
6:45	33	32	65	6:45	44	36	80
7:00	33	32	65	7:00	38	30	68
7:15	30	35	65	7:15	38	27	65
7:30	37	46	83	7:30	31	25	56
7:45	50	52	102	7:45	40	18	58
8:00	42	57	99	8:00	33	22	55
8:15	54	45	99	8:15	43	37	80
8:30	50	78	128	8:30	36	25	61
8:45	53	75	128	8:45	30	17	47
9:00	49	50	99	9:00	25	18	43
9:15	38	31	69	9:15	28	16	44
9:30	35	38	73	9:30	28	27	55
9:45	30	42	72	9:45	23	17	40
10:00	35	35	70	10:00	28	12	40
10:15	30	32	62	10:15	22	10	32
10:30	31	24	55	10:30	15	14	29
10:45	29	20	49	10:45	14	9	23
11:00	33	28	61	11:00	11	14	25
11:15	29	29	58	11:15	6	8	14
11:30	38	26	64	11:30	14	8	22
11:45	24	36	60	11:45	9	7	16
Total	**927**	**1036**	**1963**	**Total**	**2109**	**1622**	**3731**
				Total All	**3036**	**2658**	**5694**

Avg ADT	6479

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	2	10	12:00 PM	48	31	79
12:15	5	4	9	12:15	56	48	104
12:30	5	3	8	12:30	61	55	116
12:45	8	2	10	12:45	52	46	98
1:00	7	4	11	1:00	56	48	104
1:15	4	4	8	1:15	39	49	88
1:30	3	5	8	1:30	42	55	97
1:45	4	1	5	1:45	82	50	132
2:00	1	3	4	2:00	63	60	123
2:15	1	2	3	2:15	60	43	103
2:30	2	3	5	2:30	62	67	129
2:45	2	6	8	2:45	84	67	151
3:00	0	2	2	3:00	88	51	139
3:15	2	2	4	3:15	79	57	136
3:30	2	1	3	3:30	56	49	105
3:45	5	1	6	3:45	83	66	149
4:00	1	3	4	4:00	88	55	143
4:15	1	3	4	4:15	67	49	116
4:30	5	6	11	4:30	99	67	166
4:45	4	5	9	4:45	77	50	127
5:00	3	5	8	5:00	85	61	146
5:15	6	9	15	5:15	82	49	131
5:30	9	14	23	5:30	80	45	125
5:45	10	16	26	5:45	58	50	108
6:00	7	18	25	6:00	64	44	108
6:15	8	26	34	6:15	48	41	89
6:30	31	32	63	6:30	62	49	111
6:45	28	34	62	6:45	56	46	102
7:00	39	44	83	7:00	52	50	102
7:15	25	33	58	7:15	49	31	80
7:30	44	45	89	7:30	60	46	106
7:45	47	60	107	7:45	54	31	85
8:00	62	62	124	8:00	40	33	73
8:15	60	48	108	8:15	42	28	70
8:30	56	62	118	8:30	33	23	56
8:45	44	74	118	8:45	40	32	72
9:00	55	46	101	9:00	36	20	56
9:15	42	40	82	9:15	36	33	69
9:30	41	43	84	9:30	38	30	68
9:45	30	48	78	9:45	32	27	59
10:00	32	37	69	10:00	16	18	34
10:15	34	39	73	10:15	34	20	54
10:30	34	26	60	10:30	23	23	46
10:45	45	37	82	10:45	25	10	35
11:00	35	31	66	11:00	14	15	29
11:15	28	38	66	11:15	17	12	29
11:30	45	42	87	11:30	17	7	24
11:45	32	32	64	11:45	12	7	19
Total	**1002**	**1103**	**2105**	**Total**	**2547**	**1944**	**4491**
				Total All	**3549**	**3047**	**6596**

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	9	6	15	12:00 PM	33	38	71
12:15	2	2	4	12:15	35	33	68
12:30	5	7	12	12:30	51	49	100
12:45	2	1	3	12:45	30	41	71
1:00	4	4	8	1:00	48	35	83
1:15	5	6	11	1:15	49	56	105
1:30	2	0	2	1:30	40	46	86
1:45	3	1	4	1:45	72	33	105
2:00	1	4	5	2:00	55	47	102
2:15	3	3	6	2:15	78	45	123
2:30	3	5	8	2:30	65	61	126
2:45	3	3	6	2:45	65	72	137
3:00	1	0	1	3:00	89	57	146
3:15	1	2	3	3:15	74	57	131
3:30	2	0	2	3:30	70	64	134
3:45	1	4	5	3:45	71	65	136
4:00	3	2	5	4:00	104	60	164
4:15	2	5	7	4:15	86	74	160
4:30	6	7	13	4:30	68	69	137
4:45	3	3	6	4:45	97	45	142
5:00	4	4	8	5:00	79	75	154
5:15	4	12	16	5:15	93	56	149
5:30	4	12	16	5:30	62	50	112
5:45	13	15	28	5:45	64	44	108
6:00	8	21	29	6:00	56	55	111
6:15	13	34	47	6:15	69	44	113
6:30	24	30	54	6:30	59	50	109
6:45	26	29	55	6:45	47	50	97
7:00	29	31	60	7:00	60	42	102
7:15	38	36	74	7:15	32	32	64
7:30	36	46	82	7:30	39	42	81
7:45	47	63	110	7:45	50	29	79
8:00	58	64	122	8:00	36	36	72
8:15	44	66	110	8:15	38	47	85
8:30	62	67	129	8:30	44	26	70
8:45	54	85	139	8:45	40	39	79
9:00	50	69	119	9:00	34	17	51
9:15	41	40	81	9:15	40	24	64
9:30	44	43	87	9:30	39	24	63
9:45	33	37	70	9:45	30	21	51
10:00	45	39	84	10:00	27	24	51
10:15	40	29	69	10:15	28	16	44
10:30	43	27	70	10:30	24	15	39
10:45	27	34	61	10:45	16	17	33
11:00	30	47	77	11:00	17	7	24
11:15	43	44	87	11:15	22	13	35
11:30	35	42	77	11:30	11	6	17
11:45	40	40	80	11:45	6	10	16
Total	**996**	**1171**	**2167**	**Total**	**2442**	**1958**	**4400**
				Total All	**3438**	**3129**	**6567**

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	12	5	17	12:00 PM	44	49	93
12:15	2	6	8	12:15	66	43	109
12:30	12	10	22	12:30	49	44	93
12:45	6	8	14	12:45	49	45	94
1:00	5	6	11	1:00	52	34	86
1:15	5	4	9	1:15	41	62	103
1:30	6	5	11	1:30	39	44	83
1:45	4	3	7	1:45	74	52	126
2:00	5	4	9	2:00	71	53	124
2:15	5	3	8	2:15	63	44	107
2:30	2	10	12	2:30	62	79	141
2:45	3	3	6	2:45	71	84	155
3:00	2	1	3	3:00	89	52	141
3:15	2	4	6	3:15	70	69	139
3:30	4	0	4	3:30	60	60	120
3:45	1	1	2	3:45	77	58	135
4:00	1	3	4	4:00	105	64	169
4:15	3	6	9	4:15	90	74	164
4:30	10	12	22	4:30	86	53	139
4:45	5	2	7	4:45	85	55	140
5:00	4	7	11	5:00	76	58	134
5:15	6	14	20	5:15	62	72	134
5:30	7	15	22	5:30	81	61	142
5:45	11	21	32	5:45	73	55	128
6:00	9	20	29	6:00	77	68	145
6:15	16	30	46	6:15	65	52	117
6:30	31	26	57	6:30	60	56	116
6:45	18	35	53	6:45	58	54	112
7:00	26	29	55	7:00	59	32	91
7:15	36	49	85	7:15	60	39	99
7:30	43	48	91	7:30	61	47	108
7:45	45	55	100	7:45	53	40	93
8:00	54	50	104	8:00	34	36	70
8:15	76	67	143	8:15	52	39	91
8:30	41	60	101	8:30	49	42	91
8:45	58	82	140	8:45	41	42	83
9:00	45	57	102	9:00	33	18	51
9:15	44	46	90	9:15	31	24	55
9:30	47	34	81	9:30	31	29	60
9:45	23	41	64	9:45	26	26	52
10:00	27	46	73	10:00	37	25	62
10:15	33	26	59	10:15	32	21	53
10:30	25	37	62	10:30	32	21	53
10:45	38	31	69	10:45	18	6	24
11:00	29	32	61	11:00	14	16	30
11:15	25	25	50	11:15	15	3	18
11:30	28	35	63	11:30	19	12	31
11:45	34	35	69	11:45	14	8	22
Total	**974**	**1149**	**2123**	**Total**	**2606**	**2120**	**4726**
				Total All	**3580**	**3269**	**6849**

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	21	8	29	12:00 PM	51	46	97
12:15	7	10	17	12:15	56	50	106
12:30	7	5	12	12:30	46	36	82
12:45	6	5	11	12:45	58	67	125
1:00	6	6	12	1:00	70	47	117
1:15	4	7	11	1:15	62	41	103
1:30	1	2	3	1:30	52	67	119
1:45	11	8	19	1:45	60	44	104
2:00	5	4	9	2:00	58	58	116
2:15	2	3	5	2:15	70	59	129
2:30	3	1	4	2:30	74	63	137
2:45	2	1	3	2:45	64	66	130
3:00	3	2	5	3:00	91	67	158
3:15	4	4	8	3:15	98	47	145
3:30	1	4	5	3:30	89	64	153
3:45	3	4	7	3:45	99	61	160
4:00	4	7	11	4:00	84	58	142
4:15	3	6	9	4:15	99	55	154
4:30	0	6	6	4:30	93	57	150
4:45	7	5	12	4:45	79	57	136
5:00	3	12	15	5:00	68	54	122
5:15	7	5	12	5:15	83	44	127
5:30	5	15	20	5:30	77	55	132
5:45	8	19	27	5:45	64	52	116
6:00	14	21	35	6:00	60	45	105
6:15	14	28	42	6:15	54	42	96
6:30	22	27	49	6:30	64	49	113
6:45	26	28	54	6:45	45	41	86
7:00	27	47	74	7:00	44	35	79
7:15	32	43	75	7:15	57	38	95
7:30	41	36	77	7:30	46	38	84
7:45	38	48	86	7:45	41	25	66
8:00	59	67	126	8:00	49	29	78
8:15	62	71	133	8:15	34	32	66
8:30	50	54	104	8:30	34	42	76
8:45	41	44	85	8:45	30	24	54
9:00	36	39	75	9:00	30	40	70
9:15	42	33	75	9:15	29	27	56
9:30	32	48	80	9:30	30	26	56
9:45	46	40	86	9:45	24	28	52
10:00	41	22	63	10:00	24	23	47
10:15	35	40	75	10:15	32	16	48
10:30	35	46	81	10:30	22	19	41
10:45	36	35	71	10:45	17	11	28
11:00	39	34	73	11:00	14	15	29
11:15	45	41	86	11:15	20	18	38
11:30	41	31	72	11:30	5	13	18
11:45	41	40	81	11:45	12	8	20
Total	**1018**	**1112**	**2130**	**Total**	**2562**	**1999**	**4561**
				Total All	**3580**	**3111**	**6691**

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**10**	**23**	**124**	**586**	**1311**	**994**	**317**	**60**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**3437**

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	8	9	8	4	0	0	0	0	0	0	0	0	30
1:00	0	0	0	1	4	9	1	2	1	0	0	0	0	0	0	0	18
2:00	0	0	0	0	0	4	4	1	0	0	0	0	0	0	0	0	9
3:00	0	0	0	0	0	3	1	1	0	0	0	0	0	0	0	0	5
4:00	0	0	0	0	1	3	6	2	1	0	0	0	0	0	0	0	13
5:00	0	0	0	1	2	9	14	2	0	0	0	0	0	0	0	0	28
6:00	0	0	5	7	12	23	19	8	0	0	0	0	0	0	0	0	74
7:00	0	0	4	5	32	54	43	9	2	1	0	0	0	0	0	0	150
8:00	0	0	0	1	34	88	50	20	6	0	0	0	0	0	0	0	199
9:00	0	0	0	3	17	53	47	26	6	0	0	0	0	0	0	0	152
10:00	0	0	1	2	14	44	46	15	3	0	0	0	0	0	0	0	125
11:00	0	0	0	3	11	47	46	13	4	0	0	0	0	0	0	0	124
12:00 PM	0	0	0	4	28	57	50	16	3	2	0	0	0	0	0	0	160
1:00	0	0	1	6	24	68	58	20	3	2	0	0	0	0	0	0	182
2:00	0	0	1	6	39	107	66	22	5	1	0	0	0	0	0	0	247
3:00	0	1	3	15	38	93	71	25	3	2	0	0	0	0	0	0	251
4:00	0	0	0	10	59	117	97	30	3	1	0	0	0	0	0	0	317
5:00	0	0	0	4	36	87	85	28	3	2	0	0	0	0	0	0	245
6:00	0	1	0	7	28	81	63	12	2	1	0	0	0	0	0	0	195
7:00	0	0	0	1	26	64	44	10	2	0	0	0	0	0	0	0	147
8:00	0	0	0	10	28	51	34	17	2	0	0	0	0	0	0	0	142
9:00	0	0	1	1	20	45	30	5	2	0	0	0	0	0	0	0	104
10:00	0	0	0	2	13	32	24	6	2	0	0	0	0	0	0	0	79
11:00	0	0	0	3	8	14	8	6	1	0	0	0	0	0	0	0	40
Total	**0**	**2**	**16**	**93**	**482**	**1162**	**915**	**300**	**54**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**3036**

Percentile	15th	50th	85th	95th
Speed	24	29	33	36
Mean Speed (Average)	29.6			
10 MPH Pace Speed	26-35			
Number in Pace	2077			
Percent in Pace	68.0%			

Avg 85th 33.2

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	8	10	4	3	1	0	0	0	0	0	0	0	26
1:00	0	0	0	0	2	8	6	2	0	0	0	0	0	0	0	0	18
2:00	0	0	0	0	1	4	0	1	0	0	0	0	0	0	0	0	6
3:00	0	0	0	0	1	2	5	1	0	0	0	0	0	0	0	0	9
4:00	0	0	0	0	2	4	3	2	0	0	0	0	0	0	0	0	11
5:00	0	0	0	2	6	6	6	5	3	0	0	0	0	0	0	0	28
6:00	0	0	1	2	16	22	23	6	4	0	0	0	0	0	0	0	74
7:00	0	0	0	4	15	54	55	22	4	1	0	0	0	0	0	0	155
8:00	0	0	0	5	30	80	68	33	4	2	0	0	0	0	0	0	222
9:00	0	0	0	3	15	71	51	22	3	3	0	0	0	0	0	0	168
10:00	0	0	0	3	14	52	53	19	4	0	0	0	0	0	0	0	145
11:00	0	0	0	4	17	50	41	21	6	1	0	0	0	0	0	0	140
12:00 PM	0	0	0	3	20	85	72	34	2	1	0	0	0	0	0	0	217
1:00	0	0	1	6	29	85	67	23	7	1	0	0	0	0	0	0	219
2:00	0	0	0	12	45	104	81	22	4	1	0	0	0	0	0	0	269
3:00	0	0	3	15	84	117	70	13	4	0	0	0	0	0	0	0	306
4:00	0	1	3	26	72	122	85	15	5	2	0	0	0	0	0	0	331
5:00	0	5	7	29	64	105	78	17	0	0	0	0	0	0	0	0	305
6:00	0	3	6	12	40	90	50	21	8	0	0	0	0	0	0	0	230
7:00	0	0	1	10	36	92	51	23	2	0	0	0	0	0	0	0	215
8:00	0	1	1	5	35	59	33	17	2	2	0	0	0	0	0	0	155
9:00	0	0	1	2	32	63	30	13	1	0	0	0	0	0	0	0	142
10:00	0	1	0	3	19	30	34	10	1	0	0	0	0	0	0	0	98
11:00	0	0	0	1	15	22	16	3	3	0	0	0	0	0	0	0	60
Total	**0**	**11**	**24**	**147**	**618**	**1337**	**982**	**348**	**68**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**3549**

Percentile	15th	50th	85th	95th
Speed	23	28	34	37

Mean Speed (Average)	29.3
10 MPH Pace Speed	26-35
Number in Pace	2319
Percent in Pace	65.0%

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	2	8	6	2	0	0	0	0	0	0	0	0	18
1:00	0	0	0	0	3	3	7	1	0	0	0	0	0	0	0	0	14
2:00	0	0	0	2	0	4	4	0	0	0	0	0	0	0	0	0	10
3:00	0	0	0	0	1	1	2	1	0	0	0	0	0	0	0	0	5
4:00	0	1	0	1	3	2	2	3	2	0	0	0	0	0	0	0	14
5:00	0	0	0	0	4	9	4	6	2	0	0	0	0	0	0	0	25
6:00	0	0	0	7	8	25	19	9	3	0	0	0	0	0	0	0	71
7:00	0	1	0	6	22	57	41	20	2	1	0	0	0	0	0	0	150
8:00	0	0	3	2	30	84	66	31	2	0	0	0	0	0	0	0	218
9:00	0	0	0	1	26	54	51	29	6	1	0	0	0	0	0	0	168
10:00	0	0	0	0	15	54	65	20	1	0	0	0	0	0	0	0	155
11:00	0	0	0	3	17	50	50	24	3	1	0	0	0	0	0	0	148
12:00 PM	0	0	0	0	10	64	55	19	1	0	0	0	0	0	0	0	149
1:00	0	0	0	3	35	73	71	26	1	0	0	0	0	0	0	0	209
2:00	0	1	2	10	23	123	82	12	7	3	0	0	0	0	0	0	263
3:00	0	1	2	11	63	123	82	22	0	0	0	0	0	0	0	0	304
4:00	0	4	1	28	89	119	88	20	6	0	0	0	0	0	0	0	355
5:00	0	2	0	7	51	134	79	19	6	0	0	0	0	0	0	0	298
6:00	0	1	1	12	37	83	68	26	1	2	0	0	0	0	0	0	231
7:00	0	0	1	12	41	64	48	11	3	1	0	0	0	0	0	0	181
8:00	0	0	0	4	39	68	38	5	4	0	0	0	0	0	0	0	158
9:00	0	0	1	3	17	66	44	10	2	0	0	0	0	0	0	0	143
10:00	0	0	1	8	21	35	20	8	2	0	0	0	0	0	0	0	95
11:00	0	0	0	2	9	24	14	6	1	0	0	0	0	0	0	0	56
Total	**0**	**11**	**12**	**122**	**566**	**1327**	**1006**	**330**	**55**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**3438**

Percentile	15th	50th	85th	95th
Speed	24	29	33	36
Mean Speed (Average)	29.4			
10 MPH Pace Speed	26-35			
Number in Pace	2333			
Percent in Pace	68.0%			

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	4	8	9	7	4	0	0	0	0	0	0	0	0	32
1:00	0	0	0	0	6	5	7	2	0	0	0	0	0	0	0	0	20
2:00	0	0	0	0	1	7	5	2	0	0	0	0	0	0	0	0	15
3:00	0	0	0	0	1	4	3	1	0	0	0	0	0	0	0	0	9
4:00	0	1	0	1	1	4	4	5	3	0	0	0	0	0	0	0	19
5:00	0	0	0	0	5	8	9	4	1	1	0	0	0	0	0	0	28
6:00	0	0	1	9	11	27	14	12	0	0	0	0	0	0	0	0	74
7:00	0	0	1	6	27	61	36	14	2	3	0	0	0	0	0	0	150
8:00	0	1	0	5	33	76	83	28	1	2	0	0	0	0	0	0	229
9:00	0	0	0	3	22	60	43	21	10	0	0	0	0	0	0	0	159
10:00	0	0	2	2	17	39	42	17	3	1	0	0	0	0	0	0	123
11:00	0	0	1	4	13	33	41	20	3	1	0	0	0	0	0	0	116
12:00 PM	0	1	0	10	34	94	54	14	1	0	0	0	0	0	0	0	208
1:00	0	0	1	6	38	81	57	18	4	1	0	0	0	0	0	0	206
2:00	0	3	3	10	76	85	70	17	2	1	0	0	0	0	0	0	267
3:00	0	0	1	7	38	122	88	32	8	0	0	0	0	0	0	0	296
4:00	0	7	16	51	125	93	58	15	1	0	0	0	0	0	0	0	366
5:00	0	3	4	25	72	104	65	16	3	0	0	0	0	0	0	0	292
6:00	0	1	7	14	68	71	73	21	5	0	0	0	0	0	0	0	260
7:00	0	5	0	9	42	95	68	11	3	0	0	0	0	0	0	0	233
8:00	0	0	0	6	38	77	47	6	1	1	0	0	0	0	0	0	176
9:00	0	0	0	1	22	59	31	7	1	0	0	0	0	0	0	0	121
10:00	0	0	1	3	16	52	37	6	3	1	0	0	0	0	0	0	119
11:00	0	0	0	3	11	23	14	8	2	1	0	0	0	0	0	0	62
Total	**0**	**22**	**38**	**179**	**725**	**1289**	**956**	**301**	**57**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**3580**

Percentile	15th	50th	85th	95th
Speed	23	28	33	36

Mean Speed (Average)	28.7
10 MPH Pace Speed	26-35
Number in Pace	2245
Percent in Pace	63.0%

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	4	16	12	4	3	0	0	0	0	0	0	0	41
1:00	0	0	0	1	3	8	6	2	2	0	0	0	0	0	0	0	22
2:00	0	0	0	1	3	5	2	1	0	0	0	0	0	0	0	0	12
3:00	0	0	0	0	1	3	4	3	0	0	0	0	0	0	0	0	11
4:00	0	0	0	1	1	7	3	0	1	1	0	0	0	0	0	0	14
5:00	0	0	0	2	5	6	5	3	2	0	0	0	0	0	0	0	23
6:00	0	0	6	7	13	25	17	4	4	0	0	0	0	0	0	0	76
7:00	0	0	0	3	17	43	56	10	7	2	0	0	0	0	0	0	138
8:00	0	0	1	1	20	87	72	27	3	1	0	0	0	0	0	0	212
9:00	0	0	0	5	29	44	64	12	2	0	0	0	0	0	0	0	156
10:00	0	0	0	1	22	66	47	9	2	0	0	0	0	0	0	0	147
11:00	0	0	1	3	10	70	61	18	2	1	0	0	0	0	0	0	166
12:00 PM	0	0	0	3	26	98	67	15	2	0	0	0	0	0	0	0	211
1:00	0	0	1	4	40	99	76	16	8	0	0	0	0	0	0	0	244
2:00	0	0	0	5	43	117	69	27	4	1	0	0	0	0	0	0	266
3:00	0	2	1	6	66	169	103	26	2	2	0	0	0	0	0	0	377
4:00	0	1	5	7	51	130	116	39	5	1	0	0	0	0	0	0	355
5:00	0	1	6	6	45	108	98	21	5	2	0	0	0	0	0	0	292
6:00	0	2	0	9	45	89	62	14	1	1	0	0	0	0	0	0	223
7:00	0	0	2	7	35	78	48	13	4	1	0	0	0	0	0	0	188
8:00	0	0	1	0	20	68	42	13	3	0	0	0	0	0	0	0	147
9:00	0	0	0	3	13	48	34	15	0	0	0	0	0	0	0	0	113
10:00	0	0	0	0	21	37	28	7	1	1	0	0	0	0	0	0	95
11:00	0	0	0	1	5	17	17	6	4	1	0	0	0	0	0	0	51
Total	**0**	**6**	**24**	**78**	**538**	**1438**	**1109**	**305**	**67**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**3580**

Percentile	15th	50th	85th	95th
Speed	24	28	34	36
Mean Speed (Average)	29.6			
10 MPH Pace Speed	26-35			
Number in Pace	2513			
Percent in Pace	71.0%			

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**10**	**22**	**95**	**482**	**1112**	**963**	**306**	**44**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**3043**

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	4	11	6	1	0	0	0	0	0	0	0	0	23
1:00	0	0	0	0	2	6	2	3	1	0	0	0	0	0	0	0	14
2:00	0	0	0	0	2	1	1	4	1	0	0	0	0	0	0	0	9
3:00	0	1	1	0	2	3	0	0	0	0	0	0	0	0	0	0	7
4:00	0	0	1	2	4	5	6	3	0	0	0	0	0	0	0	0	21
5:00	0	0	0	2	8	18	11	4	1	0	0	0	0	0	0	0	44
6:00	0	0	1	0	26	44	23	12	1	0	0	0	0	0	0	0	107
7:00	0	0	1	9	16	67	52	19	1	0	0	0	0	0	0	0	165
8:00	0	0	0	18	52	81	75	26	2	1	0	0	0	0	0	0	255
9:00	0	0	0	1	16	57	70	15	2	0	0	0	0	0	0	0	161
10:00	0	0	0	1	13	38	43	13	2	1	0	0	0	0	0	0	111
11:00	0	0	1	3	22	43	39	7	2	2	0	0	0	0	0	0	119
12:00 PM	0	0	1	4	27	55	42	9	5	0	0	0	0	0	0	0	143
1:00	0	2	2	2	21	61	52	19	3	0	0	0	0	0	0	0	162
2:00	0	0	6	6	43	79	60	20	0	0	0	0	0	0	0	0	214
3:00	0	1	3	2	36	84	59	16	2	0	0	0	0	0	0	0	203
4:00	0	2	1	3	25	82	71	10	4	1	0	0	0	0	0	0	199
5:00	0	0	1	1	16	59	89	33	1	0	0	0	0	0	0	0	200
6:00	0	0	1	1	17	47	50	22	1	1	0	0	0	0	0	0	140
7:00	0	0	0	2	17	31	37	13	0	0	0	0	0	0	0	0	100
8:00	0	0	0	4	18	38	31	9	1	0	0	0	0	0	0	0	101
9:00	0	0	0	1	15	29	24	7	1	1	0	0	0	0	0	0	78
10:00	0	0	0	2	5	17	17	3	1	0	0	0	0	0	0	0	45
11:00	0	0	1	0	6	16	7	6	1	0	0	0	0	0	0	0	37
Total	**0**	**6**	**21**	**65**	**413**	**972**	**867**	**274**	**33**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**2658**

Percentile	15th	50th	85th	95th
Speed	23	28	33	37

Mean Speed (Average)	29.7
10 MPH Pace Speed	26-35
Number in Pace	1839
Percent in Pace	69.0%

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	1	5	2	2	0	0	0	0	0	0	0	0	11
1:00	0	0	1	0	3	3	2	4	1	0	0	0	0	0	0	0	14
2:00	0	0	0	2	2	4	1	5	0	0	0	0	0	0	0	0	14
3:00	0	0	0	1	1	1	3	0	0	0	0	0	0	0	0	0	6
4:00	0	0	0	3	3	2	5	3	1	0	0	0	0	0	0	0	17
5:00	0	0	1	2	5	15	16	5	0	0	0	0	0	0	0	0	44
6:00	0	0	0	1	14	34	38	20	3	0	0	0	0	0	0	0	110
7:00	0	0	3	5	25	62	62	18	6	1	0	0	0	0	0	0	182
8:00	0	0	0	2	20	75	92	45	12	0	0	0	0	0	0	0	246
9:00	0	0	0	0	16	52	76	30	2	1	0	0	0	0	0	0	177
10:00	0	0	2	3	15	49	50	18	2	0	0	0	0	0	0	0	139
11:00	0	1	0	0	18	53	52	18	1	0	0	0	0	0	0	0	143
12:00 PM	0	0	0	2	21	68	53	32	4	0	0	0	0	0	0	0	180
1:00	0	0	1	5	21	83	61	29	2	0	0	0	0	0	0	0	202
2:00	0	1	3	6	67	83	56	19	1	1	0	0	0	0	0	0	237
3:00	0	2	1	5	39	93	64	17	1	1	0	0	0	0	0	0	223
4:00	0	2	3	20	46	80	56	11	3	0	0	0	0	0	0	0	221
5:00	0	7	4	13	42	71	55	11	1	0	0	0	0	1	0	0	205
6:00	0	0	1	6	43	62	53	12	3	0	0	0	0	0	0	0	180
7:00	0	0	1	8	37	56	49	5	2	0	0	0	0	0	0	0	158
8:00	0	0	0	9	31	39	29	8	0	0	0	0	0	0	0	0	116
9:00	0	0	0	3	14	42	35	13	3	0	0	0	0	0	0	0	110
10:00	0	0	0	3	12	28	18	9	1	0	0	0	0	0	0	0	71
11:00	0	0	0	1	10	16	6	6	2	0	0	0	0	0	0	0	41
Total	**0**	**13**	**21**	**101**	**506**	**1076**	**934**	**340**	**51**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**3047**

Percentile	15th	50th	85th	95th
Speed	23	28	33	37
Mean Speed (Average)	29.6			
10 MPH Pace Speed	26-35			
Number in Pace	2010			
Percent in Pace	66.0%			

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	9	5	1	0	0	0	0	0	0	0	0	16
1:00	0	0	0	0	0	4	6	1	0	0	0	0	0	0	0	0	11
2:00	0	0	0	0	2	5	5	2	1	0	0	0	0	0	0	0	15
3:00	0	0	0	1	0	2	0	3	0	0	0	0	0	0	0	0	6
4:00	0	0	0	3	3	5	4	2	0	0	0	0	0	0	0	0	17
5:00	0	0	0	0	3	20	14	5	1	0	0	0	0	0	0	0	43
6:00	0	1	0	1	26	31	39	11	4	1	0	0	0	0	0	0	114
7:00	0	0	3	13	19	47	64	22	6	2	0	0	0	0	0	0	176
8:00	0	1	3	8	29	108	110	22	0	1	0	0	0	0	0	0	282
9:00	0	0	0	2	13	54	81	34	4	1	0	0	0	0	0	0	189
10:00	0	0	1	0	12	43	49	19	5	0	0	0	0	0	0	0	129
11:00	0	2	2	7	25	56	63	17	1	0	0	0	0	0	0	0	173
12:00 PM	0	1	0	3	20	56	53	23	3	2	0	0	0	0	0	0	161
1:00	0	1	1	4	17	66	63	15	3	0	0	0	0	0	0	0	170
2:00	0	0	1	2	46	83	67	25	1	0	0	0	0	0	0	0	225
3:00	0	0	0	8	40	90	84	21	0	0	0	0	0	0	0	0	243
4:00	0	1	3	10	47	120	55	10	2	0	0	0	0	0	0	0	248
5:00	0	0	1	10	25	108	58	20	3	0	0	0	0	0	0	0	225
6:00	0	0	0	9	30	74	64	20	2	0	0	0	0	0	0	0	199
7:00	0	0	0	3	31	53	47	9	2	0	0	0	0	0	0	0	145
8:00	0	0	4	6	19	64	45	9	1	0	0	0	0	0	0	0	148
9:00	0	0	0	0	18	31	23	10	3	1	0	0	0	0	0	0	86
10:00	0	0	0	4	13	28	20	6	1	0	0	0	0	0	0	0	72
11:00	0	0	0	0	2	16	13	5	0	0	0	0	0	0	0	0	36
Total	**0**	**7**	**19**	**94**	**441**	**1173**	**1032**	**312**	**43**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**3129**

Percentile	15th	50th	85th	95th
Speed	23	28	33	37

Mean Speed (Average)	29.8
10 MPH Pace Speed	26-35
Number in Pace	2205
Percent in Pace	70.0%

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	6	12	8	1	1	1	0	0	0	0	0	0	29
1:00	0	0	0	2	4	5	5	2	0	0	0	0	0	0	0	0	18
2:00	0	0	0	0	4	10	3	2	1	0	0	0	0	0	0	0	20
3:00	0	0	0	2	1	2	1	0	0	0	0	0	0	0	0	0	6
4:00	0	0	1	2	1	9	6	4	0	0	0	0	0	0	0	0	23
5:00	0	2	3	1	14	15	20	2	0	0	0	0	0	0	0	0	57
6:00	0	1	1	8	23	38	28	11	1	0	0	0	0	0	0	0	111
7:00	0	0	0	10	36	59	65	9	2	0	0	0	0	0	0	0	181
8:00	0	0	0	4	33	93	101	27	1	0	0	0	0	0	0	0	259
9:00	0	0	0	2	26	52	66	29	3	0	0	0	0	0	0	0	178
10:00	0	0	1	4	21	46	47	20	1	0	0	0	0	0	0	0	140
11:00	0	0	0	3	14	51	42	12	5	0	0	0	0	0	0	0	127
12:00 PM	0	0	0	5	22	56	73	22	2	1	0	0	0	0	0	0	181
1:00	0	1	1	8	45	61	55	20	1	0	0	0	0	0	0	0	192
2:00	0	2	5	6	45	98	82	18	3	1	0	0	0	0	0	0	260
3:00	0	2	5	8	31	89	73	28	3	0	0	0	0	0	0	0	239
4:00	0	5	5	12	62	91	60	5	4	2	0	0	0	0	0	0	246
5:00	0	0	6	16	57	84	68	14	1	0	0	0	0	0	0	0	246
6:00	0	0	0	18	65	79	53	13	2	0	0	0	0	0	0	0	230
7:00	0	2	3	6	35	54	41	15	2	0	0	0	0	0	0	0	158
8:00	0	0	2	2	28	66	41	19	1	0	0	0	0	0	0	0	159
9:00	0	1	1	6	15	29	37	7	1	0	0	0	0	0	0	0	97
10:00	0	0	1	0	7	30	28	6	1	0	0	0	0	0	0	0	73
11:00	0	0	0	1	7	16	10	4	1	0	0	0	0	0	0	0	39
Total	**0**	**16**	**35**	**126**	**602**	**1145**	**1013**	**290**	**37**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3269**

Percentile	15th	50th	85th	95th
Speed	22	28	33	36
Mean Speed (Average)	29.1			
10 MPH Pace Speed	26-35			
Number in Pace	2157			
Percent in Pace	66.0%			

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	7	9	8	2	1	0	0	0	0	0	0	0	28
1:00	0	0	0	0	7	8	5	1	1	1	0	0	0	0	0	0	23
2:00	0	0	0	0	1	2	4	1	1	0	0	0	0	0	0	0	9
3:00	0	0	0	1	1	5	3	3	1	0	0	0	0	0	0	0	14
4:00	0	0	0	2	1	13	5	2	1	0	0	0	0	0	0	0	24
5:00	0	0	2	1	10	18	11	8	1	0	0	0	0	0	0	0	51
6:00	0	1	1	7	14	34	34	13	0	0	0	0	0	0	0	0	104
7:00	0	0	0	9	18	68	53	21	5	0	0	0	0	0	0	0	174
8:00	0	0	0	7	33	84	86	22	3	1	0	0	0	0	0	0	236
9:00	0	1	0	6	19	63	51	17	3	0	0	0	0	0	0	0	160
10:00	0	0	0	2	10	55	48	23	3	2	0	0	0	0	0	0	143
11:00	0	0	0	2	26	48	43	22	4	1	0	0	0	0	0	0	146
12:00 PM	0	1	1	4	27	77	65	21	3	0	0	0	0	0	0	0	199
1:00	0	0	0	5	32	76	64	20	2	0	0	0	0	0	0	0	199
2:00	0	2	7	5	34	98	73	22	4	1	0	0	0	0	0	0	246
3:00	0	0	0	5	19	102	86	22	4	1	0	0	0	0	0	0	239
4:00	0	1	0	10	48	89	58	18	2	1	0	0	0	0	0	0	227
5:00	0	0	2	7	32	78	67	14	3	2	0	0	0	0	0	0	205
6:00	0	2	0	6	32	60	55	15	7	0	0	0	0	0	0	0	177
7:00	0	0	0	3	27	57	38	10	1	0	0	0	0	0	0	0	136
8:00	0	0	0	4	18	59	32	12	1	1	0	0	0	0	0	0	127
9:00	0	0	0	1	13	48	37	17	4	1	0	0	0	0	0	0	121
10:00	0	0	0	1	12	25	27	4	0	0	0	0	0	0	0	0	69
11:00	0	1	0	1	7	19	18	6	2	0	0	0	0	0	0	0	54
Total	**0**	**9**	**13**	**90**	**448**	**1195**	**971**	**316**	**57**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**3111**

Percentile	15th	50th	85th	95th
Speed	24	28	33	36

Mean Speed (Average)	29.8
10 MPH Pace Speed	26-35
Number in Pace	2129
Percent in Pace	70.0%

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	28	2	0	0	0	30
1:00	0	17	1	0	0	0	18
2:00	0	9	0	0	0	0	9
3:00	0	5	0	0	0	0	5
4:00	0	12	1	0	0	0	13
5:00	0	27	1	0	0	0	28
6:00	0	60	6	2	6	0	74
7:00	0	123	19	3	5	0	150
8:00	0	172	15	2	9	1	199
9:00	0	132	20	0	0	0	152
10:00	0	101	21	2	1	0	125
11:00	0	107	14	1	2	0	124
12:00 PM	0	139	17	2	2	0	160
1:00	1	149	30	1	1	0	182
2:00	1	204	32	2	8	0	247
3:00	0	211	31	0	9	0	251
4:00	0	277	31	1	7	1	317
5:00	0	217	20	3	5	0	245
6:00	0	176	16	2	1	0	195
7:00	0	132	13	2	0	0	147
8:00	0	125	16	0	1	0	142
9:00	0	94	6	4	0	0	104
10:00	0	68	7	3	1	0	79
11:00	0	37	2	0	1	0	40
Total	**2**	**2622**	**321**	**30**	**59**	**2**	**3036**
Percent	0.1%	86.4%	10.6%	1.0%	1.9%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	23	3	0	0	0	26
1:00	0	18	0	0	0	0	18
2:00	0	6	0	0	0	0	6
3:00	0	8	1	0	0	0	9
4:00	0	9	0	1	1	0	11
5:00	0	23	5	0	0	0	28
6:00	0	61	8	0	5	0	74
7:00	0	126	22	4	3	0	155
8:00	0	191	22	3	5	1	222
9:00	0	148	16	2	2	0	168
10:00	0	119	21	4	1	0	145
11:00	0	115	19	3	3	0	140
12:00 PM	0	180	30	3	4	0	217
1:00	0	195	20	2	2	0	219
2:00	0	236	21	4	8	0	269
3:00	0	273	22	2	9	0	306
4:00	0	300	19	3	8	1	331
5:00	0	273	24	4	4	0	305
6:00	0	205	18	5	2	0	230
7:00	0	189	20	3	3	0	215
8:00	0	142	11	1	1	0	155
9:00	1	131	8	1	1	0	142
10:00	2	85	9	0	2	0	98
11:00	0	56	3	0	1	0	60
Total	**3**	**3112**	**322**	**45**	**65**	**2**	**3549**
Percent	0.1%	87.7%	9.1%	1.3%	1.8%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	18	0	0	0	0	18
1:00	0	13	1	0	0	0	14
2:00	0	10	0	0	0	0	10
3:00	0	5	0	0	0	0	5
4:00	0	11	2	0	1	0	14
5:00	0	22	2	1	0	0	25
6:00	0	58	7	1	5	0	71
7:00	0	127	16	2	5	0	150
8:00	1	179	25	4	8	1	218
9:00	0	140	22	4	2	0	168
10:00	0	129	23	1	2	0	155
11:00	1	122	19	1	5	0	148
12:00 PM	0	122	23	3	1	0	149
1:00	1	187	17	2	2	0	209
2:00	0	229	27	2	5	0	263
3:00	0	269	24	3	8	0	304
4:00	1	306	31	8	8	1	355
5:00	1	268	25	0	4	0	298
6:00	0	214	12	4	1	0	231
7:00	0	167	11	1	2	0	181
8:00	0	139	15	3	1	0	158
9:00	1	129	11	1	1	0	143
10:00	0	86	8	0	1	0	95
11:00	0	47	8	0	1	0	56
Total	**6**	**2997**	**329**	**41**	**63**	**2**	**3438**
Percent	0.2%	87.2%	9.6%	1.2%	1.8%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	30	2	0	0	0	32
1:00	0	17	3	0	0	0	20
2:00	0	11	3	1	0	0	15
3:00	0	8	1	0	0	0	9
4:00	0	16	3	0	0	0	19
5:00	0	24	3	1	0	0	28
6:00	0	60	7	2	5	0	74
7:00	0	120	18	6	6	0	150
8:00	0	189	32	2	5	1	229
9:00	1	142	12	1	3	0	159
10:00	0	101	17	3	2	0	123
11:00	0	98	13	3	2	0	116
12:00 PM	0	197	5	3	2	1	208
1:00	1	179	21	4	1	0	206
2:00	1	234	20	2	10	0	267
3:00	0	256	23	4	12	1	296
4:00	3	323	27	6	7	0	366
5:00	0	265	19	1	7	0	292
6:00	0	234	23	1	2	0	260
7:00	0	210	20	2	1	0	233
8:00	0	161	13	1	1	0	176
9:00	0	104	15	1	1	0	121
10:00	0	108	10	0	1	0	119
11:00	0	57	4	0	1	0	62
Total	**6**	**3144**	**314**	**44**	**69**	**3**	**3580**
Percent	0.2%	87.8%	8.8%	1.2%	1.9%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	38	3	0	0	0	41
1:00	0	19	3	0	0	0	22
2:00	0	11	1	0	0	0	12
3:00	0	11	0	0	0	0	11
4:00	0	12	1	1	0	0	14
5:00	0	19	3	1	0	0	23
6:00	0	61	7	2	6	0	76
7:00	0	112	20	3	3	0	138
8:00	1	180	20	6	5	0	212
9:00	0	136	19	0	1	0	156
10:00	0	120	24	0	3	0	147
11:00	0	145	19	1	1	0	166
12:00 PM	0	190	19	0	2	0	211
1:00	1	223	17	1	1	1	244
2:00	0	233	20	5	8	0	266
3:00	0	324	39	5	9	0	377
4:00	0	309	34	6	6	0	355
5:00	0	266	23	1	2	0	292
6:00	0	209	12	1	1	0	223
7:00	0	172	14	1	1	0	188
8:00	0	136	10	0	1	0	147
9:00	0	106	5	1	1	0	113
10:00	0	84	10	0	1	0	95
11:00	0	41	8	1	1	0	51
Total	**2**	**3157**	**331**	**36**	**53**	**1**	**3580**
Percent	0.1%	88.2%	9.2%	1.0%	1.5%	0.0%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	21	2	0	0	0	23
1:00	0	13	1	0	0	0	14
2:00	0	8	1	0	0	0	9
3:00	0	6	1	0	0	0	7
4:00	0	19	2	0	0	0	21
5:00	0	31	13	0	0	0	44
6:00	0	76	22	0	9	0	107
7:00	0	138	18	1	8	0	165
8:00	0	201	46	1	7	0	255
9:00	0	131	27	1	1	1	161
10:00	2	92	16	1	0	0	111
11:00	1	107	8	2	1	0	119
12:00 PM	0	125	16	1	1	0	143
1:00	1	138	21	0	2	0	162
2:00	1	172	30	3	8	0	214
3:00	1	174	18	2	8	0	203
4:00	4	169	20	2	4	0	199
5:00	2	182	13	1	2	0	200
6:00	0	129	11	0	0	0	140
7:00	0	87	12	0	1	0	100
8:00	0	87	13	0	0	1	101
9:00	0	70	7	0	1	0	78
10:00	1	38	6	0	0	0	45
11:00	1	35	1	0	0	0	37
Total	**14**	**2249**	**325**	**15**	**53**	**2**	**2658**
Percent	0.5%	84.6%	12.2%	0.6%	2.0%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	10	0	0	0	0	11
1:00	0	13	1	0	0	0	14
2:00	1	13	0	0	0	0	14
3:00	0	6	0	0	0	0	6
4:00	0	15	1	1	0	0	17
5:00	2	37	5	0	0	0	44
6:00	1	95	8	1	5	0	110
7:00	1	152	18	4	7	0	182
8:00	0	197	42	1	5	1	246
9:00	1	157	18	0	1	0	177
10:00	0	127	9	0	3	0	139
11:00	1	117	22	2	1	0	143
12:00 PM	2	153	21	1	2	1	180
1:00	3	166	31	0	2	0	202
2:00	1	191	31	5	9	0	237
3:00	1	195	18	2	7	0	223
4:00	0	191	27	1	2	0	221
5:00	2	177	23	0	3	0	205
6:00	1	160	19	0	0	0	180
7:00	4	134	20	0	0	0	158
8:00	3	106	6	0	1	0	116
9:00	2	98	10	0	0	0	110
10:00	1	63	7	0	0	0	71
11:00	1	37	1	1	1	0	41
Total	**29**	**2610**	**338**	**19**	**49**	**2**	**3047**
Percent	1.0%	85.7%	11.1%	0.6%	1.6%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	16	0	0	0	0	16
1:00	0	9	2	0	0	0	11
2:00	0	14	1	0	0	0	15
3:00	0	6	0	0	0	0	6
4:00	2	13	1	0	1	0	17
5:00	0	40	2	1	0	0	43
6:00	1	92	12	3	6	0	114
7:00	0	148	21	1	5	1	176
8:00	4	230	37	2	9	0	282
9:00	1	166	19	1	2	0	189
10:00	2	105	19	2	1	0	129
11:00	4	142	18	4	5	0	173
12:00 PM	1	127	29	4	0	0	161
1:00	2	141	23	3	1	0	170
2:00	1	185	28	3	8	0	225
3:00	2	216	18	2	5	0	243
4:00	2	213	28	2	3	0	248
5:00	1	199	22	1	2	0	225
6:00	2	169	28	0	0	0	199
7:00	3	131	11	0	0	0	145
8:00	0	133	14	1	0	0	148
9:00	1	75	10	0	0	0	86
10:00	1	65	4	1	1	0	72
11:00	0	32	4	0	0	0	36
Total	**30**	**2667**	**351**	**31**	**49**	**1**	**3129**
Percent	1.0%	85.2%	11.2%	1.0%	1.6%	0.0%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	27	2	0	0	0	29
1:00	0	17	1	0	0	0	18
2:00	0	19	1	0	0	0	20
3:00	0	5	0	1	0	0	6
4:00	0	19	1	2	1	0	23
5:00	0	48	7	2	0	0	57
6:00	0	86	17	1	7	0	111
7:00	0	146	26	2	7	0	181
8:00	0	213	39	0	7	0	259
9:00	0	156	20	1	1	0	178
10:00	1	125	11	2	1	0	140
11:00	0	109	15	1	2	0	127
12:00 PM	1	159	19	1	1	0	181
1:00	1	163	23	1	4	0	192
2:00	1	216	33	1	9	0	260
3:00	0	212	21	1	5	0	239
4:00	3	217	23	0	3	0	246
5:00	3	220	20	0	3	0	246
6:00	3	203	23	0	0	1	230
7:00	3	145	10	0	0	0	158
8:00	1	134	23	0	1	0	159
9:00	0	82	14	0	0	1	97
10:00	1	64	7	0	1	0	73
11:00	0	35	4	0	0	0	39
Total	**18**	**2820**	**360**	**16**	**53**	**2**	**3269**
Percent	0.6%	86.3%	11.0%	0.5%	1.6%	0.1%	

Project #: 1803_BL
ID#: ATR 3
City/Town: Waterbury, CT
Location: Cooke Street, between Farmington Ave & McDonald Ave

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	27	0	0	0	0	28
1:00	0	22	1	0	0	0	23
2:00	0	9	0	0	0	0	9
3:00	1	12	1	0	0	0	14
4:00	1	21	1	1	0	0	24
5:00	0	48	3	0	0	0	51
6:00	1	85	12	1	4	1	104
7:00	1	148	18	0	7	0	174
8:00	1	197	27	3	7	1	236
9:00	0	129	29	2	0	0	160
10:00	2	119	15	5	2	0	143
11:00	1	120	24	1	0	0	146
12:00 PM	1	175	20	1	2	0	199
1:00	2	166	28	0	3	0	199
2:00	0	197	35	4	9	1	246
3:00	4	203	25	1	5	1	239
4:00	0	205	20	0	2	0	227
5:00	2	183	19	1	0	0	205
6:00	2	165	10	0	0	0	177
7:00	3	125	8	0	0	0	136
8:00	1	118	7	1	0	0	127
9:00	0	102	19	0	0	0	121
10:00	1	62	6	0	0	0	69
11:00	1	50	3	0	0	0	54
Total	**26**	**2688**	**331**	**21**	**41**	**4**	**3111**
Percent	0.8%	86.4%	10.6%	0.7%	1.3%	0.1%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	3	4	7	12:00 PM	86	116	202
12:15	5	8	13	12:15	87	111	198
12:30	2	3	5	12:30	88	125	213
12:45	8	3	11	12:45	82	120	202
1:00	7	5	12	1:00	88	121	209
1:15	4	6	10	1:15	92	127	219
1:30	5	6	11	1:30	87	131	218
1:45	3	3	6	1:45	95	141	236
2:00	2	4	6	2:00	84	136	220
2:15	1	7	8	2:15	97	145	242
2:30	5	3	8	2:30	105	164	269
2:45	4	5	9	2:45	105	124	229
3:00	0	4	4	3:00	119	145	264
3:15	4	3	7	3:15	106	143	249
3:30	4	8	12	3:30	113	130	243
3:45	6	6	12	3:45	98	143	241
4:00	4	5	9	4:00	120	148	268
4:15	7	12	19	4:15	113	154	267
4:30	10	11	21	4:30	110	150	260
4:45	5	9	14	4:45	119	133	252
5:00	9	21	30	5:00	106	151	257
5:15	8	21	29	5:15	120	139	259
5:30	21	28	49	5:30	87	142	229
5:45	19	21	40	5:45	93	139	232
6:00	19	30	49	6:00	78	115	193
6:15	27	27	54	6:15	79	114	193
6:30	31	33	64	6:30	71	127	198
6:45	41	73	114	6:45	75	92	167
7:00	48	55	103	7:00	90	113	203
7:15	35	77	112	7:15	59	81	140
7:30	44	71	115	7:30	74	84	158
7:45	50	58	108	7:45	53	77	130
8:00	53	68	121	8:00	54	76	130
8:15	57	83	140	8:15	49	71	120
8:30	74	76	150	8:30	52	81	133
8:45	86	76	162	8:45	45	65	110
9:00	77	92	169	9:00	54	68	122
9:15	75	78	153	9:15	47	58	105
9:30	52	94	146	9:30	34	57	91
9:45	76	86	162	9:45	33	53	86
10:00	81	103	184	10:00	35	47	82
10:15	67	80	147	10:15	18	32	50
10:30	78	83	161	10:30	19	34	53
10:45	98	114	212	10:45	18	28	46
11:00	90	105	195	11:00	12	24	36
11:15	72	112	184	11:15	15	16	31
11:30	70	120	190	11:30	9	16	25
11:45	100	106	206	11:45	9	14	23
Total	**1647**	**2106**	**3753**	**Total**	**3482**	**4821**	**8303**
				Total All	**5129**	**6927**	**12056**

Average ADT	12566

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	11	19	30	12:00 PM	72	114	186
12:15	16	11	27	12:15	73	109	182
12:30	10	7	17	12:30	82	115	197
12:45	3	8	11	12:45	101	107	208
1:00	9	9	18	1:00	72	130	202
1:15	3	9	12	1:15	76	123	199
1:30	1	10	11	1:30	73	118	191
1:45	2	3	5	1:45	94	109	203
2:00	3	4	7	2:00	80	133	213
2:15	1	3	4	2:15	97	111	208
2:30	4	4	8	2:30	92	127	219
2:45	1	3	4	2:45	87	122	209
3:00	1	3	4	3:00	99	142	241
3:15	1	3	4	3:15	106	134	240
3:30	2	3	5	3:30	97	132	229
3:45	9	9	18	3:45	94	153	247
4:00	9	3	12	4:00	88	108	196
4:15	5	10	15	4:15	94	127	221
4:30	9	17	26	4:30	111	124	235
4:45	8	11	19	4:45	90	160	250
5:00	11	16	27	5:00	107	160	267
5:15	11	25	36	5:15	109	146	255
5:30	25	31	56	5:30	84	152	236
5:45	21	32	53	5:45	85	119	204
6:00	27	31	58	6:00	85	116	201
6:15	28	36	64	6:15	94	86	180
6:30	33	47	80	6:30	86	116	202
6:45	55	87	142	6:45	86	124	210
7:00	61	69	130	7:00	79	113	192
7:15	43	80	123	7:15	93	121	214
7:30	55	81	136	7:30	72	99	171
7:45	61	83	144	7:45	72	88	160
8:00	71	69	140	8:00	71	103	174
8:15	80	84	164	8:15	63	77	140
8:30	84	89	173	8:30	53	80	133
8:45	92	72	164	8:45	54	82	136
9:00	82	81	163	9:00	56	70	126
9:15	83	92	175	9:15	40	74	114
9:30	87	88	175	9:30	43	59	102
9:45	68	84	152	9:45	40	58	98
10:00	86	81	167	10:00	36	52	88
10:15	71	121	192	10:15	26	26	52
10:30	73	100	173	10:30	16	32	48
10:45	79	105	184	10:45	19	30	49
11:00	67	108	175	11:00	16	34	50
11:15	80	100	180	11:15	16	21	37
11:30	77	113	190	11:30	19	19	38
11:45	92	111	203	11:45	15	25	40
Total	**1811**	**2265**	**4076**	**Total**	**3413**	**4780**	**8193**
				Total All	**5224**	**7045**	**12269**

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	13	19	32	12:00 PM	91	119	210
12:15	9	9	18	12:15	80	116	196
12:30	8	8	16	12:30	88	125	213
12:45	4	7	11	12:45	91	122	213
1:00	4	7	11	1:00	83	129	212
1:15	4	13	17	1:15	82	133	215
1:30	7	6	13	1:30	85	143	228
1:45	4	7	11	1:45	84	127	211
2:00	3	3	6	2:00	75	136	211
2:15	0	4	4	2:15	105	131	236
2:30	4	3	7	2:30	96	150	246
2:45	6	5	11	2:45	97	144	241
3:00	1	4	5	3:00	96	132	228
3:15	4	6	10	3:15	107	125	232
3:30	4	4	8	3:30	88	136	224
3:45	4	9	13	3:45	102	141	243
4:00	5	9	14	4:00	91	125	216
4:15	8	7	15	4:15	102	128	230
4:30	7	11	18	4:30	99	135	234
4:45	5	9	14	4:45	111	125	236
5:00	7	16	23	5:00	101	126	227
5:15	12	20	32	5:15	77	147	224
5:30	13	32	45	5:30	88	130	218
5:45	31	34	65	5:45	108	107	215
6:00	23	40	63	6:00	102	137	239
6:15	27	28	55	6:15	94	141	235
6:30	29	54	83	6:30	95	108	203
6:45	74	70	144	6:45	68	110	178
7:00	55	72	127	7:00	80	111	191
7:15	45	68	113	7:15	84	127	211
7:30	61	91	152	7:30	80	100	180
7:45	75	69	144	7:45	61	96	157
8:00	71	80	151	8:00	78	90	168
8:15	66	80	146	8:15	68	87	155
8:30	81	85	166	8:30	59	73	132
8:45	94	79	173	8:45	61	84	145
9:00	75	64	139	9:00	50	76	126
9:15	71	98	169	9:15	53	53	106
9:30	73	101	174	9:30	41	66	107
9:45	79	89	168	9:45	46	47	93
10:00	77	107	184	10:00	32	45	77
10:15	87	108	195	10:15	22	40	62
10:30	53	108	161	10:30	26	33	59
10:45	82	106	188	10:45	18	30	48
11:00	73	110	183	11:00	15	31	46
11:15	83	105	188	11:15	18	18	36
11:30	86	115	201	11:30	11	22	33
11:45	84	139	223	11:45	13	8	21
Total	**1791**	**2318**	**4109**	**Total**	**3502**	**4865**	**8367**
				Total All	**5293**	**7183**	**12476**

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	11	10	21	12:00 PM	93	118	211
12:15	5	20	25	12:15	88	91	179
12:30	2	4	6	12:30	84	132	216
12:45	5	7	12	12:45	78	122	200
1:00	5	4	9	1:00	86	137	223
1:15	11	11	22	1:15	64	128	192
1:30	4	5	9	1:30	74	122	196
1:45	6	5	11	1:45	79	128	207
2:00	2	2	4	2:00	77	124	201
2:15	4	2	6	2:15	81	135	216
2:30	3	8	11	2:30	71	138	209
2:45	2	6	8	2:45	84	130	214
3:00	1	4	5	3:00	92	125	217
3:15	5	3	8	3:15	93	146	239
3:30	7	4	11	3:30	98	143	241
3:45	3	7	10	3:45	82	129	211
4:00	4	5	9	4:00	111	135	246
4:15	9	8	17	4:15	82	141	223
4:30	7	10	17	4:30	86	143	229
4:45	11	8	19	4:45	88	115	203
5:00	9	17	26	5:00	94	130	224
5:15	7	18	25	5:15	97	132	229
5:30	14	39	53	5:30	101	144	245
5:45	30	33	63	5:45	83	113	196
6:00	20	33	53	6:00	83	132	215
6:15	29	34	63	6:15	73	136	209
6:30	32	57	89	6:30	80	129	209
6:45	70	68	138	6:45	92	111	203
7:00	47	65	112	7:00	72	109	181
7:15	50	84	134	7:15	79	112	191
7:30	57	78	135	7:30	91	104	195
7:45	57	87	144	7:45	64	96	160
8:00	66	64	130	8:00	55	99	154
8:15	77	88	165	8:15	50	67	117
8:30	82	90	172	8:30	55	84	139
8:45	84	78	162	8:45	47	85	132
9:00	73	78	151	9:00	40	80	120
9:15	65	89	154	9:15	32	68	100
9:30	75	94	169	9:30	31	58	89
9:45	75	97	172	9:45	39	48	87
10:00	71	92	163	10:00	30	47	77
10:15	78	89	167	10:15	19	48	67
10:30	77	115	192	10:30	17	42	59
10:45	75	105	180	10:45	12	25	37
11:00	60	83	143	11:00	16	36	52
11:15	72	119	191	11:15	16	29	45
11:30	81	111	192	11:30	9	24	33
11:45	74	115	189	11:45	13	15	28
Total	**1714**	**2253**	**3967**	**Total**	**3181**	**4885**	**8066**
				Total All	**4895**	**7138**	**12033**

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	5	21	26	12:00 PM	75	142	217
12:15	6	10	16	12:15	99	136	235
12:30	4	14	18	12:30	115	138	253
12:45	5	8	13	12:45	103	147	250
1:00	3	6	9	1:00	90	120	210
1:15	1	6	7	1:15	99	136	235
1:30	0	7	7	1:30	89	132	221
1:45	4	5	9	1:45	109	131	240
2:00	3	10	13	2:00	87	166	253
2:15	6	7	13	2:15	103	164	267
2:30	0	8	8	2:30	109	147	256
2:45	3	4	7	2:45	101	131	232
3:00	2	4	6	3:00	101	137	238
3:15	2	8	10	3:15	112	148	260
3:30	4	8	12	3:30	119	141	260
3:45	6	6	12	3:45	98	160	258
4:00	4	8	12	4:00	84	155	239
4:15	4	9	13	4:15	110	156	266
4:30	12	12	24	4:30	118	147	265
4:45	8	15	23	4:45	108	144	252
5:00	7	18	25	5:00	138	166	304
5:15	7	21	28	5:15	131	160	291
5:30	20	28	48	5:30	104	145	249
5:45	29	35	64	5:45	110	143	253
6:00	16	38	54	6:00	104	123	227
6:15	26	38	64	6:15	94	149	243
6:30	37	51	88	6:30	95	142	237
6:45	53	58	111	6:45	104	128	232
7:00	48	86	134	7:00	107	138	245
7:15	47	63	110	7:15	107	131	238
7:30	50	71	121	7:30	103	128	231
7:45	46	61	107	7:45	87	109	196
8:00	69	74	143	8:00	89	116	205
8:15	93	77	170	8:15	78	112	190
8:30	85	83	168	8:30	62	81	143
8:45	97	98	195	8:45	63	106	169
9:00	91	83	174	9:00	52	96	148
9:15	78	101	179	9:15	54	81	135
9:30	76	84	160	9:30	52	74	126
9:45	83	115	198	9:45	49	62	111
10:00	85	116	201	10:00	37	91	128
10:15	74	101	175	10:15	49	54	103
10:30	93	102	195	10:30	37	45	82
10:45	101	102	203	10:45	27	52	79
11:00	98	122	220	11:00	33	54	87
11:15	91	112	203	11:15	27	33	60
11:30	92	136	228	11:30	36	35	71
11:45	95	126	221	11:45	28	34	62
Total	**1869**	**2376**	**4245**	**Total**	**4086**	**5666**	**9752**
				Total All	**5955**	**8042**	**13997**

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**14**	**10**	**74**	**387**	**681**	**1417**	**1642**	**790**	**224**	**52**	**9**	**0**	**0**	**0**	**0**	**5299**

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	1	0	0	0	1	5	7	2	2	0	0	0	0	0	0	18
1:00	0	0	0	0	1	3	3	7	4	1	0	0	0	0	0	0	19
2:00	0	0	0	0	0	1	4	5	2	0	0	0	0	0	0	0	12
3:00	0	0	0	0	0	2	4	2	3	3	0	0	0	0	0	0	14
4:00	0	0	0	0	0	3	8	6	8	1	0	0	0	0	0	0	26
5:00	0	0	0	1	2	6	15	15	11	4	3	0	0	0	0	0	57
6:00	0	0	0	6	8	8	30	43	16	5	1	1	0	0	0	0	118
7:00	0	0	0	3	7	13	28	68	42	13	2	1	0	0	0	0	177
8:00	0	1	0	2	17	53	75	68	38	11	5	0	0	0	0	0	270
9:00	0	0	1	3	20	36	88	87	36	5	3	1	0	0	0	0	280
10:00	0	1	1	8	23	49	101	95	40	6	0	0	0	0	0	0	324
11:00	0	2	0	5	29	47	121	93	30	5	0	0	0	0	0	0	332
12:00 PM	0	3	0	2	22	55	96	105	49	9	1	1	0	0	0	0	343
1:00	0	2	2	4	36	44	114	107	43	6	4	0	0	0	0	0	362
2:00	0	2	1	6	32	56	121	111	46	16	0	0	0	0	0	0	391
3:00	0	2	2	5	32	63	125	146	48	13	0	0	0	0	0	0	436
4:00	0	0	1	2	34	76	136	134	63	14	1	1	0	0	0	0	462
5:00	0	1	0	4	35	47	108	136	63	12	0	0	0	0	0	0	406
6:00	0	1	0	1	19	38	108	90	32	10	4	0	0	0	0	0	303
7:00	0	0	1	2	19	44	86	67	51	6	0	0	0	0	0	0	276
8:00	0	0	0	2	15	25	55	68	29	6	0	0	0	0	0	0	200
9:00	0	0	0	1	7	20	32	66	29	13	0	0	0	0	0	0	168
10:00	0	0	0	1	6	12	18	25	20	8	0	0	0	0	0	0	90
11:00	0	0	0	0	3	4	9	11	11	7	0	0	0	0	0	0	45
Total	**0**	**16**	**9**	**58**	**367**	**706**	**1490**	**1562**	**716**	**176**	**24**	**5**	**0**	**0**	**0**	**0**	**5129**

Percentile	15th	50th	85th	95th
Speed	28	34	41	45
Mean Speed (Average)	34.9			
10 MPH Pace Speed	31-40			
Number in Pace	3026			
Percent in Pace	59.0%			

Average 85th	40.8

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	2	6	11	11	8	2	0	0	0	0	0	0	40
1:00	0	0	0	0	0	2	5	3	5	0	0	0	0	0	0	0	15
2:00	0	0	0	0	1	2	2	2	1	1	0	0	0	0	0	0	9
3:00	0	0	0	0	1	3	2	4	2	1	0	0	0	0	0	0	13
4:00	0	0	0	0	0	3	7	12	6	2	1	0	0	0	0	0	31
5:00	0	0	0	1	4	8	13	26	13	1	1	1	0	0	0	0	68
6:00	0	0	0	2	5	13	28	50	31	11	3	0	0	0	0	0	143
7:00	0	0	0	4	8	10	42	70	49	28	9	0	0	0	0	0	220
8:00	0	0	0	2	18	33	74	98	70	20	9	3	0	0	0	0	327
9:00	0	0	0	2	21	40	83	90	62	16	5	1	0	0	0	0	320
10:00	0	1	0	8	25	35	87	90	51	10	2	0	0	0	0	0	309
11:00	0	3	0	5	17	45	98	87	48	8	3	2	0	0	0	0	316
12:00 PM	0	1	0	6	22	48	102	105	35	9	0	0	0	0	0	0	328
1:00	0	2	0	5	28	39	71	115	37	17	1	0	0	0	0	0	315
2:00	0	1	2	4	31	37	91	127	45	9	8	1	0	0	0	0	356
3:00	0	3	2	4	38	46	103	116	64	17	3	0	0	0	0	0	396
4:00	0	0	3	6	27	44	102	124	63	11	3	0	0	0	0	0	383
5:00	0	2	2	6	37	51	83	124	57	17	5	1	0	0	0	0	385
6:00	0	1	0	6	30	42	93	116	38	23	1	1	0	0	0	0	351
7:00	0	0	0	3	17	58	103	78	46	9	2	0	0	0	0	0	316
8:00	0	0	1	2	18	36	70	66	31	13	3	1	0	0	0	0	241
9:00	0	0	1	3	10	20	50	44	41	7	2	1	0	0	0	0	179
10:00	0	0	1	0	2	11	24	33	15	7	4	0	0	0	0	0	97
11:00	0	0	0	0	3	5	13	23	15	2	3	2	0	0	0	0	66
Total	**0**	**14**	**12**	**69**	**365**	**637**	**1357**	**1614**	**833**	**241**	**68**	**14**	**0**	**0**	**0**	**0**	**5224**

Percentile	15th	50th	85th	95th
Speed	28	34	41	46

Mean Speed (Average)	35.6
10 MPH Pace Speed	31-40
Number in Pace	2958
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	4	6	12	10	1	0	0	0	0	0	0	34
1:00	0	0	0	1	0	3	3	6	2	2	2	0	0	0	0	0	19
2:00	0	0	0	0	0	0	4	4	3	1	1	0	0	0	0	0	13
3:00	0	0	0	0	2	2	4	3	1	1	0	0	0	0	0	0	13
4:00	0	0	0	0	0	2	7	8	7	1	0	0	0	0	0	0	25
5:00	0	0	0	0	5	9	13	23	8	5	0	0	0	0	0	0	63
6:00	0	0	0	3	11	18	35	55	18	12	1	0	0	0	0	0	153
7:00	0	0	0	3	16	18	39	75	60	21	3	1	0	0	0	0	236
8:00	0	0	0	1	18	21	67	115	57	30	3	0	0	0	0	0	312
9:00	0	1	0	4	30	24	80	111	29	15	4	0	0	0	0	0	298
10:00	0	0	0	5	26	36	92	89	37	10	3	1	0	0	0	0	299
11:00	0	3	0	5	31	46	89	113	30	7	2	0	0	0	0	0	326
12:00 PM	0	1	0	6	30	37	125	94	42	13	1	1	0	0	0	0	350
1:00	0	2	1	9	28	37	72	119	50	14	2	0	0	0	0	0	334
2:00	0	2	4	5	18	38	106	115	65	18	2	0	0	0	0	0	373
3:00	0	0	2	3	24	47	99	125	67	19	7	0	0	0	0	0	393
4:00	0	3	1	8	34	54	94	122	64	17	5	1	0	0	0	0	403
5:00	0	1	0	6	38	52	86	113	60	17	1	0	0	0	0	0	374
6:00	0	1	1	4	19	60	90	97	61	20	6	0	0	0	0	0	359
7:00	0	0	1	1	24	55	85	78	38	17	4	2	0	0	0	0	305
8:00	0	0	0	2	24	39	85	72	33	9	2	0	0	0	0	0	266
9:00	0	0	0	0	11	22	38	70	40	9	0	0	0	0	0	0	190
10:00	0	0	0	0	3	7	25	29	26	7	1	0	0	0	0	0	98
11:00	0	0	0	0	3	5	10	20	14	3	1	1	0	0	0	0	57
Total	**0**	**14**	**10**	**66**	**396**	**636**	**1354**	**1668**	**822**	**269**	**51**	**7**	**0**	**0**	**0**	**0**	**5293**

Percentile	15th	50th	85th	95th
Speed	28	35	41	46

Mean Speed (Average)	35.6
10 MPH Pace Speed	31-40
Number in Pace	3001
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	1	0	2	2	7	5	4	2	0	0	0	0	0	0	23
1:00	0	0	0	0	0	7	7	3	6	2	1	0	0	0	0	0	26
2:00	0	0	0	0	0	2	3	3	2	1	0	0	0	0	0	0	11
3:00	0	0	0	0	1	4	2	7	2	0	0	0	0	0	0	0	16
4:00	0	0	0	0	3	4	7	11	5	1	0	0	0	0	0	0	31
5:00	0	0	0	0	3	10	11	22	8	5	1	0	0	0	0	0	60
6:00	0	0	0	6	9	17	26	68	18	6	1	0	0	0	0	0	151
7:00	0	0	0	3	8	13	45	76	44	19	3	0	0	0	0	0	211
8:00	0	0	2	5	15	35	68	118	43	19	4	0	0	0	0	0	309
9:00	0	0	0	2	19	21	82	79	58	19	6	2	0	0	0	0	288
10:00	0	2	0	4	23	41	89	86	42	9	5	0	0	0	0	0	301
11:00	0	0	0	4	16	40	71	99	46	11	0	0	0	0	0	0	287
12:00 PM	0	0	1	5	25	45	98	112	43	11	3	0	0	0	0	0	343
1:00	0	2	0	0	24	28	73	116	41	15	3	1	0	0	0	0	303
2:00	0	2	2	6	18	46	77	99	49	12	2	0	0	0	0	0	313
3:00	0	3	0	5	36	55	87	106	58	8	6	1	0	0	0	0	365
4:00	0	1	1	7	30	41	95	110	62	13	7	0	0	0	0	0	367
5:00	0	0	1	6	36	61	86	112	52	15	3	3	0	0	0	0	375
6:00	0	0	0	7	23	52	77	101	45	20	3	0	0	0	0	0	328
7:00	0	4	0	4	24	43	86	105	30	8	1	1	0	0	0	0	306
8:00	0	0	0	4	21	36	59	47	28	10	2	0	0	0	0	0	207
9:00	0	0	0	2	10	15	38	47	22	8	0	0	0	0	0	0	142
10:00	0	0	1	2	3	6	17	28	16	3	2	0	0	0	0	0	78
11:00	0	0	0	0	3	6	14	20	5	5	1	0	0	0	0	0	54
Total	**0**	**14**	**9**	**72**	**352**	**630**	**1225**	**1580**	**729**	**222**	**54**	**8**	**0**	**0**	**0**	**0**	**4895**

Percentile	15th	50th	85th	95th
Speed	28	34	41	46

Mean Speed (Average)	35.4
10 MPH Pace Speed	31-40
Number in Pace	2794
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	0	1	5	7	3	3	0	0	0	0	0	0	20
1:00	0	0	0	0	1	0	2	2	3	0	0	0	0	0	0	0	8
2:00	0	0	0	0	0	1	2	3	4	1	1	0	0	0	0	0	12
3:00	0	0	0	0	0	1	3	5	4	1	0	0	0	0	0	0	14
4:00	0	0	0	0	5	2	5	9	3	3	1	0	0	0	0	0	28
5:00	0	0	0	1	6	7	8	19	15	6	1	0	0	0	0	0	63
6:00	0	0	0	4	14	11	36	42	19	6	0	0	0	0	0	0	132
7:00	0	0	0	2	13	19	45	46	41	17	7	1	0	0	0	0	191
8:00	0	0	2	3	28	25	70	125	65	21	3	2	0	0	0	0	344
9:00	0	0	0	6	26	38	82	98	58	13	5	2	0	0	0	0	328
10:00	0	1	0	3	29	59	100	83	59	14	5	0	0	0	0	0	353
11:00	0	2	1	8	25	66	92	115	59	4	4	0	0	0	0	0	376
12:00 PM	0	3	4	12	21	59	134	112	37	7	3	0	0	0	0	0	392
1:00	0	3	1	5	21	59	136	103	42	12	3	2	0	0	0	0	387
2:00	0	0	0	13	20	61	116	128	50	12	0	0	0	0	0	0	400
3:00	0	3	0	9	36	57	122	136	52	12	2	1	0	0	0	0	430
4:00	0	0	1	3	39	77	114	106	61	13	5	1	0	0	0	0	420
5:00	0	0	0	9	46	67	141	147	58	9	5	1	0	0	0	0	483
6:00	0	0	0	9	26	53	108	121	57	16	5	2	0	0	0	0	397
7:00	0	0	0	4	35	55	135	123	41	9	2	0	0	0	0	0	404
8:00	0	1	1	6	26	29	98	86	31	10	4	0	0	0	0	0	292
9:00	0	0	0	1	18	23	52	66	36	7	4	0	0	0	0	0	207
10:00	0	0	0	3	12	16	29	56	24	10	0	0	0	0	0	0	150
11:00	0	0	0	2	8	9	24	48	26	4	3	0	0	0	0	0	124
Total	**0**	**13**	**10**	**104**	**455**	**795**	**1659**	**1786**	**848**	**210**	**63**	**12**	**0**	**0**	**0**	**0**	**5955**

Percentile	15th	50th	85th	95th
Speed	28	34	41	46

Mean Speed (Average) 35.0
10 MPH Pace Speed 0-0
Number in Pace 0
Percent in Pace 0.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**7**	**19**	**78**	**338**	**927**	**2057**	**2178**	**1122**	**410**	**109**	**21**	**0**	**0**	**0**	**0**	**7267**

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	2	2	5	5	3	1	0	0	0	0	0	0	18
1:00	0	0	0	0	0	0	2	7	7	3	1	0	0	0	0	0	20
2:00	0	0	0	0	0	2	5	7	3	1	1	0	0	0	0	0	19
3:00	0	0	0	0	0	2	5	1	9	4	0	0	0	0	0	0	21
4:00	0	0	0	0	2	7	2	12	12	2	0	0	0	0	0	0	37
5:00	0	0	0	0	0	5	16	30	27	11	2	0	0	0	0	0	91
6:00	0	0	0	3	3	22	34	56	33	10	2	0	0	0	0	0	163
7:00	0	0	0	0	2	21	54	83	75	20	2	4	0	0	0	0	261
8:00	0	0	1	4	16	32	79	89	62	15	4	1	0	0	0	0	303
9:00	0	0	0	4	18	49	94	98	58	17	9	3	0	0	0	0	350
10:00	0	0	1	3	26	42	125	114	44	17	8	0	0	0	0	0	380
11:00	0	0	0	6	23	44	144	137	66	19	2	2	0	0	0	0	443
12:00 PM	0	0	1	2	22	59	154	147	65	13	7	2	0	0	0	0	472
1:00	0	2	0	6	19	87	166	142	72	15	11	0	0	0	0	0	520
2:00	0	1	2	5	38	86	191	153	69	20	2	2	0	0	0	0	569
3:00	0	1	7	10	21	87	186	154	74	17	2	2	0	0	0	0	561
4:00	0	0	4	10	44	110	170	161	68	15	3	0	0	0	0	0	585
5:00	0	0	2	11	34	81	196	166	60	16	5	0	0	0	0	0	571
6:00	0	0	0	1	22	59	162	133	44	22	3	2	0	0	0	0	448
7:00	0	0	0	2	12	47	121	107	47	16	3	0	0	0	0	0	355
8:00	0	0	0	2	11	40	79	83	55	20	3	0	0	0	0	0	293
9:00	0	0	0	1	16	25	50	82	39	19	4	0	0	0	0	0	236
10:00	0	0	0	0	5	14	24	49	29	16	4	0	0	0	0	0	141
11:00	0	0	0	1	3	4	13	23	16	6	2	2	0	0	0	0	70
Total	**0**	**4**	**18**	**71**	**339**	**927**	**2077**	**2039**	**1037**	**315**	**80**	**20**	**0**	**0**	**0**	**0**	**6927**

Percentile	15th	50th	85th	95th
Speed	27	34	40	44

Mean Speed (Average)	35.6
10 MPH Pace Speed	31-40
Number in Pace	4101
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	2	6	8	13	7	5	3	0	0	0	0	0	45
1:00	0	0	0	1	1	3	7	9	6	4	0	0	0	0	0	0	31
2:00	0	0	0	1	1	3	3	2	2	2	0	0	0	0	0	0	14
3:00	0	0	0	0	2	0	0	9	5	0	2	0	0	0	0	0	18
4:00	0	0	0	0	0	2	2	14	15	3	3	2	0	0	0	0	41
5:00	0	0	0	0	0	4	21	18	33	19	7	2	0	0	0	0	104
6:00	0	0	0	1	6	10	39	50	58	29	6	2	0	0	0	0	201
7:00	0	0	0	0	2	15	44	98	93	50	8	3	0	0	0	0	313
8:00	0	0	2	0	13	24	53	102	80	27	13	0	0	0	0	0	314
9:00	0	0	0	1	13	33	75	115	72	30	6	0	0	0	0	0	345
10:00	0	0	1	3	6	43	108	146	70	25	3	2	0	0	0	0	407
11:00	0	2	1	4	17	58	149	128	53	17	3	0	0	0	0	0	432
12:00 PM	0	0	2	2	13	59	141	151	62	9	5	1	0	0	0	0	445
1:00	0	0	0	5	18	57	143	147	70	29	8	3	0	0	0	0	480
2:00	0	0	1	8	33	54	127	168	73	21	6	2	0	0	0	0	493
3:00	0	0	1	2	44	79	177	159	76	15	6	2	0	0	0	0	561
4:00	0	0	3	10	45	84	152	147	50	21	7	0	0	0	0	0	519
5:00	0	0	5	9	35	113	166	162	64	11	11	1	0	0	0	0	577
6:00	0	0	1	7	33	69	141	112	58	19	2	0	0	0	0	0	442
7:00	0	0	0	4	18	77	140	86	67	22	5	2	0	0	0	0	421
8:00	0	0	1	4	19	38	108	100	38	26	8	0	0	0	0	0	342
9:00	0	0	0	3	9	35	87	70	44	8	4	1	0	0	0	0	261
10:00	0	0	0	0	2	22	40	34	21	11	10	0	0	0	0	0	140
11:00	0	0	0	2	6	13	19	35	14	9	1	0	0	0	0	0	99
Total	**0**	**2**	**18**	**68**	**338**	**901**	**1950**	**2075**	**1131**	**412**	**127**	**23**	**0**	**0**	**0**	**0**	**7045**

Percentile	15th	50th	85th	95th
Speed	27	34	41	45

Mean Speed (Average)	36.2
10 MPH Pace Speed	31-40
Number in Pace	3996
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	2	14	15	8	4	0	0	0	0	0	0	43
1:00	0	0	0	0	1	2	5	11	6	8	0	0	0	0	0	0	33
2:00	0	0	0	0	0	1	3	3	5	2	0	1	0	0	0	0	15
3:00	0	0	0	0	2	2	1	7	8	2	0	1	0	0	0	0	23
4:00	0	0	0	0	0	0	2	9	13	8	2	2	0	0	0	0	36
5:00	0	0	0	1	1	1	16	35	22	15	9	2	0	0	0	0	102
6:00	0	0	0	1	4	7	38	57	50	26	9	0	0	0	0	0	192
7:00	0	0	1	0	7	11	54	89	78	45	15	0	0	0	0	0	300
8:00	0	0	1	7	7	22	59	103	77	36	9	3	0	0	0	0	324
9:00	0	0	0	7	21	29	81	109	73	26	4	2	0	0	0	0	352
10:00	0	0	0	3	17	50	118	143	74	17	5	2	0	0	0	0	429
11:00	0	0	2	9	25	55	148	143	60	23	3	1	0	0	0	0	469
12:00 PM	0	1	1	9	19	55	147	173	48	24	5	0	0	0	0	0	482
1:00	0	1	1	7	23	90	173	142	74	16	5	0	0	0	0	0	532
2:00	0	2	4	7	30	65	179	174	77	16	6	1	0	0	0	0	561
3:00	0	1	0	7	26	66	161	181	68	23	0	1	0	0	0	0	534
4:00	0	0	2	9	29	83	134	152	72	24	5	3	0	0	0	0	513
5:00	0	0	1	9	25	78	149	151	67	23	7	0	0	0	0	0	510
6:00	0	0	1	2	17	87	144	139	74	28	4	0	0	0	0	0	496
7:00	0	0	0	3	27	64	128	120	64	24	3	1	0	0	0	0	434
8:00	0	0	0	2	28	72	87	87	36	17	4	1	0	0	0	0	334
9:00	0	0	0	1	11	22	85	63	41	13	5	1	0	0	0	0	242
10:00	0	0	0	2	6	13	31	43	32	18	1	2	0	0	0	0	148
11:00	0	0	0	1	0	10	12	29	19	4	3	1	0	0	0	0	79
Total	**0**	**5**	**14**	**87**	**326**	**887**	**1969**	**2178**	**1146**	**442**	**104**	**25**	**0**	**0**	**0**	**0**	**7183**

Percentile	15th	50th	85th	95th
Speed	27	34	41	45

Mean Speed (Average)	36.2
10 MPH Pace Speed	31-40
Number in Pace	4109
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	1	1	0	3	6	7	15	4	4	0	0	0	0	0	0	41
1:00	0	0	0	0	0	2	5	6	6	6	0	0	0	0	0	0	25
2:00	0	0	0	0	1	0	2	6	6	2	1	0	0	0	0	0	18
3:00	0	0	0	0	0	2	4	5	6	1	0	0	0	0	0	0	18
4:00	0	0	0	0	0	0	3	9	7	6	4	2	0	0	0	0	31
5:00	0	0	0	1	0	1	14	32	35	18	5	1	0	0	0	0	107
6:00	0	0	0	0	7	11	44	57	40	23	8	2	0	0	0	0	192
7:00	0	0	0	1	11	33	86	73	81	25	4	0	0	0	0	0	314
8:00	0	0	0	4	18	28	87	104	50	17	9	3	0	0	0	0	320
9:00	0	0	1	7	9	43	89	101	69	31	8	0	0	0	0	0	358
10:00	0	1	1	2	19	43	115	135	67	16	1	1	0	0	0	0	401
11:00	0	0	1	9	27	55	109	154	46	22	4	1	0	0	0	0	428
12:00 PM	0	1	1	4	17	51	139	149	76	20	5	0	0	0	0	0	463
1:00	0	0	0	0	14	73	167	153	72	30	5	1	0	0	0	0	515
2:00	0	3	4	13	28	73	145	156	76	17	11	1	0	0	0	0	527
3:00	0	3	7	11	36	93	163	125	79	20	5	1	0	0	0	0	543
4:00	0	2	1	5	41	76	126	172	79	23	8	1	0	0	0	0	534
5:00	0	2	2	9	34	74	127	174	62	26	6	3	0	0	0	0	519
6:00	0	0	1	7	18	58	153	160	78	21	11	1	0	0	0	0	508
7:00	0	1	1	4	20	80	126	120	50	19	0	0	0	0	0	0	421
8:00	0	0	1	1	18	56	92	100	53	12	2	0	0	0	0	0	335
9:00	0	0	0	0	17	29	85	66	37	14	5	1	0	0	0	0	254
10:00	0	0	0	0	5	14	39	53	31	15	4	1	0	0	0	0	162
11:00	0	0	0	3	4	13	18	24	24	12	6	0	0	0	0	0	104
Total	**0**	**14**	**22**	**81**	**347**	**914**	**1945**	**2149**	**1134**	**400**	**112**	**20**	**0**	**0**	**0**	**0**	**7138**

Percentile	15th	50th	85th	95th
Speed	27	34	41	45

Mean Speed (Average)	36.0
10 MPH Pace Speed	31-40
Number in Pace	4062
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	2	2	13	16	14	6	0	0	0	0	0	0	53
1:00	0	0	0	0	0	0	4	11	6	3	0	0	0	0	0	0	24
2:00	0	0	1	1	0	6	4	9	4	2	2	0	0	0	0	0	29
3:00	0	0	0	0	0	2	6	7	6	5	0	0	0	0	0	0	26
4:00	0	0	0	0	1	3	2	16	10	6	5	1	0	0	0	0	44
5:00	0	0	0	1	2	8	13	31	27	14	6	0	0	0	0	0	102
6:00	0	0	0	0	1	16	24	63	47	23	8	3	0	0	0	0	185
7:00	0	0	0	1	6	14	56	93	70	33	5	3	0	0	0	0	281
8:00	0	0	2	5	11	35	65	101	76	34	3	0	0	0	0	0	332
9:00	0	0	3	2	16	42	109	120	58	24	7	2	0	0	0	0	383
10:00	0	0	0	0	12	51	121	131	69	26	11	0	0	0	0	0	421
11:00	0	0	1	4	23	49	145	164	75	30	5	0	0	0	0	0	496
12:00 PM	0	0	5	11	33	75	153	192	67	22	5	0	0	0	0	0	563
1:00	0	3	1	10	25	73	167	143	63	24	10	0	0	0	0	0	519
2:00	0	4	2	10	38	72	190	192	71	25	4	0	0	0	0	0	608
3:00	0	0	1	4	19	69	192	184	71	37	9	0	0	0	0	0	586
4:00	0	1	1	10	41	89	210	169	62	11	6	2	0	0	0	0	602
5:00	0	0	1	4	22	94	203	197	66	25	2	0	0	0	0	0	614
6:00	0	0	0	7	23	67	155	173	89	24	3	1	0	0	0	0	542
7:00	0	1	1	5	19	88	173	130	55	27	7	0	0	0	0	0	506
8:00	0	0	0	2	27	61	140	113	46	19	4	3	0	0	0	0	415
9:00	0	0	0	1	10	52	90	86	45	19	9	1	0	0	0	0	313
10:00	0	0	1	2	6	26	63	75	38	22	9	0	0	0	0	0	242
11:00	0	0	1	1	4	14	47	35	27	20	4	3	0	0	0	0	156
Total	**0**	**9**	**21**	**81**	**341**	**1008**	**2345**	**2451**	**1162**	**481**	**124**	**19**	**0**	**0**	**0**	**0**	**8042**

Percentile	15th	50th	85th	95th
Speed	26	34	40	44

Mean Speed (Average)	36.0
10 MPH Pace Speed	0-0
Number in Pace	0
Percent in Pace	0.0%

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	14	3	0	1	0	18
1:00	0	13	3	2	1	0	19
2:00	0	9	1	2	0	0	12
3:00	0	12	0	1	1	0	14
4:00	0	21	4	1	0	0	26
5:00	0	48	6	1	2	0	57
6:00	1	103	9	3	2	0	118
7:00	1	134	18	18	4	2	177
8:00	0	206	42	15	5	2	270
9:00	1	228	35	11	5	0	280
10:00	0	236	59	23	3	3	324
11:00	0	261	42	20	8	1	332
12:00 PM	0	261	50	23	9	0	343
1:00	2	269	62	20	7	2	362
2:00	1	283	68	33	5	1	391
3:00	1	327	77	25	5	1	436
4:00	2	336	86	32	5	1	462
5:00	0	311	70	21	4	0	406
6:00	3	230	45	23	1	1	303
7:00	1	192	53	24	6	0	276
8:00	1	163	24	8	3	1	200
9:00	0	134	24	8	2	0	168
10:00	0	77	11	1	0	1	90
11:00	0	37	4	2	2	0	45
Total	**14**	**3905**	**796**	**317**	**81**	**16**	**5129**
Percent	0.3%	76.1%	15.5%	6.2%	1.6%	0.3%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/24/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	32	4	2	0	2	40
1:00	0	10	4	1	0	0	15
2:00	0	8	0	0	1	0	9
3:00	0	10	1	1	1	0	13
4:00	0	24	4	1	1	1	31
5:00	0	52	5	4	7	0	68
6:00	0	104	29	7	3	0	143
7:00	0	155	33	19	9	4	220
8:00	2	226	54	31	11	3	327
9:00	0	228	64	19	4	5	320
10:00	1	240	37	19	10	2	309
11:00	1	243	43	21	7	1	316
12:00 PM	2	242	50	21	8	5	328
1:00	1	243	40	21	8	2	315
2:00	0	292	36	26	2	0	356
3:00	1	314	45	26	10	0	396
4:00	2	300	37	30	11	3	383
5:00	1	308	46	17	11	2	385
6:00	1	272	46	23	9	0	351
7:00	1	222	66	21	6	0	316
8:00	0	178	39	19	5	0	241
9:00	1	129	33	9	7	0	179
10:00	0	81	11	4	1	0	97
11:00	0	54	8	1	2	1	66
Total	**14**	**3967**	**735**	**343**	**134**	**31**	**5224**
Percent	0.3%	75.9%	14.1%	6.6%	2.6%	0.6%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	28	3	2	1	0	34
1:00	0	16	1	1	1	0	19
2:00	0	12	0	0	1	0	13
3:00	0	11	1	0	1	0	13
4:00	0	22	2	0	0	1	25
5:00	0	41	16	3	2	1	63
6:00	0	115	26	10	1	1	153
7:00	0	174	38	14	10	0	236
8:00	2	220	58	18	12	2	312
9:00	1	213	48	23	13	0	298
10:00	1	241	31	16	7	3	299
11:00	2	255	47	18	4	0	326
12:00 PM	0	258	52	31	8	1	350
1:00	0	261	35	26	10	2	334
2:00	2	277	57	27	9	1	373
3:00	1	316	41	22	12	1	393
4:00	2	329	41	24	5	2	403
5:00	3	305	44	13	9	0	374
6:00	2	277	56	17	7	0	359
7:00	2	214	56	28	5	0	305
8:00	0	200	46	17	3	0	266
9:00	0	145	31	10	1	3	190
10:00	0	77	15	4	2	0	98
11:00	0	47	4	5	1	0	57
Total	**18**	**4054**	**749**	**329**	**125**	**18**	**5293**
Percent	0.3%	76.6%	14.2%	6.2%	2.4%	0.3%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	17	5	1	0	0	23
1:00	0	23	2	1	0	0	26
2:00	0	10	1	0	0	0	11
3:00	0	13	1	1	1	0	16
4:00	0	30	1	0	0	0	31
5:00	1	42	11	0	3	3	60
6:00	0	109	27	10	2	3	151
7:00	0	145	41	18	4	3	211
8:00	0	228	47	26	8	0	309
9:00	1	205	53	23	4	2	288
10:00	1	220	40	21	17	2	301
11:00	0	231	35	17	4	0	287
12:00 PM	0	280	39	19	4	1	343
1:00	1	245	39	14	3	1	303
2:00	5	245	40	21	2	0	313
3:00	3	284	45	23	9	1	365
4:00	0	291	48	22	5	1	367
5:00	3	311	40	16	4	1	375
6:00	0	255	46	22	5	0	328
7:00	3	252	36	10	5	0	306
8:00	0	170	25	8	4	0	207
9:00	0	112	22	5	3	0	142
10:00	0	68	7	0	3	0	78
11:00	0	43	6	2	1	2	54
Total	**18**	**3829**	**657**	**280**	**91**	**20**	**4895**
Percent	0.4%	78.2%	13.4%	5.7%	1.9%	0.4%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	19	1	0	0	0	20
1:00	0	4	2	2	0	0	8
2:00	0	11	0	1	0	0	12
3:00	0	11	2	0	1	0	14
4:00	0	22	2	1	2	1	28
5:00	1	46	10	3	3	0	63
6:00	0	96	23	10	3	0	132
7:00	1	137	33	12	6	2	191
8:00	0	250	55	31	8	0	344
9:00	0	232	62	27	6	1	328
10:00	1	259	61	21	10	1	353
11:00	2	271	64	26	12	1	376
12:00 PM	2	315	39	17	15	4	392
1:00	3	297	52	23	12	0	387
2:00	1	298	51	36	11	3	400
3:00	1	339	53	30	7	0	430
4:00	0	332	51	27	10	0	420
5:00	4	370	72	24	13	0	483
6:00	2	287	68	33	6	1	397
7:00	1	295	81	23	4	0	404
8:00	2	215	63	7	4	1	292
9:00	0	153	46	7	1	0	207
10:00	0	128	15	7	0	0	150
11:00	0	97	18	6	1	2	124
Total	**21**	**4484**	**924**	**374**	**135**	**17**	**5955**
Percent	0.4%	75.3%	15.5%	6.3%	2.3%	0.3%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	13	4	1	0	0	18
1:00	0	15	3	0	0	2	20
2:00	0	14	3	2	0	0	19
3:00	0	17	0	3	1	0	21
4:00	0	31	4	1	1	0	37
5:00	0	64	16	7	4	0	91
6:00	0	118	20	10	14	1	163
7:00	0	184	38	26	10	3	261
8:00	0	209	48	26	14	6	303
9:00	1	247	62	32	5	3	350
10:00	2	261	65	41	6	5	380
11:00	0	277	99	47	13	7	443
12:00 PM	0	303	98	48	19	4	472
1:00	0	351	89	52	20	8	520
2:00	1	367	108	70	14	9	569
3:00	0	371	112	53	20	5	561
4:00	0	400	114	55	9	7	585
5:00	2	381	101	57	22	8	571
6:00	0	301	89	43	12	3	448
7:00	0	244	72	30	6	3	355
8:00	0	191	71	23	5	3	293
9:00	2	156	62	12	2	2	236
10:00	0	110	17	11	2	1	141
11:00	0	58	8	2	1	1	70
Total	**8**	**4683**	**1303**	**652**	**200**	**81**	**6927**
Percent	0.1%	67.6%	18.8%	9.4%	2.9%	1.2%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	35	7	2	0	1	45
1:00	0	26	3	2	0	0	31
2:00	0	12	0	1	1	0	14
3:00	0	14	2	1	1	0	18
4:00	0	35	5	1	0	0	41
5:00	0	74	17	6	5	2	104
6:00	0	133	34	21	10	3	201
7:00	1	192	62	44	10	4	313
8:00	0	202	62	33	12	5	314
9:00	0	228	71	31	12	3	345
10:00	1	292	65	33	13	3	407
11:00	0	308	74	35	12	3	432
12:00 PM	0	334	59	27	18	7	445
1:00	1	325	75	48	23	8	480
2:00	0	364	71	30	20	8	493
3:00	0	417	76	40	21	7	561
4:00	2	408	53	35	16	5	519
5:00	0	427	76	41	25	8	577
6:00	0	321	75	31	12	3	442
7:00	0	288	77	42	10	4	421
8:00	0	239	59	33	9	2	342
9:00	0	184	54	17	3	3	261
10:00	0	108	21	7	3	1	140
11:00	0	77	12	6	1	3	99
Total	**5**	**5043**	**1110**	**567**	**237**	**83**	**7045**
Percent	0.1%	71.6%	15.8%	8.0%	3.4%	1.2%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	33	8	1	0	0	43
1:00	1	29	2	0	1	0	33
2:00	0	12	0	1	2	0	15
3:00	0	18	2	1	2	0	23
4:00	0	28	3	4	1	0	36
5:00	0	72	21	4	4	1	102
6:00	1	127	32	19	12	1	192
7:00	0	187	47	45	14	7	300
8:00	0	201	71	33	15	4	324
9:00	0	257	53	28	8	6	352
10:00	1	300	76	36	12	4	429
11:00	0	345	73	34	10	7	469
12:00 PM	0	333	94	36	14	5	482
1:00	0	394	79	42	13	4	532
2:00	1	408	85	39	19	9	561
3:00	0	417	59	37	15	6	534
4:00	0	389	66	29	23	6	513
5:00	0	396	56	36	16	6	510
6:00	1	391	62	29	10	3	496
7:00	2	310	67	35	15	5	434
8:00	1	235	60	29	7	2	334
9:00	0	181	40	16	4	1	242
10:00	0	122	20	4	1	1	148
11:00	0	63	6	7	2	1	79
Total	**9**	**5248**	**1082**	**545**	**220**	**79**	**7183**
Percent	0.1%	73.1%	15.1%	7.6%	3.1%	1.1%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/26/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	29	7	5	0	0	41
1:00	0	21	3	1	0	0	25
2:00	0	16	0	1	1	0	18
3:00	0	15	1	1	1	0	18
4:00	0	25	5	1	0	0	31
5:00	0	77	18	9	3	0	107
6:00	1	125	36	15	9	6	192
7:00	1	201	55	41	15	1	314
8:00	1	213	56	30	8	12	320
9:00	0	245	53	47	7	6	358
10:00	1	289	58	36	14	3	401
11:00	0	304	66	46	10	2	428
12:00 PM	1	351	61	37	8	5	463
1:00	1	377	80	39	11	7	515
2:00	0	382	66	55	20	4	527
3:00	1	404	79	38	13	8	543
4:00	0	402	60	49	16	7	534
5:00	1	413	53	31	16	5	519
6:00	1	377	72	28	23	7	508
7:00	2	319	57	29	10	4	421
8:00	0	269	32	22	10	2	335
9:00	2	207	32	9	3	1	254
10:00	2	136	11	7	4	2	162
11:00	0	89	7	3	3	2	104
Total	**15**	**5286**	**968**	**580**	**205**	**84**	**7138**
Percent	0.2%	74.1%	13.6%	8.1%	2.9%	1.2%	

Project #: 1803_BL
ID#: ATR 4
City/Town: Waterbury, CT
Location: Wolcott Street, north of Dallas Ave

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	47	5	0	0	1	53
1:00	0	24	0	0	0	0	24
2:00	0	26	1	0	2	0	29
3:00	0	21	3	0	2	0	26
4:00	0	37	3	3	1	0	44
5:00	0	84	10	5	2	1	102
6:00	0	134	25	16	8	2	185
7:00	0	207	33	30	9	2	281
8:00	0	249	33	30	13	7	332
9:00	0	285	58	27	9	4	383
10:00	0	302	69	30	15	5	421
11:00	0	358	77	47	11	3	496
12:00 PM	1	425	73	44	18	2	563
1:00	0	389	66	42	18	4	519
2:00	0	464	83	43	12	6	608
3:00	0	459	59	44	17	7	586
4:00	2	464	64	47	21	4	602
5:00	1	460	77	51	21	4	614
6:00	1	393	82	42	15	9	542
7:00	0	358	96	33	12	7	506
8:00	0	270	96	32	12	5	415
9:00	0	211	65	28	8	1	313
10:00	0	177	44	15	5	1	242
11:00	0	111	29	10	2	4	156
Total	**5**	**5955**	**1151**	**619**	**233**	**79**	**8042**
Percent	0.1%	74.0%	14.3%	7.7%	2.9%	1.0%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	12	11	23	12:00 PM	56	50	106
12:15	8	9	17	12:15	47	47	94
12:30	7	8	15	12:30	59	46	105
12:45	8	9	17	12:45	46	41	87
1:00	10	6	16	1:00	50	38	88
1:15	7	3	10	1:15	51	47	98
1:30	2	5	7	1:30	39	30	69
1:45	6	3	9	1:45	54	41	95
2:00	4	3	7	2:00	46	50	96
2:15	1	3	4	2:15	46	60	106
2:30	3	3	6	2:30	69	65	134
2:45	2	1	3	2:45	80	48	128
3:00	3	2	5	3:00	64	64	128
3:15	2	1	3	3:15	77	57	134
3:30	2	5	7	3:30	71	46	117
3:45	3	1	4	3:45	92	51	143
4:00	5	3	8	4:00	71	52	123
4:15	2	9	11	4:15	76	58	134
4:30	6	6	12	4:30	88	65	153
4:45	4	7	11	4:45	69	72	141
5:00	5	7	12	5:00	78	73	151
5:15	6	12	18	5:15	80	61	141
5:30	9	18	27	5:30	62	61	123
5:45	12	24	36	5:45	65	48	113
6:00	16	20	36	6:00	60	52	112
6:15	19	36	55	6:15	53	44	97
6:30	24	46	70	6:30	47	52	99
6:45	26	17	43	6:45	52	53	105
7:00	35	33	68	7:00	58	56	114
7:15	30	30	60	7:15	56	49	105
7:30	32	28	60	7:30	37	27	64
7:45	33	32	65	7:45	35	29	64
8:00	43	50	93	8:00	47	32	79
8:15	55	45	100	8:15	40	42	82
8:30	60	51	111	8:30	30	28	58
8:45	44	30	74	8:45	41	16	57
9:00	41	39	80	9:00	31	25	56
9:15	26	27	53	9:15	32	16	48
9:30	37	44	81	9:30	17	19	36
9:45	31	35	66	9:45	20	16	36
10:00	37	35	72	10:00	14	13	27
10:15	30	40	70	10:15	18	12	30
10:30	34	39	73	10:30	14	18	32
10:45	34	40	74	10:45	16	14	30
11:00	33	47	80	11:00	11	9	20
11:15	48	40	88	11:15	10	6	16
11:30	45	39	84	11:30	7	12	19
11:45	35	30	65	11:45	6	5	11
Total	**977**	**1032**	**2009**	**Total**	**2288**	**1916**	**4204**
				Total All	**3265**	**2948**	**6213**

Average ADT	6665

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	12	2	14	12:00 PM	45	37	82
12:15	5	3	8	12:15	52	53	105
12:30	3	5	8	12:30	60	53	113
12:45	7	4	11	12:45	40	39	79
1:00	4	3	7	1:00	36	56	92
1:15	4	4	8	1:15	40	35	75
1:30	5	3	8	1:30	49	52	101
1:45	4	3	7	1:45	38	34	72
2:00	5	3	8	2:00	68	41	109
2:15	1	2	3	2:15	62	64	126
2:30	3	4	7	2:30	56	57	113
2:45	2	2	4	2:45	75	52	127
3:00	1	2	3	3:00	77	50	127
3:15	3	1	4	3:15	57	55	112
3:30	3	4	7	3:30	68	63	131
3:45	3	4	7	3:45	93	55	148
4:00	3	2	5	4:00	89	55	144
4:15	2	6	8	4:15	75	56	131
4:30	4	8	12	4:30	63	70	133
4:45	11	5	16	4:45	77	48	125
5:00	4	7	11	5:00	69	62	131
5:15	8	16	24	5:15	63	55	118
5:30	14	25	39	5:30	67	65	132
5:45	18	26	44	5:45	71	67	138
6:00	17	33	50	6:00	59	58	117
6:15	27	47	74	6:15	63	56	119
6:30	23	42	65	6:30	66	58	124
6:45	28	36	64	6:45	55	53	108
7:00	41	27	68	7:00	55	64	119
7:15	46	34	80	7:15	63	56	119
7:30	41	41	82	7:30	60	43	103
7:45	32	39	71	7:45	53	42	95
8:00	48	59	107	8:00	38	37	75
8:15	55	45	100	8:15	56	37	93
8:30	42	49	91	8:30	33	26	59
8:45	52	42	94	8:45	31	29	60
9:00	37	28	65	9:00	33	32	65
9:15	38	41	79	9:15	29	26	55
9:30	46	42	88	9:30	34	28	62
9:45	49	38	87	9:45	15	19	34
10:00	35	35	70	10:00	17	28	45
10:15	24	27	51	10:15	20	14	34
10:30	43	32	75	10:30	13	17	30
10:45	57	35	92	10:45	8	13	21
11:00	40	39	79	11:00	9	10	19
11:15	57	29	86	11:15	14	9	23
11:30	42	41	83	11:30	18	10	28
11:45	45	44	89	11:45	4	3	7
Total	**1094**	**1069**	**2163**	**Total**	**2336**	**2042**	**4378**
				Total All	**3430**	**3111**	**6541**

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	6	14	12:00 PM	57	45	102
12:15	4	6	10	12:15	49	38	87
12:30	5	5	10	12:30	44	50	94
12:45	6	4	10	12:45	60	41	101
1:00	6	4	10	1:00	56	36	92
1:15	6	5	11	1:15	50	45	95
1:30	5	1	6	1:30	65	48	113
1:45	1	3	4	1:45	48	46	94
2:00	2	2	4	2:00	62	43	105
2:15	4	2	6	2:15	54	77	131
2:30	1	2	3	2:30	54	46	100
2:45	3	1	4	2:45	80	46	126
3:00	1	4	5	3:00	69	44	113
3:15	3	0	3	3:15	70	57	127
3:30	5	5	10	3:30	83	54	137
3:45	3	1	4	3:45	87	63	150
4:00	4	4	8	4:00	79	60	139
4:15	0	2	2	4:15	67	63	130
4:30	8	7	15	4:30	70	59	129
4:45	10	10	20	4:45	89	60	149
5:00	4	8	12	5:00	73	63	136
5:15	6	16	22	5:15	66	68	134
5:30	16	20	36	5:30	77	52	129
5:45	16	28	44	5:45	68	61	129
6:00	23	32	55	6:00	50	58	108
6:15	28	32	60	6:15	59	55	114
6:30	30	52	82	6:30	52	62	114
6:45	29	41	70	6:45	66	53	119
7:00	35	23	58	7:00	75	50	125
7:15	34	30	64	7:15	65	52	117
7:30	49	34	83	7:30	46	50	96
7:45	42	44	86	7:45	63	37	100
8:00	47	52	99	8:00	38	35	73
8:15	56	43	99	8:15	40	35	75
8:30	35	35	70	8:30	36	36	72
8:45	35	39	74	8:45	20	26	46
9:00	31	34	65	9:00	30	32	62
9:15	31	29	60	9:15	32	29	61
9:30	44	37	81	9:30	17	18	35
9:45	48	29	77	9:45	26	26	52
10:00	44	34	78	10:00	27	21	48
10:15	31	36	67	10:15	22	14	36
10:30	50	35	85	10:30	25	21	46
10:45	39	39	78	10:45	16	15	31
11:00	33	35	68	11:00	17	10	27
11:15	45	32	77	11:15	12	11	23
11:30	33	51	84	11:30	9	9	18
11:45	36	47	83	11:45	8	5	13
Total	**1035**	**1041**	**2076**	**Total**	**2428**	**2025**	**4453**
				Total All	**3463**	**3066**	**6529**

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	7	3	10	12:00 PM	51	35	86
12:15	4	3	7	12:15	40	44	84
12:30	3	3	6	12:30	47	36	83
12:45	5	1	6	12:45	40	42	82
1:00	5	6	11	1:00	52	48	100
1:15	11	6	17	1:15	51	45	96
1:30	0	2	2	1:30	38	46	84
1:45	2	2	4	1:45	55	39	94
2:00	6	2	8	2:00	49	49	98
2:15	4	2	6	2:15	59	62	121
2:30	2	2	4	2:30	54	59	113
2:45	0	2	2	2:45	81	54	135
3:00	2	4	6	3:00	59	53	112
3:15	2	0	2	3:15	63	52	115
3:30	1	4	5	3:30	76	57	133
3:45	1	3	4	3:45	82	58	140
4:00	1	1	2	4:00	86	59	145
4:15	3	6	9	4:15	87	50	137
4:30	8	7	15	4:30	66	52	118
4:45	5	6	11	4:45	87	55	142
5:00	7	8	15	5:00	60	71	131
5:15	4	10	14	5:15	85	64	149
5:30	16	26	42	5:30	79	73	152
5:45	17	31	48	5:45	65	57	122
6:00	16	33	49	6:00	69	75	144
6:15	20	43	63	6:15	61	77	138
6:30	27	55	82	6:30	66	54	120
6:45	39	29	68	6:45	63	50	113
7:00	40	28	68	7:00	70	57	127
7:15	40	34	74	7:15	71	56	127
7:30	40	22	62	7:30	62	41	103
7:45	36	40	76	7:45	62	52	114
8:00	40	43	83	8:00	46	48	94
8:15	55	40	95	8:15	44	43	87
8:30	36	51	87	8:30	31	35	66
8:45	47	43	90	8:45	30	27	57
9:00	42	40	82	9:00	26	36	62
9:15	38	32	70	9:15	36	24	60
9:30	38	42	80	9:30	25	16	41
9:45	31	40	71	9:45	25	15	40
10:00	45	33	78	10:00	28	24	52
10:15	34	43	77	10:15	19	17	36
10:30	45	42	87	10:30	11	16	27
10:45	39	47	86	10:45	15	10	25
11:00	43	33	76	11:00	14	17	31
11:15	43	27	70	11:15	14	16	30
11:30	41	36	77	11:30	17	13	30
11:45	48	36	84	11:45	9	9	18
Total	**1039**	**1052**	**2091**	**Total**	**2426**	**2088**	**4514**
				Total All	**3465**	**3140**	**6605**

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	14	11	25	12:00 PM	59	44	103
12:15	8	6	14	12:15	59	50	109
12:30	9	5	14	12:30	50	43	93
12:45	3	6	9	12:45	57	46	103
1:00	5	4	9	1:00	66	52	118
1:15	7	2	9	1:15	57	42	99
1:30	1	4	5	1:30	47	38	85
1:45	5	6	11	1:45	61	46	107
2:00	4	3	7	2:00	80	47	127
2:15	1	3	4	2:15	63	58	121
2:30	3	6	9	2:30	59	66	125
2:45	4	0	4	2:45	87	71	158
3:00	3	3	6	3:00	84	59	143
3:15	3	3	6	3:15	80	85	165
3:30	2	2	4	3:30	86	62	148
3:45	5	5	10	3:45	91	68	159
4:00	4	3	7	4:00	78	56	134
4:15	4	8	12	4:15	83	63	146
4:30	4	10	14	4:30	82	64	146
4:45	12	12	24	4:45	79	73	152
5:00	5	6	11	5:00	97	68	165
5:15	6	10	16	5:15	82	54	136
5:30	18	29	47	5:30	72	68	140
5:45	19	27	46	5:45	73	66	139
6:00	20	31	51	6:00	66	54	120
6:15	27	50	77	6:15	59	57	116
6:30	27	42	69	6:30	80	64	144
6:45	34	33	67	6:45	81	49	130
7:00	42	37	79	7:00	60	57	117
7:15	42	38	80	7:15	64	48	112
7:30	38	26	64	7:30	47	55	102
7:45	33	47	80	7:45	54	40	94
8:00	69	54	123	8:00	53	43	96
8:15	57	58	115	8:15	42	36	78
8:30	64	61	125	8:30	48	34	82
8:45	34	36	70	8:45	59	37	96
9:00	46	32	78	9:00	39	29	68
9:15	42	38	80	9:15	34	26	60
9:30	33	28	61	9:30	39	32	71
9:45	51	43	94	9:45	31	34	65
10:00	43	46	89	10:00	29	22	51
10:15	53	43	96	10:15	39	26	65
10:30	54	54	108	10:30	31	31	62
10:45	49	51	100	10:45	18	27	45
11:00	60	39	99	11:00	26	12	38
11:15	46	37	83	11:15	28	16	44
11:30	54	43	97	11:30	15	11	26
11:45	53	39	92	11:45	19	13	32
Total	**1220**	**1180**	**2400**	**Total**	**2793**	**2242**	**5035**
				Total All	**4013**	**3422**	**7435**

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**51**	**188**	**594**	**1079**	**1089**	**421**	**94**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3527**

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	16	15	3	0	0	0	0	0	0	0	0	35
1:00	0	1	1	3	5	10	4	1	0	0	0	0	0	0	0	0	25
2:00	0	0	0	2	3	1	4	0	0	0	0	0	0	0	0	0	10
3:00	0	0	0	2	3	3	1	1	0	0	0	0	0	0	0	0	10
4:00	0	0	3	5	3	3	3	0	0	0	0	0	0	0	0	0	17
5:00	0	0	1	4	6	10	4	5	2	0	0	0	0	0	0	0	32
6:00	0	4	10	9	24	29	7	2	0	0	0	0	0	0	0	0	85
7:00	0	2	11	28	28	38	18	5	0	0	0	0	0	0	0	0	130
8:00	0	0	10	42	62	64	21	3	0	0	0	0	0	0	0	0	202
9:00	0	3	8	13	37	41	28	5	0	0	0	0	0	0	0	0	135
10:00	0	6	2	24	23	50	25	4	1	0	0	0	0	0	0	0	135
11:00	0	2	13	28	55	43	12	8	0	0	0	0	0	0	0	0	161
12:00 PM	0	2	8	30	63	75	23	6	1	0	0	0	0	0	0	0	208
1:00	0	5	7	29	66	58	23	6	0	0	0	0	0	0	0	0	194
2:00	0	11	16	32	72	77	27	5	1	0	0	0	0	0	0	0	241
3:00	0	3	8	50	104	96	36	7	0	0	0	0	0	0	0	0	304
4:00	0	1	8	64	122	75	27	6	1	0	0	0	0	0	0	0	304
5:00	0	6	13	63	72	102	24	5	0	0	0	0	0	0	0	0	285
6:00	0	2	3	28	67	85	25	2	0	0	0	0	0	0	0	0	212
7:00	0	0	6	26	59	65	24	6	0	0	0	0	0	0	0	0	186
8:00	0	0	9	22	59	49	17	2	0	0	0	0	0	0	0	0	158
9:00	0	0	4	11	33	28	17	6	1	0	0	0	0	0	0	0	100
10:00	0	2	4	9	16	13	14	4	0	0	0	0	0	0	0	0	62
11:00	0	0	0	3	14	9	7	1	0	0	0	0	0	0	0	0	34
Total	**0**	**50**	**145**	**527**	**997**	**1040**	**406**	**93**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3265**

Percentile	15th	50th	85th	95th
Speed	18	24	29	33

Mean Speed (Average)	24.8
10 MPH Pace Speed	21-30
Number in Pace	2021
Percent in Pace	63.0%

Avg 85th	29.6

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	3	5	9	4	5	1	0	0	0	0	0	0	0	27
1:00	0	0	1	3	1	7	5	0	0	0	0	0	0	0	0	0	17
2:00	0	0	0	2	5	2	2	0	0	0	0	0	0	0	0	0	11
3:00	0	0	2	2	0	3	3	0	0	0	0	0	0	0	0	0	10
4:00	0	0	1	2	4	5	7	1	0	0	0	0	0	0	0	0	20
5:00	0	0	3	8	12	7	12	1	1	0	0	0	0	0	0	0	44
6:00	0	1	6	17	31	30	9	1	0	0	0	0	0	0	0	0	95
7:00	0	4	7	28	39	49	21	11	1	0	0	0	0	0	0	0	160
8:00	0	4	11	31	62	61	23	4	1	0	0	0	0	0	0	0	197
9:00	0	2	10	19	46	61	28	4	0	0	0	0	0	0	0	0	170
10:00	0	0	15	22	30	54	30	7	1	0	0	0	0	0	0	0	159
11:00	0	0	12	24	59	52	31	5	1	0	0	0	0	0	0	0	184
12:00 PM	0	1	3	41	45	71	28	8	0	0	0	0	0	0	0	0	197
1:00	0	2	4	22	44	53	35	3	0	0	0	0	0	0	0	0	163
2:00	0	4	20	47	77	70	40	3	0	0	0	0	0	0	0	0	261
3:00	0	4	13	48	78	106	42	4	0	0	0	0	0	0	0	0	295
4:00	0	8	6	48	101	95	38	6	2	0	0	0	0	0	0	0	304
5:00	0	0	5	37	80	114	30	4	0	0	0	0	0	0	0	0	270
6:00	0	1	8	34	84	81	28	7	0	0	0	0	0	0	0	0	243
7:00	0	2	5	30	89	77	24	4	0	0	0	0	0	0	0	0	231
8:00	0	0	7	26	59	49	12	4	1	0	0	0	0	0	0	0	158
9:00	0	2	11	17	30	39	9	3	0	0	0	0	0	0	0	0	111
10:00	0	0	3	4	16	24	10	1	0	0	0	0	0	0	0	0	58
11:00	0	0	0	5	16	11	12	1	0	0	0	0	0	0	0	0	45
Total	**0**	**35**	**153**	**520**	**1013**	**1130**	**483**	**87**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3430**

Percentile	15th	50th	85th	95th
Speed	18	24	29	33

Mean Speed (Average)	25.1
10 MPH Pace Speed	21-30
Number in Pace	2143
Percent in Pace	62.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	3	9	9	1	0	0	0	0	0	0	0	0	23
1:00	0	0	0	4	3	6	3	2	0	0	0	0	0	0	0	0	18
2:00	0	0	0	3	0	3	2	2	0	0	0	0	0	0	0	0	10
3:00	0	0	2	2	3	1	4	0	0	0	0	0	0	0	0	0	12
4:00	0	1	2	4	5	9	1	0	0	0	0	0	0	0	0	0	22
5:00	0	0	1	13	9	12	4	3	0	0	0	0	0	0	0	0	42
6:00	0	2	6	23	29	37	9	3	1	0	0	0	0	0	0	0	110
7:00	0	2	10	27	38	43	30	10	0	0	0	0	0	0	0	0	160
8:00	0	0	10	33	45	56	22	7	0	0	0	0	0	0	0	0	173
9:00	0	0	6	30	36	61	14	6	1	0	0	0	0	0	0	0	154
10:00	0	0	8	31	40	45	32	7	1	0	0	0	0	0	0	0	164
11:00	0	4	17	23	44	37	20	2	0	0	0	0	0	0	0	0	147
12:00 PM	0	7	22	32	61	62	18	6	2	0	0	0	0	0	0	0	210
1:00	0	3	13	38	68	63	28	6	0	0	0	0	0	0	0	0	219
2:00	0	5	10	27	81	91	28	7	1	0	0	0	0	0	0	0	250
3:00	0	5	36	79	107	68	13	1	0	0	0	0	0	0	0	0	309
4:00	0	17	38	64	93	64	26	3	0	0	0	0	0	0	0	0	305
5:00	0	10	25	55	103	71	18	2	0	0	0	0	0	0	0	0	284
6:00	0	3	8	46	76	65	24	4	1	0	0	0	0	0	0	0	227
7:00	0	1	10	51	92	66	24	4	1	0	0	0	0	0	0	0	249
8:00	0	0	7	15	53	41	10	6	2	0	0	0	0	0	0	0	134
9:00	0	1	2	13	29	35	20	3	1	1	0	0	0	0	0	0	105
10:00	0	0	4	8	38	24	13	3	0	0	0	0	0	0	0	0	90
11:00	0	0	3	6	7	15	11	4	0	0	0	0	0	0	0	0	46
Total	**0**	**61**	**240**	**628**	**1063**	**984**	**383**	**92**	**11**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3463**

Percentile	15th	50th	85th	95th
Speed	16	23	29	33

Mean Speed (Average)	24.1
10 MPH Pace Speed	21-30
Number in Pace	2047
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	2	2	2	8	2	2	1	0	0	0	0	0	0	0	19
1:00	0	0	3	5	1	3	3	2	1	0	0	0	0	0	0	0	18
2:00	0	0	1	3	0	3	4	1	0	0	0	0	0	0	0	0	12
3:00	0	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0	6
4:00	0	0	2	3	3	4	4	1	0	0	0	0	0	0	0	0	17
5:00	0	0	3	10	10	5	14	2	0	0	0	0	0	0	0	0	44
6:00	0	1	9	24	35	20	10	2	1	0	0	0	0	0	0	0	102
7:00	0	2	7	25	49	39	27	6	1	0	0	0	0	0	0	0	156
8:00	0	3	6	30	67	49	18	5	0	0	0	0	0	0	0	0	178
9:00	0	3	7	22	37	46	28	6	0	0	0	0	0	0	0	0	149
10:00	0	2	8	22	38	65	21	7	0	0	0	0	0	0	0	0	163
11:00	0	1	9	20	49	63	31	1	1	0	0	0	0	0	0	0	175
12:00 PM	0	2	11	28	49	60	24	3	1	0	0	0	0	0	0	0	178
1:00	0	2	15	39	66	51	17	6	0	0	0	0	0	0	0	0	196
2:00	0	16	34	48	82	52	8	2	1	0	0	0	0	0	0	0	243
3:00	0	4	15	50	86	88	28	8	1	0	0	0	0	0	0	0	280
4:00	0	3	12	65	91	111	33	11	0	0	0	0	0	0	0	0	326
5:00	0	7	10	66	91	92	15	6	2	0	0	0	0	0	0	0	289
6:00	0	3	17	45	101	76	15	2	0	0	0	0	0	0	0	0	259
7:00	0	2	14	47	107	72	18	5	0	0	0	0	0	0	0	0	265
8:00	0	0	4	24	54	41	21	6	1	0	0	0	0	0	0	0	151
9:00	0	0	6	19	46	22	18	1	0	0	0	0	0	0	0	0	112
10:00	0	2	5	12	16	22	13	3	0	0	0	0	0	0	0	0	73
11:00	0	0	1	10	18	15	6	4	0	0	0	0	0	0	0	0	54
Total	**0**	**53**	**201**	**619**	**1099**	**1011**	**379**	**92**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3465**

Percentile	15th	50th	85th	95th
Speed	17	23	29	33
Mean Speed (Average)	24.3			
10 MPH Pace Speed	21-30			
Number in Pace	2000			
Percent in Pace	61.0%			

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	3	1	9	13	6	1	1	0	0	0	0	0	0	0	34
1:00	0	0	0	5	4	7	1	1	0	0	0	0	0	0	0	0	18
2:00	0	0	0	3	3	2	3	1	0	0	0	0	0	0	0	0	12
3:00	0	0	0	1	1	6	3	2	0	0	0	0	0	0	0	0	13
4:00	0	0	1	3	7	11	2	0	0	0	0	0	0	0	0	0	24
5:00	0	0	5	8	11	15	6	3	0	0	0	0	0	0	0	0	48
6:00	0	3	4	19	30	35	13	4	0	0	0	0	0	0	0	0	108
7:00	0	1	8	25	35	53	28	3	2	0	0	0	0	0	0	0	155
8:00	0	2	9	36	74	75	25	3	0	0	0	0	0	0	0	0	224
9:00	0	3	4	36	46	53	25	5	0	0	0	0	0	0	0	0	172
10:00	0	0	5	35	81	54	20	3	1	0	0	0	0	0	0	0	199
11:00	0	3	11	37	64	67	25	4	2	0	0	0	0	0	0	0	213
12:00 PM	0	5	13	37	58	76	30	5	1	0	0	0	0	0	0	0	225
1:00	0	1	10	38	76	63	40	2	1	0	0	0	0	0	0	0	231
2:00	0	9	26	50	81	85	29	8	1	0	0	0	0	0	0	0	289
3:00	0	3	27	61	116	99	28	7	0	0	0	0	0	0	0	0	341
4:00	0	8	17	50	103	106	32	6	0	0	0	0	0	0	0	0	322
5:00	0	5	14	79	96	84	37	9	0	0	0	0	0	0	0	0	324
6:00	0	6	11	40	86	108	21	12	2	0	0	0	0	0	0	0	286
7:00	0	3	11	41	63	83	19	5	0	0	0	0	0	0	0	0	225
8:00	0	1	11	25	71	75	15	3	1	0	0	0	0	0	0	0	202
9:00	0	1	3	25	47	49	12	5	1	0	0	0	0	0	0	0	143
10:00	0	3	6	8	41	35	16	7	1	0	0	0	0	0	0	0	117
11:00	0	1	2	13	22	26	16	6	2	0	0	0	0	0	0	0	88
Total	**0**	**58**	**201**	**676**	**1225**	**1280**	**452**	**105**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4013**

Percentile	15th	50th	85th	95th
Speed	17	24	29	33

Mean Speed (Average)	24.6
10 MPH Pace Speed	0-0
Number in Pace	0
Percent in Pace	0.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**48**	**263**	**453**	**833**	**885**	**495**	**133**	**28**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3137**

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	4	12	14	4	1	0	0	0	0	0	0	0	37
1:00	0	0	1	1	1	8	2	2	2	0	0	0	0	0	0	0	17
2:00	0	0	0	5	0	3	1	1	0	0	0	0	0	0	0	0	10
3:00	0	0	1	1	2	3	1	1	0	0	0	0	0	0	0	0	9
4:00	0	0	1	3	4	3	8	4	2	0	0	0	0	0	0	0	25
5:00	0	0	4	7	10	18	17	4	1	0	0	0	0	0	0	0	61
6:00	0	4	23	18	31	23	12	8	0	0	0	0	0	0	0	0	119
7:00	0	3	8	23	28	44	11	5	1	0	0	0	0	0	0	0	123
8:00	0	2	11	28	55	49	22	8	1	0	0	0	0	0	0	0	176
9:00	0	4	17	11	35	46	22	8	2	0	0	0	0	0	0	0	145
10:00	0	4	12	25	39	39	28	5	2	0	0	0	0	0	0	0	154
11:00	0	1	6	18	39	59	25	5	3	0	0	0	0	0	0	0	156
12:00 PM	0	1	12	29	30	59	42	11	0	0	0	0	0	0	0	0	184
1:00	0	0	7	19	35	57	29	7	2	0	0	0	0	0	0	0	156
2:00	0	6	31	27	65	59	32	2	1	0	0	0	0	0	0	0	223
3:00	0	6	15	25	79	54	27	10	2	0	0	0	0	0	0	0	218
4:00	0	3	14	41	72	87	23	6	1	0	0	0	0	0	0	0	247
5:00	0	6	22	41	65	71	32	5	1	0	0	0	0	0	0	0	243
6:00	0	1	11	30	65	64	21	9	0	0	0	0	0	0	0	0	201
7:00	0	2	12	22	46	57	18	3	1	0	0	0	0	0	0	0	161
8:00	0	1	6	15	33	42	18	2	1	0	0	0	0	0	0	0	118
9:00	0	0	4	5	20	15	22	8	2	0	0	0	0	0	0	0	76
10:00	0	0	5	10	5	13	11	10	3	0	0	0	0	0	0	0	57
11:00	0	1	2	5	7	5	7	3	2	0	0	0	0	0	0	0	32
Total	**0**	**45**	**225**	**411**	**770**	**890**	**445**	**131**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2948**

Percentile	15th	50th	85th	95th
Speed	16	24	30	34
Mean Speed (Average)	25.1			
10 MPH Pace Speed	21-30			
Number in Pace	1650			
Percent in Pace	57.0%			

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	2	1	2	2	5	2	0	0	0	0	0	0	0	0	14
1:00	0	0	2	0	3	3	2	2	1	0	0	0	0	0	0	0	13
2:00	0	0	0	1	1	2	5	1	1	0	0	0	0	0	0	0	11
3:00	0	0	1	1	1	3	3	1	1	0	0	0	0	0	0	0	11
4:00	0	0	0	1	3	4	10	2	1	0	0	0	0	0	0	0	21
5:00	0	3	7	9	13	16	18	5	3	0	0	0	0	0	0	0	74
6:00	0	4	18	28	41	44	13	8	2	0	0	0	0	0	0	0	158
7:00	0	2	19	22	37	37	17	5	2	0	0	0	0	0	0	0	141
8:00	0	3	21	25	44	52	35	13	2	0	0	0	0	0	0	0	195
9:00	0	6	13	20	19	46	33	10	2	0	0	0	0	0	0	0	149
10:00	0	2	14	15	14	42	27	11	4	0	0	0	0	0	0	0	129
11:00	0	3	10	19	38	48	26	9	0	0	0	0	0	0	0	0	153
12:00 PM	0	4	15	32	50	44	26	10	1	0	0	0	0	0	0	0	182
1:00	0	3	19	19	39	56	30	8	3	0	0	0	0	0	0	0	177
2:00	0	3	14	32	63	60	33	8	1	0	0	0	0	0	0	0	214
3:00	0	2	11	25	72	71	36	6	0	0	0	0	0	0	0	0	223
4:00	0	4	13	36	68	69	33	5	1	0	0	0	0	0	0	0	229
5:00	0	4	16	40	52	81	50	5	1	0	0	0	0	0	0	0	249
6:00	0	4	11	29	85	71	21	3	1	0	0	0	0	0	0	0	225
7:00	0	1	16	18	66	68	25	11	0	0	0	0	0	0	0	0	205
8:00	0	1	5	22	31	40	22	7	1	0	0	0	0	0	0	0	129
9:00	0	2	7	16	23	30	25	2	0	0	0	0	0	0	0	0	105
10:00	0	0	6	5	16	19	15	9	2	0	0	0	0	0	0	0	72
11:00	0	0	2	0	12	5	9	4	0	0	0	0	0	0	0	0	32
Total	**0**	**51**	**242**	**416**	**793**	**913**	**519**	**147**	**30**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3111**

	15th	50th	85th	95th
Percentile				
Speed	16	24	31	34

Mean Speed (Average)	25.4
10 MPH Pace Speed	21-30
Number in Pace	1706
Percent in Pace	55.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	2	0	1	9	7	1	1	0	0	0	0	0	0	0	21
1:00	0	0	2	1	0	1	5	4	0	0	0	0	0	0	0	0	13
2:00	0	0	1	0	1	0	3	1	1	0	0	0	0	0	0	0	7
3:00	0	0	1	2	3	0	2	1	1	0	0	0	0	0	0	0	10
4:00	0	0	0	3	4	8	6	1	1	0	0	0	0	0	0	0	23
5:00	0	1	4	6	14	27	15	5	0	0	0	0	0	0	0	0	72
6:00	0	2	25	24	30	43	20	10	3	0	0	0	0	0	0	0	157
7:00	0	1	16	24	31	21	27	11	0	0	0	0	0	0	0	0	131
8:00	0	5	20	20	37	37	40	9	1	0	0	0	0	0	0	0	169
9:00	0	2	6	17	15	37	43	7	2	0	0	0	0	0	0	0	129
10:00	0	2	19	21	24	43	24	11	0	0	0	0	0	0	0	0	144
11:00	0	4	13	21	49	42	32	3	1	0	0	0	0	0	0	0	165
12:00 PM	0	6	21	24	38	51	26	7	1	0	0	0	0	0	0	0	174
1:00	0	2	16	26	40	51	34	5	1	0	0	0	0	0	0	0	175
2:00	0	4	12	23	56	64	41	9	3	0	0	0	0	0	0	0	212
3:00	0	1	18	33	74	57	28	3	4	0	0	0	0	0	0	0	218
4:00	0	2	9	40	88	61	37	4	1	0	0	0	0	0	0	0	242
5:00	0	3	16	37	77	77	27	6	1	0	0	0	0	0	0	0	244
6:00	0	0	16	29	77	58	39	6	3	0	0	0	0	0	0	0	228
7:00	0	1	11	26	67	56	22	5	1	0	0	0	0	0	0	0	189
8:00	0	0	12	21	26	46	21	3	3	0	0	0	0	0	0	0	132
9:00	0	1	8	9	24	38	19	6	0	0	0	0	0	0	0	0	105
10:00	0	1	3	6	11	14	22	10	4	0	0	0	0	0	0	0	71
11:00	0	1	3	7	9	8	5	2	0	0	0	0	0	0	0	0	35
Total	**0**	**39**	**254**	**420**	**796**	**849**	**545**	**130**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3066**

Percentile	15th	50th	85th	95th
Speed	16	24	31	34

Mean Speed (Average)	25.3
10 MPH Pace Speed	21-30
Number in Pace	1645
Percent in Pace	54.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	1	0	1	4	2	2	0	0	0	0	0	0	0	0	10
1:00	0	0	0	2	3	4	5	2	0	0	0	0	0	0	0	0	16
2:00	0	0	1	1	0	0	3	2	1	0	0	0	0	0	0	0	8
3:00	0	0	1	2	2	5	1	0	0	0	0	0	0	0	0	0	11
4:00	0	0	0	1	3	7	6	2	1	0	0	0	0	0	0	0	20
5:00	0	2	9	9	11	20	14	8	2	0	0	0	0	0	0	0	75
6:00	0	5	23	28	43	34	20	4	3	0	0	0	0	0	0	0	160
7:00	0	3	12	33	23	25	20	5	3	0	0	0	0	0	0	0	124
8:00	0	4	11	25	57	44	32	2	2	0	0	0	0	0	0	0	177
9:00	0	2	8	24	39	42	32	7	0	0	0	0	0	0	0	0	154
10:00	0	4	13	22	44	46	28	6	2	0	0	0	0	0	0	0	165
11:00	0	3	8	16	44	36	17	7	1	0	0	0	0	0	0	0	132
12:00 PM	0	2	14	15	37	58	22	8	1	0	0	0	0	0	0	0	157
1:00	0	2	19	41	58	38	15	5	0	0	0	0	0	0	0	0	178
2:00	0	13	36	37	73	46	15	2	2	0	0	0	0	0	0	0	224
3:00	0	4	25	35	64	58	26	8	0	0	0	0	0	0	0	0	220
4:00	0	5	22	39	60	54	23	13	0	0	0	0	0	0	0	0	216
5:00	0	3	30	41	85	72	25	8	1	0	0	0	0	0	0	0	265
6:00	0	3	15	41	82	82	27	5	1	0	0	0	0	0	0	0	256
7:00	0	2	25	29	64	56	20	9	1	0	0	0	0	0	0	0	206
8:00	0	2	10	22	53	37	24	4	1	0	0	0	0	0	0	0	153
9:00	0	3	9	11	21	28	16	3	0	0	0	0	0	0	0	0	91
10:00	0	2	6	9	10	21	14	5	0	0	0	0	0	0	0	0	67
11:00	0	1	4	2	10	12	16	10	0	0	0	0	0	0	0	0	55
Total	**0**	**65**	**302**	**485**	**887**	**829**	**423**	**127**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3140**

Percentile	15th	50th	85th	95th
Speed	15	24	29	34

Mean Speed (Average)	24.4
10 MPH Pace Speed	21-30
Number in Pace	1631
Percent in Pace	54.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	8	7	6	5	0	0	0	0	0	0	0	0	28
1:00	0	0	0	3	3	3	6	1	0	0	0	0	0	0	0	0	16
2:00	0	0	1	1	2	4	2	1	1	0	0	0	0	0	0	0	12
3:00	0	0	1	2	2	3	3	2	0	0	0	0	0	0	0	0	13
4:00	0	0	1	2	2	13	12	2	1	0	0	0	0	0	0	0	33
5:00	0	1	5	12	9	20	13	10	2	0	0	0	0	0	0	0	72
6:00	0	3	16	27	34	41	25	10	0	0	0	0	0	0	0	0	156
7:00	0	2	24	24	40	38	18	2	0	0	0	0	0	0	0	0	148
8:00	0	1	17	34	57	55	40	5	0	0	0	0	0	0	0	0	209
9:00	0	4	9	12	36	43	32	5	0	0	0	0	0	0	0	0	141
10:00	0	0	12	29	48	56	42	4	3	0	0	0	0	0	0	0	194
11:00	0	1	10	28	38	44	30	6	1	0	0	0	0	0	0	0	158
12:00 PM	0	3	20	26	48	46	33	5	2	0	0	0	0	0	0	0	183
1:00	0	1	20	32	44	54	21	5	1	0	0	0	0	0	0	0	178
2:00	0	3	19	43	73	67	29	8	0	0	0	0	0	0	0	0	242
3:00	0	2	21	42	79	75	44	10	1	0	0	0	0	0	0	0	274
4:00	0	3	18	64	84	56	23	8	0	0	0	0	0	0	0	0	256
5:00	0	8	44	49	65	55	23	10	2	0	0	0	0	0	0	0	256
6:00	0	2	12	30	75	70	30	5	0	0	0	0	0	0	0	0	224
7:00	0	1	16	28	63	66	21	3	2	0	0	0	0	0	0	0	200
8:00	0	2	7	18	39	52	22	7	3	0	0	0	0	0	0	0	150
9:00	0	1	8	9	26	37	34	6	0	0	0	0	0	0	0	0	121
10:00	0	0	9	12	33	20	22	6	4	0	0	0	0	0	0	0	106
11:00	0	1	3	6	10	19	10	3	0	0	0	0	0	0	0	0	52
Total	**0**	**39**	**293**	**535**	**918**	**944**	**541**	**129**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3422**

Percentile	15th	50th	85th	95th
Speed	16	24	30	34

Mean Speed (Average)	24.9
10 MPH Pace Speed	0-0
Number in Pace	0
Percent in Pace	0.0%

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	32	1	1	0	0	35
1:00	0	20	3	2	0	0	25
2:00	0	10	0	0	0	0	10
3:00	0	10	0	0	0	0	10
4:00	0	15	2	0	0	0	17
5:00	0	29	2	0	1	0	32
6:00	0	72	3	6	4	0	85
7:00	0	112	7	5	6	0	130
8:00	0	173	10	12	6	1	202
9:00	0	121	7	5	1	1	135
10:00	0	123	8	2	2	0	135
11:00	1	138	10	10	2	0	161
12:00 PM	0	184	14	6	3	1	208
1:00	1	172	13	5	3	0	194
2:00	1	209	15	11	5	0	241
3:00	1	266	12	18	7	0	304
4:00	3	258	23	13	6	1	304
5:00	1	261	11	10	2	0	285
6:00	1	189	14	5	3	0	212
7:00	2	167	12	4	1	0	186
8:00	1	144	8	4	1	0	158
9:00	0	95	4	0	1	0	100
10:00	0	60	0	1	1	0	62
11:00	0	32	0	1	1	0	34
Total	**13**	**2892**	**179**	**121**	**56**	**4**	**3265**
Percent	0.4%	88.6%	5.5%	3.7%	1.7%	0.1%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	26	1	0	0	0	27
1:00	0	16	0	0	0	1	17
2:00	0	11	0	0	0	0	11
3:00	0	9	1	0	0	0	10
4:00	0	19	1	0	0	0	20
5:00	0	39	0	4	1	0	44
6:00	0	76	8	5	5	1	95
7:00	0	138	8	5	7	2	160
8:00	0	163	13	15	5	1	197
9:00	1	134	18	12	3	2	170
10:00	1	147	6	2	3	0	159
11:00	1	164	11	4	2	2	184
12:00 PM	0	174	13	6	4	0	197
1:00	1	143	8	8	3	0	163
2:00	1	226	15	12	6	1	261
3:00	1	265	11	9	8	1	295
4:00	2	270	18	10	4	0	304
5:00	1	235	26	6	2	0	270
6:00	0	223	11	7	2	0	243
7:00	2	211	7	9	2	0	231
8:00	0	135	17	4	2	0	158
9:00	0	103	5	1	2	0	111
10:00	0	51	3	3	1	0	58
11:00	1	42	1	0	1	0	45
Total	**12**	**3020**	**202**	**122**	**63**	**11**	**3430**
Percent	0.3%	88.0%	5.9%	3.6%	1.8%	0.3%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	21	2	0	0	0	23
1:00	0	17	0	1	0	0	18
2:00	0	10	0	0	0	0	10
3:00	0	11	0	1	0	0	12
4:00	0	19	1	1	0	1	22
5:00	0	37	3	1	1	0	42
6:00	0	92	9	5	4	0	110
7:00	0	133	11	10	4	2	160
8:00	0	142	9	15	7	0	173
9:00	1	136	8	5	4	0	154
10:00	0	143	9	9	3	0	164
11:00	0	125	7	9	6	0	147
12:00 PM	0	179	9	16	3	3	210
1:00	2	196	6	9	5	1	219
2:00	2	218	17	10	3	0	250
3:00	2	260	20	20	7	0	309
4:00	3	264	21	13	4	0	305
5:00	0	250	19	10	4	1	284
6:00	0	202	12	8	5	0	227
7:00	2	230	12	4	1	0	249
8:00	0	122	10	1	1	0	134
9:00	0	94	7	3	1	0	105
10:00	0	87	1	1	1	0	90
11:00	0	43	1	1	1	0	46
Total	**12**	**3031**	**194**	**153**	**65**	**8**	**3463**
Percent	0.3%	87.5%	5.6%	4.4%	1.9%	0.2%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/26/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	18	1	0	0	0	19
1:00	0	17	0	1	0	0	18
2:00	0	12	0	0	0	0	12
3:00	0	6	0	0	0	0	6
4:00	0	15	2	0	0	0	17
5:00	0	40	1	1	2	0	44
6:00	0	76	13	7	6	0	102
7:00	0	135	12	4	5	0	156
8:00	0	148	10	14	6	0	178
9:00	1	135	7	4	2	0	149
10:00	0	151	7	2	3	0	163
11:00	0	154	8	9	4	0	175
12:00 PM	0	156	11	9	2	0	178
1:00	0	175	10	8	3	0	196
2:00	0	214	15	10	4	0	243
3:00	0	252	14	11	3	0	280
4:00	1	291	16	12	6	0	326
5:00	0	255	19	10	3	2	289
6:00	0	228	23	6	2	0	259
7:00	0	237	13	11	4	0	265
8:00	3	135	9	3	1	0	151
9:00	0	104	4	2	1	1	112
10:00	1	65	6	0	1	0	73
11:00	0	51	1	1	1	0	54
Total	**6**	**3070**	**202**	**125**	**59**	**3**	**3465**
Percent	0.2%	88.6%	5.8%	3.6%	1.7%	0.1%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	30	3	0	0	0	34
1:00	0	17	1	0	0	0	18
2:00	0	11	0	1	0	0	12
3:00	0	13	0	0	0	0	13
4:00	0	21	2	0	0	1	24
5:00	0	45	1	1	1	0	48
6:00	0	85	10	9	3	1	108
7:00	0	138	6	6	5	0	155
8:00	0	191	13	12	8	0	224
9:00	1	157	6	4	4	0	172
10:00	0	182	10	4	3	0	199
11:00	1	185	16	7	3	1	213
12:00 PM	1	194	20	5	4	1	225
1:00	1	204	14	8	4	0	231
2:00	0	254	17	13	3	2	289
3:00	0	304	21	12	4	0	341
4:00	0	279	20	21	2	0	322
5:00	1	287	20	9	7	0	324
6:00	1	248	22	13	2	0	286
7:00	1	199	15	8	2	0	225
8:00	0	183	15	2	2	0	202
9:00	1	131	7	3	1	0	143
10:00	1	108	2	5	1	0	117
11:00	0	82	3	2	1	0	88
Total	**10**	**3548**	**244**	**145**	**60**	**6**	**4013**
Percent	0.2%	88.4%	6.1%	3.6%	1.5%	0.1%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	34	2	1	0	0	37
1:00	0	16	0	1	0	0	17
2:00	0	8	2	0	0	0	10
3:00	0	7	2	0	0	0	9
4:00	0	22	3	0	0	0	25
5:00	0	56	4	0	1	0	61
6:00	1	102	10	1	5	0	119
7:00	0	91	20	5	7	0	123
8:00	0	135	31	2	8	0	176
9:00	0	113	23	4	5	0	145
10:00	0	123	23	2	5	1	154
11:00	1	127	21	6	1	0	156
12:00 PM	0	158	21	3	2	0	184
1:00	0	138	13	3	2	0	156
2:00	0	186	26	6	5	0	223
3:00	0	177	23	9	8	1	218
4:00	0	214	23	6	4	0	247
5:00	0	207	28	7	1	0	243
6:00	1	179	16	5	0	0	201
7:00	0	140	16	5	0	0	161
8:00	0	106	12	0	0	0	118
9:00	0	70	5	0	1	0	76
10:00	0	52	3	1	0	1	57
11:00	0	30	2	0	0	0	32
Total	**3**	**2491**	**329**	**67**	**55**	**3**	**2948**
Percent	0.1%	84.5%	11.2%	2.3%	1.9%	0.1%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	12	1	0	1	0	14
1:00	0	12	1	0	0	0	13
2:00	0	11	0	0	0	0	11
3:00	0	11	0	0	0	0	11
4:00	0	20	1	0	0	0	21
5:00	0	64	9	0	1	0	74
6:00	0	121	27	5	5	0	158
7:00	0	115	23	1	2	0	141
8:00	0	141	34	8	11	1	195
9:00	0	122	17	8	2	0	149
10:00	0	109	14	2	3	1	129
11:00	0	132	15	2	4	0	153
12:00 PM	1	154	21	2	3	1	182
1:00	1	157	15	1	2	1	177
2:00	0	187	16	6	4	1	214
3:00	2	189	14	12	6	0	223
4:00	0	206	18	3	2	0	229
5:00	1	214	26	7	1	0	249
6:00	0	202	19	2	2	0	225
7:00	1	180	20	3	1	0	205
8:00	0	118	9	1	1	0	129
9:00	0	98	5	1	1	0	105
10:00	0	67	3	1	1	0	72
11:00	0	29	2	0	1	0	32
Total	**6**	**2671**	**310**	**65**	**54**	**5**	**3111**
Percent	0.2%	85.9%	10.0%	2.1%	1.7%	0.2%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	19	1	0	1	0	21
1:00	0	13	0	0	0	0	13
2:00	0	6	1	0	0	0	7
3:00	0	10	0	0	0	0	10
4:00	0	20	2	1	0	0	23
5:00	0	63	7	1	1	0	72
6:00	0	128	21	3	4	1	157
7:00	0	108	16	3	4	0	131
8:00	0	128	26	8	7	0	169
9:00	0	112	13	1	2	1	129
10:00	0	126	13	5	0	0	144
11:00	0	134	21	5	5	0	165
12:00 PM	1	146	21	4	1	1	174
1:00	1	151	14	7	2	0	175
2:00	0	179	21	5	7	0	212
3:00	0	182	22	6	8	0	218
4:00	1	213	18	7	3	0	242
5:00	1	222	17	1	3	0	244
6:00	0	207	16	4	1	0	228
7:00	1	167	19	1	1	0	189
8:00	0	119	11	0	1	1	132
9:00	0	101	2	2	0	0	105
10:00	0	66	3	0	2	0	71
11:00	0	30	3	1	1	0	35
Total	**5**	**2650**	**288**	**65**	**54**	**4**	**3066**
Percent	0.2%	86.4%	9.4%	2.1%	1.8%	0.1%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	9	0	0	1	0	10
1:00	0	16	0	0	0	0	16
2:00	0	8	0	0	0	0	8
3:00	0	10	0	1	0	0	11
4:00	0	17	2	1	0	0	20
5:00	0	62	11	0	1	1	75
6:00	0	131	21	5	3	0	160
7:00	0	97	18	2	7	0	124
8:00	0	141	19	6	11	0	177
9:00	1	133	14	4	2	0	154
10:00	0	142	16	5	2	0	165
11:00	0	116	12	2	2	0	132
12:00 PM	0	144	6	4	3	0	157
1:00	0	152	17	7	2	0	178
2:00	0	184	25	9	5	1	224
3:00	0	185	24	7	4	0	220
4:00	0	181	23	5	6	1	216
5:00	2	228	26	6	3	0	265
6:00	1	221	30	2	0	2	256
7:00	1	177	24	2	1	1	206
8:00	0	142	9	2	0	0	153
9:00	0	84	7	0	0	0	91
10:00	0	59	4	3	1	0	67
11:00	0	53	2	0	0	0	55
Total	**5**	**2692**	**310**	**73**	**54**	**6**	**3140**
Percent	0.2%	85.7%	9.9%	2.3%	1.7%	0.2%	

Project #: 1803_BL
ID#: ATR 5
City/Town: Waterbury, CT
Location: Baldwin Street, south of Madison Street

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	27	0	0	1	0	28
1:00	0	14	2	0	0	0	16
2:00	0	12	0	0	0	0	12
3:00	0	13	0	0	0	0	13
4:00	0	29	3	1	0	0	33
5:00	0	60	9	1	2	0	72
6:00	1	124	20	8	2	1	156
7:00	0	124	13	5	6	0	148
8:00	1	171	19	8	10	0	209
9:00	1	123	10	5	2	0	141
10:00	0	154	33	4	3	0	194
11:00	0	140	11	5	2	0	158
12:00 PM	0	147	28	6	2	0	183
1:00	1	150	17	6	4	0	178
2:00	0	204	27	5	6	0	242
3:00	0	234	26	4	10	0	274
4:00	3	216	24	9	2	2	256
5:00	2	211	31	8	4	0	256
6:00	0	192	26	4	2	0	224
7:00	0	177	21	1	1	0	200
8:00	0	137	11	2	0	0	150
9:00	0	110	10	1	0	0	121
10:00	0	95	8	2	1	0	106
11:00	1	45	4	0	1	1	52
Total	**10**	**2909**	**353**	**85**	**61**	**4**	**3422**
Percent	0.3%	85.0%	10.3%	2.5%	1.8%	0.1%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	10	5	15	12:00 PM	70	33	103
12:15	7	3	10	12:15	68	31	99
12:30	5	4	9	12:30	59	29	88
12:45	3	3	6	12:45	81	36	117
1:00	2	2	4	1:00	71	43	114
1:15	1	1	2	1:15	73	31	104
1:30	2	2	4	1:30	76	35	111
1:45	2	0	2	1:45	75	34	109
2:00	6	1	7	2:00	71	40	111
2:15	0	1	1	2:15	72	42	114
2:30	2	1	3	2:30	86	43	129
2:45	1	2	3	2:45	92	45	137
3:00	2	2	4	3:00	101	39	140
3:15	5	1	6	3:15	77	43	120
3:30	1	1	2	3:30	96	33	129
3:45	2	0	2	3:45	94	39	133
4:00	3	1	4	4:00	92	33	125
4:15	4	3	7	4:15	94	54	148
4:30	11	5	16	4:30	114	33	147
4:45	9	12	21	4:45	92	40	132
5:00	8	5	13	5:00	120	36	156
5:15	12	8	20	5:15	106	41	147
5:30	21	13	34	5:30	98	26	124
5:45	23	21	44	5:45	53	26	79
6:00	21	18	39	6:00	63	28	91
6:15	28	18	46	6:15	78	15	93
6:30	47	20	67	6:30	57	21	78
6:45	48	28	76	6:45	54	13	67
7:00	54	44	98	7:00	37	22	59
7:15	49	46	95	7:15	33	18	51
7:30	65	47	112	7:30	39	13	52
7:45	87	58	145	7:45	34	16	50
8:00	70	45	115	8:00	28	13	41
8:15	81	51	132	8:15	31	16	47
8:30	98	31	129	8:30	21	11	32
8:45	73	49	122	8:45	25	14	39
9:00	65	32	97	9:00	21	11	32
9:15	62	25	87	9:15	40	12	52
9:30	70	31	101	9:30	20	10	30
9:45	73	26	99	9:45	18	14	32
10:00	64	28	92	10:00	11	7	18
10:15	64	27	91	10:15	13	9	22
10:30	71	25	96	10:30	9	5	14
10:45	66	20	86	10:45	14	2	16
11:00	67	20	87	11:00	13	8	21
11:15	72	16	88	11:15	7	8	15
11:30	65	33	98	11:30	6	4	10
11:45	54	27	81	11:45	5	5	10
Total	**1656**	**862**	**2518**	**Total**	**2708**	**1180**	**3888**
				Total All	**4364**	**2042**	**6406**

Avg ADT	7210

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	9	3	12	12:00 PM	92	24	116
12:15	3	3	6	12:15	68	44	112
12:30	2	3	5	12:30	81	40	121
12:45	2	2	4	12:45	76	34	110
1:00	3	5	8	1:00	79	29	108
1:15	3	2	5	1:15	84	37	121
1:30	2	1	3	1:30	87	34	121
1:45	2	0	2	1:45	76	43	119
2:00	2	0	2	2:00	70	46	116
2:15	2	1	3	2:15	96	31	127
2:30	3	0	3	2:30	92	41	133
2:45	0	0	0	2:45	64	45	109
3:00	2	1	3	3:00	89	48	137
3:15	2	1	3	3:15	99	38	137
3:30	2	2	4	3:30	107	43	150
3:45	1	1	2	3:45	104	47	151
4:00	7	2	9	4:00	104	51	155
4:15	3	1	4	4:15	104	31	135
4:30	11	4	15	4:30	108	28	136
4:45	4	4	8	4:45	116	46	162
5:00	10	10	20	5:00	104	35	139
5:15	18	12	30	5:15	111	30	141
5:30	29	12	41	5:30	119	21	140
5:45	20	15	35	5:45	99	36	135
6:00	26	20	46	6:00	90	29	119
6:15	31	19	50	6:15	76	34	110
6:30	50	22	72	6:30	73	19	92
6:45	61	40	101	6:45	77	25	102
7:00	44	32	76	7:00	70	27	97
7:15	62	49	111	7:15	52	15	67
7:30	86	53	139	7:30	52	24	76
7:45	88	66	154	7:45	59	21	80
8:00	75	71	146	8:00	49	17	66
8:15	89	41	130	8:15	34	18	52
8:30	88	44	132	8:30	38	13	51
8:45	62	44	106	8:45	24	12	36
9:00	75	38	113	9:00	17	15	32
9:15	79	36	115	9:15	22	12	34
9:30	77	20	97	9:30	24	10	34
9:45	78	29	107	9:45	12	11	23
10:00	64	32	96	10:00	25	9	34
10:15	61	17	78	10:15	16	9	25
10:30	75	27	102	10:30	14	11	25
10:45	71	24	95	10:45	10	6	16
11:00	78	32	110	11:00	9	4	13
11:15	66	29	95	11:15	12	6	18
11:30	80	26	106	11:30	6	5	11
11:45	64	36	100	11:45	11	4	15
Total	**1772**	**932**	**2704**	**Total**	**3101**	**1258**	**4359**
				Total All	**4873**	**2190**	**7063**

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	3	3	6	12:00 PM	58	22	80
12:15	7	3	10	12:15	69	29	98
12:30	3	4	7	12:30	73	30	103
12:45	1	1	2	12:45	69	34	103
1:00	5	3	8	1:00	68	33	101
1:15	0	4	4	1:15	78	33	111
1:30	0	0	0	1:30	62	29	91
1:45	5	0	5	1:45	76	41	117
2:00	2	0	2	2:00	71	46	117
2:15	1	2	3	2:15	86	33	119
2:30	2	0	2	2:30	87	44	131
2:45	0	0	0	2:45	88	49	137
3:00	2	0	2	3:00	99	38	137
3:15	0	1	1	3:15	92	40	132
3:30	2	0	2	3:30	94	39	133
3:45	1	0	1	3:45	99	32	131
4:00	2	6	8	4:00	118	39	157
4:15	10	2	12	4:15	111	42	153
4:30	11	3	14	4:30	115	42	157
4:45	12	12	24	4:45	137	36	173
5:00	10	7	17	5:00	141	39	180
5:15	16	9	25	5:15	106	24	130
5:30	28	14	42	5:30	100	28	128
5:45	21	10	31	5:45	92	29	121
6:00	26	17	43	6:00	87	34	121
6:15	38	18	56	6:15	94	22	116
6:30	42	21	63	6:30	77	29	106
6:45	61	40	101	6:45	82	22	104
7:00	50	41	91	7:00	69	18	87
7:15	51	53	104	7:15	57	19	76
7:30	78	65	143	7:30	54	12	66
7:45	89	75	164	7:45	41	14	55
8:00	76	74	150	8:00	37	19	56
8:15	99	53	152	8:15	30	22	52
8:30	71	38	109	8:30	37	12	49
8:45	64	41	105	8:45	24	14	38
9:00	78	34	112	9:00	34	11	45
9:15	73	21	94	9:15	31	13	44
9:30	80	66	146	9:30	20	13	33
9:45	69	61	130	9:45	21	16	37
10:00	84	61	145	10:00	16	9	25
10:15	65	61	126	10:15	13	10	23
10:30	65	50	115	10:30	11	12	23
10:45	84	47	131	10:45	14	10	24
11:00	62	60	122	11:00	20	6	26
11:15	73	40	113	11:15	10	3	13
11:30	64	29	93	11:30	7	2	9
11:45	63	35	98	11:45	11	5	16
Total	**1749**	**1185**	**2934**	**Total**	**3086**	**1198**	**4284**
				Total All	**4835**	**2383**	**7218**

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	2	10	12:00 PM	69	34	103
12:15	4	7	11	12:15	76	36	112
12:30	1	3	4	12:30	85	28	113
12:45	3	2	5	12:45	97	36	133
1:00	3	2	5	1:00	83	44	127
1:15	4	1	5	1:15	94	35	129
1:30	1	1	2	1:30	85	36	121
1:45	1	1	2	1:45	85	50	135
2:00	3	1	4	2:00	65	31	96
2:15	2	1	3	2:15	94	46	140
2:30	0	0	0	2:30	100	47	147
2:45	2	3	5	2:45	82	50	132
3:00	3	1	4	3:00	92	42	134
3:15	0	2	2	3:15	81	45	126
3:30	7	0	7	3:30	103	43	146
3:45	3	3	6	3:45	107	37	144
4:00	1	5	6	4:00	113	49	162
4:15	4	3	7	4:15	110	52	162
4:30	15	2	17	4:30	125	46	171
4:45	5	8	13	4:45	106	72	178
5:00	7	9	16	5:00	120	43	163
5:15	24	11	35	5:15	113	37	150
5:30	22	13	35	5:30	108	26	134
5:45	27	18	45	5:45	90	36	126
6:00	29	17	46	6:00	85	34	119
6:15	32	19	51	6:15	78	27	105
6:30	49	21	70	6:30	75	23	98
6:45	58	37	95	6:45	55	23	78
7:00	49	47	96	7:00	56	27	83
7:15	65	44	109	7:15	61	21	82
7:30	65	56	121	7:30	50	21	71
7:45	71	60	131	7:45	38	19	57
8:00	80	70	150	8:00	43	16	59
8:15	78	49	127	8:15	28	25	53
8:30	99	38	137	8:30	43	10	53
8:45	91	45	136	8:45	28	15	43
9:00	83	25	108	9:00	34	12	46
9:15	68	26	94	9:15	27	14	41
9:30	64	21	85	9:30	16	13	29
9:45	67	41	108	9:45	18	12	30
10:00	89	33	122	10:00	21	9	30
10:15	63	35	98	10:15	19	15	34
10:30	72	31	103	10:30	17	9	26
10:45	77	38	115	10:45	20	5	25
11:00	73	26	99	11:00	16	5	21
11:15	54	29	83	11:15	21	11	32
11:30	69	26	95	11:30	11	6	17
11:45	73	32	105	11:45	14	1	15
Total	**1768**	**965**	**2733**	**Total**	**3157**	**1374**	**4531**
				Total All	**4925**	**2339**	**7264**

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	6	1	7	12:00 PM	86	70	156
12:15	7	3	10	12:15	82	70	152
12:30	4	4	8	12:30	85	70	155
12:45	6	4	10	12:45	88	69	157
1:00	1	3	4	1:00	92	78	170
1:15	8	1	9	1:15	86	60	146
1:30	2	0	2	1:30	74	70	144
1:45	2	2	4	1:45	84	68	152
2:00	4	1	5	2:00	95	69	164
2:15	3	1	4	2:15	86	77	163
2:30	2	0	2	2:30	110	69	179
2:45	2	4	6	2:45	75	69	144
3:00	2	1	3	3:00	105	84	189
3:15	1	2	3	3:15	103	81	184
3:30	1	1	2	3:30	99	63	162
3:45	1	2	3	3:45	121	42	163
4:00	5	2	7	4:00	101	38	139
4:15	6	4	10	4:15	111	39	150
4:30	10	6	16	4:30	130	40	170
4:45	14	6	20	4:45	111	42	153
5:00	11	7	18	5:00	115	40	155
5:15	15	10	25	5:15	97	41	138
5:30	21	12	33	5:30	92	21	113
5:45	22	17	39	5:45	93	26	119
6:00	17	11	28	6:00	73	25	98
6:15	31	24	55	6:15	53	22	75
6:30	38	20	58	6:30	77	24	101
6:45	59	32	91	6:45	66	25	91
7:00	47	28	75	7:00	64	26	90
7:15	49	51	100	7:15	49	17	66
7:30	69	38	107	7:30	40	28	68
7:45	71	50	121	7:45	48	18	66
8:00	92	50	142	8:00	37	18	55
8:15	79	44	123	8:15	39	14	53
8:30	74	58	132	8:30	33	8	41
8:45	83	72	155	8:45	37	17	54
9:00	71	65	136	9:00	40	14	54
9:15	71	70	141	9:15	28	13	41
9:30	78	56	134	9:30	30	11	41
9:45	81	63	144	9:45	32	11	43
10:00	77	55	132	10:00	25	19	44
10:15	69	76	145	10:15	21	12	33
10:30	72	63	135	10:30	17	7	24
10:45	71	67	138	10:45	24	6	30
11:00	72	65	137	11:00	21	11	32
11:15	70	49	119	11:15	19	4	23
11:30	93	48	141	11:30	29	8	37
11:45	95	62	157	11:45	21	4	25
Total	**1785**	**1311**	**3096**	**Total**	**3244**	**1758**	**5002**
				Total All	**5029**	**3069**	**8098**

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**1**	**6**	**8**	**15**	**76**	**469**	**1509**	**1799**	**751**	**155**	**16**	**0**	**0**	**0**	**0**	**4805**

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	2	9	12	2	0	0	0	0	0	0	0	25
1:00	0	0	0	0	0	1	2	2	1	1	0	0	0	0	0	0	7
2:00	0	0	0	0	0	0	2	1	3	1	2	0	0	0	0	0	9
3:00	0	0	0	0	0	0	2	4	3	1	0	0	0	0	0	0	10
4:00	0	0	0	0	0	3	2	10	7	4	1	0	0	0	0	0	27
5:00	0	0	0	1	1	2	6	18	23	12	1	0	0	0	0	0	64
6:00	0	0	0	0	2	3	27	56	36	18	2	0	0	0	0	0	144
7:00	0	0	0	1	0	2	39	93	85	31	4	0	0	0	0	0	255
8:00	0	0	2	0	0	6	44	106	118	43	3	0	0	0	0	0	322
9:00	0	0	0	0	1	1	16	84	124	38	6	0	0	0	0	0	270
10:00	0	0	0	0	0	4	35	98	96	24	8	0	0	0	0	0	265
11:00	0	0	0	1	2	4	34	77	97	40	3	0	0	0	0	0	258
12:00 PM	0	0	4	1	1	3	29	91	102	42	5	0	0	0	0	0	278
1:00	0	0	0	0	2	4	33	101	107	43	5	0	0	0	0	0	295
2:00	0	0	0	0	0	3	32	123	129	29	5	0	0	0	0	0	321
3:00	0	0	1	2	4	10	30	145	130	39	7	0	0	0	0	0	368
4:00	0	0	0	0	1	5	40	155	142	45	4	0	0	0	0	0	392
5:00	0	0	0	1	2	4	34	140	149	37	9	1	0	0	0	0	377
6:00	0	0	4	0	2	3	22	69	108	33	10	1	0	0	0	0	252
7:00	0	0	0	0	0	6	19	41	61	12	4	0	0	0	0	0	143
8:00	0	0	0	0	0	2	11	39	33	15	5	0	0	0	0	0	105
9:00	0	0	0	0	0	2	9	29	44	14	1	0	0	0	0	0	99
10:00	0	0	0	0	0	0	7	8	14	15	3	0	0	0	0	0	47
11:00	0	0	0	0	0	1	2	4	13	8	3	0	0	0	0	0	31
Total	**0**	**0**	**11**	**7**	**18**	**71**	**486**	**1506**	**1627**	**545**	**91**	**2**	**0**	**0**	**0**	**0**	**4364**

Percentile	15th	50th	85th	95th
Speed	39	44	49	52

Mean Speed (Average)	45.7
10 MPH Pace Speed	36-45
Number in Pace	3117
Percent in Pace	72.0%

Avg 85th	51.8

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	1	2	2	4	5	2	0	0	0	0	0	16
1:00	0	0	0	0	0	0	1	2	6	1	0	0	0	0	0	0	10
2:00	0	0	0	0	0	0	0	1	2	3	1	0	0	0	0	0	7
3:00	0	0	0	0	1	0	1	1	2	0	1	1	0	0	0	0	7
4:00	0	0	0	0	0	1	0	7	10	7	0	0	0	0	0	0	25
5:00	0	0	0	2	1	3	4	27	23	11	4	2	0	0	0	0	77
6:00	0	0	0	0	0	3	17	51	57	33	6	1	0	0	0	0	168
7:00	0	0	0	0	0	3	19	86	102	58	11	1	0	0	0	0	280
8:00	0	0	0	0	1	8	45	93	117	43	7	0	0	0	0	0	314
9:00	0	0	0	0	0	3	20	85	142	53	6	0	0	0	0	0	309
10:00	0	0	0	0	1	0	18	72	134	40	5	1	0	0	0	0	271
11:00	0	0	1	1	2	0	16	81	126	55	5	1	0	0	0	0	288
12:00 PM	0	0	0	0	1	6	33	98	122	43	13	1	0	0	0	0	317
1:00	0	0	0	1	0	2	19	113	121	59	11	0	0	0	0	0	326
2:00	0	0	0	1	1	4	20	95	121	65	13	2	0	0	0	0	322
3:00	0	0	2	0	2	5	45	103	176	53	13	0	0	0	0	0	399
4:00	0	0	0	0	1	3	27	146	171	69	14	1	0	0	0	0	432
5:00	0	0	0	0	0	1	20	125	200	71	14	2	0	0	0	0	433
6:00	0	0	0	0	4	4	22	87	126	62	9	2	0	0	0	0	316
7:00	0	0	0	1	0	2	36	68	88	34	3	1	0	0	0	0	233
8:00	0	0	0	0	0	4	10	54	42	24	9	2	0	0	0	0	145
9:00	0	0	0	0	0	1	7	19	24	16	8	0	0	0	0	0	75
10:00	0	0	0	0	0	3	5	8	24	18	7	0	0	0	0	0	65
11:00	0	0	0	0	0	1	2	12	12	8	3	0	0	0	0	0	38
Total	**0**	**0**	**3**	**6**	**15**	**58**	**389**	**1436**	**1952**	**831**	**165**	**18**	**0**	**0**	**0**	**0**	**4873**

Percentile	15th	50th	85th	95th
Speed	41	46	51	53

Mean Speed (Average)	46.7
10 MPH Pace Speed	36-45
Number in Pace	3381
Percent in Pace	69.0%

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	1	2	3	6	2	0	0	0	0	0	14
1:00	0	0	0	0	0	0	1	1	2	5	1	0	0	0	0	0	10
2:00	0	0	0	0	0	0	1	0	0	4	0	0	0	0	0	0	5
3:00	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	5
4:00	0	0	0	0	0	0	2	8	12	8	5	0	0	0	0	0	35
5:00	0	0	0	1	0	3	4	20	21	18	8	0	0	0	0	0	75
6:00	0	0	0	1	0	4	17	32	54	43	13	3	0	0	0	0	167
7:00	0	0	0	0	0	2	12	76	104	64	9	1	0	0	0	0	268
8:00	0	0	0	0	0	4	37	73	123	59	14	0	0	0	0	0	310
9:00	0	0	0	4	0	5	25	89	104	56	16	1	0	0	0	0	300
10:00	0	0	0	1	0	4	48	111	105	27	2	0	0	0	0	0	298
11:00	0	0	0	0	4	13	15	100	97	24	9	0	0	0	0	0	262
12:00 PM	0	0	0	0	0	0	16	65	115	63	10	0	0	0	0	0	269
1:00	0	0	0	0	0	2	18	75	127	49	11	2	0	0	0	0	284
2:00	0	0	0	0	0	4	23	99	137	56	9	4	0	0	0	0	332
3:00	0	0	0	2	1	5	30	106	142	85	12	1	0	0	0	0	384
4:00	0	2	1	4	0	6	53	107	192	91	22	3	0	0	0	0	481
5:00	0	0	0	1	1	4	30	130	179	80	12	2	0	0	0	0	439
6:00	0	0	0	0	0	1	30	89	147	55	14	4	0	0	0	0	340
7:00	0	0	0	0	1	2	20	61	94	35	6	2	0	0	0	0	221
8:00	0	0	1	0	0	2	10	31	54	23	7	0	0	0	0	0	128
9:00	0	1	0	0	0	2	20	29	31	12	11	0	0	0	0	0	106
10:00	0	0	0	0	0	1	6	12	19	10	5	1	0	0	0	0	54
11:00	0	0	0	0	0	0	2	13	16	8	6	3	0	0	0	0	48
Total	**0**	**3**	**2**	**14**	**7**	**64**	**422**	**1331**	**1879**	**882**	**204**	**27**	**0**	**0**	**0**	**0**	**4835**

Percentile	15th	50th	85th	95th
Speed	41	46	51	54
Mean Speed (Average)	46.9			
10 MPH Pace Speed	36-45			
Number in Pace	3196			
Percent in Pace	66.0%			

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	2	5	4	2	3	0	0	0	0	0	16
1:00	0	0	0	0	0	1	0	1	5	2	0	0	0	0	0	0	9
2:00	0	0	0	0	0	0	0	2	3	2	0	0	0	0	0	0	7
3:00	0	0	0	0	0	0	1	6	3	2	1	0	0	0	0	0	13
4:00	0	0	0	0	0	1	3	6	6	6	3	0	0	0	0	0	25
5:00	0	0	0	1	0	4	6	25	21	16	7	0	0	0	0	0	80
6:00	0	0	0	0	1	10	14	45	64	27	7	0	0	0	0	0	168
7:00	0	0	0	0	1	0	21	69	86	57	13	3	0	0	0	0	250
8:00	0	0	0	0	0	10	45	108	130	50	5	0	0	0	0	0	348
9:00	0	0	0	1	0	5	25	96	94	46	15	0	0	0	0	0	282
10:00	0	0	0	0	1	1	13	83	121	64	14	4	0	0	0	0	301
11:00	0	0	0	0	0	2	15	74	112	56	10	0	0	0	0	0	269
12:00 PM	0	0	0	0	1	0	7	90	151	65	11	2	0	0	0	0	327
1:00	0	0	0	0	1	9	29	99	113	79	16	1	0	0	0	0	347
2:00	0	0	0	1	2	5	36	95	148	49	5	0	0	0	0	0	341
3:00	0	0	1	0	1	13	28	126	146	54	13	1	0	0	0	0	383
4:00	0	0	0	0	0	9	43	124	194	69	14	1	0	0	0	0	454
5:00	0	0	0	0	1	7	40	119	174	70	17	3	0	0	0	0	431
6:00	0	0	1	2	0	2	23	81	117	51	16	0	0	0	0	0	293
7:00	0	0	0	0	1	4	25	54	69	38	13	1	0	0	0	0	205
8:00	0	0	0	0	0	5	10	39	57	25	6	0	0	0	0	0	142
9:00	0	0	0	0	0	1	8	23	36	15	10	2	0	0	0	0	95
10:00	0	0	0	0	0	0	6	21	27	18	5	0	0	0	0	0	77
11:00	0	0	0	0	0	3	5	10	23	17	4	0	0	0	0	0	62
Total	**0**	**0**	**2**	**5**	**10**	**92**	**405**	**1401**	**1904**	**880**	**208**	**18**	**0**	**0**	**0**	**0**	**4925**

Percentile	15th	50th	85th	95th
Speed	41	46	51	54
Mean Speed (Average)	46.9			
10 MPH Pace Speed	36-45			
Number in Pace	3277			
Percent in Pace	67.0%			

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	1	0	4	6	8	3	1	0	0	0	0	23
1:00	0	0	0	0	0	0	0	4	3	2	4	0	0	0	0	0	13
2:00	0	0	0	0	0	0	1	5	2	0	2	1	0	0	0	0	11
3:00	0	0	0	0	0	0	0	1	2	1	0	1	0	0	0	0	5
4:00	0	0	0	0	0	2	1	7	15	8	1	1	0	0	0	0	35
5:00	0	0	0	0	1	2	8	13	22	13	7	3	0	0	0	0	69
6:00	0	0	0	0	1	6	12	43	44	28	10	1	0	0	0	0	145
7:00	0	0	0	0	0	5	34	82	77	36	2	0	0	0	0	0	236
8:00	0	0	0	0	1	7	35	126	103	48	7	1	0	0	0	0	328
9:00	0	0	0	0	0	3	63	114	96	23	2	0	0	0	0	0	301
10:00	0	0	2	1	2	5	40	124	85	26	4	0	0	0	0	0	289
11:00	0	1	0	3	11	4	46	136	112	17	0	0	0	0	0	0	330
12:00 PM	0	0	6	2	0	4	54	151	99	23	2	0	0	0	0	0	341
1:00	0	0	0	0	0	9	48	163	92	23	1	0	0	0	0	0	336
2:00	0	0	0	0	0	15	62	157	110	19	2	1	0	0	0	0	366
3:00	0	0	2	0	0	10	79	179	120	33	5	0	0	0	0	0	428
4:00	0	0	0	0	0	3	37	165	181	59	8	0	0	0	0	0	453
5:00	0	0	0	2	0	5	41	119	137	84	9	0	0	0	0	0	397
6:00	0	0	0	0	1	0	10	80	104	65	9	0	0	0	0	0	269
7:00	0	0	0	1	5	8	24	57	71	24	9	2	0	0	0	0	201
8:00	0	0	0	0	0	0	12	56	53	21	2	2	0	0	0	0	146
9:00	0	0	0	0	0	1	17	41	43	22	6	0	0	0	0	0	130
10:00	0	0	0	0	0	5	10	19	34	16	3	0	0	0	0	0	87
11:00	0	0	0	0	2	1	11	26	22	19	8	1	0	0	0	0	90
Total	**0**	**1**	**10**	**9**	**24**	**96**	**645**	**1872**	**1633**	**618**	**106**	**15**	**0**	**0**	**0**	**0**	**5029**

Percentile	15th	50th	85th	95th
Speed	39	44	49	52

Mean Speed (Average)	45.3
10 MPH Pace Speed	36-45
Number in Pace	3319
Percent in Pace	66.0%

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**4**	**10**	**6**	**20**	**84**	**275**	**580**	**677**	**505**	**219**	**24**	**0**	**0**	**0**	**0**	**2405**

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	1	4	7	3	0	0	0	0	0	0	0	15
1:00	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	5
2:00	0	0	0	0	0	0	0	3	1	1	0	0	0	0	0	0	5
3:00	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	4
4:00	0	0	0	0	1	3	5	5	3	3	1	0	0	0	0	0	21
5:00	0	0	0	1	0	0	8	14	15	7	2	0	0	0	0	0	47
6:00	0	0	1	0	0	1	8	24	31	11	6	2	0	0	0	0	84
7:00	0	0	0	0	0	1	17	41	57	60	19	0	0	0	0	0	195
8:00	0	1	0	0	0	1	18	47	52	45	11	1	0	0	0	0	176
9:00	0	0	1	0	1	2	11	23	44	22	10	0	0	0	0	0	114
10:00	0	1	1	0	1	2	9	22	31	28	5	0	0	0	0	0	100
11:00	0	0	3	0	0	1	7	14	26	27	14	4	0	0	0	0	96
12:00 PM	0	0	0	0	1	3	9	40	34	33	9	0	0	0	0	0	129
1:00	0	1	1	0	0	3	12	27	51	35	13	0	0	0	0	0	143
2:00	0	0	0	0	3	6	17	38	53	32	21	0	0	0	0	0	170
3:00	0	0	2	2	2	5	11	44	46	29	13	0	0	0	0	0	154
4:00	0	0	1	0	1	4	8	35	43	48	20	0	0	0	0	0	160
5:00	0	0	2	0	0	4	13	33	45	21	8	3	0	0	0	0	129
6:00	0	0	0	0	0	0	4	19	19	18	17	0	0	0	0	0	77
7:00	0	0	0	1	0	1	5	15	18	21	7	1	0	0	0	0	69
8:00	0	0	0	0	0	0	8	16	17	9	4	0	0	0	0	0	54
9:00	0	0	0	0	0	1	2	13	13	13	4	1	0	0	0	0	47
10:00	0	0	0	0	0	0	2	4	5	8	3	1	0	0	0	0	23
11:00	0	0	0	0	0	0	1	4	11	6	2	1	0	0	0	0	25
Total	**0**	**3**	**12**	**4**	**11**	**40**	**181**	**489**	**621**	**478**	**189**	**14**	**0**	**0**	**0**	**0**	**2042**

Percentile	15th	50th	85th	95th
Speed	40	47	53	57

Mean Speed (Average)	48.0
10 MPH Pace Speed	39-48
Number in Pace	1106
Percent in Pace	55.0%

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	0	2	3	3	2	1	0	0	0	0	11
1:00	0	0	0	0	0	0	0	4	3	0	1	0	0	0	0	0	8
2:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
3:00	0	0	0	0	1	2	0	0	1	0	1	0	0	0	0	0	5
4:00	0	0	0	0	0	0	3	1	2	2	2	1	0	0	0	0	11
5:00	0	0	0	0	0	3	2	11	9	17	6	1	0	0	0	0	49
6:00	0	1	0	0	1	1	6	25	22	22	23	0	0	0	0	0	101
7:00	0	0	0	0	0	0	13	40	71	42	30	4	0	0	0	0	200
8:00	0	0	0	1	1	3	22	46	56	51	20	0	0	0	0	0	200
9:00	0	0	0	0	0	0	9	34	35	32	12	1	0	0	0	0	123
10:00	0	1	1	0	0	2	6	25	29	26	10	0	0	0	0	0	100
11:00	0	0	1	0	0	2	7	26	34	37	15	1	0	0	0	0	123
12:00 PM	0	0	1	0	0	0	11	25	44	35	26	0	0	0	0	0	142
1:00	0	0	0	1	0	0	11	31	40	45	15	0	0	0	0	0	143
2:00	0	0	1	1	0	4	12	29	59	40	17	0	0	0	0	0	163
3:00	0	0	0	0	1	3	13	45	45	46	22	1	0	0	0	0	176
4:00	0	0	0	2	0	1	8	25	58	49	10	3	0	0	0	0	156
5:00	0	0	1	0	0	3	9	29	31	28	17	4	0	0	0	0	122
6:00	0	0	1	1	0	4	8	16	29	32	13	3	0	0	0	0	107
7:00	0	0	1	0	0	1	9	26	22	22	5	1	0	0	0	0	87
8:00	0	0	0	0	0	2	4	8	22	16	5	3	0	0	0	0	60
9:00	0	0	0	0	0	0	3	13	13	11	8	0	0	0	0	0	48
10:00	0	0	0	0	0	2	3	7	9	7	5	2	0	0	0	0	35
11:00	0	0	0	0	0	0	1	4	9	3	1	1	0	0	0	0	19
Total	**0**	**2**	**7**	**6**	**4**	**33**	**160**	**472**	**647**	**566**	**266**	**27**	**0**	**0**	**0**	**0**	**2190**

Percentile	15th	50th	85th	95th
Speed	41	48	55	59
Mean Speed (Average)	49.3			
10 MPH Pace Speed	41-50			
Number in Pace	1213			
Percent in Pace	55.0%			

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	2	3	6	0	0	0	0	0	0	0	11
1:00	0	0	0	0	0	0	2	1	3	1	0	0	0	0	0	0	7
2:00	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	3	4	8	3	5	0	0	0	0	0	23
5:00	0	0	0	0	0	1	4	10	13	7	5	0	0	0	0	0	40
6:00	0	0	0	0	0	0	5	27	25	24	15	0	0	0	0	0	96
7:00	0	0	0	0	1	1	17	52	85	60	17	1	0	0	0	0	234
8:00	0	0	0	0	2	4	18	31	76	47	25	3	0	0	0	0	206
9:00	0	0	0	2	9	14	40	43	41	24	6	3	0	0	0	0	182
10:00	0	0	2	0	1	19	57	94	31	10	3	2	0	0	0	0	219
11:00	0	2	2	3	1	18	34	37	27	29	9	2	0	0	0	0	164
12:00 PM	0	0	0	0	0	0	6	20	33	39	15	2	0	0	0	0	115
1:00	0	0	0	0	0	1	15	27	46	35	10	2	0	0	0	0	136
2:00	0	0	1	1	4	3	12	35	54	37	24	1	0	0	0	0	172
3:00	0	1	2	0	2	2	12	29	38	44	17	2	0	0	0	0	149
4:00	0	0	0	0	1	1	13	46	50	31	15	2	0	0	0	0	159
5:00	0	0	2	0	1	6	11	34	30	24	12	0	0	0	0	0	120
6:00	0	0	1	0	0	2	7	21	29	29	18	0	0	0	0	0	107
7:00	0	0	0	0	0	3	5	13	23	5	12	2	0	0	0	0	63
8:00	0	0	0	0	1	1	9	21	19	14	2	0	0	0	0	0	67
9:00	0	0	0	0	0	1	2	16	13	11	7	3	0	0	0	0	53
10:00	0	0	0	0	0	1	3	8	16	8	4	1	0	0	0	0	41
11:00	0	0	0	0	0	0	1	5	7	3	0	0	0	0	0	0	16
Total	**0**	**3**	**10**	**6**	**23**	**78**	**278**	**579**	**673**	**486**	**221**	**26**	**0**	**0**	**0**	**0**	**2383**

Percentile	15th	50th	85th	95th
Speed	39	46	54	58

Mean Speed (Average)	47.4
10 MPH Pace Speed	37-46
Number in Pace	1200
Percent in Pace	50.0%

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	0	3	2	3	5	0	0	0	0	0	0	14
1:00	0	0	0	0	0	1	0	2	2	0	0	0	0	0	0	0	5
2:00	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	5
3:00	0	0	0	0	0	1	0	1	2	2	0	0	0	0	0	0	6
4:00	0	0	0	0	0	1	1	4	6	3	3	0	0	0	0	0	18
5:00	0	0	0	0	0	4	5	17	12	9	4	0	0	0	0	0	51
6:00	0	0	0	0	1	1	9	27	22	25	8	1	0	0	0	0	94
7:00	0	0	0	0	0	1	9	43	74	56	24	0	0	0	0	0	207
8:00	0	1	0	0	3	4	12	51	69	48	12	2	0	0	0	0	202
9:00	0	0	0	0	0	4	6	24	43	25	10	1	0	0	0	0	113
10:00	0	0	0	0	1	1	5	28	48	37	17	0	0	0	0	0	137
11:00	0	1	0	0	0	0	10	26	38	22	13	3	0	0	0	0	113
12:00 PM	0	0	2	0	1	4	6	34	41	30	16	0	0	0	0	0	134
1:00	0	0	1	0	1	4	11	41	47	34	24	2	0	0	0	0	165
2:00	0	1	2	0	0	3	12	45	57	36	14	4	0	0	0	0	174
3:00	0	0	2	0	0	1	11	39	48	47	19	0	0	0	0	0	167
4:00	0	0	0	0	1	2	13	47	79	54	22	1	0	0	0	0	219
5:00	0	0	2	2	4	0	8	29	45	36	14	2	0	0	0	0	142
6:00	0	1	0	0	0	0	5	24	28	33	11	5	0	0	0	0	107
7:00	0	0	0	0	1	3	6	20	27	20	9	2	0	0	0	0	88
8:00	0	0	1	0	0	1	9	20	15	16	4	0	0	0	0	0	66
9:00	0	0	0	0	0	1	1	13	21	10	3	2	0	0	0	0	51
10:00	0	0	0	0	0	0	7	5	13	9	3	1	0	0	0	0	38
11:00	0	0	0	0	0	0	2	9	5	4	3	0	0	0	0	0	23
Total	**0**	**4**	**10**	**2**	**14**	**37**	**151**	**554**	**747**	**561**	**233**	**26**	**0**	**0**	**0**	**0**	**2339**

Percentile	15th	50th	85th	95th
Speed	41	47	54	58

Mean Speed (Average)	48.5
10 MPH Pace Speed	40-49
Number in Pace	1311
Percent in Pace	56.0%

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	3	2	4	2	1	0	0	0	0	0	12
1:00	0	0	0	0	0	0	0	2	3	1	0	0	0	0	0	0	6
2:00	0	0	0	0	0	0	1	3	1	1	0	0	0	0	0	0	6
3:00	0	0	0	0	0	0	2	1	2	1	0	0	0	0	0	0	6
4:00	0	0	0	0	0	1	1	4	9	1	2	0	0	0	0	0	18
5:00	0	0	0	0	1	1	3	11	12	11	4	3	0	0	0	0	46
6:00	0	0	0	0	0	0	5	21	24	24	12	1	0	0	0	0	87
7:00	0	0	1	0	0	0	7	37	43	45	32	2	0	0	0	0	167
8:00	0	1	0	0	1	8	22	44	66	53	23	6	0	0	0	0	224
9:00	0	2	0	2	3	24	76	80	43	22	2	0	0	0	0	0	254
10:00	0	1	2	0	8	36	73	79	46	15	1	0	0	0	0	0	261
11:00	0	1	2	1	3	32	52	70	51	10	2	0	0	0	0	0	224
12:00 PM	0	1	0	4	11	27	94	86	43	7	6	0	0	0	0	0	279
1:00	0	0	2	0	4	32	71	76	61	28	2	0	0	0	0	0	276
2:00	0	1	1	3	8	38	74	84	55	18	1	1	0	0	0	0	284
3:00	0	0	2	0	8	23	72	71	54	32	5	3	0	0	0	0	270
4:00	0	0	1	0	1	0	11	31	35	48	30	2	0	0	0	0	159
5:00	0	0	0	0	0	2	11	30	34	28	22	1	0	0	0	0	128
6:00	0	0	0	1	0	0	7	16	27	32	11	2	0	0	0	0	96
7:00	0	0	0	0	0	1	9	22	29	24	4	0	0	0	0	0	89
8:00	0	0	0	0	0	2	8	13	20	5	8	1	0	0	0	0	57
9:00	0	0	0	0	0	3	1	12	15	16	2	0	0	0	0	0	49
10:00	0	0	0	0	0	2	1	8	10	7	12	4	0	0	0	0	44
11:00	0	0	0	0	0	1	1	4	11	4	6	0	0	0	0	0	27
Total	**0**	**7**	**11**	**11**	**48**	**233**	**605**	**807**	**698**	**435**	**188**	**26**	**0**	**0**	**0**	**0**	**3069**

Percentile	15th	50th	85th	95th
Speed	36	43	51	56

Mean Speed (Average)	44.6
10 MPH Pace Speed	35-44
Number in Pace	1657
Percent in Pace	54.0%

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	24	1	0	0		25
1:00	0	6	0	1	0	0	7
2:00	0	9	0	0	0	0	9
3:00	0	9	1	0	0	0	10
4:00	0	26	1	0	0	0	27
5:00	0	58	6	0	0	0	64
6:00	0	119	13	5	6	1	144
7:00	0	230	13	4	6	2	255
8:00	1	292	12	9	5	3	322
9:00	0	246	13	4	7	0	270
10:00	0	238	13	11	3	0	265
11:00	0	236	9	9	3	1	258
12:00 PM	0	257	12	6	3	0	278
1:00	0	266	12	12	5	0	295
2:00	1	290	16	6	7	1	321
3:00	0	342	15	6	4	1	368
4:00	0	359	22	5	6	0	392
5:00	0	348	22	6	1	0	377
6:00	0	233	13	3	3	0	252
7:00	0	133	9	1	0	0	143
8:00	0	98	4	3	0	0	105
9:00	0	97	2	0	0	0	99
10:00	0	45	0	1	1	0	47
11:00	0	30	1	0	0	0	31
Total	**2**	**3991**	**210**	**92**	**60**	**9**	**4364**
Percent	0.0%	91.5%	4.8%	2.1%	1.4%	0.2%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	15	0	1	0	0	16
1:00	0	10	0	0	0	0	10
2:00	0	7	0	0	0	0	7
3:00	0	7	0	0	0	0	7
4:00	0	22	1	2	0	0	25
5:00	0	64	8	4	1	0	77
6:00	0	137	16	8	7	0	168
7:00	0	258	11	7	4	0	280
8:00	1	282	19	5	6	1	314
9:00	0	275	20	8	5	1	309
10:00	0	240	17	9	3	2	271
11:00	0	253	19	10	5	1	288
12:00 PM	0	273	21	14	8	1	317
1:00	0	291	21	9	4	1	326
2:00	0	289	18	10	4	1	322
3:00	0	359	26	8	5	1	399
4:00	1	398	18	9	6	0	432
5:00	1	400	22	9	1	0	433
6:00	0	286	23	3	3	1	316
7:00	0	216	15	2	0	0	233
8:00	0	138	3	3	1	0	145
9:00	0	72	2	1	0	0	75
10:00	0	62	0	2	1	0	65
11:00	0	38	0	0	0	0	38
Total	**3**	**4392**	**280**	**124**	**64**	**10**	**4873**
Percent	0.1%	90.1%	5.7%	2.5%	1.3%	0.2%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	14	0	0	0	0	14
1:00	0	10	0	0	0	0	10
2:00	0	5	0	0	0	0	5
3:00	0	4	1	0	0	0	5
4:00	1	29	3	2	0	0	35
5:00	0	70	2	1	1	1	75
6:00	0	135	17	6	9	0	167
7:00	0	234	20	8	3	3	268
8:00	0	276	17	12	5	0	310
9:00	0	258	27	8	7	0	300
10:00	0	269	14	12	3	0	298
11:00	1	226	18	11	4	2	262
12:00 PM	0	244	15	8	1	1	269
1:00	1	257	14	8	3	1	284
2:00	1	294	25	7	5	0	332
3:00	1	352	19	6	5	1	384
4:00	1	445	22	7	4	2	481
5:00	1	402	23	9	3	1	439
6:00	0	312	22	4	2	0	340
7:00	0	204	14	3	0	0	221
8:00	0	121	3	4	0	0	128
9:00	0	99	5	1	1	0	106
10:00	0	52	1	1	0	0	54
11:00	0	46	2	0	0	0	48
Total	**7**	**4358**	**284**	**118**	**56**	**12**	**4835**
Percent	0.1%	90.1%	5.9%	2.4%	1.2%	0.2%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	16	0	0	0	0	16
1:00	0	9	0	0	0	0	9
2:00	0	7	0	0	0	0	7
3:00	0	12	1	0	0	0	13
4:00	0	24	0	0	0	1	25
5:00	0	68	8	1	2	1	80
6:00	0	137	16	7	8	0	168
7:00	0	226	14	3	5	2	250
8:00	0	307	23	9	6	3	348
9:00	0	241	16	11	10	4	282
10:00	1	265	20	7	6	2	301
11:00	0	236	20	6	5	2	269
12:00 PM	0	303	15	7	2	0	327
1:00	0	318	19	4	5	1	347
2:00	0	311	8	11	8	3	341
3:00	0	360	15	3	3	2	383
4:00	0	419	22	6	5	2	454
5:00	1	402	22	4	2	0	431
6:00	1	278	11	2	1	0	293
7:00	0	191	11	2	1	0	205
8:00	0	134	7	1	0	0	142
9:00	0	90	4	0	1	0	95
10:00	0	73	3	1	0	0	77
11:00	0	60	2	0	0	0	62
Total	**3**	**4487**	**257**	**85**	**70**	**23**	**4925**
Percent	0.1%	91.1%	5.2%	1.7%	1.4%	0.5%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	23	0	0	0	0	23
1:00	0	11	2	0	0	0	13
2:00	0	11	0	0	0	0	11
3:00	0	4	0	1	0	0	5
4:00	0	34	0	1	0	0	35
5:00	0	56	13	0	0	0	69
6:00	0	110	23	4	8	0	145
7:00	0	210	7	8	8	3	236
8:00	0	285	22	12	7	2	328
9:00	0	261	25	11	3	1	301
10:00	0	261	15	5	6	2	289
11:00	1	297	18	8	3	3	330
12:00 PM	0	311	17	5	6	2	341
1:00	0	300	25	5	3	3	336
2:00	0	328	21	8	9	0	366
3:00	0	382	25	10	10	1	428
4:00	0	422	15	8	8	0	453
5:00	0	369	23	3	1	1	397
6:00	0	240	20	7	2	0	269
7:00	0	185	14	2	0	0	201
8:00	0	135	9	2	0	0	146
9:00	1	124	4	1	0	0	130
10:00	0	82	3	2	0	0	87
11:00	0	89	1	0	0	0	90
Total	**2**	**4530**	**302**	**103**	**74**	**18**	**5029**
Percent	0.0%	90.1%	6.0%	2.0%	1.5%	0.4%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	11	2	1	1	0	15
1:00	0	4	1	0	0	0	5
2:00	0	5	0	0	0	0	5
3:00	0	3	1	0	0	0	4
4:00	0	18	1	1	1	0	21
5:00	0	38	9	0	0	0	47
6:00	0	73	10	1	0	0	84
7:00	1	174	14	6	0	0	195
8:00	0	144	24	5	2	1	176
9:00	0	81	24	6	2	1	114
10:00	0	86	12	1	1	0	100
11:00	0	76	14	6	0	0	96
12:00 PM	0	104	18	5	2	0	129
1:00	0	123	16	2	0	2	143
2:00	1	138	23	4	4	0	170
3:00	0	128	21	3	2	0	154
4:00	0	127	26	5	2	0	160
5:00	0	94	28	4	2	1	129
6:00	0	63	11	2	1	0	77
7:00	0	58	9	2	0	0	69
8:00	0	47	6	0	1	0	54
9:00	0	42	3	2	0	0	47
10:00	0	20	3	0	0	0	23
11:00	0	21	2	2	0	0	25
Total	**2**	**1678**	**278**	**58**	**21**	**5**	**2042**
Percent	0.1%	82.2%	13.6%	2.8%	1.0%	0.2%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	7	3	1	0	0	11
1:00	0	7	0	1	0	0	8
2:00	0	1	0	0	0	0	1
3:00	0	5	0	0	0	0	5
4:00	0	7	3	0	1	0	11
5:00	0	37	6	5	1	0	49
6:00	0	76	17	5	2	1	101
7:00	1	158	31	8	2	0	200
8:00	0	162	22	13	2	1	200
9:00	0	92	19	10	1	1	123
10:00	0	75	20	4	0	1	100
11:00	0	103	13	5	2	0	123
12:00 PM	0	111	23	7	1	0	142
1:00	0	115	20	4	4	0	143
2:00	0	136	23	4	0	0	163
3:00	1	137	31	6	1	0	176
4:00	0	116	33	5	2	0	156
5:00	0	99	17	6	0	0	122
6:00	1	88	15	3	0	0	107
7:00	0	69	15	3	0	0	87
8:00	0	47	9	3	1	0	60
9:00	0	37	10	1	0	0	48
10:00	0	27	8	0	0	0	35
11:00	0	16	1	1	0	1	19
Total	**3**	**1728**	**339**	**95**	**20**	**5**	**2190**
Percent	0.1%	78.9%	15.5%	4.3%	0.9%	0.2%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	11	0	0	0	0	11
1:00	0	7	0	0	0	0	7
2:00	0	1	1	0	0	0	2
3:00	0	1	0	0	0	0	1
4:00	0	14	5	3	1	0	23
5:00	0	28	7	4	1	0	40
6:00	0	73	17	4	2	0	96
7:00	1	165	45	18	3	2	234
8:00	0	152	36	15	3	0	206
9:00	0	124	44	9	5	0	182
10:00	0	154	38	19	6	2	219
11:00	0	130	20	10	3	1	164
12:00 PM	0	92	19	4	0	0	115
1:00	0	102	24	7	1	2	136
2:00	1	133	27	7	3	1	172
3:00	0	117	21	9	0	2	149
4:00	0	125	26	6	2	0	159
5:00	0	95	22	2	0	1	120
6:00	0	84	15	6	2	0	107
7:00	0	50	6	6	1	0	63
8:00	0	53	14	0	0	0	67
9:00	0	46	6	1	0	0	53
10:00	0	34	5	2	0	0	41
11:00	0	11	5	0	0	0	16
Total	**2**	**1802**	**403**	**132**	**33**	**11**	**2383**
Percent	0.1%	75.6%	16.9%	5.5%	1.4%	0.5%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	13	1	0	0	0	14
1:00	0	5	0	0	0	0	5
2:00	0	4	1	0	0	0	5
3:00	0	5	1	0	0	0	6
4:00	0	15	2	0	0	1	18
5:00	0	31	11	6	2	1	51
6:00	0	74	13	6	1	0	94
7:00	1	163	28	13	1	1	207
8:00	0	152	41	7	1	1	202
9:00	0	86	21	6	0	0	113
10:00	0	111	17	7	2	0	137
11:00	0	85	22	4	1	1	113
12:00 PM	0	108	23	3	0	0	134
1:00	1	127	28	8	1	0	165
2:00	0	142	16	14	2	0	174
3:00	0	138	22	5	1	1	167
4:00	1	178	27	10	3	0	219
5:00	0	124	14	2	1	1	142
6:00	0	96	9	2	0	0	107
7:00	0	71	13	3	1	0	88
8:00	0	54	11	1	0	0	66
9:00	0	45	5	1	0	0	51
10:00	0	32	3	3	0	0	38
11:00	0	19	4	0	0	0	23
Total	**3**	**1878**	**333**	**101**	**17**	**7**	**2339**
Percent	0.1%	80.3%	14.2%	4.3%	0.7%	0.3%	

Project #: 1803_BL
ID#: ATR 6
City/Town: Waterbury, CT
Location: Prospect Road, north of E Mountain Road

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	9	1	2	0	0	12
1:00	0	4	1	1	0	0	6
2:00	0	3	2	0	1	0	6
3:00	0	5	1	0	0	0	6
4:00	0	13	4	0	1	0	18
5:00	0	31	12	1	1	1	46
6:00	0	75	10	1	1	0	87
7:00	0	133	22	8	3	1	167
8:00	0	173	27	17	6	1	224
9:00	0	188	48	14	4	0	254
10:00	1	201	30	15	11	3	261
11:00	0	161	35	22	4	2	224
12:00 PM	0	213	42	17	6	1	279
1:00	0	215	38	18	5	0	276
2:00	1	218	39	15	7	4	284
3:00	0	200	50	12	6	2	270
4:00	0	127	20	10	1	1	159
5:00	0	104	16	6	1	1	128
6:00	0	74	17	4	1	0	96
7:00	0	70	16	3	0	0	89
8:00	0	47	8	2	0	0	57
9:00	0	41	7	1	0	0	49
10:00	0	35	9	0	0	0	44
11:00	0	22	5	0	0	0	27
Total	**2**	**2362**	**460**	**169**	**59**	**17**	**3069**
Percent	0.1%	77.0%	15.0%	5.5%	1.9%	0.6%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	5	11	16	12:00 PM	51	64	115
12:15	6	10	16	12:15	59	75	134
12:30	7	12	19	12:30	58	67	125
12:45	6	11	17	12:45	52	54	106
1:00	5	4	9	1:00	53	58	111
1:15	5	9	14	1:15	45	50	95
1:30	3	3	6	1:30	41	54	95
1:45	7	12	19	1:45	46	61	107
2:00	6	11	17	2:00	56	87	143
2:15	2	2	4	2:15	65	68	133
2:30	3	4	7	2:30	76	93	169
2:45	5	9	14	2:45	73	81	154
3:00	3	5	8	3:00	66	72	138
3:15	4	7	11	3:15	69	84	153
3:30	3	7	10	3:30	80	97	177
3:45	5	8	13	3:45	65	72	137
4:00	3	5	8	4:00	63	71	134
4:15	5	7	12	4:15	78	109	187
4:30	12	15	27	4:30	84	92	176
4:45	13	18	31	4:45	63	76	139
5:00	13	17	30	5:00	70	87	157
5:15	16	19	35	5:15	67	74	141
5:30	12	15	27	5:30	69	71	140
5:45	15	21	36	5:45	63	76	139
6:00	26	32	58	6:00	61	66	127
6:15	32	46	78	6:15	42	47	89
6:30	42	49	91	6:30	48	47	95
6:45	39	43	82	6:45	44	42	86
7:00	49	60	109	7:00	30	35	65
7:15	44	57	101	7:15	36	38	74
7:30	37	43	80	7:30	34	39	73
7:45	50	64	114	7:45	28	30	58
8:00	67	77	144	8:00	23	23	46
8:15	70	79	149	8:15	25	26	51
8:30	67	81	148	8:30	32	35	67
8:45	58	65	123	8:45	23	34	57
9:00	39	44	83	9:00	29	30	59
9:15	36	59	95	9:15	24	27	51
9:30	36	57	93	9:30	22	17	39
9:45	39	54	93	9:45	21	25	46
10:00	35	39	74	10:00	20	30	50
10:15	44	58	102	10:15	22	23	45
10:30	48	52	100	10:30	21	32	53
10:45	37	47	84	10:45	10	18	28
11:00	47	58	105	11:00	11	12	23
11:15	38	58	96	11:15	10	15	25
11:30	52	63	115	11:30	6	8	14
11:45	64	71	135	11:45	6	12	18
Total	**1260**	**1598**	**2858**	**Total**	**2140**	**2504**	**4644**
				Total All	**3400**	**4102**	**7502**

Average ADT	8288

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	5	6	11	12:00 PM	72	92	164
12:15	4	7	11	12:15	71	91	162
12:30	6	10	16	12:30	78	79	157
12:45	2	3	5	12:45	69	63	132
1:00	2	3	5	1:00	64	77	141
1:15	3	4	7	1:15	60	76	136
1:30	4	7	11	1:30	63	71	134
1:45	2	1	3	1:45	32	35	67
2:00	2	4	6	2:00	33	59	92
2:15	3	2	5	2:15	73	82	155
2:30	2	3	5	2:30	90	104	194
2:45	4	7	11	2:45	98	110	208
3:00	1	1	2	3:00	98	104	202
3:15	2	4	6	3:15	76	73	149
3:30	4	7	11	3:30	90	112	202
3:45	3	6	9	3:45	80	80	160
4:00	6	7	13	4:00	91	115	206
4:15	7	9	16	4:15	97	101	198
4:30	10	16	26	4:30	96	119	215
4:45	13	17	30	4:45	91	97	188
5:00	14	21	35	5:00	88	78	166
5:15	13	21	34	5:15	95	100	195
5:30	25	26	51	5:30	92	107	199
5:45	27	38	65	5:45	85	77	162
6:00	35	38	73	6:00	76	71	147
6:15	36	43	79	6:15	73	72	145
6:30	48	60	108	6:30	62	66	128
6:45	43	47	90	6:45	49	49	98
7:00	43	48	91	7:00	53	57	110
7:15	57	58	115	7:15	51	54	105
7:30	61	74	135	7:30	58	61	119
7:45	74	79	153	7:45	49	54	103
8:00	63	65	128	8:00	57	72	129
8:15	68	78	146	8:15	34	34	68
8:30	65	71	136	8:30	34	37	71
8:45	34	43	77	8:45	33	35	68
9:00	44	65	109	9:00	28	24	52
9:15	36	41	77	9:15	25	33	58
9:30	48	51	99	9:30	26	34	60
9:45	48	52	100	9:45	21	20	41
10:00	40	48	88	10:00	14	23	37
10:15	50	56	106	10:15	12	24	36
10:30	62	78	140	10:30	10	16	26
10:45	46	51	97	10:45	11	14	25
11:00	52	64	116	11:00	8	9	17
11:15	68	70	138	11:15	6	10	16
11:30	68	75	143	11:30	6	14	20
11:45	74	80	154	11:45	5	12	17
Total	**1427**	**1665**	**3092**	**Total**	**2683**	**2997**	**5680**
				Total All	**4110**	**4662**	**8772**

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	7	12	19	12:00 PM	59	65	124
12:15	5	10	15	12:15	62	78	140
12:30	2	3	5	12:30	63	68	131
12:45	3	5	8	12:45	59	69	128
1:00	3	5	8	1:00	52	52	104
1:15	2	3	5	1:15	66	81	147
1:30	2	2	4	1:30	62	63	125
1:45	3	8	11	1:45	67	72	139
2:00	2	3	5	2:00	70	79	149
2:15	5	8	13	2:15	51	58	109
2:30	2	3	5	2:30	66	95	161
2:45	3	6	9	2:45	73	80	153
3:00	4	5	9	3:00	68	80	148
3:15	6	10	16	3:15	70	89	159
3:30	3	4	7	3:30	76	90	166
3:45	5	10	15	3:45	68	77	145
4:00	3	7	10	4:00	65	86	151
4:15	6	10	16	4:15	66	70	136
4:30	11	16	27	4:30	73	104	177
4:45	13	16	29	4:45	72	85	157
5:00	11	10	21	5:00	74	84	158
5:15	15	20	35	5:15	80	102	182
5:30	17	24	41	5:30	52	58	110
5:45	27	36	63	5:45	61	72	133
6:00	34	41	75	6:00	66	62	128
6:15	38	45	83	6:15	61	63	124
6:30	52	60	112	6:30	59	61	120
6:45	44	42	86	6:45	57	60	117
7:00	53	61	114	7:00	53	61	114
7:15	59	63	122	7:15	47	52	99
7:30	60	66	126	7:30	49	53	102
7:45	64	68	132	7:45	30	35	65
8:00	63	77	140	8:00	51	57	108
8:15	64	71	135	8:15	47	40	87
8:30	60	71	131	8:30	30	35	65
8:45	61	60	121	8:45	35	29	64
9:00	55	57	112	9:00	31	41	72
9:15	41	44	85	9:15	28	35	63
9:30	44	59	103	9:30	24	22	46
9:45	46	46	92	9:45	21	23	44
10:00	37	40	77	10:00	23	31	54
10:15	50	54	104	10:15	13	21	34
10:30	51	57	108	10:30	24	25	49
10:45	49	46	95	10:45	11	15	26
11:00	61	71	132	11:00	12	20	32
11:15	48	56	104	11:15	8	13	21
11:30	59	64	123	11:30	6	7	13
11:45	61	73	134	11:45	5	13	18
Total	**1414**	**1628**	**3042**	**Total**	**2366**	**2731**	**5097**
				Total All	**3780**	**4359**	**8139**

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	1	2	3	12:00 PM	51	68	119
12:15	3	9	12	12:15	54	66	120
12:30	5	7	12	12:30	64	73	137
12:45	2	2	4	12:45	66	63	129
1:00	3	6	9	1:00	54	57	111
1:15	2	5	7	1:15	55	72	127
1:30	3	2	5	1:30	65	90	155
1:45	2	3	5	1:45	75	89	164
2:00	3	7	10	2:00	66	71	137
2:15	2	5	7	2:15	71	82	153
2:30	2	3	5	2:30	90	101	191
2:45	1	3	4	2:45	78	83	161
3:00	2	4	6	3:00	73	74	147
3:15	5	10	15	3:15	92	113	205
3:30	6	8	14	3:30	92	95	187
3:45	5	9	14	3:45	90	92	182
4:00	6	7	13	4:00	81	80	161
4:15	11	10	21	4:15	72	79	151
4:30	10	11	21	4:30	86	106	192
4:45	16	21	37	4:45	60	67	127
5:00	21	23	44	5:00	64	95	159
5:15	22	18	40	5:15	66	74	140
5:30	23	31	54	5:30	63	72	135
5:45	32	46	78	5:45	59	57	116
6:00	24	31	55	6:00	66	76	142
6:15	35	39	74	6:15	58	52	110
6:30	54	66	120	6:30	46	49	95
6:45	47	55	102	6:45	54	56	110
7:00	47	50	97	7:00	48	54	102
7:15	46	50	96	7:15	56	75	131
7:30	50	62	112	7:30	54	83	137
7:45	54	56	110	7:45	47	46	93
8:00	61	76	137	8:00	36	44	80
8:15	76	95	171	8:15	39	43	82
8:30	76	74	150	8:30	37	38	75
8:45	66	69	135	8:45	27	30	57
9:00	59	52	111	9:00	25	30	55
9:15	59	50	109	9:15	32	36	68
9:30	43	49	92	9:30	21	26	47
9:45	51	62	113	9:45	23	31	54
10:00	55	55	110	10:00	25	30	55
10:15	45	48	93	10:15	23	24	47
10:30	46	57	103	10:30	12	17	29
10:45	49	58	107	10:45	13	14	27
11:00	66	70	136	11:00	10	19	29
11:15	59	65	124	11:15	12	13	25
11:30	59	63	122	11:30	9	12	21
11:45	60	73	133	11:45	5	9	14
Total	**1475**	**1677**	**3152**	**Total**	**2465**	**2826**	**5291**
				Total All	**3940**	**4503**	**8443**

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	6	10	16	12:00 PM	70	92	162
12:15	5	8	13	12:15	79	88	167
12:30	3	4	7	12:30	71	78	149
12:45	4	7	11	12:45	66	73	139
1:00	6	12	18	1:00	64	70	134
1:15	3	5	8	1:15	68	69	137
1:30	4	7	11	1:30	51	55	106
1:45	3	6	9	1:45	60	71	131
2:00	2	3	5	2:00	65	89	154
2:15	2	6	8	2:15	74	79	153
2:30	3	5	8	2:30	84	94	178
2:45	3	7	10	2:45	76	92	168
3:00	2	3	5	3:00	73	94	167
3:15	6	16	22	3:15	74	90	164
3:30	4	8	12	3:30	87	104	191
3:45	5	10	15	3:45	76	85	161
4:00	6	8	14	4:00	70	86	156
4:15	5	8	13	4:15	76	86	162
4:30	7	12	19	4:30	83	90	173
4:45	11	16	27	4:45	79	79	158
5:00	10	17	27	5:00	68	72	140
5:15	15	17	32	5:15	78	89	167
5:30	22	25	47	5:30	65	65	130
5:45	23	33	56	5:45	61	70	131
6:00	33	36	69	6:00	65	73	138
6:15	33	43	76	6:15	65	71	136
6:30	43	59	102	6:30	54	57	111
6:45	55	60	115	6:45	49	53	102
7:00	47	51	98	7:00	50	61	111
7:15	56	60	116	7:15	57	59	116
7:30	70	79	149	7:30	61	63	124
7:45	53	57	110	7:45	48	46	94
8:00	60	65	125	8:00	44	54	98
8:15	55	60	115	8:15	42	45	87
8:30	68	74	142	8:30	40	43	83
8:45	52	52	104	8:45	36	44	80
9:00	54	60	114	9:00	32	41	73
9:15	45	45	90	9:15	25	25	50
9:30	38	41	79	9:30	23	28	51
9:45	48	57	105	9:45	27	24	51
10:00	45	50	95	10:00	26	33	59
10:15	52	70	122	10:15	26	33	59
10:30	49	51	100	10:30	22	31	53
10:45	56	61	117	10:45	20	21	41
11:00	51	57	108	11:00	18	21	39
11:15	57	65	122	11:15	13	12	25
11:30	60	78	138	11:30	12	20	32
11:45	65	76	141	11:45	12	15	27
Total	**1405**	**1660**	**3065**	**Total**	**2585**	**2933**	**5518**
				Total All	**3990**	**4593**	**8583**

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**10**	**63**	**391**	**453**	**856**	**1018**	**891**	**157**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3844**

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20		> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	> 20 - 25 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	1	4	8	6	3	2	0	0	0	0	0	0	0	0	24
1:00	0	0	0	2	4	7	4	3	0	0	0	0	0	0	0	0	20
2:00	0	0	1	1	3	6	4	1	0	0	0	0	0	0	0	0	16
3:00	0	0	0	2	3	7	2	1	0	0	0	0	0	0	0	0	15
4:00	0	0	1	2	2	5	12	8	3	0	0	0	0	0	0	0	33
5:00	0	0	4	3	8	8	11	16	6	0	0	0	0	0	0	0	56
6:00	0	0	6	19	21	24	27	35	7	0	0	0	0	0	0	0	139
7:00	0	0	1	21	12	42	49	46	9	0	0	0	0	0	0	0	180
8:00	0	1	7	27	34	65	63	54	10	1	0	0	0	0	0	0	262
9:00	0	0	5	21	25	27	28	32	12	0	0	0	0	0	0	0	150
10:00	0	0	2	14	27	32	30	45	14	0	0	0	0	0	0	0	164
11:00	0	0	1	22	34	42	43	48	10	1	0	0	0	0	0	0	201
12:00 PM	0	0	2	23	39	50	55	42	9	0	0	0	0	0	0	0	220
1:00	0	1	4	22	25	46	44	35	8	0	0	0	0	0	0	0	185
2:00	0	2	7	38	49	62	60	40	11	1	0	0	0	0	0	0	270
3:00	0	0	2	32	42	78	65	52	9	0	0	0	0	0	0	0	280
4:00	0	1	2	26	40	84	74	55	6	0	0	0	0	0	0	0	288
5:00	0	3	4	29	36	76	68	47	5	1	0	0	0	0	0	0	269
6:00	0	1	1	16	24	55	50	42	6	0	0	0	0	0	0	0	195
7:00	0	0	4	17	22	23	25	33	4	0	0	0	0	0	0	0	128
8:00	0	0	5	11	18	20	16	30	3	0	0	0	0	0	0	0	103
9:00	0	1	0	9	6	22	29	27	2	0	0	0	0	0	0	0	96
10:00	0	0	1	2	11	16	22	20	1	0	0	0	0	0	0	0	73
11:00	0	0	0	1	2	6	7	16	1	0	0	0	0	0	0	0	33
Total	**0**	**10**	**61**	**364**	**495**	**809**	**791**	**730**	**136**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3400**

Percentile	15th	50th	85th	95th
Speed	20	31	41	46

Mean Speed (Average) 30.2
10 MPH Pace Speed 25-34
Number in Pace 2720
Percent in Pace 80.0%

Average 85th 41
Only use NB for 85th percentile speed

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	1	1	2	3	6	3	1	0	0	0	0	0	0	0	17
1:00	0	0	1	0	1	2	5	2	0	0	0	0	0	0	0	0	11
2:00	0	0	0	0	1	4	4	1	1	0	0	0	0	0	0	0	11
3:00	0	0	0	0	0	2	5	3	0	0	0	0	0	0	0	0	10
4:00	0	0	1	3	3	5	14	9	1	0	0	0	0	0	0	0	36
5:00	0	0	3	9	10	18	23	14	2	0	0	0	0	0	0	0	79
6:00	0	0	4	10	14	38	50	38	8	0	0	0	0	0	0	0	162
7:00	0	2	7	28	37	52	45	52	11	1	0	0	0	0	0	0	235
8:00	0	1	2	23	21	59	58	56	10	0	0	0	0	0	0	0	230
9:00	0	1	6	16	10	34	52	48	9	0	0	0	0	0	0	0	176
10:00	0	1	3	21	6	32	68	55	12	0	0	0	0	0	0	0	198
11:00	0	1	4	18	27	56	74	70	12	0	0	0	0	0	0	0	262
12:00 PM	0	1	2	30	23	77	72	65	19	1	0	0	0	0	0	0	290
1:00	0	0	2	22	28	75	48	35	9	0	0	0	0	0	0	0	219
2:00	0	1	3	36	32	89	68	53	12	0	0	0	0	0	0	0	294
3:00	0	0	2	49	28	116	77	62	10	0	0	0	0	0	0	0	344
4:00	0	0	1	36	46	128	92	64	7	1	0	0	0	0	0	0	375
5:00	0	0	3	26	45	112	95	73	6	0	0	0	0	0	0	0	360
6:00	0	2	3	21	31	75	65	58	5	0	0	0	0	0	0	0	260
7:00	0	0	4	18	22	52	48	62	5	0	0	0	0	0	0	0	211
8:00	0	1	1	9	15	42	44	42	4	0	0	0	0	0	0	0	158
9:00	0	0	2	11	8	23	25	30	1	0	0	0	0	0	0	0	100
10:00	0	0	0	0	1	4	18	22	2	0	0	0	0	0	0	0	47
11:00	0	0	1	4	2	5	7	5	1	0	0	0	0	0	0	0	25
Total	**0**	**11**	**56**	**391**	**413**	**1103**	**1063**	**922**	**148**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**4110**

Percentile	15th	50th	85th	95th
Speed	20	29	41	46
Mean Speed (Average)	29.3			
10 MPH Pace Speed	26-35			
Number in Pace	3124			
Percent in Pace	76.0%			

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	1	1	1	4	7	3	0	0	0	0	0	0	0	0	17
1:00	0	0	0	2	1	3	3	1	0	0	0	0	0	0	0	0	10
2:00	0	0	0	0	3	3	3	2	1	0	0	0	0	0	0	0	12
3:00	0	0	0	1	2	3	8	4	0	0	0	0	0	0	0	0	18
4:00	0	0	2	2	4	6	13	5	1	0	0	0	0	0	0	0	33
5:00	0	0	2	10	12	15	18	10	3	0	0	0	0	0	0	0	70
6:00	0	3	4	20	19	48	35	30	9	0	0	0	0	0	0	0	168
7:00	0	2	1	27	33	68	51	43	10	1	0	0	0	0	0	0	236
8:00	0	0	5	27	36	62	54	55	9	0	0	0	0	0	0	0	248
9:00	0	1	7	11	21	47	42	47	10	0	0	0	0	0	0	0	186
10:00	0	1	3	19	18	44	46	45	11	0	0	0	0	0	0	0	187
11:00	0	1	3	18	22	68	60	42	14	1	0	0	0	0	0	0	229
12:00 PM	0	1	6	28	25	67	59	45	12	0	0	0	0	0	0	0	243
1:00	0	1	5	22	23	71	62	48	15	0	0	0	0	0	0	0	247
2:00	0	0	6	33	34	68	65	43	11	0	0	0	0	0	0	0	260
3:00	0	0	2	42	44	74	69	38	12	1	0	0	0	0	0	0	282
4:00	0	1	3	38	40	78	70	37	9	0	0	0	0	0	0	0	276
5:00	0	1	3	25	32	85	78	35	8	0	0	0	0	0	0	0	267
6:00	0	0	2	22	26	78	74	34	7	0	0	0	0	0	0	0	243
7:00	0	0	4	20	23	46	47	32	6	1	0	0	0	0	0	0	179
8:00	0	1	2	20	27	40	43	27	3	0	0	0	0	0	0	0	163
9:00	0	1	0	10	13	26	29	23	2	0	0	0	0	0	0	0	104
10:00	0	0	1	6	10	18	19	16	1	0	0	0	0	0	0	0	71
11:00	0	0	1	3	5	5	8	7	2	0	0	0	0	0	0	0	31
Total	**0**	**14**	**63**	**407**	**474**	**1027**	**963**	**672**	**156**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3780**

Percentile	15th	50th	85th	95th
Speed	20	30	41	46

Mean Speed (Average)	30.1
10 MPH Pace Speed	26-35
Number in Pace	3024
Percent in Pace	80.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	1	2	4	3	0	0	0	0	0	0	0	0	11
1:00	0	0	0	0	1	1	4	3	1	0	0	0	0	0	0	0	10
2:00	0	0	0	0	0	1	3	3	1	0	0	0	0	0	0	0	8
3:00	0	0	0	1	1	2	6	7	1	0	0	0	0	0	0	0	18
4:00	0	0	1	1	2	7	14	16	2	0	0	0	0	0	0	0	43
5:00	0	0	0	4	6	12	37	35	4	0	0	0	0	0	0	0	98
6:00	0	0	1	16	18	25	47	45	8	0	0	0	0	0	0	0	160
7:00	0	1	9	22	23	31	54	48	9	0	0	0	0	0	0	0	197
8:00	0	2	7	28	32	46	82	68	12	2	0	0	0	0	0	0	279
9:00	0	0	3	20	28	48	54	50	9	0	0	0	0	0	0	0	212
10:00	0	0	2	11	21	52	51	48	10	0	0	0	0	0	0	0	195
11:00	0	0	4	18	23	48	72	64	15	0	0	0	0	0	0	0	244
12:00 PM	0	1	5	37	30	42	54	52	14	0	0	0	0	0	0	0	235
1:00	0	1	3	30	32	46	64	59	13	1	0	0	0	0	0	0	249
2:00	0	0	5	34	36	55	89	74	12	0	0	0	0	0	0	0	305
3:00	0	0	6	38	41	68	94	85	15	0	0	0	0	0	0	0	347
4:00	0	1	3	32	36	57	83	74	12	1	0	0	0	0	0	0	299
5:00	0	0	1	30	38	45	67	62	9	0	0	0	0	0	0	0	252
6:00	0	0	3	28	35	42	55	53	8	0	0	0	0	0	0	0	224
7:00	0	1	0	12	16	20	77	74	5	0	0	0	0	0	0	0	205
8:00	0	1	1	14	18	21	42	38	4	0	0	0	0	0	0	0	139
9:00	0	0	1	7	12	17	32	30	2	0	0	0	0	0	0	0	101
10:00	0	0	1	8	14	16	15	18	1	0	0	0	0	0	0	0	73
11:00	0	0	2	3	6	7	8	9	1	0	0	0	0	0	0	0	36
Total	**0**	**8**	**58**	**395**	**470**	**711**	**1108**	**1018**	**168**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3940**

Percentile	15th	50th	85th	95th
Speed	20	30	41	46

Mean Speed (Average)	30.4
10 MPH Pace Speed	28-37
Number in Pace	3191
Percent in Pace	81.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	3	0	1	8	6	0	0	0	0	0	0	0	0	18
1:00	0	0	0	0	0	2	7	5	2	0	0	0	0	0	0	0	16
2:00	0	0	0	2	0	1	4	3	0	0	0	0	0	0	0	0	10
3:00	0	0	0	0	0	3	7	6	1	0	0	0	0	0	0	0	17
4:00	0	0	1	2	0	7	9	7	3	0	0	0	0	0	0	0	29
5:00	0	0	1	5	1	14	23	21	5	0	0	0	0	0	0	0	70
6:00	0	0	3	13	5	22	60	54	7	0	0	0	0	0	0	0	164
7:00	0	0	8	22	20	32	69	67	8	0	0	0	0	0	0	0	226
8:00	0	1	4	26	28	39	65	61	10	1	0	0	0	0	0	0	235
9:00	0	1	8	18	20	37	45	44	12	0	0	0	0	0	0	0	185
10:00	0	0	4	30	18	34	54	51	11	0	0	0	0	0	0	0	202
11:00	0	0	10	25	27	40	64	55	12	0	0	0	0	0	0	0	233
12:00 PM	0	2	5	20	23	37	94	86	17	2	0	0	0	0	0	0	286
1:00	0	0	5	33	38	45	55	54	13	0	0	0	0	0	0	0	243
2:00	0	1	7	38	44	51	76	67	15	0	0	0	0	0	0	0	299
3:00	0	3	8	37	43	54	78	75	12	0	0	0	0	0	0	0	310
4:00	0	0	4	30	34	52	88	82	17	1	0	0	0	0	0	0	308
5:00	0	0	2	18	20	42	93	87	10	0	0	0	0	0	0	0	272
6:00	0	0	1	21	28	31	75	67	9	1	0	0	0	0	0	0	233
7:00	0	0	0	19	23	28	68	72	6	0	0	0	0	0	0	0	216
8:00	0	0	4	12	14	19	52	56	5	0	0	0	0	0	0	0	162
9:00	0	0	1	11	12	17	31	34	1	0	0	0	0	0	0	0	107
10:00	0	0	1	9	10	12	27	35	0	0	0	0	0	0	0	0	94
11:00	0	0	1	5	7	9	14	18	1	0	0	0	0	0	0	0	55
Total	**0**	**8**	**78**	**399**	**415**	**629**	**1166**	**1113**	**177**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3990**

Percentile	15th	50th	85th	95th
Speed	20	30	41	46

Mean Speed (Average)	30.3
10 MPH Pace Speed	28-37
Number in Pace	3152
Percent in Pace	79.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**23**	**75**	**411**	**994**	**607**	**584**	**837**	**618**	**225**	**57**	**13**	**0**	**0**	**0**	**0**	**4444**

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	5	6	12	8	5	6	0	0	0	0	0	0	44
1:00	0	0	0	1	7	4	7	6	3	0	0	0	0	0	0	0	28
2:00	0	0	0	2	2	2	8	9	2	1	0	0	0	0	0	0	26
3:00	0	0	0	1	6	1	1	9	4	3	1	1	0	0	0	0	27
4:00	0	1	0	0	2	4	8	15	6	5	4	0	0	0	0	0	45
5:00	0	1	0	5	6	3	11	17	19	6	2	2	0	0	0	0	72
6:00	0	0	0	10	26	12	31	43	30	13	5	0	0	0	0	0	170
7:00	0	1	2	18	50	30	32	36	37	13	2	3	0	0	0	0	224
8:00	0	1	3	50	54	38	30	69	44	11	1	1	0	0	0	0	302
9:00	0	0	2	15	44	27	28	51	34	10	3	0	0	0	0	0	214
10:00	0	1	3	18	49	24	23	39	30	7	2	0	0	0	0	0	196
11:00	0	1	0	18	61	42	36	54	24	9	5	0	0	0	0	0	250
12:00 PM	0	0	3	22	56	25	42	56	40	14	2	0	0	0	0	0	260
1:00	0	1	5	10	59	32	26	44	36	9	1	0	0	0	0	0	223
2:00	0	0	9	41	82	62	40	52	35	8	0	0	0	0	0	0	329
3:00	0	0	2	23	62	51	40	57	63	21	6	0	0	0	0	0	325
4:00	0	1	10	40	94	40	38	61	51	12	1	0	0	0	0	0	348
5:00	0	0	2	32	72	48	32	40	55	22	2	3	0	0	0	0	308
6:00	0	1	0	14	52	31	22	42	26	13	1	0	0	0	0	0	202
7:00	0	0	0	14	39	18	19	20	22	7	2	1	0	0	0	0	142
8:00	0	1	2	12	34	18	14	17	13	7	0	0	0	0	0	0	118
9:00	0	1	0	11	19	9	8	22	21	7	1	0	0	0	0	0	99
10:00	0	1	2	9	15	12	9	28	16	9	2	0	0	0	0	0	103
11:00	0	0	0	2	12	7	3	2	11	10	0	0	0	0	0	0	47
Total	**0**	**12**	**45**	**370**	**908**	**546**	**520**	**797**	**627**	**223**	**43**	**11**	**0**	**0**	**0**	**0**	**4102**

Percentile	15th	50th	85th	95th
Speed	15	18	22	32

Mean Speed (Average)	32.1
10 MPH Pace Speed	21-30
Number in Pace	1429
Percent in Pace	36.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	3	4	4	2	6	4	1	2	0	0	0	0	0	26
1:00	0	0	0	0	4	0	3	3	2	2	1	0	0	0	0	0	15
2:00	0	0	0	0	1	0	1	4	7	3	0	0	0	0	0	0	16
3:00	0	0	0	1	1	1	0	3	5	3	3	1	0	0	0	0	18
4:00	0	0	0	3	3	7	2	6	14	11	3	0	0	0	0	0	49
5:00	0	1	2	1	9	3	6	27	34	14	8	1	0	0	0	0	106
6:00	0	0	2	9	24	10	19	42	44	28	6	4	0	0	0	0	188
7:00	0	5	6	19	45	35	35	54	41	13	4	2	0	0	0	0	259
8:00	0	0	3	22	47	37	39	55	36	14	3	1	0	0	0	0	257
9:00	0	0	1	17	54	33	20	50	25	6	3	0	0	0	0	0	209
10:00	0	1	1	28	57	39	32	44	25	4	1	1	0	0	0	0	233
11:00	0	1	8	36	67	45	42	49	26	10	5	0	0	0	0	0	289
12:00 PM	0	7	6	41	87	57	48	47	25	5	1	1	0	0	0	0	325
1:00	0	4	7	23	67	30	64	43	20	0	1	0	0	0	0	0	259
2:00	0	2	13	44	78	47	44	46	59	21	1	0	0	0	0	0	355
3:00	0	3	7	44	82	45	62	80	34	10	2	0	0	0	0	0	369
4:00	0	3	11	51	109	50	57	90	37	20	3	1	0	0	0	0	432
5:00	0	2	7	59	84	48	38	61	45	14	4	0	0	0	0	0	362
6:00	0	2	4	36	62	36	35	35	28	14	4	2	0	0	0	0	258
7:00	0	1	5	19	72	32	36	37	15	6	3	0	0	0	0	0	226
8:00	0	0	2	6	40	26	32	35	25	11	1	0	0	0	0	0	178
9:00	0	0	2	11	27	10	9	33	14	3	1	1	0	0	0	0	111
10:00	0	0	0	6	11	8	6	16	15	11	2	2	0	0	0	0	77
11:00	0	0	0	5	10	5	3	9	6	3	3	1	0	0	0	0	45
Total	**0**	**32**	**87**	**484**	**1045**	**608**	**635**	**875**	**586**	**227**	**65**	**18**	**0**	**0**	**0**	**0**	**4662**

Percentile	15th	50th	85th	95th
Speed	15	18	25	34
Mean Speed (Average)	31.3			
10 MPH Pace Speed	21-30			
Number in Pace	1653			
Percent in Pace	35.0%			

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	5	7	3	5	6	0	3	0	0	0	0	0	30
1:00	0	2	1	1	3	3	1	6	1	0	0	0	0	0	0	0	18
2:00	0	0	0	1	3	1	4	4	5	1	1	0	0	0	0	0	20
3:00	0	0	0	0	1	3	4	5	10	4	1	1	0	0	0	0	29
4:00	0	0	0	0	4	3	6	8	14	7	5	2	0	0	0	0	49
5:00	0	1	0	2	7	9	2	26	20	18	3	2	0	0	0	0	90
6:00	0	0	2	9	22	17	19	39	52	18	8	2	0	0	0	0	188
7:00	0	3	5	19	51	46	29	39	46	14	5	1	0	0	0	0	258
8:00	0	2	2	22	48	42	34	64	41	21	2	1	0	0	0	0	279
9:00	0	3	6	13	48	23	28	49	22	11	3	0	0	0	0	0	206
10:00	0	1	4	15	43	27	23	51	26	5	2	0	0	0	0	0	197
11:00	0	3	10	33	71	37	43	39	18	8	1	1	0	0	0	0	264
12:00 PM	0	1	7	33	69	31	42	55	27	10	5	0	0	0	0	0	280
1:00	0	0	6	20	71	40	41	47	30	12	1	0	0	0	0	0	268
2:00	0	2	10	39	76	55	52	46	22	9	1	0	0	0	0	0	312
3:00	0	5	7	38	79	36	48	70	36	14	3	0	0	0	0	0	336
4:00	0	1	5	51	64	50	46	69	34	22	1	2	0	0	0	0	345
5:00	0	0	4	30	80	54	28	66	40	11	3	0	0	0	0	0	316
6:00	0	0	1	14	73	35	26	45	44	6	2	0	0	0	0	0	246
7:00	0	0	2	21	55	27	29	42	18	5	2	0	0	0	0	0	201
8:00	0	2	5	13	37	27	17	33	21	1	3	2	0	0	0	0	161
9:00	0	0	1	5	32	19	11	25	18	7	3	0	0	0	0	0	121
10:00	0	0	1	8	20	17	4	15	18	5	3	1	0	0	0	0	92
11:00	0	0	2	4	15	6	5	10	9	1	1	0	0	0	0	0	53
Total	**0**	**26**	**81**	**392**	**977**	**615**	**545**	**858**	**578**	**210**	**62**	**15**	**0**	**0**	**0**	**0**	**4359**

Percentile	15th	50th	85th	95th
Speed	15	18	23	29

Mean Speed (Average)	31.6
10 MPH Pace Speed	21-30
Number in Pace	1592
Percent in Pace	37.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	6	1	4	3	3	1	0	0	0	0	0	0	20
1:00	0	0	0	0	1	1	4	4	3	2	1	0	0	0	0	0	16
2:00	0	0	0	0	3	1	2	8	4	0	0	0	0	0	0	0	18
3:00	0	0	1	0	1	1	2	5	9	9	2	1	0	0	0	0	31
4:00	0	0	2	0	5	1	1	12	16	8	3	1	0	0	0	0	49
5:00	0	2	0	1	10	5	12	24	45	18	0	1	0	0	0	0	118
6:00	0	0	0	16	23	16	28	52	34	15	6	1	0	0	0	0	191
7:00	0	2	3	24	38	27	29	33	45	13	4	0	0	0	0	0	218
8:00	0	3	8	24	62	50	47	46	50	19	2	3	0	0	0	0	314
9:00	0	1	6	17	46	32	31	36	30	12	2	0	0	0	0	0	213
10:00	0	1	6	20	36	31	37	53	23	8	3	0	0	0	0	0	218
11:00	0	2	4	19	69	42	33	57	35	5	5	0	0	0	0	0	271
12:00 PM	0	4	8	35	69	34	42	38	33	6	1	0	0	0	0	0	270
1:00	0	4	7	32	79	46	44	57	33	5	1	0	0	0	0	0	308
2:00	0	1	9	24	94	53	64	50	27	11	4	0	0	0	0	0	337
3:00	0	0	6	39	98	50	48	64	53	11	5	0	0	0	0	0	374
4:00	0	3	10	36	71	47	41	64	42	14	3	1	0	0	0	0	332
5:00	0	1	7	29	81	43	31	43	46	14	3	0	0	0	0	0	298
6:00	0	0	3	21	67	32	34	23	35	16	2	0	0	0	0	0	233
7:00	0	0	1	27	62	32	40	54	28	12	2	0	0	0	0	0	258
8:00	0	0	0	20	42	33	18	19	17	6	0	0	0	0	0	0	155
9:00	0	2	1	11	21	11	16	27	25	6	2	1	0	0	0	0	123
10:00	0	0	1	10	18	9	5	18	13	7	3	1	0	0	0	0	85
11:00	0	0	0	4	11	6	8	11	8	3	2	0	0	0	0	0	53
Total	**0**	**26**	**83**	**411**	**1013**	**604**	**621**	**801**	**657**	**221**	**56**	**10**	**0**	**0**	**0**	**0**	**4503**

Percentile	15th	50th	85th	95th
Speed	16	18	23	32

Mean Speed (Average)	31.7
10 MPH Pace Speed	21-30
Number in Pace	1617
Percent in Pace	36.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	2	6	3	4	9	4	1	0	0	0	0	0	0	29
1:00	0	0	0	2	5	7	6	6	1	0	2	1	0	0	0	0	30
2:00	0	0	0	1	1	0	1	6	7	4	0	1	0	0	0	0	21
3:00	0	0	0	3	6	0	3	7	10	8	0	0	0	0	0	0	37
4:00	0	0	0	0	3	5	1	12	14	6	0	3	0	0	0	0	44
5:00	0	1	0	1	9	9	13	16	29	9	3	2	0	0	0	0	92
6:00	0	0	0	6	12	20	29	57	43	21	9	1	0	0	0	0	198
7:00	0	2	5	15	65	31	26	49	40	13	1	0	0	0	0	0	247
8:00	0	1	6	19	50	31	35	47	39	17	5	1	0	0	0	0	251
9:00	0	2	5	10	49	26	26	33	31	17	4	0	0	0	0	0	203
10:00	0	0	7	15	45	39	31	51	32	10	2	0	0	0	0	0	232
11:00	0	1	5	31	63	44	40	55	28	8	1	0	0	0	0	0	276
12:00 PM	0	3	5	37	65	65	53	58	29	15	1	0	0	0	0	0	331
1:00	0	2	4	22	69	34	38	48	28	17	3	0	0	0	0	0	265
2:00	0	1	9	45	88	53	49	57	35	12	5	0	0	0	0	0	354
3:00	0	2	7	42	86	62	49	59	47	14	5	0	0	0	0	0	373
4:00	0	2	8	29	82	42	53	60	45	16	4	0	0	0	0	0	341
5:00	0	1	5	25	62	49	40	54	40	15	5	0	0	0	0	0	296
6:00	0	1	7	26	70	41	24	35	35	9	5	1	0	0	0	0	254
7:00	0	0	4	15	68	33	32	44	23	9	0	1	0	0	0	0	229
8:00	0	0	1	31	55	14	12	40	27	4	2	0	0	0	0	0	186
9:00	0	0	0	6	33	18	15	17	23	4	1	1	0	0	0	0	118
10:00	0	0	1	9	15	27	13	23	20	8	1	1	0	0	0	0	118
11:00	0	0	1	6	20	8	7	9	12	5	0	0	0	0	0	0	68
Total	**0**	**19**	**80**	**398**	**1027**	**661**	**600**	**852**	**642**	**242**	**59**	**13**	**0**	**0**	**0**	**0**	**4593**

Percentile	15th	50th	85th	95th
Speed	15	18	23	32

Mean Speed (Average)	31.8
10 MPH Pace Speed	21-30
Number in Pace	1688
Percent in Pace	37.0%

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	22	2	0	0	0	24
1:00	0	19	1	0	0	0	20
2:00	0	12	3	1	0	0	16
3:00	1	11	2	0	1	0	15
4:00	0	24	3	3	2	1	33
5:00	0	48	5	2	1	0	56
6:00	1	116	14	4	3	1	139
7:00	0	147	16	12	3	2	180
8:00	0	232	14	10	4	2	262
9:00	1	117	13	11	5	3	150
10:00	1	124	18	12	7	2	164
11:00	0	157	24	8	8	4	201
12:00 PM	1	172	29	9	6	3	220
1:00	0	141	28	7	7	2	185
2:00	0	221	35	8	5	1	270
3:00	1	242	24	5	6	2	280
4:00	2	240	31	6	7	2	288
5:00	0	239	19	5	5	1	269
6:00	1	176	12	4	2	0	195
7:00	0	115	8	3	1	1	128
8:00	1	91	7	3	1	0	103
9:00	0	88	6	1	0	1	96
10:00	0	66	5	1	1	0	73
11:00	0	27	5	1	0	0	33
Total	**10**	**2847**	**324**	**116**	**75**	**28**	**3400**
Percent	0.3%	83.7%	9.5%	3.4%	2.2%	0.8%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	15	2	0	0	0	17
1:00	0	10	1	0	0	0	11
2:00	0	8	2	1	0	0	11
3:00	0	7	2	0	1	0	10
4:00	0	28	4	2	1	1	36
5:00	1	66	4	3	3	2	79
6:00	0	140	12	5	4	1	162
7:00	1	205	13	10	6	0	235
8:00	2	190	18	12	7	1	230
9:00	0	136	16	14	10	0	176
10:00	1	166	14	7	8	2	198
11:00	0	225	19	8	7	3	262
12:00 PM	2	244	22	11	9	2	290
1:00	0	172	26	13	5	3	219
2:00	0	239	34	14	6	1	294
3:00	1	294	28	15	4	2	344
4:00	2	318	34	13	6	2	375
5:00	1	325	20	11	2	1	360
6:00	3	236	12	4	3	2	260
7:00	0	201	6	3	1	0	211
8:00	1	147	4	3	2	1	158
9:00	0	91	6	2	0	1	100
10:00	0	39	5	1	1	1	47
11:00	0	23	2	0	0	0	25
Total	**15**	**3525**	**306**	**152**	**86**	**26**	**4110**
Percent	0.4%	85.8%	7.4%	3.7%	2.1%	0.6%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	15	2	0	0	0	17
1:00	0	10	0	0	0	0	10
2:00	0	8	2	1	0	1	12
3:00	0	14	2	1	0	1	18
4:00	0	30	3	0	0	0	33
5:00	0	62	4	1	1	2	70
6:00	1	147	12	4	3	1	168
7:00	1	192	20	10	11	2	236
8:00	1	208	16	13	7	3	248
9:00	0	149	13	10	8	6	186
10:00	0	154	15	8	6	4	187
11:00	1	194	17	9	5	3	229
12:00 PM	0	211	14	7	8	3	243
1:00	1	212	12	9	9	4	247
2:00	0	220	18	12	5	5	260
3:00	2	241	22	11	4	2	282
4:00	1	245	18	7	3	2	276
5:00	0	233	24	8	2	0	267
6:00	0	218	20	3	1	1	243
7:00	1	160	16	2	0	0	179
8:00	0	149	12	1	1	0	163
9:00	0	96	5	0	2	1	104
10:00	0	67	2	1	0	1	71
11:00	0	27	3	0	1	0	31
Total	**9**	**3262**	**272**	**118**	**77**	**42**	**3780**
Percent	0.2%	86.3%	7.2%	3.1%	2.0%	1.1%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	9	2	0	0	0	11
1:00	0	10	0	0	0	0	10
2:00	0	6	1	0	0	1	8
3:00	0	14	2	0	1	1	18
4:00	0	33	4	1	3	2	43
5:00	0	88	4	0	3	3	98
6:00	1	132	12	9	4	2	160
7:00	1	163	16	8	5	4	197
8:00	2	241	15	7	12	2	279
9:00	0	175	14	10	10	3	212
10:00	0	160	13	9	11	2	195
11:00	1	202	20	7	12	2	244
12:00 PM	0	204	14	8	8	1	235
1:00	3	210	15	11	7	3	249
2:00	0	270	15	10	8	2	305
3:00	0	308	22	12	4	1	347
4:00	1	266	20	9	3	0	299
5:00	0	219	24	6	2	1	252
6:00	0	199	18	4	2	1	224
7:00	1	184	16	3	1	0	205
8:00	1	122	15	0	0	1	139
9:00	0	91	6	1	1	2	101
10:00	0	69	3	1	0	0	73
11:00	0	32	2	0	1	1	36
Total	**11**	**3407**	**273**	**116**	**98**	**35**	**3940**
Percent	0.3%	86.5%	6.9%	2.9%	2.5%	0.9%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	16	1	1	0	0	18
1:00	0	14	1	1	0	0	16
2:00	0	8	0	1	0	1	10
3:00	0	11	3	1	1	1	17
4:00	0	21	2	4	2	0	29
5:00	0	58	7	3	1	1	70
6:00	0	133	16	7	4	4	164
7:00	1	191	17	8	7	2	226
8:00	0	195	20	10	8	2	235
9:00	1	146	18	9	6	5	185
10:00	0	159	15	14	9	5	202
11:00	1	187	14	17	10	4	233
12:00 PM	0	246	16	13	8	3	286
1:00	1	206	15	12	7	2	243
2:00	1	249	23	15	8	3	299
3:00	1	262	22	14	6	5	310
4:00	0	255	31	12	8	2	308
5:00	2	240	16	8	5	1	272
6:00	0	211	14	5	3	0	233
7:00	1	187	18	6	3	1	216
8:00	1	147	10	2	2	0	162
9:00	0	98	7	0	1	1	107
10:00	0	86	6	1	0	1	94
11:00	0	49	5	1	0	0	55
Total	**10**	**3375**	**297**	**165**	**99**	**44**	**3990**
Percent	0.3%	84.6%	7.4%	4.1%	2.5%	1.1%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	36	5	0	1	1	44
1:00	0	27	1	0	0	0	28
2:00	0	19	3	1	1	2	26
3:00	1	19	3	1	3	0	27
4:00	1	32	5	2	3	2	45
5:00	0	53	6	8	4	1	72
6:00	4	140	17	6	2	1	170
7:00	2	174	20	17	7	4	224
8:00	2	240	30	21	7	2	302
9:00	2	150	25	21	10	6	214
10:00	4	137	23	19	10	3	196
11:00	1	178	29	20	12	10	250
12:00 PM	1	196	32	18	8	5	260
1:00	0	164	31	15	12	1	223
2:00	4	242	45	24	9	5	329
3:00	0	262	36	16	6	5	325
4:00	4	287	40	14	3	0	348
5:00	0	275	25	5	3	0	308
6:00	0	171	18	10	3	0	202
7:00	2	123	12	4	1	0	142
8:00	1	107	6	2	1	1	118
9:00	0	81	12	4	1	1	99
10:00	1	89	10	1	1	1	103
11:00	1	41	3	1	1	0	47
Total	**32**	**3243**	**437**	**230**	**109**	**51**	**4102**
Percent	0.8%	79.1%	10.7%	5.6%	2.7%	1.2%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	21	4	0	0	1	26
1:00	1	12	0	1	0	1	15
2:00	0	14	1	1	0	0	16
3:00	0	13	3	1	1	0	18
4:00	0	35	3	6	4	1	49
5:00	2	75	13	10	3	3	106
6:00	1	148	19	10	6	4	188
7:00	1	208	21	23	5	1	259
8:00	3	195	22	27	6	4	257
9:00	1	144	31	17	9	7	209
10:00	1	174	26	17	8	7	233
11:00	4	215	30	28	7	5	289
12:00 PM	1	267	25	17	9	6	325
1:00	1	202	27	11	13	5	259
2:00	2	289	31	19	10	4	355
3:00	4	304	39	10	9	3	369
4:00	3	375	31	18	5	0	432
5:00	0	305	34	19	3	1	362
6:00	3	227	20	6	2	0	258
7:00	0	194	25	5	2	0	226
8:00	0	163	10	3	1	1	178
9:00	2	95	9	2	2	1	111
10:00	1	70	4	1	1	0	77
11:00	0	42	1	0	2	0	45
Total	**31**	**3787**	**429**	**252**	**108**	**55**	**4662**
Percent	0.7%	81.2%	9.2%	5.4%	2.3%	1.2%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	25	3	0	2	0	30
1:00	0	14	0	0	4	0	18
2:00	0	18	0	0	0	2	20
3:00	2	18	3	2	2	2	29
4:00	0	36	5	4	4	0	49
5:00	2	70	6	4	3	5	90
6:00	0	151	15	16	4	2	188
7:00	0	199	22	22	13	2	258
8:00	2	224	20	18	10	5	279
9:00	0	151	16	19	9	11	206
10:00	4	143	18	18	8	6	197
11:00	1	203	24	23	8	5	264
12:00 PM	1	228	16	20	10	5	280
1:00	4	215	18	11	14	6	268
2:00	1	244	26	23	11	7	312
3:00	2	271	36	18	8	1	336
4:00	6	285	23	22	5	4	345
5:00	1	265	32	17	1	0	316
6:00	2	211	28	4	1	0	246
7:00	0	163	25	11	2	0	201
8:00	2	135	14	7	2	1	161
9:00	2	111	7	0	1	0	121
10:00	1	83	4	2	1	1	92
11:00	0	48	4	0	1	0	53
Total	**33**	**3511**	**365**	**261**	**124**	**65**	**4359**
Percent	0.8%	80.5%	8.4%	6.0%	2.8%	1.5%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: SB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	18	2	0	0	0	20
1:00	0	14	2	0	0	0	16
2:00	0	12	2	1	1	2	18
3:00	0	23	2	3	2	1	31
4:00	0	39	4	1	4	1	49
5:00	1	85	16	7	5	4	118
6:00	0	144	16	23	5	3	191
7:00	2	161	31	14	5	5	218
8:00	2	225	39	29	16	3	314
9:00	2	148	23	24	15	1	213
10:00	3	146	23	25	16	5	218
11:00	1	209	27	18	14	2	271
12:00 PM	1	210	24	24	9	2	270
1:00	3	231	27	35	9	3	308
2:00	3	261	30	26	14	3	337
3:00	3	325	22	18	5	1	374
4:00	3	281	23	20	4	1	332
5:00	2	270	16	8	2	0	298
6:00	5	202	16	6	3	1	233
7:00	3	227	17	9	1	1	258
8:00	3	132	11	6	1	2	155
9:00	2	109	7	3	1	1	123
10:00	2	77	2	3	1	0	85
11:00	1	49	2	0	1	0	53
Total	**42**	**3598**	**384**	**303**	**134**	**42**	**4503**
Percent	0.9%	79.9%	8.5%	6.7%	3.0%	0.9%	

Project #: 1803_BL
ID#: ATR 7
City/Town: Waterbury, CT
Location: S Main Street, between Pearl Lake Road & S Leonard Street

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	25	2	1	0	0	29
1:00	1	27	1	1	0	0	30
2:00	0	18	0	1	1	1	21
3:00	0	29	4	1	1	2	37
4:00	0	33	3	4	3	1	44
5:00	0	74	11	3	3	1	92
6:00	0	148	26	14	5	5	198
7:00	4	187	27	19	7	3	247
8:00	1	187	30	12	18	3	251
9:00	3	145	28	11	9	7	203
10:00	3	159	30	24	10	6	232
11:00	3	208	20	27	12	6	276
12:00 PM	6	252	26	23	18	6	331
1:00	0	208	25	18	10	4	265
2:00	0	288	33	23	8	2	354
3:00	0	294	42	24	6	7	373
4:00	0	266	51	15	6	3	341
5:00	3	249	26	12	4	2	296
6:00	0	221	20	7	6	0	254
7:00	0	195	22	9	3	0	229
8:00	0	168	12	4	1	1	186
9:00	0	105	8	1	3	1	118
10:00	1	108	8	0	1	0	118
11:00	1	58	7	1	1	0	68
Total	**27**	**3652**	**462**	**255**	**136**	**61**	**4593**
Percent	0.6%	79.5%	10.1%	5.6%	3.0%	1.3%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	7	15	12:00 PM	67	55	122
12:15	6	7	13	12:15	74	65	139
12:30	8	5	13	12:30	63	62	125
12:45	6	6	12	12:45	61	52	113
1:00	4	8	12	1:00	73	56	129
1:15	7	3	10	1:15	67	68	135
1:30	8	10	18	1:30	59	78	137
1:45	4	6	10	1:45	65	55	120
2:00	5	4	9	2:00	77	64	141
2:15	3	5	8	2:15	66	83	149
2:30	4	2	6	2:30	78	58	136
2:45	1	4	5	2:45	75	87	162
3:00	7	1	8	3:00	74	90	164
3:15	5	1	6	3:15	90	70	160
3:30	3	2	5	3:30	72	80	152
3:45	1	3	4	3:45	75	78	153
4:00	1	1	2	4:00	89	71	160
4:15	1	3	4	4:15	82	82	164
4:30	6	5	11	4:30	92	86	178
4:45	9	5	14	4:45	93	69	162
5:00	8	4	12	5:00	92	71	163
5:15	10	7	17	5:15	87	51	138
5:30	13	6	19	5:30	86	51	137
5:45	11	14	25	5:45	42	62	104
6:00	8	15	23	6:00	60	51	111
6:15	17	27	44	6:15	37	41	78
6:30	22	41	63	6:30	49	34	83
6:45	24	39	63	6:45	42	36	78
7:00	30	54	84	7:00	50	32	82
7:15	35	37	72	7:15	38	34	72
7:30	28	66	94	7:30	26	23	49
7:45	33	79	112	7:45	28	21	49
8:00	56	50	106	8:00	39	23	62
8:15	47	75	122	8:15	36	34	70
8:30	40	70	110	8:30	26	28	54
8:45	53	58	111	8:45	11	16	27
9:00	50	67	117	9:00	21	19	40
9:15	54	53	107	9:15	19	13	32
9:30	43	40	83	9:30	25	18	43
9:45	47	75	122	9:45	19	14	33
10:00	48	33	81	10:00	19	12	31
10:15	48	60	108	10:15	16	10	26
10:30	56	63	119	10:30	11	15	26
10:45	61	45	106	10:45	8	5	13
11:00	62	45	107	11:00	10	13	23
11:15	45	51	96	11:15	9	5	14
11:30	50	42	92	11:30	10	5	15
11:45	55	52	107	11:45	6	5	11
Total	**1151**	**1356**	**2507**	**Total**	**2414**	**2151**	**4565**
				Total All	**3565**	**3507**	**7072**

Average ADT	7936

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	7	5	12	12:00 PM	71	73	144
12:15	4	7	11	12:15	63	69	132
12:30	3	3	6	12:30	88	72	160
12:45	2	4	6	12:45	65	71	136
1:00	5	5	10	1:00	81	60	141
1:15	4	1	5	1:15	70	79	149
1:30	1	3	4	1:30	66	71	137
1:45	4	1	5	1:45	66	75	141
2:00	3	3	6	2:00	75	76	151
2:15	1	3	4	2:15	82	91	173
2:30	1	1	2	2:30	71	85	156
2:45	3	1	4	2:45	63	95	158
3:00	1	1	2	3:00	86	88	174
3:15	3	4	7	3:15	90	100	190
3:30	4	2	6	3:30	79	82	161
3:45	5	3	8	3:45	82	79	161
4:00	1	2	3	4:00	74	82	156
4:15	7	1	8	4:15	82	83	165
4:30	6	6	12	4:30	108	72	180
4:45	8	3	11	4:45	85	75	160
5:00	6	6	12	5:00	95	83	178
5:15	9	8	17	5:15	72	87	159
5:30	6	13	19	5:30	73	73	146
5:45	17	17	34	5:45	74	41	115
6:00	10	15	25	6:00	52	53	105
6:15	14	24	38	6:15	65	69	134
6:30	34	40	74	6:30	73	48	121
6:45	33	55	88	6:45	53	42	95
7:00	40	59	99	7:00	57	51	108
7:15	30	67	97	7:15	49	30	79
7:30	34	70	104	7:30	42	34	76
7:45	43	74	117	7:45	34	31	65
8:00	51	73	124	8:00	41	29	70
8:15	57	65	122	8:15	33	33	66
8:30	47	79	126	8:30	24	20	44
8:45	53	79	132	8:45	25	20	45
9:00	65	78	143	9:00	23	16	39
9:15	45	78	123	9:15	29	14	43
9:30	59	66	125	9:30	23	15	38
9:45	58	69	127	9:45	19	20	39
10:00	69	75	144	10:00	26	16	42
10:15	65	58	123	10:15	17	18	35
10:30	67	61	128	10:30	20	16	36
10:45	63	54	117	10:45	12	14	26
11:00	74	66	140	11:00	5	23	28
11:15	84	64	148	11:15	13	14	27
11:30	51	61	112	11:30	12	12	24
11:45	79	55	134	11:45	8	15	23
Total	**1336**	**1588**	**2924**	**Total**	**2616**	**2515**	**5131**
				Total All	**3952**	**4103**	**8055**

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	9	4	13	12:00 PM	78	69	147
12:15	6	0	6	12:15	72	56	128
12:30	6	7	13	12:30	75	52	127
12:45	3	4	7	12:45	63	61	124
1:00	8	6	14	1:00	73	82	155
1:15	3	6	9	1:15	62	58	120
1:30	1	3	4	1:30	76	64	140
1:45	4	1	5	1:45	62	73	135
2:00	3	4	7	2:00	79	72	151
2:15	4	4	8	2:15	67	69	136
2:30	3	2	5	2:30	76	97	173
2:45	4	0	4	2:45	59	106	165
3:00	2	0	2	3:00	89	88	177
3:15	2	2	4	3:15	96	82	178
3:30	3	2	5	3:30	66	98	164
3:45	2	2	4	3:45	84	89	173
4:00	2	4	6	4:00	101	101	202
4:15	3	2	5	4:15	77	97	174
4:30	5	3	8	4:30	78	104	182
4:45	6	3	9	4:45	101	85	186
5:00	11	8	19	5:00	85	88	173
5:15	6	5	11	5:15	88	78	166
5:30	12	11	23	5:30	92	63	155
5:45	15	20	35	5:45	69	66	135
6:00	9	15	24	6:00	56	54	110
6:15	17	23	40	6:15	65	45	110
6:30	26	31	57	6:30	60	35	95
6:45	27	50	77	6:45	53	43	96
7:00	35	61	96	7:00	50	37	87
7:15	32	57	89	7:15	40	33	73
7:30	37	76	113	7:30	36	40	76
7:45	44	90	134	7:45	41	40	81
8:00	40	75	115	8:00	39	38	77
8:15	35	66	101	8:15	37	29	66
8:30	59	81	140	8:30	34	29	63
8:45	51	72	123	8:45	39	26	65
9:00	56	56	112	9:00	31	34	65
9:15	40	51	91	9:15	30	22	52
9:30	51	53	104	9:30	28	21	49
9:45	49	64	113	9:45	19	19	38
10:00	55	59	114	10:00	20	11	31
10:15	48	43	91	10:15	22	7	29
10:30	56	61	117	10:30	19	9	28
10:45	61	69	130	10:45	20	10	30
11:00	58	50	108	11:00	13	16	29
11:15	67	56	123	11:15	10	10	20
11:30	62	54	116	11:30	13	12	25
11:45	77	60	137	11:45	8	10	18
Total	**1215**	**1476**	**2691**	**Total**	**2651**	**2528**	**5179**
				Total All	**3866**	**4004**	**7870**

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	11	5	16	12:00 PM	63	69	132
12:15	8	3	11	12:15	81	70	151
12:30	6	3	9	12:30	76	74	150
12:45	4	5	9	12:45	76	73	149
1:00	6	5	11	1:00	74	71	145
1:15	5	2	7	1:15	78	76	154
1:30	5	6	11	1:30	58	90	148
1:45	4	3	7	1:45	70	76	146
2:00	6	3	9	2:00	98	101	199
2:15	4	2	6	2:15	69	108	177
2:30	4	3	7	2:30	72	93	165
2:45	1	2	3	2:45	84	98	182
3:00	2	3	5	3:00	82	101	183
3:15	7	1	8	3:15	106	78	184
3:30	4	2	6	3:30	79	94	173
3:45	6	5	11	3:45	77	80	157
4:00	4	1	5	4:00	88	104	192
4:15	3	4	7	4:15	84	79	163
4:30	3	4	7	4:30	95	79	174
4:45	9	6	15	4:45	84	90	174
5:00	6	7	13	5:00	103	71	174
5:15	6	4	10	5:15	74	78	152
5:30	14	8	22	5:30	100	79	179
5:45	12	16	28	5:45	65	60	125
6:00	11	18	29	6:00	64	50	114
6:15	17	33	50	6:15	70	48	118
6:30	27	31	58	6:30	49	59	108
6:45	30	53	83	6:45	57	54	111
7:00	38	62	100	7:00	48	46	94
7:15	26	58	84	7:15	44	57	101
7:30	39	60	99	7:30	56	41	97
7:45	46	85	131	7:45	32	26	58
8:00	49	86	135	8:00	43	32	75
8:15	41	80	121	8:15	48	44	92
8:30	42	64	106	8:30	26	36	62
8:45	40	83	123	8:45	21	24	45
9:00	47	55	102	9:00	26	29	55
9:15	55	58	113	9:15	32	21	53
9:30	61	67	128	9:30	17	28	45
9:45	46	67	113	9:45	21	25	46
10:00	51	60	111	10:00	27	31	58
10:15	43	56	99	10:15	24	6	30
10:30	51	76	127	10:30	17	11	28
10:45	61	63	124	10:45	17	11	28
11:00	52	36	88	11:00	16	24	40
11:15	54	66	120	11:15	16	12	28
11:30	63	63	126	11:30	11	15	26
11:45	75	74	149	11:45	14	2	16
Total	**1205**	**1557**	**2762**	**Total**	**2732**	**2724**	**5456**
				Total All	**3937**	**4281**	**8218**

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	7	7	14	12:00 PM	77	68	145
12:15	4	9	13	12:15	86	58	144
12:30	8	8	16	12:30	70	76	146
12:45	6	4	10	12:45	73	68	141
1:00	3	6	9	1:00	73	69	142
1:15	10	3	13	1:15	89	76	165
1:30	7	7	14	1:30	81	75	156
1:45	5	3	8	1:45	90	97	187
2:00	4	4	8	2:00	90	87	177
2:15	2	0	2	2:15	82	93	175
2:30	6	3	9	2:30	96	94	190
2:45	2	1	3	2:45	95	107	202
3:00	5	4	9	3:00	77	95	172
3:15	7	2	9	3:15	98	80	178
3:30	1	3	4	3:30	95	75	170
3:45	3	1	4	3:45	86	102	188
4:00	5	1	6	4:00	107	79	186
4:15	5	2	7	4:15	99	80	179
4:30	6	6	12	4:30	105	71	176
4:45	7	7	14	4:45	95	81	176
5:00	11	5	16	5:00	84	84	168
5:15	5	8	13	5:15	83	68	151
5:30	10	10	20	5:30	75	62	137
5:45	12	16	28	5:45	52	59	111
6:00	13	22	35	6:00	60	51	111
6:15	16	32	48	6:15	78	58	136
6:30	29	31	60	6:30	64	60	124
6:45	40	67	107	6:45	41	48	89
7:00	27	124	151	7:00	53	44	97
7:15	32	91	123	7:15	58	37	95
7:30	35	74	109	7:30	28	40	68
7:45	37	82	119	7:45	53	48	101
8:00	44	64	108	8:00	54	32	86
8:15	54	82	136	8:15	27	37	64
8:30	36	71	107	8:30	40	25	65
8:45	40	68	108	8:45	38	25	63
9:00	51	56	107	9:00	31	38	69
9:15	54	47	101	9:15	22	33	55
9:30	44	46	90	9:30	33	24	57
9:45	57	62	119	9:45	28	23	51
10:00	77	51	128	10:00	14	15	29
10:15	57	55	112	10:15	25	18	43
10:30	60	60	120	10:30	13	12	25
10:45	61	45	106	10:45	20	16	36
11:00	62	55	117	11:00	16	23	39
11:15	61	61	122	11:15	15	25	40
11:30	80	61	141	11:30	21	20	41
11:45	78	74	152	11:45	17	14	31
Total	**1286**	**1601**	**2887**	**Total**	**2907**	**2670**	**5577**
				Total All	**4193**	**4271**	**8464**

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**0**	**1**	**15**	**67**	**304**	**908**	**1334**	**876**	**297**	**81**	**17**	**2**	**0**	**0**	**0**	**3903**

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	2	7	14	4	0	0	0	0	0	0	0	28
1:00	0	0	0	0	3	1	5	7	4	2	1	0	0	0	0	0	23
2:00	0	0	0	0	1	5	5	1	1	0	0	0	0	0	0	0	13
3:00	0	0	0	0	2	6	3	3	0	2	0	0	0	0	0	0	16
4:00	0	0	0	0	0	3	4	6	4	0	0	0	0	0	0	0	17
5:00	0	0	0	1	3	4	13	13	6	1	1	0	0	0	0	0	42
6:00	0	0	0	1	8	13	20	19	10	0	0	0	0	0	0	0	71
7:00	0	0	1	5	2	12	30	38	22	10	5	1	0	0	0	0	126
8:00	0	0	0	1	2	10	57	75	34	12	3	2	0	0	0	0	196
9:00	0	0	0	1	4	21	57	73	29	8	1	0	0	0	0	0	194
10:00	0	0	0	0	7	22	65	61	42	14	2	0	0	0	0	0	213
11:00	0	0	0	1	6	14	52	85	41	8	4	1	0	0	0	0	212
12:00 PM	0	0	0	2	2	31	70	88	53	16	2	1	0	0	0	0	265
1:00	0	0	0	1	1	16	83	88	54	17	4	0	0	0	0	0	264
2:00	0	0	0	0	7	30	77	107	50	18	6	1	0	0	0	0	296
3:00	0	0	0	3	13	39	82	103	54	14	3	0	0	0	0	0	311
4:00	0	0	0	0	14	22	78	149	82	10	1	0	0	0	0	0	356
5:00	0	0	0	1	7	30	76	120	48	22	2	1	0	0	0	0	307
6:00	0	0	0	0	6	14	53	47	48	14	4	2	0	0	0	0	188
7:00	0	0	0	0	5	8	41	41	31	10	3	3	0	0	0	0	142
8:00	0	0	0	0	4	11	40	32	18	4	1	2	0	0	0	0	112
9:00	0	0	0	0	1	7	15	35	13	11	2	0	0	0	0	0	84
10:00	0	0	0	0	0	10	9	16	12	4	3	0	0	0	0	0	54
11:00	0	0	0	0	1	4	5	16	7	2	0	0	0	0	0	0	35
Total	**0**	**0**	**1**	**17**	**100**	**335**	**947**	**1237**	**667**	**199**	**48**	**14**	**0**	**0**	**0**	**0**	**3565**

Percentile	15th	50th	85th	95th
Speed	40	46	52	56
Mean Speed (Average)	46.9			
10 MPH Pace Speed	41-50			
Number in Pace	2145			
Percent in Pace	61.0%			

Average 85th 51.6

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	0	6	6	2	1	1	0	0	0	0	16
1:00	0	0	0	0	2	1	2	3	1	4	1	0	0	0	0	0	14
2:00	0	0	0	0	0	1	1	2	2	1	0	1	0	0	0	0	8
3:00	0	0	0	1	0	1	5	4	2	0	0	0	0	0	0	0	13
4:00	0	0	0	0	0	1	5	8	7	0	1	0	0	0	0	0	22
5:00	0	0	0	0	1	5	7	10	6	3	4	1	1	0	0	0	38
6:00	0	0	0	0	1	13	10	37	20	9	0	1	0	0	0	0	91
7:00	0	0	0	0	2	7	26	48	38	18	4	4	0	0	0	0	147
8:00	0	0	0	3	2	8	54	58	63	15	5	0	0	0	0	0	208
9:00	0	0	0	0	1	20	62	83	43	11	6	1	0	0	0	0	227
10:00	0	0	0	0	7	31	72	95	43	12	3	1	0	0	0	0	264
11:00	0	0	0	2	6	31	75	97	58	16	3	0	0	0	0	0	288
12:00 PM	0	0	0	1	4	26	58	93	71	27	7	0	0	0	0	0	287
1:00	0	0	0	1	7	22	69	84	71	22	4	3	0	0	0	0	283
2:00	0	0	0	0	8	21	74	101	60	20	4	3	0	0	0	0	291
3:00	0	0	0	2	5	23	83	128	67	24	5	0	0	0	0	0	337
4:00	0	0	0	0	6	16	72	105	106	33	7	2	2	0	0	0	349
5:00	0	0	0	2	4	9	41	105	99	47	6	1	0	0	0	0	314
6:00	0	0	0	0	3	8	51	76	73	21	9	1	1	0	0	0	243
7:00	0	0	0	4	1	14	42	69	32	13	4	2	1	0	0	0	182
8:00	0	0	0	1	1	11	33	34	25	11	6	1	0	0	0	0	123
9:00	0	0	0	0	0	5	26	40	16	3	4	0	0	0	0	0	94
10:00	0	0	0	0	0	10	15	26	13	5	4	2	0	0	0	0	75
11:00	0	0	0	0	0	6	7	9	9	6	1	0	0	0	0	0	38
Total	**0**	**0**	**0**	**17**	**61**	**290**	**890**	**1321**	**931**	**323**	**89**	**25**	**5**	**0**	**0**	**0**	**3952**

Percentile	15th	50th	85th	95th
Speed	41	47	52	57

Mean Speed (Average)	48.3
10 MPH Pace Speed	44-53
Number in Pace	2261
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	1	5	9	4	3	2	0	0	0	0	24
1:00	0	0	0	0	0	3	2	2	4	2	1	1	1	0	0	0	16
2:00	0	0	0	0	1	0	4	4	3	1	0	1	0	0	0	0	14
3:00	0	0	0	0	0	2	2	3	1	1	0	0	0	0	0	0	9
4:00	0	0	0	0	0	0	3	5	5	2	1	0	0	0	0	0	16
5:00	0	0	0	0	0	5	4	12	12	5	3	2	1	0	0	0	44
6:00	0	0	0	0	1	8	17	19	23	8	3	0	0	0	0	0	79
7:00	0	0	0	0	3	10	27	46	43	8	7	4	0	0	0	0	148
8:00	0	0	0	1	12	21	32	55	35	25	3	1	0	0	0	0	185
9:00	0	0	0	1	5	11	45	71	49	11	3	0	0	0	0	0	196
10:00	0	0	0	1	4	23	48	67	49	28	0	0	0	0	0	0	220
11:00	0	0	0	0	1	18	66	93	70	15	1	0	0	0	0	0	264
12:00 PM	0	0	0	0	10	26	60	115	48	19	8	1	1	0	0	0	288
1:00	0	0	0	1	7	18	72	87	59	23	5	1	0	0	0	0	273
2:00	0	0	0	0	2	12	77	92	70	23	5	0	0	0	0	0	281
3:00	0	0	0	2	5	10	65	120	95	28	8	1	1	0	0	0	335
4:00	0	0	0	3	3	32	59	125	100	27	7	1	0	0	0	0	357
5:00	0	0	0	0	1	13	56	137	84	35	8	0	0	0	0	0	334
6:00	0	0	0	0	2	11	47	86	61	17	9	1	0	0	0	0	234
7:00	0	0	0	0	1	15	37	56	35	11	10	2	0	0	0	0	167
8:00	0	0	0	0	1	15	21	51	45	13	3	0	0	0	0	0	149
9:00	0	0	0	0	4	7	25	39	21	9	2	1	0	0	0	0	108
10:00	0	0	0	0	0	11	14	35	18	1	2	0	0	0	0	0	81
11:00	0	0	0	0	2	7	15	7	5	5	1	2	0	0	0	0	44
Total	**0**	**0**	**0**	**9**	**65**	**278**	**799**	**1332**	**944**	**321**	**93**	**21**	**4**	**0**	**0**	**0**	**3866**

Percentile	15th	50th	85th	95th
Speed	41	47	52	57

Mean Speed (Average)	48.4
10 MPH Pace Speed	46-55
Number in Pace	2273
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	4	9	7	5	3	0	1	0	0	0	29
1:00	0	0	0	0	1	3	6	7	1	2	0	0	0	0	0	0	20
2:00	0	0	0	0	0	3	6	3	2	1	0	0	0	0	0	0	15
3:00	0	0	0	0	1	3	8	4	2	0	0	1	0	0	0	0	19
4:00	0	0	0	0	0	1	4	4	7	3	0	0	0	0	0	0	19
5:00	0	0	0	0	1	2	6	9	17	3	0	0	0	0	0	0	38
6:00	0	0	0	0	0	12	18	31	16	5	3	0	0	0	0	0	85
7:00	0	0	0	0	1	10	43	40	41	10	4	0	0	0	0	0	149
8:00	0	0	0	0	0	9	53	54	35	17	4	0	0	0	0	0	172
9:00	0	0	0	0	3	17	60	67	38	16	7	1	0	0	0	0	209
10:00	0	0	0	1	1	14	49	64	48	24	5	0	0	0	0	0	206
11:00	0	0	0	1	4	11	45	102	56	22	2	1	0	0	0	0	244
12:00 PM	0	0	1	1	5	21	74	104	66	18	3	2	1	0	0	0	296
1:00	0	0	0	0	1	10	76	95	59	31	7	1	0	0	0	0	280
2:00	0	0	0	2	6	30	61	122	60	31	11	0	0	0	0	0	323
3:00	0	0	0	3	4	26	54	124	90	30	11	2	0	0	0	0	344
4:00	0	0	0	1	2	23	75	127	93	29	1	0	0	0	0	0	351
5:00	0	0	1	9	8	9	68	108	95	31	10	3	0	0	0	0	342
6:00	0	0	0	2	4	18	42	80	79	10	5	0	0	0	0	0	240
7:00	0	0	0	0	2	21	35	55	38	21	6	2	0	0	0	0	180
8:00	0	0	0	0	1	10	35	46	32	11	3	0	0	0	0	0	138
9:00	0	0	0	0	4	8	25	28	16	8	4	2	1	0	0	0	96
10:00	0	0	0	0	1	9	28	22	13	9	3	0	0	0	0	0	85
11:00	0	0	0	0	0	2	12	19	13	7	2	2	0	0	0	0	57
Total	**0**	**0**	**2**	**20**	**50**	**272**	**887**	**1324**	**924**	**344**	**94**	**17**	**3**	**0**	**0**	**0**	**3937**

Percentile	15th	50th	85th	95th
Speed	41	47	53	57
Mean Speed (Average)	48.4			
10 MPH Pace Speed	44-53			
Number in Pace	2239			
Percent in Pace	57.0%			

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	6	11	6	2	0	0	0	0	0	0	25
1:00	0	0	0	0	1	2	7	6	9	0	0	0	0	0	0	0	25
2:00	0	0	0	0	0	4	1	5	4	0	0	0	0	0	0	0	14
3:00	0	0	0	0	0	2	4	8	1	1	0	0	0	0	0	0	16
4:00	0	0	0	0	0	0	8	8	5	2	0	0	0	0	0	0	23
5:00	0	0	0	0	0	5	13	11	4	2	3	0	0	0	0	0	38
6:00	0	0	0	0	2	11	18	37	17	12	1	0	0	0	0	0	98
7:00	0	0	0	1	0	10	21	50	30	15	4	0	0	0	0	0	131
8:00	0	0	0	2	1	24	44	44	45	11	3	0	0	0	0	0	174
9:00	0	0	0	0	6	16	54	71	38	13	8	0	0	0	0	0	206
10:00	0	0	0	1	3	25	60	90	52	17	4	3	0	0	0	0	255
11:00	0	0	0	3	7	23	76	95	61	13	3	0	0	0	0	0	281
12:00 PM	0	0	1	1	6	20	67	108	72	22	8	1	0	0	0	0	306
1:00	0	0	0	0	4	35	87	110	69	23	5	0	0	0	0	0	333
2:00	0	0	0	2	2	21	92	130	92	23	1	0	0	0	0	0	363
3:00	0	0	0	1	8	27	94	146	55	17	7	1	0	0	0	0	356
4:00	0	0	0	0	2	34	98	130	102	29	10	1	0	0	0	0	406
5:00	0	0	0	1	2	16	44	115	74	33	9	0	0	0	0	0	294
6:00	0	0	0	0	2	8	56	92	58	22	5	0	0	0	0	0	243
7:00	0	0	0	0	5	25	50	55	42	14	1	0	0	0	0	0	192
8:00	0	0	0	0	5	10	42	56	31	13	1	1	0	0	0	0	159
9:00	0	0	0	0	4	10	42	38	16	3	1	0	0	0	0	0	114
10:00	0	0	0	0	0	8	19	20	18	7	0	0	0	0	0	0	72
11:00	0	0	0	0	0	9	14	20	15	6	5	0	0	0	0	0	69
Total	**0**	**0**	**1**	**12**	**60**	**345**	**1017**	**1456**	**916**	**300**	**79**	**7**	**0**	**0**	**0**	**0**	**4193**

Percentile	15th	50th	85th	95th
Speed	41	46	52	57
Mean Speed (Average)	47.9			
10 MPH Pace Speed	41-50			
Number in Pace	2443			
Percent in Pace	58.0%			

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**0**	**5**	**25**	**129**	**568**	**1191**	**1239**	**618**	**195**	**53**	**9**	**0**	**0**	**0**	**0**	**4033**

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	4	6	6	5	4	0	0	0	0	0	0	25
1:00	0	0	0	1	2	6	8	9	1	0	0	0	0	0	0	0	27
2:00	0	0	0	0	3	7	3	2	0	0	0	0	0	0	0	0	15
3:00	0	0	0	0	0	2	4	0	1	0	0	0	0	0	0	0	7
4:00	0	0	0	0	1	2	6	1	3	1	0	0	0	0	0	0	14
5:00	0	0	0	1	2	7	8	4	3	2	3	1	0	0	0	0	31
6:00	0	0	0	1	25	18	30	27	15	4	1	1	0	0	0	0	122
7:00	0	0	0	0	13	40	63	74	32	9	5	0	0	0	0	0	236
8:00	0	0	0	5	12	41	78	74	34	9	0	0	0	0	0	0	253
9:00	0	0	4	5	7	33	68	74	35	8	1	0	0	0	0	0	235
10:00	0	0	0	3	1	41	61	58	25	7	3	2	0	0	0	0	201
11:00	0	0	0	4	4	19	42	72	33	11	4	1	0	0	0	0	190
12:00 PM	0	0	0	0	14	38	69	66	35	11	1	0	0	0	0	0	234
1:00	0	0	0	6	15	47	59	80	34	12	4	0	0	0	0	0	257
2:00	0	0	0	0	13	43	94	94	31	12	3	2	0	0	0	0	292
3:00	0	0	0	0	16	56	96	94	41	12	3	0	0	0	0	0	318
4:00	0	0	0	0	3	36	85	111	61	9	3	0	0	0	0	0	308
5:00	0	0	0	2	5	39	75	76	24	8	5	1	0	0	0	0	235
6:00	0	0	0	0	10	25	40	52	23	6	6	0	0	0	0	0	162
7:00	0	0	0	3	8	9	32	37	10	8	2	1	0	0	0	0	110
8:00	0	0	0	0	1	18	25	25	19	9	3	1	0	0	0	0	101
9:00	0	0	0	0	1	9	16	14	13	9	2	0	0	0	0	0	64
10:00	0	0	0	0	1	2	8	12	14	4	1	0	0	0	0	0	42
11:00	0	0	0	0	0	3	4	9	7	3	2	0	0	0	0	0	28
Total	**0**	**0**	**4**	**31**	**157**	**545**	**980**	**1071**	**499**	**158**	**52**	**10**	**0**	**0**	**0**	**0**	**3507**

Percentile	15th	50th	85th	95th
Speed	38	44	51	55

Mean Speed (Average)	45.6
10 MPH Pace Speed	41-50
Number in Pace	2014
Percent in Pace	58.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	1	7	7	2	2	0	0	0	0	0	19
1:00	0	0	0	0	0	0	2	5	3	0	0	0	0	0	0	0	10
2:00	0	0	0	0	0	0	2	2	2	1	1	0	0	0	0	0	8
3:00	0	0	0	0	0	2	0	4	3	1	0	0	0	0	0	0	10
4:00	0	0	0	0	0	1	3	2	5	1	0	0	0	0	0	0	12
5:00	0	0	0	0	1	5	8	12	8	6	3	1	0	0	0	0	44
6:00	0	0	0	0	9	21	27	44	20	8	4	1	0	0	0	0	134
7:00	0	0	0	0	4	27	65	109	43	17	5	0	0	0	0	0	270
8:00	0	0	0	0	0	22	95	91	58	25	5	0	0	0	0	0	296
9:00	0	0	0	3	3	37	92	73	59	18	6	0	0	0	0	0	291
10:00	0	0	0	0	7	28	77	82	34	17	3	0	0	0	0	0	248
11:00	0	0	0	0	7	48	87	62	30	6	3	3	0	0	0	0	246
12:00 PM	0	0	0	0	6	43	59	108	52	16	1	0	0	0	0	0	285
1:00	0	0	0	1	11	55	65	84	55	11	3	0	0	0	0	0	285
2:00	0	0	0	2	8	50	93	119	55	16	4	0	0	0	0	0	347
3:00	0	0	2	11	9	59	127	91	40	8	1	1	0	0	0	0	349
4:00	0	0	0	0	11	25	100	106	52	16	2	0	0	0	0	0	312
5:00	0	0	1	7	15	27	76	95	43	15	4	1	0	0	0	0	284
6:00	0	0	0	0	5	37	50	79	33	8	0	0	0	0	0	0	212
7:00	0	0	0	1	8	20	45	55	14	3	0	0	0	0	0	0	146
8:00	0	0	0	0	1	26	24	25	15	7	2	2	0	0	0	0	102
9:00	0	0	0	0	6	10	17	13	10	6	2	1	0	0	0	0	65
10:00	0	0	0	0	2	6	17	17	16	5	1	0	0	0	0	0	64
11:00	0	0	0	0	0	5	16	18	18	4	2	1	0	0	0	0	64
Total	**0**	**0**	**3**	**25**	**113**	**554**	**1148**	**1303**	**675**	**217**	**54**	**11**	**0**	**0**	**0**	**0**	**4103**

Percentile	15th	50th	85th	95th
Speed	39	45	51	56

Mean Speed (Average)	46.3
10 MPH Pace Speed	41-50
Number in Pace	2441
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	3	7	2	3	0	0	0	0	0	0	15
1:00	0	0	0	0	1	3	3	6	2	1	0	0	0	0	0	0	16
2:00	0	0	0	0	0	2	1	1	2	3	1	0	0	0	0	0	10
3:00	0	0	0	0	0	1	3	0	1	0	1	0	0	0	0	0	6
4:00	0	0	0	0	0	1	3	4	2	2	0	0	0	0	0	0	12
5:00	0	0	0	0	2	6	12	8	8	5	3	0	0	0	0	0	44
6:00	0	0	0	0	4	21	38	27	19	9	1	0	0	0	0	0	119
7:00	0	0	0	0	17	32	62	107	45	18	3	0	0	0	0	0	284
8:00	0	0	0	4	13	29	82	100	48	13	4	1	0	0	0	0	294
9:00	0	0	0	0	11	36	61	70	38	6	2	0	0	0	0	0	224
10:00	0	0	0	0	15	28	80	66	27	15	1	0	0	0	0	0	232
11:00	0	0	0	8	3	37	50	71	39	9	3	0	0	0	0	0	220
12:00 PM	0	0	0	0	12	28	86	71	30	11	0	0	0	0	0	0	238
1:00	0	0	0	0	18	42	79	77	47	10	3	1	0	0	0	0	277
2:00	0	0	0	0	21	51	108	108	43	12	0	1	0	0	0	0	344
3:00	0	0	5	9	13	60	121	92	36	17	4	0	0	0	0	0	357
4:00	0	0	0	0	15	30	134	135	54	18	0	1	0	0	0	0	387
5:00	0	0	2	6	4	40	91	80	55	15	2	0	0	0	0	0	295
6:00	0	0	0	0	3	19	40	57	37	14	5	2	0	0	0	0	177
7:00	0	0	0	0	9	20	47	41	22	9	2	0	0	0	0	0	150
8:00	0	0	0	0	7	18	41	36	15	4	1	0	0	0	0	0	122
9:00	0	0	0	0	1	16	24	33	13	5	4	0	0	0	0	0	96
10:00	0	0	0	0	0	4	8	14	10	1	0	0	0	0	0	0	37
11:00	0	0	0	0	2	10	7	15	10	4	0	0	0	0	0	0	48
Total	**0**	**0**	**7**	**27**	**171**	**534**	**1184**	**1226**	**605**	**204**	**40**	**6**	**0**	**0**	**0**	**0**	**4004**

Percentile	15th	50th	85th	95th
Speed	38	44	51	56

Mean Speed (Average)	46.0
10 MPH Pace Speed	41-50
Number in Pace	2376
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	2	2	6	4	2	0	0	0	0	0	16
1:00	0	0	0	0	1	1	7	4	2	1	0	0	0	0	0	0	16
2:00	0	0	0	0	0	3	5	2	0	0	0	0	0	0	0	0	10
3:00	0	0	0	2	0	1	1	4	1	1	1	0	0	0	0	0	11
4:00	0	0	0	0	0	4	4	4	2	1	0	0	0	0	0	0	15
5:00	0	0	0	0	1	4	9	11	4	4	2	0	0	0	0	0	35
6:00	0	0	0	1	15	26	38	24	23	7	1	0	0	0	0	0	135
7:00	0	0	0	0	3	43	96	79	30	12	2	0	0	0	0	0	265
8:00	0	0	0	4	12	56	99	84	31	18	9	0	0	0	0	0	313
9:00	0	0	0	0	3	45	69	74	35	15	5	1	0	0	0	0	247
10:00	0	0	0	5	11	27	92	74	34	10	2	0	0	0	0	0	255
11:00	0	0	4	4	4	36	66	73	41	7	3	1	0	0	0	0	239
12:00 PM	0	0	0	0	11	23	101	94	45	8	4	0	0	0	0	0	286
1:00	0	0	1	3	10	34	102	106	44	5	7	1	0	0	0	0	313
2:00	0	0	0	7	24	94	106	113	42	11	3	0	0	0	0	0	400
3:00	0	0	0	0	1	55	149	88	47	10	3	0	0	0	0	0	353
4:00	0	0	0	0	8	38	111	119	59	12	5	0	0	0	0	0	352
5:00	0	0	0	5	9	31	84	80	51	17	10	1	0	0	0	0	288
6:00	0	0	0	0	0	25	56	77	42	8	2	1	0	0	0	0	211
7:00	0	0	0	0	6	33	70	37	14	8	2	0	0	0	0	0	170
8:00	0	0	0	0	4	29	32	52	16	1	1	1	0	0	0	0	136
9:00	0	0	0	2	0	10	36	25	18	9	2	1	0	0	0	0	103
10:00	0	0	0	1	1	4	20	16	8	6	2	1	0	0	0	0	59
11:00	0	0	0	0	1	7	16	16	8	4	1	0	0	0	0	0	53
Total	**0**	**0**	**5**	**34**	**125**	**629**	**1371**	**1258**	**603**	**179**	**69**	**8**	**0**	**0**	**0**	**0**	**4281**

Percentile	15th	50th	85th	95th
Speed	38	44	51	55

Mean Speed (Average)	45.7
10 MPH Pace Speed	41-50
Number in Pace	2620
Percent in Pace	61.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	6	8	8	6	0	0	0	0	0	0	28
1:00	0	0	0	0	0	1	5	8	4	1	0	0	0	0	0	0	19
2:00	0	0	0	0	2	2	3	0	1	0	0	0	0	0	0	0	8
3:00	0	0	0	0	0	4	4	2	0	0	0	0	0	0	0	0	10
4:00	0	0	0	0	0	2	3	5	4	1	0	1	0	0	0	0	16
5:00	0	0	0	0	0	4	18	8	5	3	1	0	0	0	0	0	39
6:00	0	0	0	0	2	31	57	32	17	12	1	0	0	0	0	0	152
7:00	0	0	0	0	2	38	108	127	74	18	4	0	0	0	0	0	371
8:00	0	0	0	1	4	45	83	103	35	12	2	0	0	0	0	0	285
9:00	0	0	0	0	5	36	50	61	43	10	5	1	0	0	0	0	211
10:00	0	0	0	0	6	37	50	67	36	12	3	0	0	0	0	0	211
11:00	0	0	6	0	9	41	65	86	33	6	3	2	0	0	0	0	251
12:00 PM	0	0	0	9	2	47	81	63	52	10	6	0	0	0	0	0	270
1:00	0	0	0	0	4	40	105	109	42	15	0	2	0	0	0	0	317
2:00	0	0	0	0	16	18	117	139	70	19	2	0	0	0	0	0	381
3:00	0	0	0	0	3	54	111	109	51	22	2	0	0	0	0	0	352
4:00	0	0	0	0	1	32	84	107	65	19	3	0	0	0	0	0	311
5:00	0	0	0	0	0	19	82	98	56	16	1	1	0	0	0	0	273
6:00	0	0	0	0	13	38	54	61	28	15	4	4	0	0	0	0	217
7:00	0	0	0	0	1	35	68	46	14	2	3	0	0	0	0	0	169
8:00	0	0	0	0	4	15	39	32	18	7	4	0	0	0	0	0	119
9:00	0	0	0	0	0	14	41	33	22	5	3	0	0	0	0	0	118
10:00	0	0	0	0	0	10	18	13	13	5	2	0	0	0	0	0	61
11:00	0	0	0	0	4	15	22	20	19	1	1	0	0	0	0	0	82
Total	**0**	**0**	**6**	**10**	**78**	**578**	**1274**	**1337**	**710**	**217**	**50**	**11**	**0**	**0**	**0**	**0**	**4271**

Percentile	15th	50th	85th	95th
Speed	39	45	51	55

Mean Speed (Average)	46.4
10 MPH Pace Speed	41-50
Number in Pace	2599
Percent in Pace	61.0%

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	28	0	0	0	0	28
1:00	0	22	1	0	0	0	23
2:00	0	12	1	0	0	0	13
3:00	0	13	3	0	0	0	16
4:00	0	12	4	1	0	0	17
5:00	1	33	6	2	0	0	42
6:00	0	61	4	4	2	0	71
7:00	1	111	8	2	2	2	126
8:00	0	171	14	9	1	1	196
9:00	2	173	14	5	0	0	194
10:00	1	190	13	6	3	0	213
11:00	0	173	23	11	3	2	212
12:00 PM	2	233	21	6	3	0	265
1:00	0	232	20	11	1	0	264
2:00	4	261	23	6	2	0	296
3:00	2	277	24	4	2	2	311
4:00	3	319	27	3	4	0	356
5:00	1	281	17	5	3	0	307
6:00	3	174	8	2	1	0	188
7:00	2	131	6	2	1	0	142
8:00	2	103	5	2	0	0	112
9:00	2	80	2	0	0	0	84
10:00	3	51	0	0	0	0	54
11:00	1	31	1	1	0	1	35
Total	**30**	**3172**	**245**	**82**	**28**	**8**	**3565**
Percent	0.8%	89.0%	6.9%	2.3%	0.8%	0.2%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	15	0	0	1	0	16
1:00	0	13	1	0	0	0	14
2:00	0	8	0	0	0	0	8
3:00	0	13	0	0	0	0	13
4:00	1	20	1	0	0	0	22
5:00	0	37	0	0	1	0	38
6:00	1	76	9	4	1	0	91
7:00	2	131	8	4	2	0	147
8:00	1	178	20	6	2	1	208
9:00	3	196	20	5	3	0	227
10:00	2	226	23	10	2	1	264
11:00	0	253	24	6	2	3	288
12:00 PM	0	248	23	10	5	1	287
1:00	2	249	23	6	3	0	283
2:00	0	253	22	10	4	2	291
3:00	1	306	22	6	1	1	337
4:00	2	317	22	7	1	0	349
5:00	3	284	22	3	2	0	314
6:00	2	221	11	8	1	0	243
7:00	2	160	17	2	1	0	182
8:00	3	110	5	4	0	1	123
9:00	1	88	3	1	1	0	94
10:00	0	72	3	0	0	0	75
11:00	0	36	2	0	0	0	38
Total	**26**	**3510**	**281**	**92**	**33**	**10**	**3952**
Percent	0.7%	88.8%	7.1%	2.3%	0.8%	0.3%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	23	0	1	0	0	24
1:00	1	15	0	0	0	0	16
2:00	0	14	0	0	0	0	14
3:00	0	9	0	0	0	0	9
4:00	0	16	0	0	0	0	16
5:00	0	42	2	0	0	0	44
6:00	1	69	5	2	2	0	79
7:00	0	122	19	5	1	1	148
8:00	1	159	17	4	4	0	185
9:00	2	171	15	6	2	0	196
10:00	2	181	23	6	8	0	220
11:00	0	236	20	6	1	1	264
12:00 PM	2	247	24	11	4	0	288
1:00	7	242	12	11	1	0	273
2:00	0	257	18	4	2	0	281
3:00	1	293	28	6	6	1	335
4:00	2	332	13	4	5	1	357
5:00	0	311	19	3	1	0	334
6:00	5	216	8	3	2	0	234
7:00	0	149	15	2	1	0	167
8:00	2	130	13	4	0	0	149
9:00	0	103	2	2	1	0	108
10:00	2	73	4	1	1	0	81
11:00	0	40	4	0	0	0	44
Total	**28**	**3450**	**261**	**81**	**42**	**4**	**3866**
Percent	0.7%	89.2%	6.8%	2.1%	1.1%	0.1%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	27	1	0	0	0	29
1:00	0	20	0	0	0	0	20
2:00	0	12	1	0	0	2	15
3:00	0	16	3	0	0	0	19
4:00	0	18	1	0	0	0	19
5:00	1	31	4	2	0	0	38
6:00	0	77	4	3	1	0	85
7:00	1	134	11	1	2	0	149
8:00	2	141	18	8	3	0	172
9:00	1	177	20	8	3	0	209
10:00	1	175	19	4	6	1	206
11:00	0	230	10	2	2	0	244
12:00 PM	2	263	17	8	5	1	296
1:00	2	252	15	6	4	1	280
2:00	1	297	15	6	4	0	323
3:00	3	310	24	2	4	1	344
4:00	3	318	21	4	5	0	351
5:00	1	311	20	4	4	2	342
6:00	3	212	18	6	1	0	240
7:00	2	166	8	2	2	0	180
8:00	2	125	7	4	0	0	138
9:00	0	89	5	1	1	0	96
10:00	1	81	2	1	0	0	85
11:00	0	56	1	0	0	0	57
Total	**27**	**3538**	**245**	**72**	**47**	**8**	**3937**
Percent	0.7%	89.9%	6.2%	1.8%	1.2%	0.2%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	23	1	1	0	0	25
1:00	0	24	1	0	0	0	25
2:00	0	14	0	0	0	0	14
3:00	0	16	0	0	0	0	16
4:00	1	21	1	0	0	0	23
5:00	0	35	3	0	0	0	38
6:00	1	86	8	3	0	0	98
7:00	0	113	9	6	3	0	131
8:00	1	154	8	8	3	0	174
9:00	2	181	15	4	4	0	206
10:00	1	222	20	6	6	0	255
11:00	1	243	26	7	3	1	281
12:00 PM	2	261	34	6	2	1	306
1:00	1	290	26	9	5	2	333
2:00	1	308	40	8	5	1	363
3:00	4	306	30	12	3	1	356
4:00	1	365	29	6	5	0	406
5:00	4	265	14	7	4	0	294
6:00	1	219	17	4	2	0	243
7:00	0	172	13	6	1	0	192
8:00	4	133	19	3	0	0	159
9:00	1	103	8	1	1	0	114
10:00	0	67	4	1	0	0	72
11:00	0	64	4	1	0	0	69
Total	**26**	**3685**	**330**	**99**	**47**	**6**	**4193**
Percent	0.6%	87.9%	7.9%	2.4%	1.1%	0.1%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	25	0	0	0	0	25
1:00	0	25	2	0	0	0	27
2:00	0	15	0	0	0	0	15
3:00	0	7	0	0	0	0	7
4:00	0	10	1	1	2	0	14
5:00	0	26	2	1	1	1	31
6:00	0	97	17	3	4	1	122
7:00	0	204	23	7	0	2	236
8:00	0	206	29	11	6	1	253
9:00	0	189	32	9	4	1	235
10:00	0	174	19	6	2	0	201
11:00	0	163	18	5	4	0	190
12:00 PM	0	197	19	12	6	0	234
1:00	1	218	23	9	6	0	257
2:00	0	263	20	5	4	0	292
3:00	1	275	35	5	2	0	318
4:00	0	269	29	6	4	0	308
5:00	0	211	17	6	1	0	235
6:00	0	153	7	0	2	0	162
7:00	0	95	10	4	1	0	110
8:00	0	95	4	0	2	0	101
9:00	0	58	5	0	1	0	64
10:00	0	39	2	1	0	0	42
11:00	0	26	2	0	0	0	28
Total	**2**	**3040**	**316**	**91**	**52**	**6**	**3507**
Percent	0.1%	86.7%	9.0%	2.6%	1.5%	0.2%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	19	0	0	0	0	19
1:00	0	10	0	0	0	0	10
2:00	0	8	0	0	0	0	8
3:00	0	10	0	0	0	0	10
4:00	0	10	1	0	1	0	12
5:00	0	39	2	1	1	1	44
6:00	0	113	13	5	3	0	134
7:00	0	236	28	4	2	0	270
8:00	0	257	27	7	5	0	296
9:00	0	260	20	5	6	0	291
10:00	0	216	19	8	4	1	248
11:00	0	207	28	6	3	2	246
12:00 PM	0	260	17	6	2	0	285
1:00	1	249	24	8	3	0	285
2:00	0	303	31	7	5	1	347
3:00	1	322	16	8	2	0	349
4:00	1	284	20	6	1	0	312
5:00	0	265	16	0	3	0	284
6:00	0	195	12	4	1	0	212
7:00	0	131	10	3	2	0	146
8:00	0	90	8	3	1	0	102
9:00	0	60	4	0	0	1	65
10:00	0	61	3	0	0	0	64
11:00	0	58	5	0	1	0	64
Total	**3**	**3663**	**304**	**81**	**46**	**6**	**4103**
Percent	0.1%	89.3%	7.4%	2.0%	1.1%	0.1%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	15	0	0	0	0	15
1:00	0	14	1	1	0	0	16
2:00	0	10	0	0	0	0	10
3:00	0	5	1	0	0	0	6
4:00	0	11	0	0	1	0	12
5:00	0	39	2	1	2	0	44
6:00	0	101	10	3	5	0	119
7:00	0	256	21	4	3	0	284
8:00	0	257	26	5	5	1	294
9:00	0	198	16	4	6	0	224
10:00	0	209	13	5	5	0	232
11:00	0	194	14	6	6	0	220
12:00 PM	0	213	13	6	6	0	238
1:00	1	250	16	8	2	0	277
2:00	0	312	25	1	5	1	344
3:00	2	322	25	4	4	0	357
4:00	0	360	19	6	2	0	387
5:00	0	276	15	2	2	0	295
6:00	0	162	14	0	1	0	177
7:00	0	139	7	2	1	1	150
8:00	0	112	9	0	1	0	122
9:00	0	91	5	0	0	0	96
10:00	0	36	1	0	0	0	37
11:00	0	45	3	0	0	0	48
Total	**3**	**3627**	**256**	**58**	**57**	**3**	**4004**
Percent	0.1%	90.6%	6.4%	1.4%	1.4%	0.1%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/26/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	15	1	0	0	0	16
1:00	0	13	3	0	0	0	16
2:00	0	10	0	0	0	0	10
3:00	0	10	1	0	0	0	11
4:00	0	12	2	0	1	0	15
5:00	0	30	3	1	1	0	35
6:00	0	116	13	4	2	0	135
7:00	1	226	24	10	3	1	265
8:00	0	278	19	11	5	0	313
9:00	0	204	25	7	10	1	247
10:00	0	229	23	1	2	0	255
11:00	0	212	16	7	4	0	239
12:00 PM	1	254	24	2	4	1	286
1:00	0	271	30	4	8	0	313
2:00	0	368	17	10	5	0	400
3:00	0	329	19	2	3	0	353
4:00	0	327	17	5	2	1	352
5:00	0	267	15	6	0	0	288
6:00	2	192	14	2	1	0	211
7:00	0	157	10	3	0	0	170
8:00	0	122	12	0	1	1	136
9:00	0	96	5	1	1	0	103
10:00	0	57	2	0	0	0	59
11:00	0	50	2	0	1	0	53
Total	**4**	**3845**	**297**	**76**	**54**	**5**	**4281**
Percent	0.1%	89.8%	6.9%	1.8%	1.3%	0.1%	

Project #: 1803_BL
ID#: ATR 8
City/Town: Waterbury, CT
Location: #600-900 Thomaston Ave

Direction: SB

3/27/2026 Time	Motorcycle	Passenger Car	Light Truck & Van	Single-Unit Truck	Bus	Multi-Unit Truck	Total
12:00 AM	0	26	2	0	0	0	28
1:00	0	19	0	0	0	0	19
2:00	0	8	0	0	0	0	8
3:00	0	9	1	0	0	0	10
4:00	0	15	0	0	1	0	16
5:00	0	35	2	1	1	0	39
6:00	0	135	9	4	4	0	152
7:00	0	314	42	4	9	2	371
8:00	0	236	29	12	6	2	285
9:00	0	186	15	6	4	0	211
10:00	1	185	16	7	2	0	211
11:00	0	227	18	1	5	0	251
12:00 PM	0	243	15	7	5	0	270
1:00	0	279	28	5	5	0	317
2:00	0	340	31	6	4	0	381
3:00	1	319	23	4	4	1	352
4:00	0	285	23	3	0	0	311
5:00	0	249	21	2	1	0	273
6:00	0	199	14	3	1	0	217
7:00	0	150	17	2	0	0	169
8:00	0	108	9	1	1	0	119
9:00	0	109	8	1	0	0	118
10:00	0	58	3	0	0	0	61
11:00	1	75	6	0	0	0	82
Total	**3**	**3809**	**332**	**69**	**53**	**5**	**4271**
Percent	0.1%	89.2%	7.8%	1.6%	1.2%	0.1%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026				3/23/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	10	9	19	12:00 PM	73	52	125
12:15	8	7	15	12:15	64	50	114
12:30	10	6	16	12:30	75	67	142
12:45	7	7	14	12:45	73	56	129
1:00	8	8	16	1:00	70	41	111
1:15	7	9	16	1:15	63	65	128
1:30	7	4	11	1:30	58	68	126
1:45	7	4	11	1:45	76	50	126
2:00	4	6	10	2:00	90	68	158
2:15	3	7	10	2:15	83	63	146
2:30	4	4	8	2:30	83	70	153
2:45	2	3	5	2:45	81	49	130
3:00	4	4	8	3:00	87	65	152
3:15	5	4	9	3:15	85	62	147
3:30	4	3	7	3:30	96	79	175
3:45	6	4	10	3:45	87	50	137
4:00	13	11	24	4:00	93	67	160
4:15	8	9	17	4:15	82	59	141
4:30	9	2	11	4:30	97	65	162
4:45	14	7	21	4:45	88	63	151
5:00	25	7	32	5:00	73	65	138
5:15	32	9	41	5:15	87	55	142
5:30	40	20	60	5:30	54	53	107
5:45	53	26	79	5:45	72	42	114
6:00	53	23	76	6:00	55	28	83
6:15	34	38	72	6:15	57	32	89
6:30	62	28	90	6:30	43	38	81
6:45	84	35	119	6:45	44	36	80
7:00	91	46	137	7:00	35	29	64
7:15	81	54	135	7:15	36	18	54
7:30	70	57	127	7:30	40	23	63
7:45	81	51	132	7:45	30	19	49
8:00	76	71	147	8:00	23	13	36
8:15	83	73	156	8:15	34	15	49
8:30	93	59	152	8:30	28	14	42
8:45	101	57	158	8:45	20	16	36
9:00	93	66	159	9:00	25	25	50
9:15	95	60	155	9:15	20	19	39
9:30	69	56	125	9:30	18	15	33
9:45	65	44	109	9:45	15	18	33
10:00	78	61	139	10:00	15	4	19
10:15	66	45	111	10:15	24	14	38
10:30	63	46	109	10:30	20	8	28
10:45	70	59	129	10:45	14	12	26
11:00	71	46	117	11:00	18	9	27
11:15	81	41	122	11:15	15	12	27
11:30	75	56	131	11:30	6	7	13
11:45	89	52	141	11:45	10	12	22
Total	**2114**	**1404**	**3518**	**Total**	**2535**	**1860**	**4395**
				Total All	**4649**	**3264**	**7913**

Avg ADT	8499

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	5	10	15	12:00 PM	75	50	125
12:15	11	4	15	12:15	76	62	138
12:30	2	5	7	12:30	83	51	134
12:45	6	7	13	12:45	87	62	149
1:00	4	5	9	1:00	102	58	160
1:15	0	3	3	1:15	89	64	153
1:30	5	5	10	1:30	75	67	142
1:45	1	1	2	1:45	87	47	134
2:00	5	3	8	2:00	89	74	163
2:15	1	2	3	2:15	84	57	141
2:30	1	2	3	2:30	106	67	173
2:45	7	3	10	2:45	92	66	158
3:00	7	5	12	3:00	107	53	160
3:15	6	2	8	3:15	79	54	133
3:30	4	1	5	3:30	97	84	181
3:45	19	7	26	3:45	96	81	177
4:00	12	26	38	4:00	91	56	147
4:15	8	7	15	4:15	99	52	151
4:30	6	3	9	4:30	91	68	159
4:45	14	6	20	4:45	87	54	141
5:00	26	11	37	5:00	101	66	167
5:15	35	5	40	5:15	79	48	127
5:30	32	19	51	5:30	78	48	126
5:45	71	27	98	5:45	60	45	105
6:00	50	37	87	6:00	66	38	104
6:15	42	41	83	6:15	63	39	102
6:30	87	41	128	6:30	56	49	105
6:45	107	38	145	6:45	62	35	97
7:00	80	57	137	7:00	64	34	98
7:15	66	53	119	7:15	52	41	93
7:30	72	47	119	7:30	36	43	79
7:45	105	65	170	7:45	42	37	79
8:00	65	63	128	8:00	43	25	68
8:15	79	54	133	8:15	29	28	57
8:30	102	55	157	8:30	33	27	60
8:45	96	54	150	8:45	22	24	46
9:00	92	68	160	9:00	32	17	49
9:15	76	59	135	9:15	32	12	44
9:30	66	60	126	9:30	20	15	35
9:45	78	48	126	9:45	22	21	43
10:00	64	55	119	10:00	25	11	36
10:15	54	30	84	10:15	13	20	33
10:30	71	50	121	10:30	18	13	31
10:45	71	51	122	10:45	15	10	25
11:00	91	53	144	11:00	26	21	47
11:15	72	48	120	11:15	10	17	27
11:30	89	63	152	11:30	16	15	31
11:45	82	66	148	11:45	8	7	15
Total	**2145**	**1425**	**3570**	**Total**	**2915**	**2033**	**4948**
				Total All	**5060**	**3458**	**8518**

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	6	18	24	12:00 PM	87	60	147
12:15	7	9	16	12:15	74	59	133
12:30	8	3	11	12:30	70	51	121
12:45	2	7	9	12:45	64	46	110
1:00	3	5	8	1:00	87	48	135
1:15	1	2	3	1:15	79	54	133
1:30	4	6	10	1:30	88	71	159
1:45	3	2	5	1:45	76	48	124
2:00	3	2	5	2:00	71	66	137
2:15	1	2	3	2:15	84	62	146
2:30	3	1	4	2:30	86	73	159
2:45	2	1	3	2:45	97	62	159
3:00	2	3	5	3:00	95	63	158
3:15	12	4	16	3:15	94	65	159
3:30	8	2	10	3:30	91	86	177
3:45	25	2	27	3:45	103	81	184
4:00	7	15	22	4:00	105	66	171
4:15	16	12	28	4:15	88	63	151
4:30	10	5	15	4:30	111	51	162
4:45	18	9	27	4:45	86	62	148
5:00	21	6	27	5:00	91	67	158
5:15	35	11	46	5:15	81	56	137
5:30	48	23	71	5:30	72	42	114
5:45	67	26	93	5:45	62	51	113
6:00	48	41	89	6:00	84	49	133
6:15	55	49	104	6:15	55	49	104
6:30	78	52	130	6:30	53	55	108
6:45	82	42	124	6:45	50	51	101
7:00	88	52	140	7:00	54	17	71
7:15	74	42	116	7:15	49	34	83
7:30	83	53	136	7:30	47	38	85
7:45	91	64	155	7:45	39	22	61
8:00	80	65	145	8:00	39	29	68
8:15	82	59	141	8:15	20	31	51
8:30	88	69	157	8:30	33	24	57
8:45	103	52	155	8:45	24	24	48
9:00	97	61	158	9:00	37	18	55
9:15	77	63	140	9:15	22	17	39
9:30	68	59	127	9:30	26	14	40
9:45	82	57	139	9:45	9	10	19
10:00	75	46	121	10:00	18	14	32
10:15	65	47	112	10:15	19	8	27
10:30	65	60	125	10:30	23	15	38
10:45	55	65	120	10:45	21	10	31
11:00	63	67	130	11:00	15	15	30
11:15	73	50	123	11:15	14	8	22
11:30	66	47	113	11:30	13	11	24
11:45	69	48	117	11:45	8	11	19
Total	**2119**	**1486**	**3605**	**Total**	**2814**	**2027**	**4841**
				Total All	**4933**	**3513**	**8446**

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	8	9	17	12:00 PM	82	61	143
12:15	10	3	13	12:15	80	71	151
12:30	11	7	18	12:30	97	66	163
12:45	4	3	7	12:45	82	51	133
1:00	3	7	10	1:00	82	63	145
1:15	4	2	6	1:15	71	60	131
1:30	1	8	9	1:30	75	81	156
1:45	2	1	3	1:45	86	60	146
2:00	4	1	5	2:00	79	59	138
2:15	2	4	6	2:15	100	67	167
2:30	2	7	9	2:30	69	71	140
2:45	6	4	10	2:45	90	57	147
3:00	2	2	4	3:00	113	57	170
3:15	12	3	15	3:15	78	54	132
3:30	4	3	7	3:30	94	91	185
3:45	24	2	26	3:45	83	74	157
4:00	9	11	20	4:00	98	66	164
4:15	12	9	21	4:15	101	54	155
4:30	10	5	15	4:30	98	77	175
4:45	14	7	21	4:45	85	51	136
5:00	19	1	20	5:00	94	56	150
5:15	34	9	43	5:15	88	59	147
5:30	41	21	62	5:30	77	56	133
5:45	61	24	85	5:45	72	45	117
6:00	59	41	100	6:00	73	52	125
6:15	44	41	85	6:15	76	49	125
6:30	75	45	120	6:30	65	57	122
6:45	90	42	132	6:45	61	38	99
7:00	93	54	147	7:00	44	32	76
7:15	93	57	150	7:15	52	23	75
7:30	77	57	134	7:30	60	42	102
7:45	100	54	154	7:45	50	30	80
8:00	79	77	156	8:00	44	28	72
8:15	86	73	159	8:15	41	23	64
8:30	107	53	160	8:30	21	25	46
8:45	99	61	160	8:45	43	35	78
9:00	96	53	149	9:00	37	16	53
9:15	87	56	143	9:15	22	17	39
9:30	77	57	134	9:30	26	18	44
9:45	88	44	132	9:45	25	14	39
10:00	78	51	129	10:00	20	16	36
10:15	67	46	113	10:15	25	13	38
10:30	66	52	118	10:30	15	11	26
10:45	77	40	117	10:45	19	9	28
11:00	76	54	130	11:00	17	18	35
11:15	80	37	117	11:15	20	14	34
11:30	58	68	126	11:30	13	4	17
11:45	77	57	134	11:45	7	15	22
Total	**2228**	**1423**	**3651**	**Total**	**2950**	**2106**	**5056**
				Total All	**5178**	**3529**	**8707**

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	18	8	26	12:00 PM	90	69	159
12:15	12	10	22	12:15	90	45	135
12:30	8	5	13	12:30	69	62	131
12:45	7	7	14	12:45	94	59	153
1:00	6	2	8	1:00	94	56	150
1:15	2	7	9	1:15	71	52	123
1:30	7	6	13	1:30	68	76	144
1:45	2	3	5	1:45	78	60	138
2:00	4	3	7	2:00	95	66	161
2:15	5	2	7	2:15	97	76	173
2:30	3	2	5	2:30	92	80	172
2:45	1	1	2	2:45	92	59	151
3:00	4	2	6	3:00	87	56	143
3:15	12	1	13	3:15	89	68	157
3:30	5	5	10	3:30	120	86	206
3:45	23	6	29	3:45	99	59	158
4:00	12	12	24	4:00	83	59	142
4:15	10	6	16	4:15	77	74	151
4:30	15	6	21	4:30	100	62	162
4:45	14	6	20	4:45	85	58	143
5:00	24	6	30	5:00	94	72	166
5:15	35	7	42	5:15	69	56	125
5:30	44	15	59	5:30	67	61	128
5:45	53	22	75	5:45	80	50	130
6:00	47	37	84	6:00	59	44	103
6:15	49	36	85	6:15	70	47	117
6:30	69	49	118	6:30	41	43	84
6:45	77	141	218	6:45	50	36	86
7:00	71	153	224	7:00	51	40	91
7:15	72	111	183	7:15	50	35	85
7:30	72	54	126	7:30	51	32	83
7:45	96	68	164	7:45	48	24	72
8:00	73	56	129	8:00	42	21	63
8:15	93	73	166	8:15	35	29	64
8:30	110	60	170	8:30	33	35	68
8:45	89	58	147	8:45	22	15	37
9:00	96	61	157	9:00	30	42	72
9:15	81	37	118	9:15	32	29	61
9:30	79	62	141	9:30	21	19	40
9:45	70	52	122	9:45	29	24	53
10:00	68	54	122	10:00	31	20	51
10:15	64	47	111	10:15	22	13	35
10:30	64	54	118	10:30	29	16	45
10:45	83	52	135	10:45	23	13	36
11:00	75	58	133	11:00	22	12	34
11:15	59	56	115	11:15	12	17	29
11:30	89	54	143	11:30	13	15	28
11:45	78	63	141	11:45	14	13	27
Total	**2150**	**1696**	**3846**	**Total**	**2910**	**2155**	**5065**
				Total All	**5060**	**3851**	**8911**

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**28**	**66**	**163**	**609**	**1426**	**1740**	**756**	**159**	**27**	**4**	**0**	**0**	**0**	**0**	**0**	**4976**

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	3	19	10	2	0	0	0	0	0	0	0	35
1:00	0	0	0	0	2	4	11	9	3	0	0	0	0	0	0	0	29
2:00	0	0	0	0	0	2	5	5	1	0	0	0	0	0	0	0	13
3:00	0	0	0	0	0	1	10	7	1	0	0	0	0	0	0	0	19
4:00	0	0	0	2	5	11	16	6	2	2	0	0	0	0	0	0	44
5:00	0	0	1	3	16	47	57	21	3	2	0	0	0	0	0	0	150
6:00	0	2	4	7	28	92	76	19	5	0	0	0	0	0	0	0	233
7:00	0	2	1	6	53	97	110	48	5	1	0	0	0	0	0	0	323
8:00	0	4	13	16	80	121	91	23	5	0	0	0	0	0	0	0	353
9:00	0	1	3	28	66	112	82	27	2	1	0	0	0	0	0	0	322
10:00	0	3	4	7	37	96	95	29	6	0	0	0	0	0	0	0	277
11:00	0	2	2	22	54	99	101	32	3	1	0	0	0	0	0	0	316
12:00 PM	0	2	4	10	35	106	96	25	2	4	1	0	0	0	0	0	285
1:00	0	2	2	13	29	74	88	53	5	1	0	0	0	0	0	0	267
2:00	0	3	6	22	47	124	100	30	4	1	0	0	0	0	0	0	337
3:00	0	5	9	25	43	117	103	46	5	1	1	0	0	0	0	0	355
4:00	0	2	8	20	68	129	101	26	6	0	0	0	0	0	0	0	360
5:00	0	3	4	3	16	77	123	52	7	1	0	0	0	0	0	0	286
6:00	0	1	5	8	14	49	74	35	12	1	0	0	0	0	0	0	199
7:00	0	1	0	2	6	38	52	31	8	3	0	0	0	0	0	0	141
8:00	0	0	1	1	3	20	47	23	7	3	0	0	0	0	0	0	105
9:00	0	0	0	1	6	22	29	13	6	1	0	0	0	0	0	0	78
10:00	0	0	0	1	3	12	31	19	7	0	0	0	0	0	0	0	73
11:00	0	1	1	0	2	11	15	14	4	1	0	0	0	0	0	0	49
Total	**0**	**34**	**68**	**197**	**614**	**1464**	**1532**	**603**	**111**	**24**	**2**	**0**	**0**	**0**	**0**	**0**	**4649**

Percentile	15th	50th	85th	95th
Speed	23	29	34	38
Mean Speed (Average)	29.9			
10 MPH Pace Speed	26-35			
Number in Pace	2943			
Percent in Pace	65.0%			

Avg 85th	36.3

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	7	9	4	3	0	0	0	0	0	0	0	24
1:00	0	0	0	0	0	3	6	1	0	0	0	0	0	0	0	0	10
2:00	0	1	0	0	1	7	4	1	0	0	0	0	0	0	0	0	14
3:00	0	0	0	0	1	4	11	10	9	1	0	0	0	0	0	0	36
4:00	0	0	3	0	2	7	12	12	2	2	0	0	0	0	0	0	40
5:00	0	2	1	2	7	33	70	37	12	0	0	0	0	0	0	0	164
6:00	0	0	4	13	50	90	87	32	10	0	0	0	0	0	0	0	286
7:00	0	2	2	22	42	71	104	64	13	3	0	0	0	0	0	0	323
8:00	0	3	5	12	43	118	107	44	8	2	0	0	0	0	0	0	342
9:00	0	4	9	24	58	97	87	26	5	2	0	0	0	0	0	0	312
10:00	0	0	3	5	26	82	108	34	2	0	0	0	0	0	0	0	260
11:00	0	2	1	14	51	102	114	35	11	4	0	0	0	0	0	0	334
12:00 PM	0	1	1	22	57	109	103	25	3	0	0	0	0	0	0	0	321
1:00	0	6	16	18	49	93	126	37	7	1	0	0	0	0	0	0	353
2:00	0	2	16	26	51	102	122	43	8	1	0	0	0	0	0	0	371
3:00	0	0	0	7	43	121	140	57	11	0	0	0	0	0	0	0	379
4:00	0	2	2	2	32	98	159	64	9	0	0	0	0	0	0	0	368
5:00	0	0	3	11	29	67	123	77	8	0	0	0	0	0	0	0	318
6:00	0	0	1	2	20	60	104	49	10	1	0	0	0	0	0	0	247
7:00	0	0	0	2	16	40	82	43	11	0	0	0	0	0	0	0	194
8:00	0	1	1	2	10	23	58	25	6	1	0	0	0	0	0	0	127
9:00	0	1	1	2	1	24	44	29	4	0	0	0	0	0	0	0	106
10:00	0	0	0	0	2	12	33	14	9	1	0	0	0	0	0	0	71
11:00	0	1	2	0	2	5	31	12	3	4	0	0	0	0	0	0	60
Total	**0**	**28**	**71**	**186**	**594**	**1375**	**1844**	**775**	**164**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**5060**

Percentile	15th	50th	85th	95th
Speed	24	29	35	38

Mean Speed (Average)	30.7
10 MPH Pace Speed	26-35
Number in Pace	3219
Percent in Pace	64.0%

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	0	4	8	9	1	0	0	0	0	0	0	0	23
1:00	0	0	0	0	1	2	5	3	0	0	0	0	0	0	0	0	11
2:00	0	0	0	1	2	3	1	2	0	0	0	0	0	0	0	0	9
3:00	0	0	0	1	3	12	14	13	2	2	0	0	0	0	0	0	47
4:00	0	0	1	1	1	10	19	10	6	3	0	0	0	0	0	0	51
5:00	0	3	3	2	7	59	65	25	4	3	0	0	0	0	0	0	171
6:00	0	1	4	9	19	67	97	56	8	2	0	0	0	0	0	0	263
7:00	0	0	1	12	45	81	121	57	16	3	0	0	0	0	0	0	336
8:00	0	3	6	11	54	109	93	62	14	1	0	0	0	0	0	0	353
9:00	0	1	12	29	52	91	89	41	9	0	0	0	0	0	0	0	324
10:00	0	2	2	6	40	76	100	28	5	1	0	0	0	0	0	0	260
11:00	0	1	1	7	42	104	79	30	6	1	0	0	0	0	0	0	271
12:00 PM	0	2	5	5	34	92	101	45	10	1	0	0	0	0	0	0	295
1:00	0	0	2	8	47	116	110	35	11	1	0	0	0	0	0	0	330
2:00	0	0	12	12	58	96	90	57	10	2	1	0	0	0	0	0	338
3:00	0	0	8	20	45	122	121	61	6	0	0	0	0	0	0	0	383
4:00	0	2	2	6	46	113	155	57	8	1	0	0	0	0	0	0	390
5:00	0	0	1	1	18	94	125	54	9	4	0	0	0	0	0	0	306
6:00	0	0	0	2	27	59	88	47	17	1	1	0	0	0	0	0	242
7:00	0	0	0	0	10	57	70	38	14	0	0	0	0	0	0	0	189
8:00	0	0	0	1	2	23	55	24	8	3	0	0	0	0	0	0	116
9:00	0	0	0	0	1	17	36	29	6	3	2	0	0	0	0	0	94
10:00	0	0	2	0	2	18	33	17	8	1	0	0	0	0	0	0	81
11:00	0	0	0	1	3	6	16	20	3	1	0	0	0	0	0	0	50
Total	**0**	**15**	**62**	**136**	**559**	**1431**	**1691**	**820**	**181**	**34**	**4**	**0**	**0**	**0**	**0**	**0**	**4933**

Percentile	15th	50th	85th	95th
Speed	24	29	35	39
Mean Speed (Average)	31.0			
10 MPH Pace Speed	26-35			
Number in Pace	3120			
Percent in Pace	63.0%			

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	2	8	11	11	0	1	0	0	0	0	0	0	33
1:00	0	0	0	0	2	3	3	2	0	0	0	0	0	0	0	0	10
2:00	0	0	0	0	1	7	5	1	0	0	0	0	0	0	0	0	14
3:00	0	0	0	0	2	5	19	10	4	2	0	0	0	0	0	0	42
4:00	0	0	1	3	5	10	12	10	2	1	1	0	0	0	0	0	45
5:00	0	0	0	2	14	44	60	21	13	0	1	0	0	0	0	0	155
6:00	0	1	3	9	44	66	92	44	8	1	0	0	0	0	0	0	268
7:00	0	4	2	10	37	100	130	61	16	2	1	0	0	0	0	0	363
8:00	0	3	9	21	83	119	98	36	2	0	0	0	0	0	0	0	371
9:00	0	1	6	23	58	125	95	30	10	0	0	0	0	0	0	0	348
10:00	0	3	3	6	54	98	93	22	8	1	0	0	0	0	0	0	288
11:00	0	5	0	4	36	108	89	42	6	1	0	0	0	0	0	0	291
12:00 PM	0	6	10	17	26	95	145	33	6	3	0	0	0	0	0	0	341
1:00	0	2	3	3	30	91	121	51	12	1	0	0	0	0	0	0	314
2:00	0	1	3	5	46	118	108	44	11	2	0	0	0	0	0	0	338
3:00	0	6	22	26	39	111	111	45	7	1	0	0	0	0	0	0	368
4:00	0	4	4	12	52	86	138	72	9	3	2	0	0	0	0	0	382
5:00	0	0	4	8	54	81	118	51	13	2	0	0	0	0	0	0	331
6:00	0	2	2	5	18	54	125	49	18	1	1	0	0	0	0	0	275
7:00	0	0	0	2	22	56	73	39	10	3	1	0	0	0	0	0	206
8:00	0	2	0	1	13	26	74	27	6	0	0	0	0	0	0	0	149
9:00	0	0	0	0	3	16	55	32	3	1	0	0	0	0	0	0	110
10:00	0	1	1	1	6	18	27	18	6	1	0	0	0	0	0	0	79
11:00	0	0	0	0	1	12	23	10	9	2	0	0	0	0	0	0	57
Total	**0**	**41**	**73**	**158**	**648**	**1457**	**1825**	**761**	**179**	**29**	**7**	**0**	**0**	**0**	**0**	**0**	**5178**

Percentile	15th	50th	85th	95th
Speed	24	29	35	38
Mean Speed (Average)	30.6			
10 MPH Pace Speed	26-35			
Number in Pace	3279			
Percent in Pace	63.0%			

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	9	14	17	4	0	0	0	0	0	0	0	45
1:00	0	0	0	0	2	6	4	3	2	0	0	0	0	0	0	0	17
2:00	0	0	0	1	3	3	2	3	1	0	0	0	0	0	0	0	13
3:00	0	0	0	0	2	14	13	10	3	2	0	0	0	0	0	0	44
4:00	0	0	1	2	3	7	17	13	4	2	2	0	0	0	0	0	51
5:00	0	0	0	0	6	30	73	32	14	1	0	0	0	0	0	0	156
6:00	0	2	5	22	39	50	88	27	8	1	0	0	0	0	0	0	242
7:00	0	2	6	10	45	100	85	54	8	1	0	0	0	0	0	0	311
8:00	0	2	5	17	84	118	96	40	2	1	0	0	0	0	0	0	365
9:00	0	3	4	9	50	115	99	42	4	0	0	0	0	0	0	0	326
10:00	0	1	6	10	43	82	97	38	2	0	0	0	0	0	0	0	279
11:00	0	1	4	17	43	80	124	23	8	1	0	0	0	0	0	0	301
12:00 PM	0	2	5	16	39	116	110	46	9	0	0	0	0	0	0	0	343
1:00	0	0	4	5	38	83	117	50	13	1	0	0	0	0	0	0	311
2:00	0	2	4	7	49	135	116	51	10	2	0	0	0	0	0	0	376
3:00	0	0	1	6	54	100	162	67	4	1	0	0	0	0	0	0	395
4:00	0	3	4	8	63	88	115	55	8	1	0	0	0	0	0	0	345
5:00	0	1	3	2	25	81	133	50	11	3	1	0	0	0	0	0	310
6:00	0	1	1	4	14	40	96	53	11	0	0	0	0	0	0	0	220
7:00	0	0	1	1	11	47	81	46	10	2	1	0	0	0	0	0	200
8:00	0	1	2	0	3	35	58	27	4	1	1	0	0	0	0	0	132
9:00	0	0	0	0	8	26	43	28	6	1	0	0	0	0	0	0	112
10:00	0	0	0	1	2	25	43	26	7	1	0	0	0	0	0	0	105
11:00	0	0	0	0	2	13	21	19	5	1	0	0	0	0	0	0	61
Total	**0**	**21**	**56**	**138**	**629**	**1403**	**1807**	**820**	**158**	**23**	**5**	**0**	**0**	**0**	**0**	**0**	**5060**

Percentile	15th	50th	85th	95th
Speed	24	29	35	38
Mean Speed (Average)	30.8			
10 MPH Pace Speed	26-35			
Number in Pace	3210			
Percent in Pace	63.0%			

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**2**	**13**	**46**	**218**	**772**	**1219**	**893**	**289**	**59**	**12**	**0**	**0**	**0**	**0**	**0**	**3523**

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	1	0	0	1	1	16	8	2	0	0	0	0	0	0	0	29
1:00	0	0	0	0	0	2	15	7	1	0	0	0	0	0	0	0	25
2:00	0	0	0	0	0	1	12	6	1	0	0	0	0	0	0	0	20
3:00	0	0	0	0	0	1	6	7	1	0	0	0	0	0	0	0	15
4:00	0	0	0	0	4	5	8	6	4	2	0	0	0	0	0	0	29
5:00	0	0	0	2	6	11	24	13	4	1	1	0	0	0	0	0	62
6:00	0	0	2	2	19	48	28	18	5	1	1	0	0	0	0	0	124
7:00	0	0	1	5	18	42	64	59	17	2	0	0	0	0	0	0	208
8:00	0	0	1	10	8	51	99	63	18	10	0	0	0	0	0	0	260
9:00	0	0	1	3	27	59	77	50	6	2	1	0	0	0	0	0	226
10:00	0	0	0	3	16	41	92	44	11	2	2	0	0	0	0	0	211
11:00	0	0	1	5	8	49	81	39	9	1	2	0	0	0	0	0	195
12:00 PM	0	0	1	2	11	57	76	62	15	1	0	0	0	0	0	0	225
1:00	0	1	1	2	14	51	81	56	12	3	3	0	0	0	0	0	224
2:00	0	1	1	6	21	60	95	49	14	3	0	0	0	0	0	0	250
3:00	0	1	6	5	18	60	93	55	13	4	1	0	0	0	0	0	256
4:00	0	0	1	6	15	69	88	52	17	5	1	0	0	0	0	0	254
5:00	0	0	0	1	7	43	79	58	22	4	1	0	0	0	0	0	215
6:00	0	0	0	0	4	31	46	42	10	1	0	0	0	0	0	0	134
7:00	0	0	0	0	3	13	37	22	11	1	1	1	0	0	0	0	89
8:00	0	0	0	1	0	10	8	23	12	1	2	1	0	0	0	0	58
9:00	0	0	0	0	2	11	24	27	10	2	1	0	0	0	0	0	77
10:00	0	0	0	0	1	6	10	11	7	3	0	0	0	0	0	0	38
11:00	0	0	0	0	2	7	8	13	3	7	0	0	0	0	0	0	40
Total	**0**	**4**	**16**	**53**	**205**	**729**	**1167**	**790**	**225**	**56**	**17**	**2**	**0**	**0**	**0**	**0**	**3264**

Percentile	15th	50th	85th	95th
Speed	26	32	37	41

Mean Speed (Average)	33.1
10 MPH Pace Speed	30-39
Number in Pace	1884
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	5	13	5	2	1	0	0	0	0	0	0	26
1:00	0	0	0	0	1	1	8	2	2	0	0	0	0	0	0	0	14
2:00	0	0	0	0	0	3	3	3	1	0	0	0	0	0	0	0	10
3:00	0	0	0	1	1	2	4	2	2	2	1	0	0	0	0	0	15
4:00	0	0	0	0	1	8	19	11	3	0	0	0	0	0	0	0	42
5:00	0	0	0	0	8	13	21	16	4	0	0	0	0	0	0	0	62
6:00	0	0	0	1	18	52	46	27	13	0	0	0	0	0	0	0	157
7:00	0	0	1	3	4	43	80	61	23	6	1	0	0	0	0	0	222
8:00	0	0	0	5	5	57	85	50	19	3	2	0	0	0	0	0	226
9:00	0	1	3	4	24	65	88	41	6	3	0	0	0	0	0	0	235
10:00	0	0	0	2	11	39	65	43	20	4	2	0	0	0	0	0	186
11:00	0	0	1	5	11	47	89	64	12	1	0	0	0	0	0	0	230
12:00 PM	0	0	0	6	16	45	74	57	24	3	0	0	0	0	0	0	225
1:00	0	0	0	0	19	67	83	50	11	6	0	0	0	0	0	0	236
2:00	0	0	1	11	35	46	93	56	19	1	2	0	0	0	0	0	264
3:00	0	0	1	3	21	51	108	70	15	2	1	0	0	0	0	0	272
4:00	0	0	0	0	8	38	85	64	32	3	0	0	0	0	0	0	230
5:00	0	0	0	1	3	47	64	61	26	5	0	0	0	0	0	0	207
6:00	0	0	0	1	2	22	52	59	21	3	1	0	0	0	0	0	161
7:00	0	0	0	1	7	20	75	39	9	3	1	0	0	0	0	0	155
8:00	0	0	0	0	1	10	38	35	16	3	1	0	0	0	0	0	104
9:00	0	0	0	0	2	10	23	18	8	4	0	0	0	0	0	0	65
10:00	0	0	0	0	1	10	17	17	7	2	0	0	0	0	0	0	54
11:00	0	0	0	1	0	9	21	16	9	1	3	0	0	0	0	0	60
Total	**0**	**1**	**7**	**45**	**199**	**710**	**1254**	**867**	**304**	**56**	**15**	**0**	**0**	**0**	**0**	**0**	**3458**

Percentile	15th	50th	85th	95th
Speed	26	32	38	42

Mean Speed (Average)	33.6
10 MPH Pace Speed	31-40
Number in Pace	2116
Percent in Pace	61.0%

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	9	9	10	7	2	0	0	0	0	0	0	37
1:00	0	0	0	0	0	4	4	5	2	0	0	0	0	0	0	0	15
2:00	0	0	0	0	1	2	1	1	1	0	0	0	0	0	0	0	6
3:00	0	0	0	1	1	2	2	4	0	1	0	0	0	0	0	0	11
4:00	0	0	0	2	4	11	11	9	3	1	0	0	0	0	0	0	41
5:00	0	0	0	2	10	11	23	14	5	1	0	0	0	0	0	0	66
6:00	0	0	1	5	20	68	44	29	15	2	0	0	0	0	0	0	184
7:00	0	0	0	3	6	44	73	59	22	4	0	0	0	0	0	0	211
8:00	0	0	1	3	10	49	83	72	22	4	1	0	0	0	0	0	245
9:00	0	0	1	3	15	50	97	54	19	1	0	0	0	0	0	0	240
10:00	0	0	0	6	18	70	69	34	16	5	0	0	0	0	0	0	218
11:00	0	0	0	1	11	52	84	47	14	3	0	0	0	0	0	0	212
12:00 PM	0	0	1	3	12	40	100	44	15	1	0	0	0	0	0	0	216
1:00	0	1	1	2	18	54	74	56	11	4	0	0	0	0	0	0	221
2:00	0	1	1	2	20	68	85	60	19	6	1	0	0	0	0	0	263
3:00	0	0	1	9	25	78	92	66	19	5	0	0	0	0	0	0	295
4:00	0	0	0	1	8	36	89	74	32	2	0	0	0	0	0	0	242
5:00	0	0	0	1	4	42	65	72	23	8	1	0	0	0	0	0	216
6:00	0	0	0	1	7	40	68	55	28	4	1	0	0	0	0	0	204
7:00	0	0	0	1	8	15	34	28	21	3	1	0	0	0	0	0	111
8:00	0	0	0	0	5	13	35	44	8	3	0	0	0	0	0	0	108
9:00	0	0	0	0	0	11	17	23	7	1	0	0	0	0	0	0	59
10:00	0	0	0	0	1	7	15	14	8	2	0	0	0	0	0	0	47
11:00	0	0	0	0	1	11	13	17	2	1	0	0	0	0	0	0	45
Total	**0**	**2**	**7**	**46**	**205**	**787**	**1187**	**891**	**319**	**64**	**5**	**0**	**0**	**0**	**0**	**0**	**3513**

Percentile	15th	50th	85th	95th
Speed	26	32	38	42

Mean Speed (Average)	33.5
10 MPH Pace Speed	31-40
Number in Pace	2069
Percent in Pace	59.0%

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	9	6	5	1	1	0	0	0	0	0	0	22
1:00	0	0	0	0	2	3	5	5	3	0	0	0	0	0	0	0	18
2:00	0	0	0	0	1	1	5	7	1	1	0	0	0	0	0	0	16
3:00	0	0	0	0	1	2	1	4	0	2	0	0	0	0	0	0	10
4:00	0	0	0	0	1	7	5	15	1	3	0	0	0	0	0	0	32
5:00	0	0	1	1	5	16	20	9	2	1	0	0	0	0	0	0	55
6:00	0	0	1	7	22	54	45	30	8	2	0	0	0	0	0	0	169
7:00	0	0	1	8	8	54	90	47	12	2	0	0	0	0	0	0	222
8:00	0	0	0	1	17	52	94	73	22	3	2	0	0	0	0	0	264
9:00	0	2	3	3	10	65	64	50	10	3	0	0	0	0	0	0	210
10:00	0	0	2	2	20	54	57	43	10	1	0	0	0	0	0	0	189
11:00	0	0	2	3	12	41	88	46	21	3	0	0	0	0	0	0	216
12:00 PM	0	0	0	2	13	65	100	61	6	2	0	0	0	0	0	0	249
1:00	0	0	1	2	26	70	99	53	10	3	0	0	0	0	0	0	264
2:00	0	0	0	4	25	70	79	58	13	3	2	0	0	0	0	0	254
3:00	0	1	2	5	42	73	71	53	25	3	1	0	0	0	0	0	276
4:00	0	2	1	4	13	35	93	71	23	6	0	0	0	0	0	0	248
5:00	0	0	0	0	5	37	80	58	27	9	0	0	0	0	0	0	216
6:00	0	0	1	2	5	54	67	41	18	8	0	0	0	0	0	0	196
7:00	0	0	0	2	4	22	48	36	14	1	0	0	0	0	0	0	127
8:00	0	0	0	1	3	16	50	30	6	3	2	0	0	0	0	0	111
9:00	0	0	0	0	2	13	15	26	4	1	4	0	0	0	0	0	65
10:00	0	0	0	0	2	6	19	16	5	1	0	0	0	0	0	0	49
11:00	0	0	0	0	3	5	17	18	6	2	0	0	0	0	0	0	51
Total	**0**	**5**	**15**	**47**	**242**	**824**	**1218**	**855**	**248**	**64**	**11**	**0**	**0**	**0**	**0**	**0**	**3529**

Percentile	15th	50th	85th	95th
Speed	26	31	38	41
Mean Speed (Average)	33.1			
10 MPH Pace Speed	29-38			
Number in Pace	2072			
Percent in Pace	59.0%			

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	5	14	8	3	0	0	0	0	0	0	0	30
1:00	0	0	0	0	0	3	7	4	4	0	0	0	0	0	0	0	18
2:00	0	0	0	0	0	1	3	3	1	0	0	0	0	0	0	0	8
3:00	0	0	1	1	0	2	4	4	2	0	0	0	0	0	0	0	14
4:00	0	0	0	0	2	7	7	9	4	1	0	0	0	0	0	0	30
5:00	0	0	0	0	5	15	16	9	4	1	0	0	0	0	0	0	50
6:00	0	0	6	2	39	79	73	45	15	3	1	0	0	0	0	0	263
7:00	0	0	2	3	20	91	142	95	32	1	0	0	0	0	0	0	386
8:00	0	0	0	4	10	52	94	64	19	3	1	0	0	0	0	0	247
9:00	0	0	2	4	23	49	72	44	14	4	0	0	0	0	0	0	212
10:00	0	0	1	2	16	42	73	56	14	3	0	0	0	0	0	0	207
11:00	0	0	0	5	21	41	87	62	11	2	2	0	0	0	0	0	231
12:00 PM	0	0	1	6	15	55	68	69	21	0	0	0	0	0	0	0	235
1:00	0	0	1	1	18	70	67	69	17	1	0	0	0	0	0	0	244
2:00	0	0	2	3	25	57	98	75	16	4	1	0	0	0	0	0	281
3:00	0	0	1	3	16	46	93	85	25	0	0	0	0	0	0	0	269
4:00	0	0	0	1	16	42	87	72	32	2	1	0	0	0	0	0	253
5:00	0	0	0	1	6	48	72	74	29	8	1	0	0	0	0	0	239
6:00	0	0	1	2	2	37	43	58	20	5	2	0	0	0	0	0	170
7:00	0	0	0	0	1	22	37	56	12	3	0	0	0	0	0	0	131
8:00	0	0	0	0	0	15	27	36	20	2	0	0	0	0	0	0	100
9:00	0	0	0	0	2	14	44	29	21	3	1	0	0	0	0	0	114
10:00	0	0	0	0	2	8	25	16	4	5	2	0	0	0	0	0	62
11:00	0	0	0	0	0	9	16	20	8	2	2	0	0	0	0	0	57
Total	**0**	**0**	**18**	**38**	**239**	**810**	**1269**	**1062**	**348**	**53**	**14**	**0**	**0**	**0**	**0**	**0**	**3851**

Percentile	15th	50th	85th	95th
Speed	26	32	38	41

Mean Speed (Average)	33.7
10 MPH Pace Speed	31-40
Number in Pace	2313
Percent in Pace	60.0%

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	34	1	0	0	0	35
1:00	1	25	1	1	0	1	29
2:00	1	10	2	0	0	0	13
3:00	0	18	1	0	0	0	19
4:00	0	36	2	2	2	2	44
5:00	0	142	4	1	3	0	150
6:00	0	201	13	12	6	1	233
7:00	4	280	12	11	14	2	323
8:00	1	289	8	9	41	5	353
9:00	0	258	12	13	39	0	322
10:00	2	235	14	13	10	3	277
11:00	0	263	19	15	15	4	316
12:00 PM	1	242	16	14	9	3	285
1:00	0	243	8	11	3	2	267
2:00	1	294	12	16	13	1	337
3:00	2	305	10	14	20	4	355
4:00	1	312	8	7	29	3	360
5:00	1	259	7	9	9	1	286
6:00	2	169	11	8	7	2	199
7:00	0	134	5	2	0	0	141
8:00	0	102	2	1	0	0	105
9:00	0	70	3	3	0	2	78
10:00	0	70	2	0	0	1	73
11:00	0	45	0	3	1	0	49
Total	**17**	**4036**	**173**	**165**	**221**	**37**	**4649**
Percent	0.4%	86.8%	3.7%	3.5%	4.8%	0.8%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	21	1	1	0	1	24
1:00	1	8	0	1	0	0	10
2:00	0	10	0	3	0	1	14
3:00	1	34	0	1	0	0	36
4:00	0	34	1	2	0	3	40
5:00	0	152	8	3	1	0	164
6:00	0	251	15	14	6	0	286
7:00	1	266	21	7	28	0	323
8:00	0	286	8	12	34	2	342
9:00	0	244	13	13	38	4	312
10:00	0	212	14	15	14	5	260
11:00	3	289	20	11	8	3	334
12:00 PM	3	267	22	18	9	2	321
1:00	2	299	19	15	14	4	353
2:00	4	325	17	13	8	4	371
3:00	1	332	11	10	23	2	379
4:00	0	324	8	7	25	4	368
5:00	1	286	7	8	13	3	318
6:00	2	224	6	2	11	2	247
7:00	0	177	8	6	3	0	194
8:00	0	116	6	4	1	0	127
9:00	1	100	5	0	0	0	106
10:00	0	68	3	0	0	0	71
11:00	1	54	3	1	0	1	60
Total	**21**	**4379**	**216**	**167**	**236**	**41**	**5060**
Percent	0.4%	86.5%	4.3%	3.3%	4.7%	0.8%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	22	1	0	0	0	23
1:00	0	10	0	1	0	0	11
2:00	0	7	0	0	0	2	9
3:00	0	40	2	3	1	1	47
4:00	1	47	0	0	1	2	51
5:00	1	152	9	7	2	0	171
6:00	1	236	11	7	6	2	263
7:00	0	274	20	18	22	2	336
8:00	3	289	14	10	33	4	353
9:00	1	243	20	20	33	7	324
10:00	0	220	11	17	12	0	260
11:00	2	213	12	18	22	4	271
12:00 PM	1	243	20	8	19	4	295
1:00	0	288	14	15	9	4	330
2:00	3	296	13	16	7	3	338
3:00	0	331	12	13	21	6	383
4:00	3	331	10	8	37	1	390
5:00	0	280	6	5	13	2	306
6:00	1	222	9	3	6	1	242
7:00	0	179	7	2	0	1	189
8:00	0	112	3	1	0	0	116
9:00	0	89	3	1	1	0	94
10:00	0	75	3	1	1	1	81
11:00	0	47	0	2	0	1	50
Total	**17**	**4246**	**200**	**176**	**246**	**48**	**4933**
Percent	0.3%	86.1%	4.1%	3.6%	5.0%	1.0%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	32	1	0	0	0	33
1:00	0	9	0	1	0	0	10
2:00	1	10	1	0	1	1	14
3:00	2	40	0	0	0	0	42
4:00	3	36	1	3	0	2	45
5:00	0	142	6	5	2	0	155
6:00	0	231	16	11	8	2	268
7:00	0	311	12	12	27	1	363
8:00	2	296	10	24	33	6	371
9:00	1	279	11	14	42	1	348
10:00	3	233	11	27	12	2	288
11:00	2	241	9	18	15	6	291
12:00 PM	0	288	19	17	14	3	341
1:00	1	271	12	15	8	7	314
2:00	1	281	13	23	18	2	338
3:00	1	313	18	16	18	2	368
4:00	0	326	10	12	30	4	382
5:00	0	298	8	3	20	2	331
6:00	2	256	6	4	6	1	275
7:00	0	192	4	8	2	0	206
8:00	0	136	6	7	0	0	149
9:00	0	106	3	1	0	0	110
10:00	0	76	1	1	0	1	79
11:00	1	52	2	1	0	1	57
Total	**20**	**4455**	**180**	**223**	**256**	**44**	**5178**
Percent	0.4%	86.0%	3.5%	4.3%	4.9%	0.8%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	41	4	0	0	0	45
1:00	0	17	0	0	0	0	17
2:00	0	10	0	1	0	2	13
3:00	4	39	0	1	0	0	44
4:00	0	44	1	3	1	2	51
5:00	0	148	5	0	2	1	156
6:00	1	215	10	8	7	1	242
7:00	2	256	11	16	24	2	311
8:00	1	295	16	13	34	6	365
9:00	2	266	13	11	32	2	326
10:00	1	228	16	17	12	5	279
11:00	0	258	14	9	16	4	301
12:00 PM	2	298	18	16	7	2	343
1:00	3	275	10	12	9	2	311
2:00	1	340	7	16	10	2	376
3:00	1	335	14	17	26	2	395
4:00	1	298	8	13	24	1	345
5:00	1	291	7	3	6	2	310
6:00	0	204	8	7	1	0	220
7:00	1	189	8	2	0	0	200
8:00	0	125	4	2	1	0	132
9:00	0	106	5	1	0	0	112
10:00	0	99	3	1	2	0	105
11:00	0	57	3	1	0	0	61
Total	**21**	**4434**	**185**	**170**	**214**	**36**	**5060**
Percent	0.4%	87.6%	3.7%	3.4%	4.2%	0.7%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	26	2	1	0	0	29
1:00	0	25	0	0	0	0	25
2:00	0	18	1	0	1	0	20
3:00	1	13	1	0	0	0	15
4:00	0	24	0	1	4	0	29
5:00	1	52	2	1	6	0	62
6:00	0	80	7	2	35	0	124
7:00	0	160	26	9	11	2	208
8:00	0	217	26	11	6	0	260
9:00	0	195	11	9	6	5	226
10:00	0	179	24	3	4	1	211
11:00	0	161	16	5	11	2	195
12:00 PM	1	197	19	2	4	2	225
1:00	0	165	20	5	34	0	224
2:00	0	197	20	10	21	2	250
3:00	0	218	25	7	6	0	256
4:00	0	227	19	5	3	0	254
5:00	0	201	12	1	1	0	215
6:00	0	122	7	3	2	0	134
7:00	0	87	2	0	0	0	89
8:00	0	52	4	0	2	0	58
9:00	0	74	3	0	0	0	77
10:00	0	33	4	0	0	1	38
11:00	0	37	2	1	0	0	40
Total	**3**	**2760**	**253**	**76**	**157**	**15**	**3264**
Percent	0.1%	84.6%	7.8%	2.3%	4.8%	0.5%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	23	2	1	0	0	26
1:00	0	13	1	0	0	0	14
2:00	0	9	1	0	0	0	10
3:00	0	13	1	1	0	0	15
4:00	0	24	2	3	13	0	42
5:00	0	49	4	1	7	1	62
6:00	0	110	7	7	33	0	157
7:00	0	178	22	9	13	0	222
8:00	0	189	20	8	8	1	226
9:00	1	196	18	7	12	1	235
10:00	0	153	17	7	8	1	186
11:00	0	185	29	6	9	1	230
12:00 PM	0	187	18	6	9	5	225
1:00	0	186	17	5	28	0	236
2:00	2	203	20	17	21	1	264
3:00	0	236	27	3	4	2	272
4:00	0	212	9	3	6	0	230
5:00	1	191	12	1	2	0	207
6:00	0	146	9	5	1	0	161
7:00	0	145	7	1	1	1	155
8:00	0	99	5	0	0	0	104
9:00	0	61	3	1	0	0	65
10:00	0	51	2	1	0	0	54
11:00	0	59	1	0	0	0	60
Total	**4**	**2918**	**254**	**93**	**175**	**14**	**3458**
Percent	0.1%	84.4%	7.3%	2.7%	5.1%	0.4%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	33	2	2	0	0	37
1:00	0	14	1	0	0	0	15
2:00	0	5	0	0	1	0	6
3:00	0	8	1	1	1	0	11
4:00	1	32	0	3	4	1	41
5:00	0	56	6	0	4	0	66
6:00	0	119	14	7	43	1	184
7:00	0	167	22	12	8	2	211
8:00	0	200	27	9	8	1	245
9:00	1	202	15	11	11	0	240
10:00	0	170	10	10	23	5	218
11:00	0	178	12	10	11	1	212
12:00 PM	0	188	19	6	2	1	216
1:00	0	179	12	8	20	2	221
2:00	0	206	14	10	33	0	263
3:00	0	255	28	3	8	1	295
4:00	0	209	24	3	6	0	242
5:00	0	204	7	0	5	0	216
6:00	0	189	11	3	1	0	204
7:00	0	103	7	0	1	0	111
8:00	0	103	5	0	0	0	108
9:00	0	54	4	0	1	0	59
10:00	0	45	2	0	0	0	47
11:00	0	43	1	1	0	0	45
Total	**2**	**2962**	**244**	**99**	**191**	**15**	**3513**
Percent	0.1%	84.3%	6.9%	2.8%	5.4%	0.4%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	22	0	0	0	0	22
1:00	0	15	2	1	0	0	18
2:00	0	15	1	0	0	0	16
3:00	0	8	0	0	2	0	10
4:00	0	23	2	1	6	0	32
5:00	0	44	4	4	3	0	55
6:00	0	119	8	7	35	0	169
7:00	0	175	24	8	14	1	222
8:00	0	212	25	10	16	1	264
9:00	1	177	12	8	11	1	210
10:00	0	157	14	8	9	1	189
11:00	0	172	28	4	8	4	216
12:00 PM	0	201	28	10	10	0	249
1:00	0	196	17	9	41	1	264
2:00	0	191	20	12	28	3	254
3:00	0	245	18	6	5	2	276
4:00	1	225	12	7	2	1	248
5:00	0	199	11	2	3	1	216
6:00	2	179	14	1	0	0	196
7:00	0	116	8	1	2	0	127
8:00	0	105	6	0	0	0	111
9:00	0	64	1	0	0	0	65
10:00	0	46	2	0	1	0	49
11:00	0	49	1	1	0	0	51
Total	**4**	**2955**	**258**	**100**	**196**	**16**	**3529**
Percent	0.1%	83.7%	7.3%	2.8%	5.6%	0.5%	

Project #: 1803_BL
ID#: ATR 9
City/Town: Waterbury, CT
Location: E Aurora Street, south of Gear Street

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	27	3	0	0	0	30
1:00	0	18	0	0	0	0	18
2:00	0	7	0	1	0	0	8
3:00	0	12	1	0	1	0	14
4:00	0	18	0	3	9	0	30
5:00	0	47	0	0	3	0	50
6:00	0	189	24	7	41	2	263
7:00	0	301	51	15	16	3	386
8:00	0	210	17	5	14	1	247
9:00	0	182	12	9	7	2	212
10:00	0	171	16	9	8	3	207
11:00	0	188	22	14	5	2	231
12:00 PM	1	195	23	5	9	2	235
1:00	0	184	22	7	31	0	244
2:00	0	231	16	5	28	1	281
3:00	0	240	14	4	11	0	269
4:00	2	232	13	2	4	0	253
5:00	0	227	9	2	0	1	239
6:00	2	158	8	1	0	1	170
7:00	0	123	7	1	0	0	131
8:00	0	95	4	0	1	0	100
9:00	0	109	4	1	0	0	114
10:00	0	59	2	1	0	0	62
11:00	0	52	4	1	0	0	57
Total	**5**	**3275**	**272**	**93**	**188**	**18**	**3851**
Percent	0.1%	85.0%	7.1%	2.4%	4.9%	0.5%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

New England COUNTS
PO Box 1723
Framingham, MA 01701

3/23/2026 Time	NB	SB	Total	3/23/2026 Time	NB	SB	Total
12:00 AM	31	14	45	12:00 PM	119	95	214
12:15	29	11	40	12:15	147	109	256
12:30	27	12	39	12:30	155	117	272
12:45	16	9	25	12:45	129	113	242
1:00	17	5	22	1:00	118	108	226
1:15	17	8	25	1:15	137	123	260
1:30	14	10	24	1:30	156	122	278
1:45	17	9	26	1:45	157	103	260
2:00	12	8	20	2:00	183	130	313
2:15	19	9	28	2:15	162	121	283
2:30	12	9	21	2:30	181	134	315
2:45	6	5	11	2:45	196	139	335
3:00	8	6	14	3:00	200	118	318
3:15	7	11	18	3:15	241	114	355
3:30	8	10	18	3:30	200	126	326
3:45	9	12	21	3:45	183	135	318
4:00	10	14	24	4:00	214	113	327
4:15	12	22	34	4:15	194	111	305
4:30	14	42	56	4:30	244	119	363
4:45	18	43	61	4:45	227	121	348
5:00	26	40	66	5:00	222	137	359
5:15	23	62	85	5:15	219	119	338
5:30	30	81	111	5:30	210	92	302
5:45	35	68	103	5:45	212	90	302
6:00	47	105	152	6:00	170	100	270
6:15	57	121	178	6:15	117	89	206
6:30	95	121	216	6:30	155	72	227
6:45	76	135	211	6:45	129	101	230
7:00	103	159	262	7:00	111	90	201
7:15	124	158	282	7:15	107	67	174
7:30	94	147	241	7:30	104	63	167
7:45	124	186	310	7:45	118	68	186
8:00	129	164	293	8:00	80	74	154
8:15	130	160	290	8:15	78	65	143
8:30	98	152	250	8:30	94	50	144
8:45	126	133	259	8:45	91	65	156
9:00	125	125	250	9:00	68	56	124
9:15	99	131	230	9:15	55	55	110
9:30	118	109	227	9:30	63	47	110
9:45	128	98	226	9:45	58	38	96
10:00	114	100	214	10:00	44	40	84
10:15	106	108	214	10:15	41	31	72
10:30	99	104	203	10:30	42	22	64
10:45	109	117	226	10:45	39	20	59
11:00	114	122	236	11:00	34	20	54
11:15	128	105	233	11:15	38	21	59
11:30	136	110	246	11:30	29	15	44
11:45	104	103	207	11:45	20	18	38
Total	**3000**	**3593**	**6593**	**Total**	**6291**	**4096**	**10387**
				Total All	**9291**	**7689**	**16980**
					Avg ADT		18394

Percent	45.5%	54.5%	
Peak	10:45	7:45	7:45
Volume	487	662	1143
Peak Factor	0.895	0.890	0.922

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

3/24/2026				3/24/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	28	12	40	12:00 PM	159	122	281
12:15	27	5	32	12:15	160	104	264
12:30	14	5	19	12:30	156	136	292
12:45	13	5	18	12:45	157	137	294
1:00	7	4	11	1:00	149	139	288
1:15	16	8	24	1:15	154	129	283
1:30	10	8	18	1:30	156	126	282
1:45	6	4	10	1:45	155	104	259
2:00	10	5	15	2:00	168	136	304
2:15	4	5	9	2:15	175	136	311
2:30	8	3	11	2:30	197	118	315
2:45	8	2	10	2:45	216	103	319
3:00	3	10	13	3:00	227	115	342
3:15	6	10	16	3:15	237	132	369
3:30	11	10	21	3:30	239	119	358
3:45	6	17	23	3:45	231	134	365
4:00	6	6	12	4:00	237	97	334
4:15	17	20	37	4:15	220	128	348
4:30	20	33	53	4:30	229	118	347
4:45	22	39	61	4:45	245	103	348
5:00	19	56	75	5:00	249	152	401
5:15	26	55	81	5:15	260	140	400
5:30	37	100	137	5:30	231	104	335
5:45	40	95	135	5:45	212	89	301
6:00	48	104	152	6:00	161	124	285
6:15	58	141	199	6:15	173	115	288
6:30	88	142	230	6:30	163	100	263
6:45	86	153	239	6:45	145	87	232
7:00	100	155	255	7:00	146	96	242
7:15	133	176	309	7:15	162	89	251
7:30	103	141	244	7:30	113	73	186
7:45	139	151	290	7:45	119	81	200
8:00	119	138	257	8:00	132	68	200
8:15	156	135	291	8:15	102	47	149
8:30	133	136	269	8:30	103	72	175
8:45	121	125	246	8:45	85	42	127
9:00	124	106	230	9:00	72	67	139
9:15	120	105	225	9:15	76	49	125
9:30	114	101	215	9:30	80	33	113
9:45	106	115	221	9:45	53	37	90
10:00	126	99	225	10:00	54	55	109
10:15	105	112	217	10:15	50	33	83
10:30	134	130	264	10:30	38	40	78
10:45	107	107	214	10:45	25	15	40
11:00	116	107	223	11:00	34	18	52
11:15	128	107	235	11:15	37	23	60
11:30	124	122	246	11:30	26	10	36
11:45	158	93	251	11:45	15	9	24
Total	**3110**	**3518**	**6628**	**Total**	**6983**	**4304**	**11287**
				Total All	**10093**	**7822**	**17915**

Percent	46.9%	53.1%	
Peak	7:45	6:30	7:45
Volume	547	626	1107
Peak Factor	0.877	0.889	0.951

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

3/25/2026				3/25/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	16	14	30	12:00 PM	148	122	270
12:15	20	7	27	12:15	151	114	265
12:30	20	3	23	12:30	155	116	271
12:45	18	6	24	12:45	170	134	304
1:00	10	5	15	1:00	154	114	268
1:15	12	8	20	1:15	165	115	280
1:30	8	4	12	1:30	141	107	248
1:45	4	3	7	1:45	167	105	272
2:00	9	6	15	2:00	198	111	309
2:15	2	2	4	2:15	165	149	314
2:30	5	5	10	2:30	193	136	329
2:45	3	1	4	2:45	209	134	343
3:00	9	3	12	3:00	244	118	362
3:15	6	10	16	3:15	221	128	349
3:30	9	11	20	3:30	248	126	374
3:45	8	10	18	3:45	233	124	357
4:00	8	10	18	4:00	211	133	344
4:15	20	20	40	4:15	202	139	341
4:30	20	35	55	4:30	243	117	360
4:45	25	41	66	4:45	237	123	360
5:00	21	55	76	5:00	225	124	349
5:15	21	64	85	5:15	260	113	373
5:30	34	79	113	5:30	183	140	323
5:45	40	92	132	5:45	191	127	318
6:00	52	118	170	6:00	175	109	284
6:15	57	137	194	6:15	181	104	285
6:30	93	153	246	6:30	177	101	278
6:45	99	143	242	6:45	153	99	252
7:00	106	154	260	7:00	129	105	234
7:15	121	156	277	7:15	142	65	207
7:30	103	149	252	7:30	113	82	195
7:45	157	163	320	7:45	156	67	223
8:00	107	152	259	8:00	111	61	172
8:15	134	161	295	8:15	118	72	190
8:30	120	135	255	8:30	110	74	184
8:45	127	125	252	8:45	86	54	140
9:00	129	129	258	9:00	81	66	147
9:15	95	99	194	9:15	105	60	165
9:30	130	107	237	9:30	74	50	124
9:45	126	91	217	9:45	65	38	103
10:00	114	114	228	10:00	61	40	101
10:15	130	116	246	10:15	49	39	88
10:30	113	119	232	10:30	51	26	77
10:45	133	100	233	10:45	41	23	64
11:00	120	100	220	11:00	40	14	54
11:15	131	119	250	11:15	44	15	59
11:30	165	123	288	11:30	25	18	43
11:45	140	132	272	11:45	25	19	44
Total	**3150**	**3589**	**6739**	**Total**	**7026**	**4370**	**11396**
				Total All	**10176**	**7959**	**18135**

Percent	46.7%	53.3%	
Peak	11:00	7:30	7:45
Volume	556	625	1129
Peak Factor	0.842	0.959	0.882

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

3/26/2026				3/26/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	26	9	35	12:00 PM	150	121	271
12:15	17	10	27	12:15	133	128	261
12:30	12	10	22	12:30	148	131	279
12:45	10	5	15	12:45	172	138	310
1:00	9	6	15	1:00	163	100	263
1:15	5	5	10	1:15	167	138	305
1:30	8	5	13	1:30	152	136	288
1:45	6	4	10	1:45	168	135	303
2:00	6	2	8	2:00	175	116	291
2:15	3	2	5	2:15	178	99	277
2:30	4	5	9	2:30	203	139	342
2:45	7	2	9	2:45	206	140	346
3:00	7	7	14	3:00	192	138	330
3:15	10	11	21	3:15	229	151	380
3:30	12	10	22	3:30	233	128	361
3:45	8	15	23	3:45	228	127	355
4:00	12	17	29	4:00	231	136	367
4:15	13	18	31	4:15	241	112	353
4:30	19	42	61	4:30	228	133	361
4:45	23	38	61	4:45	231	129	360
5:00	27	61	88	5:00	233	123	356
5:15	22	55	77	5:15	248	127	375
5:30	41	94	135	5:30	228	139	367
5:45	35	89	124	5:45	203	111	314
6:00	46	122	168	6:00	190	139	329
6:15	71	130	201	6:15	180	123	303
6:30	102	133	235	6:30	192	106	298
6:45	102	142	244	6:45	138	113	251
7:00	102	166	268	7:00	145	119	264
7:15	113	171	284	7:15	160	90	250
7:30	123	167	290	7:30	134	79	213
7:45	141	166	307	7:45	133	84	217
8:00	136	137	273	8:00	125	81	206
8:15	128	167	295	8:15	106	69	175
8:30	131	147	278	8:30	112	56	168
8:45	132	132	264	8:45	94	57	151
9:00	117	136	253	9:00	101	73	174
9:15	109	147	256	9:15	92	58	150
9:30	130	106	236	9:30	87	45	132
9:45	142	109	251	9:45	74	48	122
10:00	121	139	260	10:00	70	42	112
10:15	127	129	256	10:15	63	51	114
10:30	143	101	244	10:30	63	35	98
10:45	134	105	239	10:45	42	31	73
11:00	139	125	264	11:00	54	23	77
11:15	139	119	258	11:15	48	27	75
11:30	163	130	293	11:30	27	20	47
11:45	169	105	274	11:45	37	17	54
Total	**3302**	**3753**	**7055**	**Total**	**7207**	**4661**	**11868**
				Total All	**10509**	**8414**	**18923**

Percent	46.8%	53.2%	
Peak	11:00	7:00	7:30
Volume	610	670	1165
Peak Factor	0.902	0.980	0.949

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

3/27/2026				3/27/2026			
Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	25	17	42	12:00 PM	179	121	300
12:15	22	7	29	12:15	184	137	321
12:30	21	13	34	12:30	153	146	299
12:45	12	11	23	12:45	186	133	319
1:00	8	11	19	1:00	154	142	296
1:15	14	12	26	1:15	159	129	288
1:30	13	6	19	1:30	166	163	329
1:45	5	5	10	1:45	153	155	308
2:00	3	6	9	2:00	236	131	367
2:15	5	5	10	2:15	209	160	369
2:30	8	5	13	2:30	237	141	378
2:45	8	5	13	2:45	232	188	420
3:00	11	5	16	3:00	220	139	359
3:15	8	11	19	3:15	235	126	361
3:30	11	12	23	3:30	274	127	401
3:45	10	12	22	3:45	237	118	355
4:00	10	12	22	4:00	224	139	363
4:15	14	33	47	4:15	212	126	338
4:30	9	33	42	4:30	233	117	350
4:45	18	34	52	4:45	240	130	370
5:00	31	54	85	5:00	228	132	360
5:15	24	81	105	5:15	225	144	369
5:30	34	88	122	5:30	221	138	359
5:45	42	89	131	5:45	213	163	376
6:00	45	105	150	6:00	173	152	325
6:15	58	169	227	6:15	188	140	328
6:30	99	147	246	6:30	153	113	266
6:45	98	168	266	6:45	172	114	286
7:00	96	155	251	7:00	155	112	267
7:15	118	199	317	7:15	142	116	258
7:30	107	177	284	7:30	141	88	229
7:45	156	176	332	7:45	136	77	213
8:00	144	160	304	8:00	115	95	210
8:15	138	159	297	8:15	108	74	182
8:30	121	129	250	8:30	108	76	184
8:45	157	117	274	8:45	105	61	166
9:00	117	123	240	9:00	93	74	167
9:15	117	131	248	9:15	85	57	142
9:30	142	119	261	9:30	101	64	165
9:45	196	115	311	9:45	87	65	152
10:00	123	122	245	10:00	82	57	139
10:15	136	120	256	10:15	88	57	145
10:30	140	128	268	10:30	73	57	130
10:45	142	115	257	10:45	53	34	87
11:00	132	122	254	11:00	64	28	92
11:15	139	125	264	11:15	58	29	87
11:30	166	122	288	11:30	59	30	89
11:45	155	124	279	11:45	32	17	49
Total	**3408**	**3894**	**7302**	**Total**	**7581**	**5132**	**12713**
				Total All	**10989**	**9026**	**20015**

Percent	46.7%	53.3%	
Peak	9:30	7:15	7:15
Volume	597	712	1237
Peak Factor	0.761	0.894	0.931

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**9**	**50**	**162**	**370**	**816**	**1940**	**3266**	**2463**	**896**	**203**	**36**	**0**	**0**	**0**	**0**	**10212**

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	0	2	10	41	47	2	0	0	0	0	0	0	103
1:00	0	0	0	0	4	5	12	18	22	4	0	0	0	0	0	0	65
2:00	0	1	0	0	1	4	5	16	19	3	0	0	0	0	0	0	49
3:00	0	0	0	0	0	0	3	9	17	3	0	0	0	0	0	0	32
4:00	0	0	0	0	1	3	5	15	25	4	1	0	0	0	0	0	54
5:00	0	0	0	1	2	3	11	37	31	23	6	0	0	0	0	0	114
6:00	0	0	0	1	3	22	32	94	82	39	2	0	0	0	0	0	275
7:00	0	0	0	3	6	22	76	154	131	46	6	1	0	0	0	0	445
8:00	0	1	0	0	5	19	98	171	142	35	10	2	0	0	0	0	483
9:00	0	3	0	0	2	22	86	181	119	42	13	2	0	0	0	0	470
10:00	0	0	0	0	2	18	87	145	121	44	9	2	0	0	0	0	428
11:00	0	0	0	2	3	29	103	155	134	44	9	3	0	0	0	0	482
12:00 PM	0	0	0	0	5	26	92	189	184	44	8	2	0	0	0	0	550
1:00	0	1	0	2	22	53	114	183	137	43	13	0	0	0	0	0	568
2:00	0	0	1	12	31	61	178	258	133	38	6	4	0	0	0	0	722
3:00	0	2	3	15	67	130	193	226	150	34	3	1	0	0	0	0	824
4:00	0	0	14	61	87	129	228	194	126	38	2	0	0	0	0	0	879
5:00	0	0	0	16	82	107	197	255	153	37	13	3	0	0	0	0	863
6:00	0	0	0	0	5	37	112	195	149	55	15	3	0	0	0	0	571
7:00	0	1	0	0	1	9	50	151	155	56	13	4	0	0	0	0	440
8:00	0	0	0	1	8	12	44	120	93	51	13	1	0	0	0	0	343
9:00	0	0	0	0	0	3	35	88	81	27	9	1	0	0	0	0	244
10:00	0	0	0	0	0	3	10	48	60	36	7	2	0	0	0	0	166
11:00	0	0	0	1	0	0	7	29	46	27	10	1	0	0	0	0	121
Total	**0**	**9**	**18**	**116**	**337**	**719**	**1788**	**2972**	**2357**	**775**	**168**	**32**	**0**	**0**	**0**	**0**	**9291**

	Percentile	15th	50th	85th	95th
	Speed	29	37	42	46
	Mean Speed (Average)	37.8			
	10 MPH Pace Speed	36-45			
	Number in Pace	5122			
	Percent in Pace	57.0%			

Avg 85th	41.2

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	1	5	33	28	9	6	0	0	0	0	0	82
1:00	0	0	0	0	0	1	2	6	15	10	3	2	0	0	0	0	39
2:00	0	0	0	0	1	0	2	7	12	5	2	1	0	0	0	0	30
3:00	0	0	0	0	0	0	4	3	12	7	0	0	0	0	0	0	26
4:00	0	0	0	0	0	0	1	16	28	15	4	1	0	0	0	0	65
5:00	0	0	0	0	1	1	5	31	46	26	10	2	0	0	0	0	122
6:00	0	0	0	1	1	7	34	60	107	45	18	7	0	0	0	0	280
7:00	0	1	0	4	6	16	57	156	155	64	14	2	0	0	0	0	475
8:00	0	0	0	0	1	17	83	202	137	72	14	3	0	0	0	0	529
9:00	0	1	0	0	1	14	108	174	114	45	7	0	0	0	0	0	464
10:00	0	0	0	1	6	36	78	152	138	47	13	1	0	0	0	0	472
11:00	0	0	4	17	13	21	77	183	132	60	19	0	0	0	0	0	526
12:00 PM	0	0	0	2	23	35	100	226	180	54	12	0	0	0	0	0	632
1:00	0	0	1	0	3	32	128	196	182	56	13	3	0	0	0	0	614
2:00	0	0	1	1	5	79	188	266	165	42	8	1	0	0	0	0	756
3:00	0	0	16	45	76	125	250	239	132	48	3	0	0	0	0	0	934
4:00	0	3	29	71	118	120	208	225	118	33	6	0	0	0	0	0	931
5:00	0	1	7	48	72	109	211	274	178	47	5	0	0	0	0	0	952
6:00	0	1	0	3	16	27	98	235	162	83	14	3	0	0	0	0	642
7:00	0	0	0	0	1	20	87	210	157	55	9	1	0	0	0	0	540
8:00	0	0	1	0	3	14	62	150	125	55	11	1	0	0	0	0	422
9:00	0	0	0	0	2	6	32	99	93	34	11	4	0	0	0	0	281
10:00	0	0	0	0	0	6	5	44	67	26	16	3	0	0	0	0	167
11:00	0	0	0	0	1	2	11	21	52	18	7	0	0	0	0	0	112
Total	**0**	**7**	**59**	**193**	**350**	**689**	**1836**	**3208**	**2535**	**956**	**225**	**35**	**0**	**0**	**0**	**0**	**10093**

Percentile	15th	50th	85th	95th
Speed	30	37	43	47

Mean Speed (Average)	38.0
10 MPH Pace Speed	36-45
Number in Pace	5736
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	1	2	3	10	27	21	5	4	0	0	0	0	74
1:00	0	0	0	0	0	2	0	7	15	5	4	1	0	0	0	0	34
2:00	0	0	0	0	0	1	1	7	4	4	1	1	0	0	0	0	19
3:00	0	0	0	0	0	1	4	8	9	8	1	1	0	0	0	0	32
4:00	0	0	0	0	0	3	3	20	27	14	5	1	0	0	0	0	73
5:00	0	0	0	0	0	2	9	34	36	24	8	3	0	0	0	0	116
6:00	0	0	1	2	1	8	38	87	81	58	19	6	0	0	0	0	301
7:00	0	3	1	10	17	22	80	157	122	59	12	4	0	0	0	0	487
8:00	0	0	0	0	0	11	75	162	166	57	17	0	0	0	0	0	488
9:00	0	0	0	0	3	21	63	171	148	58	15	1	0	0	0	0	480
10:00	0	0	0	0	1	13	68	172	155	57	21	3	0	0	0	0	490
11:00	0	1	0	0	4	47	127	187	138	41	10	1	0	0	0	0	556
12:00 PM	0	1	0	3	9	25	129	232	148	62	15	0	0	0	0	0	624
1:00	0	1	1	0	14	50	139	208	146	62	5	1	0	0	0	0	627
2:00	0	0	9	8	39	89	150	229	158	70	12	1	0	0	0	0	765
3:00	0	2	8	30	67	143	228	275	135	48	9	1	0	0	0	0	946
4:00	0	3	13	31	48	130	177	260	172	49	9	1	0	0	0	0	893
5:00	0	0	8	32	33	97	196	236	181	63	11	2	0	0	0	0	859
6:00	0	0	0	0	8	23	112	244	194	85	17	3	0	0	0	0	686
7:00	0	0	0	0	8	33	116	171	155	44	12	1	0	0	0	0	540
8:00	0	0	0	0	3	21	54	149	127	50	16	5	0	0	0	0	425
9:00	0	0	0	0	2	11	43	99	116	40	11	3	0	0	0	0	325
10:00	0	0	0	0	0	1	17	73	69	32	8	2	0	0	0	0	202
11:00	0	0	0	0	0	0	13	36	48	27	7	3	0	0	0	0	134
Total	**0**	**11**	**41**	**117**	**258**	**756**	**1845**	**3234**	**2577**	**1038**	**250**	**49**	**0**	**0**	**0**	**0**	**10176**

Percentile	15th	50th	85th	95th
Speed	31	38	44	47

Mean Speed (Average)	38.4
10 MPH Pace Speed	36-45
Number in Pace	5800
Percent in Pace	57.0%

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	5	13	23	18	5	1	0	0	0	0	65
1:00	0	0	0	0	1	0	2	10	11	2	2	0	0	0	0	0	28
2:00	0	0	0	0	0	0	1	4	8	4	3	0	0	0	0	0	20
3:00	0	0	0	0	1	0	5	8	11	10	0	2	0	0	0	0	37
4:00	0	0	0	0	0	0	5	18	19	17	7	1	0	0	0	0	67
5:00	0	0	0	0	1	0	8	32	35	33	12	4	0	0	0	0	125
6:00	0	2	0	3	0	21	49	111	86	35	12	2	0	0	0	0	321
7:00	0	1	0	2	23	24	84	168	119	46	12	0	0	0	0	0	479
8:00	0	0	0	0	25	22	86	184	168	31	11	0	0	0	0	0	527
9:00	0	0	0	1	5	30	100	177	132	45	8	0	0	0	0	0	498
10:00	0	0	1	5	14	33	80	193	152	41	4	2	0	0	0	0	525
11:00	0	2	0	1	9	38	110	230	153	50	17	0	0	0	0	0	610
12:00 PM	0	0	0	0	2	22	116	243	151	52	15	2	0	0	0	0	603
1:00	0	0	0	1	6	42	118	249	159	57	16	2	0	0	0	0	650
2:00	0	1	18	5	31	99	187	240	135	39	4	3	0	0	0	0	762
3:00	0	1	5	11	85	137	223	248	117	43	10	2	0	0	0	0	882
4:00	0	1	8	50	92	145	217	218	150	44	6	0	0	0	0	0	931
5:00	0	0	5	22	71	133	204	249	159	55	12	2	0	0	0	0	912
6:00	0	0	0	4	14	53	174	230	159	54	8	4	0	0	0	0	700
7:00	0	0	6	10	12	35	95	213	139	50	11	1	0	0	0	0	572
8:00	0	1	0	0	2	37	85	179	105	22	5	1	0	0	0	0	437
9:00	0	0	0	0	3	7	46	154	95	43	4	2	0	0	0	0	354
10:00	0	0	1	2	4	10	13	64	93	42	6	3	0	0	0	0	238
11:00	0	0	0	3	0	4	17	42	57	29	14	0	0	0	0	0	166
Total	**0**	**9**	**44**	**120**	**401**	**892**	**2030**	**3477**	**2436**	**862**	**204**	**34**	**0**	**0**	**0**	**0**	**10509**

Percentile	15th	50th	85th	95th
Speed	29	36	42	46

Mean Speed (Average)	37.6
10 MPH Pace Speed	36-45
Number in Pace	5885
Percent in Pace	56.0%

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	0	5	18	35	18	3	0	0	0	0	0	80
1:00	0	0	0	0	0	2	6	9	14	5	2	2	0	0	0	0	40
2:00	0	0	0	0	0	1	2	5	7	4	5	0	0	0	0	0	24
3:00	0	0	0	0	0	0	3	12	11	10	4	0	0	0	0	0	40
4:00	0	0	0	0	1	0	2	10	27	10	1	0	0	0	0	0	51
5:00	0	0	0	0	0	0	11	33	43	31	12	1	0	0	0	0	131
6:00	0	1	2	1	0	7	45	105	102	26	8	3	0	0	0	0	300
7:00	0	0	0	7	5	28	92	150	133	52	10	0	0	0	0	0	477
8:00	0	0	3	9	18	35	113	189	134	46	10	3	0	0	0	0	560
9:00	0	2	36	25	24	47	99	179	120	34	4	2	0	0	0	0	572
10:00	0	0	0	1	12	26	97	232	128	36	7	2	0	0	0	0	541
11:00	0	0	0	3	19	54	117	192	155	50	2	0	0	0	0	0	592
12:00 PM	0	1	1	16	17	52	146	257	153	48	7	4	0	0	0	0	702
1:00	0	0	0	0	4	29	130	257	155	50	7	0	0	0	0	0	632
2:00	0	3	15	34	70	118	228	255	151	33	6	1	0	0	0	0	914
3:00	0	0	12	54	82	143	262	261	116	33	2	1	0	0	0	0	966
4:00	0	0	7	47	114	178	209	211	106	30	5	2	0	0	0	0	909
5:00	0	0	13	36	78	154	210	235	119	35	6	1	0	0	0	0	887
6:00	0	0	1	15	32	55	120	222	173	55	13	0	0	0	0	0	686
7:00	0	0	0	6	11	48	116	188	139	56	9	1	0	0	0	0	574
8:00	0	0	0	5	6	32	77	140	121	44	10	1	0	0	0	0	436
9:00	0	0	0	4	6	7	55	126	108	50	10	0	0	0	0	0	366
10:00	0	0	0	0	2	7	46	83	88	50	17	3	0	0	0	0	296
11:00	0	0	0	1	1	3	12	69	71	45	9	2	0	0	0	0	213
Total	**0**	**7**	**90**	**264**	**503**	**1026**	**2203**	**3438**	**2409**	**851**	**169**	**29**	**0**	**0**	**0**	**0**	**10989**

Percentile	15th	50th	85th	95th
Speed	28	36	42	46
Mean Speed (Average)	36.9			
10 MPH Pace Speed	36-45			
Number in Pace	5833			
Percent in Pace	53.0%			

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

Time	0 - 5 MPH	> 5 - 10 MPH	> 10 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 - 75 MPH	> 75 MPH	Total
Average Total	**0**	**5**	**10**	**36**	**83**	**626**	**2627**	**3281**	**1264**	**211**	**35**	**4**	**0**	**0**	**0**	**0**	**8182**

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/23/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	0	5	16	19	5	0	0	0	0	0	0	0	46
1:00	0	0	0	0	1	2	10	17	2	0	0	0	0	0	0	0	32
2:00	0	0	0	1	0	3	6	15	6	0	0	0	0	0	0	0	31
3:00	0	0	0	0	0	3	12	17	7	0	0	0	0	0	0	0	39
4:00	0	0	0	1	2	11	23	47	26	9	1	1	0	0	0	0	121
5:00	0	0	0	1	2	15	49	99	68	10	7	0	0	0	0	0	251
6:00	0	1	1	0	1	43	132	217	70	16	0	1	0	0	0	0	482
7:00	0	0	0	2	0	24	228	287	95	12	2	0	0	0	0	0	650
8:00	0	0	0	6	0	53	163	278	99	10	0	0	0	0	0	0	609
9:00	0	1	1	0	0	17	131	215	82	14	2	0	0	0	0	0	463
10:00	0	0	1	1	1	22	115	214	57	17	1	0	0	0	0	0	429
11:00	0	0	0	4	19	48	151	149	58	11	0	0	0	0	0	0	440
12:00 PM	0	1	0	3	12	28	160	165	60	5	0	0	0	0	0	0	434
1:00	0	3	1	1	0	21	125	206	77	19	3	0	0	0	0	0	456
2:00	0	2	1	1	3	41	160	228	72	15	1	0	0	0	0	0	524
3:00	0	0	1	3	4	52	161	169	90	11	2	0	0	0	0	0	493
4:00	0	0	1	4	6	34	146	196	72	3	2	0	0	0	0	0	464
5:00	0	0	0	2	1	30	157	157	80	10	1	0	0	0	0	0	438
6:00	0	0	0	0	2	13	80	181	72	11	3	0	0	0	0	0	362
7:00	0	0	1	3	0	22	72	139	42	6	3	0	0	0	0	0	288
8:00	0	0	0	1	3	16	86	101	36	8	2	1	0	0	0	0	254
9:00	0	0	0	4	1	10	54	91	26	9	1	0	0	0	0	0	196
10:00	0	0	0	0	0	6	22	36	36	11	2	0	0	0	0	0	113
11:00	0	0	0	0	1	4	22	32	10	5	0	0	0	0	0	0	74
Total	**0**	**8**	**8**	**39**	**59**	**523**	**2281**	**3275**	**1248**	**212**	**33**	**3**	**0**	**0**	**0**	**0**	**7689**

	Percentile	15th	50th	85th	95th
	Speed	31	35	40	43
	Mean Speed (Average)	36.7			
	10 MPH Pace Speed	31-40			
	Number in Pace	5411			
	Percent in Pace	72.0%			

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/24/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	0	0	10	11	4	2	0	0	0	0	0	0	27
1:00	0	0	0	0	0	4	4	5	7	2	1	1	0	0	0	0	24
2:00	0	0	0	0	1	1	5	6	2	0	0	0	0	0	0	0	15
3:00	0	0	0	0	0	3	13	14	16	1	0	0	0	0	0	0	47
4:00	0	0	0	0	1	5	12	29	40	11	0	0	0	0	0	0	98
5:00	0	0	0	4	3	6	47	121	96	24	5	0	0	0	0	0	306
6:00	0	0	0	2	1	36	175	188	116	16	4	2	0	0	0	0	540
7:00	0	0	0	0	0	31	180	258	129	21	4	0	0	0	0	0	623
8:00	0	0	0	2	6	46	131	241	96	11	1	0	0	0	0	0	534
9:00	0	1	0	1	5	34	106	173	91	14	2	0	0	0	0	0	427
10:00	0	2	1	1	3	17	107	204	88	24	1	0	0	0	0	0	448
11:00	0	0	0	1	9	19	137	185	65	13	0	0	0	0	0	0	429
12:00 PM	0	2	0	0	4	40	164	199	75	13	2	0	0	0	0	0	499
1:00	0	1	0	2	9	42	164	173	93	13	1	0	0	0	0	0	498
2:00	0	0	0	3	5	19	138	223	92	13	0	0	0	0	0	0	493
3:00	0	0	3	4	8	46	148	210	62	17	2	0	0	0	0	0	500
4:00	0	2	3	4	4	19	109	201	84	19	0	1	0	0	0	0	446
5:00	0	1	3	0	2	42	157	197	70	12	1	0	0	0	0	0	485
6:00	0	0	0	3	4	28	103	186	87	12	3	0	0	0	0	0	426
7:00	0	0	1	4	10	19	100	153	41	11	0	0	0	0	0	0	339
8:00	0	0	0	1	1	24	77	86	31	9	0	0	0	0	0	0	229
9:00	0	0	0	1	0	16	48	78	39	4	0	0	0	0	0	0	186
10:00	0	0	0	0	1	17	39	56	24	4	1	1	0	0	0	0	143
11:00	0	0	0	0	0	5	18	20	11	4	1	1	0	0	0	0	60
Total	**0**	**9**	**11**	**33**	**77**	**519**	**2192**	**3217**	**1459**	**270**	**29**	**6**	**0**	**0**	**0**	**0**	**7822**

Percentile	15th	50th	85th	95th
Speed	31	36	41	44
Mean Speed (Average)	37.0			
10 MPH Pace Speed	31-40			
Number in Pace	5401			
Percent in Pace	69.0%			

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/25/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	1	10	5	9	4	0	0	0	0	0	0	30
1:00	0	0	0	0	1	0	4	6	7	1	1	0	0	0	0	0	20
2:00	0	0	0	0	1	2	2	4	3	2	0	0	0	0	0	0	14
3:00	0	0	0	1	1	2	9	12	6	3	0	0	0	0	0	0	34
4:00	0	0	0	0	0	4	12	48	28	11	3	0	0	0	0	0	106
5:00	0	0	2	1	2	8	43	121	92	18	3	0	0	0	0	0	290
6:00	0	0	0	1	7	50	134	239	109	10	1	0	0	0	0	0	551
7:00	0	0	1	4	1	16	224	273	93	8	1	1	0	0	0	0	622
8:00	0	1	0	2	0	36	144	287	81	19	3	0	0	0	0	0	573
9:00	0	0	1	3	1	20	129	182	74	13	3	0	0	0	0	0	426
10:00	0	1	1	0	2	17	168	192	59	7	2	0	0	0	0	0	449
11:00	0	1	0	1	2	35	149	194	76	15	1	0	0	0	0	0	474
12:00 PM	0	0	0	1	4	42	165	206	62	6	0	0	0	0	0	0	486
1:00	0	1	1	2	7	42	143	168	66	10	1	0	0	0	0	0	441
2:00	0	0	4	4	0	46	166	215	85	10	0	0	0	0	0	0	530
3:00	0	0	1	8	7	34	195	182	63	5	1	0	0	0	0	0	496
4:00	0	0	1	2	11	32	206	199	57	4	0	0	0	0	0	0	512
5:00	0	0	0	4	4	43	166	192	86	8	1	0	0	0	0	0	504
6:00	0	0	0	1	1	26	125	167	78	12	2	1	0	0	0	0	413
7:00	0	0	0	2	2	32	123	110	41	7	2	0	0	0	0	0	319
8:00	0	0	0	0	8	19	80	113	35	5	1	0	0	0	0	0	261
9:00	0	0	0	1	2	11	62	85	42	7	3	1	0	0	0	0	214
10:00	0	1	0	0	2	17	30	47	22	6	3	0	0	0	0	0	128
11:00	0	0	0	1	1	10	15	27	9	2	1	0	0	0	0	0	66
Total	**0**	**5**	**12**	**39**	**68**	**545**	**2504**	**3274**	**1283**	**193**	**33**	**3**	**0**	**0**	**0**	**0**	**7959**

Percentile	15th	50th	85th	95th
Speed	31	35	40	42

Mean Speed (Average)	36.6
10 MPH Pace Speed	31-40
Number in Pace	5774
Percent in Pace	73.0%

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/26/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	1	1	2	9	10	8	2	1	0	0	0	0	0	34
1:00	0	0	0	0	0	0	5	7	7	1	0	0	0	0	0	0	20
2:00	0	0	0	0	0	2	3	3	2	1	0	0	0	0	0	0	11
3:00	0	0	0	0	0	5	10	18	7	2	1	0	0	0	0	0	43
4:00	0	0	0	0	1	4	24	47	30	6	2	1	0	0	0	0	115
5:00	0	0	1	2	1	13	58	134	69	18	3	0	0	0	0	0	299
6:00	0	0	0	4	1	48	158	220	78	15	3	0	0	0	0	0	527
7:00	0	0	0	0	3	45	269	276	62	13	2	0	0	0	0	0	670
8:00	0	0	0	2	22	31	242	202	76	7	1	0	0	0	0	0	583
9:00	0	0	0	3	3	75	149	193	63	12	0	0	0	0	0	0	498
10:00	0	0	0	0	0	29	143	229	63	8	2	0	0	0	0	0	474
11:00	0	0	0	1	4	43	210	159	58	2	2	0	0	0	0	0	479
12:00 PM	0	0	2	3	2	46	184	191	75	13	2	0	0	0	0	0	518
1:00	0	0	0	0	2	43	206	183	67	7	1	0	0	0	0	0	509
2:00	0	0	0	0	5	74	183	155	63	10	4	0	0	0	0	0	494
3:00	0	0	2	5	5	107	224	149	43	9	0	0	0	0	0	0	544
4:00	0	0	0	3	10	53	180	205	49	9	1	0	0	0	0	0	510
5:00	0	0	0	0	7	51	203	189	45	4	1	0	0	0	0	0	500
6:00	0	0	0	2	11	30	168	199	58	11	2	0	0	0	0	0	481
7:00	0	0	1	5	7	40	137	153	24	4	1	0	0	0	0	0	372
8:00	0	0	0	2	12	43	86	87	27	4	2	0	0	0	0	0	263
9:00	0	0	0	0	1	16	82	83	37	3	2	0	0	0	0	0	224
10:00	0	0	1	1	0	10	45	68	28	5	1	0	0	0	0	0	159
11:00	0	0	0	2	2	6	31	30	13	1	2	0	0	0	0	0	87
Total	**0**	**0**	**7**	**36**	**100**	**816**	**3009**	**3190**	**1052**	**167**	**36**	**1**	**0**	**0**	**0**	**0**	**8414**

Percentile	15th	50th	85th	95th
Speed	29	34	39	42
Mean Speed (Average)	35.8			
10 MPH Pace Speed	31-40			
Number in Pace	6199			
Percent in Pace	74.0%			

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/27/2026		> 5 - 10	> 10 - 15	> 15 - 20	> 20 - 25	> 25 - 30	> 30 - 35	> 35 - 40	> 40 - 45	> 45 - 50	> 50 - 55	> 55 - 60	> 60 - 65	> 65 - 70	> 70 - 75		
Time	0 - 5 MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	> 75 MPH	Total
12:00 AM	0	0	0	0	1	6	11	13	12	3	2	0	0	0	0	0	48
1:00	0	0	0	0	1	2	6	14	6	4	1	0	0	0	0	0	34
2:00	0	0	0	1	0	0	5	8	5	2	0	0	0	0	0	0	21
3:00	0	0	0	0	1	4	6	17	5	6	1	0	0	0	0	0	40
4:00	0	0	0	0	0	1	12	58	31	7	3	0	0	0	0	0	112
5:00	0	0	1	2	0	10	60	153	59	22	4	1	0	0	0	0	312
6:00	0	0	0	1	2	47	178	245	97	17	2	0	0	0	0	0	589
7:00	0	1	1	5	0	74	244	267	101	12	2	0	0	0	0	0	707
8:00	0	0	2	3	11	36	169	241	93	8	1	1	0	0	0	0	565
9:00	0	1	0	1	5	52	170	180	62	13	2	2	0	0	0	0	488
10:00	0	0	0	0	7	30	169	194	77	8	0	0	0	0	0	0	485
11:00	0	0	0	1	6	59	152	182	81	10	2	0	0	0	0	0	493
12:00 PM	0	1	0	1	5	56	164	214	81	12	3	0	0	0	0	0	537
1:00	0	0	1	1	8	25	220	240	73	19	2	0	0	0	0	0	589
2:00	0	1	2	1	11	54	295	196	52	7	0	1	0	0	0	0	620
3:00	0	0	1	2	10	73	192	170	57	5	0	0	0	0	0	0	510
4:00	0	0	2	2	11	35	213	173	69	6	1	0	0	0	0	0	512
5:00	0	0	1	3	6	53	253	201	54	4	2	0	0	0	0	0	577
6:00	0	0	0	1	7	28	198	214	64	7	0	0	0	0	0	0	519
7:00	0	0	0	1	5	23	147	147	60	7	3	0	0	0	0	0	393
8:00	0	0	0	1	8	23	123	103	42	5	1	0	0	0	0	0	306
9:00	0	0	0	4	4	19	84	102	37	8	2	0	0	0	0	0	260
10:00	0	0	0	1	2	10	59	78	37	17	1	0	0	0	0	0	205
11:00	0	0	0	2	1	6	21	39	21	6	7	1	0	0	0	0	104
Total	**0**	**4**	**11**	**34**	**112**	**726**	**3151**	**3449**	**1276**	**215**	**42**	**6**	**0**	**0**	**0**	**0**	**9026**

Percentile	15th	50th	85th	95th
Speed	30	34	39	42

Mean Speed (Average)	36.1
10 MPH Pace Speed	31-40
Number in Pace	6600
Percent in Pace	73.0%

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	94	7	2	0	0	103
1:00	0	59	5	0	1	0	65
2:00	0	41	5	2	0	1	49
3:00	0	28	2	1	1	0	32
4:00	0	48	4	1	0	1	54
5:00	0	103	5	3	3	0	114
6:00	0	231	20	14	5	5	275
7:00	0	365	39	19	16	6	445
8:00	3	399	43	26	8	4	483
9:00	1	385	46	20	10	8	470
10:00	0	345	44	19	10	10	428
11:00	1	366	73	26	6	10	482
12:00 PM	1	430	64	34	7	14	550
1:00	0	460	66	24	7	11	568
2:00	0	616	57	31	12	6	722
3:00	4	714	60	24	6	16	824
4:00	3	760	74	27	8	7	879
5:00	8	758	62	23	5	7	863
6:00	2	491	53	17	5	3	571
7:00	1	369	56	9	3	2	440
8:00	2	288	39	8	5	1	343
9:00	0	210	25	5	3	1	244
10:00	0	147	11	8	0	0	166
11:00	0	111	10	0	0	0	121
Total	**26**	**7818**	**870**	**343**	**121**	**113**	**9291**
Percent	0.3%	84.1%	9.4%	3.7%	1.3%	1.2%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	72	5	3	1	1	82
1:00	0	34	4	0	0	1	39
2:00	0	22	6	0	1	1	30
3:00	0	25	1	0	0	0	26
4:00	0	55	6	2	2	0	65
5:00	0	101	10	6	4	1	122
6:00	2	234	27	10	5	2	280
7:00	2	385	41	24	21	2	475
8:00	2	426	61	27	7	6	529
9:00	1	354	56	29	20	4	464
10:00	0	351	62	23	18	18	472
11:00	0	396	66	26	23	15	526
12:00 PM	2	529	57	27	8	9	632
1:00	0	535	36	27	8	8	614
2:00	3	679	35	17	17	5	756
3:00	2	840	45	22	7	18	934
4:00	5	853	41	18	8	6	931
5:00	4	853	59	15	8	13	952
6:00	3	567	47	19	4	2	642
7:00	1	474	43	15	3	4	540
8:00	2	361	42	12	3	2	422
9:00	0	238	35	7	1	0	281
10:00	0	146	16	5	0	0	167
11:00	0	99	9	3	1	0	112
Total	**29**	**8629**	**810**	**337**	**170**	**118**	**10093**
Percent	0.3%	85.5%	8.0%	3.3%	1.7%	1.2%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	64	6	3	1	0	74
1:00	0	31	2	1	0	0	34
2:00	0	13	3	2	1	0	19
3:00	0	24	5	1	2	0	32
4:00	0	57	9	3	0	4	73
5:00	0	90	15	4	2	5	116
6:00	0	242	27	20	7	5	301
7:00	0	385	50	26	20	6	487
8:00	0	405	45	30	4	4	488
9:00	0	383	52	24	10	11	480
10:00	1	394	46	19	12	18	490
11:00	0	455	54	23	14	10	556
12:00 PM	2	541	48	15	10	8	624
1:00	1	537	40	27	9	13	627
2:00	1	703	31	14	11	5	765
3:00	5	855	46	21	11	8	946
4:00	4	831	29	8	9	12	893
5:00	1	799	34	11	8	6	859
6:00	1	622	47	9	5	2	686
7:00	1	473	41	14	9	2	540
8:00	0	360	47	13	3	2	425
9:00	0	274	34	15	2	0	325
10:00	0	184	15	3	0	0	202
11:00	0	114	15	3	1	1	134
Total	**17**	**8836**	**741**	**309**	**151**	**122**	**10176**
Percent	0.2%	86.8%	7.3%	3.0%	1.5%	1.2%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	1	56	6	2	0	0	65
1:00	0	23	4	1	0	0	28
2:00	0	15	3	2	0	0	20
3:00	0	28	6	0	2	1	37
4:00	0	60	3	0	3	1	67
5:00	0	105	8	8	2	2	125
6:00	1	266	33	13	3	5	321
7:00	2	394	40	20	18	5	479
8:00	1	423	54	27	20	2	527
9:00	0	399	58	20	14	7	498
10:00	1	437	44	10	15	18	525
11:00	0	520	35	25	11	19	610
12:00 PM	3	527	36	18	13	6	603
1:00	1	582	31	16	14	6	650
2:00	3	682	31	19	19	8	762
3:00	1	802	41	22	9	7	882
4:00	4	843	36	21	9	18	931
5:00	2	855	27	11	12	5	912
6:00	3	639	40	14	3	1	700
7:00	3	511	43	8	3	4	572
8:00	3	396	25	9	4	0	437
9:00	2	316	27	7	0	2	354
10:00	0	216	15	6	1	0	238
11:00	1	144	14	5	1	1	166
Total	**32**	**9239**	**660**	**284**	**176**	**118**	**10509**
Percent	0.3%	87.9%	6.3%	2.7%	1.7%	1.1%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: NB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	75	4	1	0	0	80
1:00	0	34	3	1	0	2	40
2:00	0	20	2	1	1	0	24
3:00	0	35	3	2	0	0	40
4:00	0	45	2	3	0	1	51
5:00	0	113	7	6	2	3	131
6:00	1	257	18	16	5	3	300
7:00	1	417	27	19	11	2	477
8:00	1	476	41	21	13	8	560
9:00	3	464	48	27	18	12	572
10:00	0	445	51	22	13	10	541
11:00	0	488	58	20	11	15	592
12:00 PM	1	603	52	25	11	10	702
1:00	2	561	42	17	6	4	632
2:00	4	809	52	23	18	8	914
3:00	1	831	69	32	19	14	966
4:00	3	819	50	22	4	11	909
5:00	2	806	46	17	8	8	887
6:00	2	603	55	17	3	6	686
7:00	1	505	46	18	3	1	574
8:00	1	379	40	12	1	3	436
9:00	1	313	38	12	1	1	366
10:00	0	235	49	10	2	0	296
11:00	0	174	33	5	1	0	213
Total	**24**	**9507**	**836**	**349**	**151**	**122**	**10989**
Percent	0.2%	86.5%	7.6%	3.2%	1.4%	1.1%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/23/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	41	2	2	1	0	46
1:00	0	27	3	2	0	0	32
2:00	0	26	2	1	1	1	31
3:00	0	33	3	2	1	0	39
4:00	0	91	14	14	2	0	121
5:00	0	194	31	25	1	0	251
6:00	0	366	51	47	14	4	482
7:00	0	568	31	34	10	7	650
8:00	1	510	50	33	10	5	609
9:00	1	371	43	31	13	4	463
10:00	0	355	29	27	12	6	429
11:00	0	357	29	34	14	6	440
12:00 PM	2	376	20	24	10	2	434
1:00	0	360	52	30	7	7	456
2:00	0	453	35	22	13	1	524
3:00	1	420	28	19	19	6	493
4:00	1	398	35	23	4	3	464
5:00	1	393	22	15	5	2	438
6:00	1	321	21	13	5	1	362
7:00	0	263	16	9	0	0	288
8:00	0	229	20	5	0	0	254
9:00	0	175	16	5	0	0	196
10:00	0	95	11	5	2	0	113
11:00	0	64	7	2	0	1	74
Total	**8**	**6486**	**571**	**424**	**144**	**56**	**7689**
Percent	0.1%	84.4%	7.4%	5.5%	1.9%	0.7%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/24/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	24	2	1	0	0	27
1:00	0	19	1	3	1	0	24
2:00	0	13	1	0	0	1	15
3:00	0	41	2	2	2	0	47
4:00	0	80	13	4	1	0	98
5:00	0	249	26	28	3	0	306
6:00	0	456	37	32	10	5	540
7:00	0	531	42	29	17	4	623
8:00	1	446	49	24	13	1	534
9:00	0	354	30	29	12	2	427
10:00	0	386	30	15	15	2	448
11:00	0	351	31	25	16	6	429
12:00 PM	0	426	29	24	13	7	499
1:00	2	415	26	31	14	10	498
2:00	0	423	27	28	12	3	493
3:00	0	447	20	10	17	6	500
4:00	0	406	19	16	4	1	446
5:00	1	441	15	19	7	2	485
6:00	0	386	18	16	6	0	426
7:00	0	295	27	15	2	0	339
8:00	0	214	11	4	0	0	229
9:00	0	167	12	7	0	0	186
10:00	0	127	9	6	1	0	143
11:00	0	53	5	2	0	0	60
Total	**4**	**6750**	**482**	**370**	**166**	**50**	**7822**
Percent	0.1%	86.3%	6.2%	4.7%	2.1%	0.6%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/25/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	27	2	0	1	0	30
1:00	0	19	1	0	0	0	20
2:00	0	12	0	1	1	0	14
3:00	0	26	1	4	3	0	34
4:00	0	91	9	6	0	0	106
5:00	0	242	27	16	4	1	290
6:00	0	459	47	29	9	7	551
7:00	1	505	59	35	16	6	622
8:00	0	484	36	33	15	5	573
9:00	0	359	33	25	6	3	426
10:00	1	394	22	12	14	6	449
11:00	0	406	22	25	15	6	474
12:00 PM	0	416	30	25	10	5	486
1:00	0	358	28	29	19	7	441
2:00	0	464	23	27	13	3	530
3:00	3	442	18	20	13	0	496
4:00	1	463	24	16	8	0	512
5:00	0	454	19	27	4	0	504
6:00	0	379	22	9	2	1	413
7:00	0	286	20	11	0	2	319
8:00	0	237	13	9	0	2	261
9:00	0	202	11	0	0	1	214
10:00	0	114	13	1	0	0	128
11:00	0	59	3	2	2	0	66
Total	**6**	**6898**	**483**	**362**	**155**	**55**	**7959**
Percent	0.1%	86.7%	6.1%	4.5%	1.9%	0.7%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/26/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	26	6	1	1	0	34
1:00	0	19	1	0	0	0	20
2:00	0	11	0	0	0	0	11
3:00	0	41	1	0	1	0	43
4:00	0	85	17	13	0	0	115
5:00	0	255	17	23	4	0	299
6:00	0	426	39	42	14	6	527
7:00	0	574	35	40	18	3	670
8:00	1	511	35	24	12	0	583
9:00	1	434	29	18	12	4	498
10:00	0	382	42	26	19	5	474
11:00	1	409	19	27	14	9	479
12:00 PM	1	452	29	19	13	4	518
1:00	0	455	21	18	13	2	509
2:00	0	448	22	14	8	2	494
3:00	1	472	26	23	16	6	544
4:00	1	461	15	21	10	2	510
5:00	0	459	19	18	4	0	500
6:00	0	439	21	14	7	0	481
7:00	0	333	23	12	3	1	372
8:00	0	246	9	7	1	0	263
9:00	0	206	13	4	0	1	224
10:00	0	142	7	4	4	2	159
11:00	0	84	2	0	1	0	87
Total	**6**	**7370**	**448**	**368**	**175**	**47**	**8414**
Percent	0.1%	87.6%	5.3%	4.4%	2.1%	0.6%	

Project #: 1803_BL
ID#: ATR 10
City/Town: Waterbury, CT
Location: Watertown Ave, between Media Ave & Gertrude Ave

Direction: SB

3/27/2026		Passenger	Light Truck &	Single-Unit		Multi-Unit	
Time	Motorcycle	Car	Van	Truck	Bus	Truck	Total
12:00 AM	0	46	2	0	0	0	48
1:00	0	32	1	0	1	0	34
2:00	0	20	1	0	0	0	21
3:00	0	38	1	0	1	0	40
4:00	0	103	6	2	1	0	112
5:00	0	257	27	20	6	2	312
6:00	0	483	39	51	9	7	589
7:00	0	586	46	42	22	11	707
8:00	0	492	36	21	12	4	565
9:00	0	410	31	31	10	6	488
10:00	0	413	32	23	11	6	485
11:00	0	422	27	27	13	4	493
12:00 PM	0	441	37	39	12	8	537
1:00	0	491	42	40	11	5	589
2:00	0	543	29	32	11	5	620
3:00	0	437	24	28	19	2	510
4:00	0	461	19	23	8	1	512
5:00	0	528	32	9	5	3	577
6:00	0	470	25	15	7	2	519
7:00	0	363	19	10	0	1	393
8:00	0	272	24	10	0	0	306
9:00	0	226	22	9	3	0	260
10:00	0	181	15	9	0	0	205
11:00	0	97	4	2	0	1	104
Total	**0**	**7812**	**541**	**443**	**162**	**68**	**9026**
Percent	0.0%	86.5%	6.0%	4.9%	1.8%	0.8%	

Status: OK East Combined West

WATB-338 - Combined - e/w

[513]-Homer Street - .17 mi East of Hanover Street

Town.....Waterbury
Station.....338
Location..... 41.5858,-73.045758
A.K.A.....2338
2015-Minor Arterial 4.....2015-Urban
HPMS Section ID.....
Start Report.....04-Apr-2023 12:00PM
End Report.....06-Apr-2023 12:00PM
Dataset Details.....2

All Vehicles Average Speed..... 38 MPH
Total Vehicles.....54898
Percentile Sampling Period.... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 22 MPH
Speed Lower Limit....15 MPH below Average

All Report Days
85th Percentile Speed.....46.1 MPH
50th Percentile Speed.....39.5 MPH
10 MPH Pace (58%).....36-45 MPH
All Hours Total Vehicles.....54898
In-Period Total Vehicles.....23197
Omitted Vehicles Too Close (81%)...18838
Omitted Vehicles Too Slow (1%).....229
Sampled Vehicles (18%).....4130

Tuesday 04-Apr-2023
85th Percentile Speed.....44.8 MPH
50th Percentile Speed.....38.4 MPH
10 MPH Pace (55%).....36-45 MPH
All Hours Total Vehicles.....17526
In-Period Total Vehicles.....7058
Omitted Vehicles Too Close (83%)....5866
Omitted Vehicles Too Slow (2%).....106
Sampled Vehicles (15%).....1086

Wednesday 05-Apr-2023
85th Percentile Speed.....46.1 MPH
50th Percentile Speed.....39.4 MPH
10 MPH Pace (59%).....36-45 MPH
All Hours Total Vehicles.....27292
In-Period Total Vehicles.....11602
Omitted Vehicles Too Close (81%)....9405
Omitted Vehicles Too Slow (1%).....82
Sampled Vehicles (18%).....2115

Thursday 06-Apr-2023
85th Percentile Speed.....47.0 MPH
50th Percentile Speed.....40.6 MPH
10 MPH Pace (61%).....36-45 MPH
All Hours Total Vehicles.....10080
In-Period Total Vehicles.....4537
Omitted Vehicles Too Close (79%)....3567
Omitted Vehicles Too Slow (1%).....41
Sampled Vehicles (20%).....929

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tot Vo
Tuesday															
04-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm	7	16	33	146	474	579	338	71	22	9	1	.	.	.	16
01:00pm	26	34	76	211	472	516	316	88	15	3	.	.	.	.	17
02:00pm	192	63	68	213	400	413	197	49	13	4	1	.	.	.	16
03:00pm	11	31	68	252	610	586	333	78	17	5	1	.	.	.	19
04:00pm	20	28	49	216	556	600	286	79	20	10	.	.	.	.	18
05:00pm	25	35	50	227	615	645	310	79	21	5	2	.	.	.	20
06:00pm	2	5	25	131	513	564	351	79	33	10	1	5	.	.	17
07:00pm	.	1	12	59	297	538	408	116	34	13	3	2	1	.	14
08:00pm	.	2	5	45	267	503	340	119	33	14	2	2	1	.	13
09:00pm	1	.	3	20	96	279	276	133	34	11	7	2	.	.	8
10:00pm	2	1	1	14	67	165	246	119	54	12	3	2	2	.	6
11:00pm	.	.	5	22	46	110	163	90	37	21	8	1	1	.	5
Totals	286	216	395	1556	4413	5498	3564	1100	333	117	29	14	5	0	175
Percent	1.63	1.23	2.25	8.88	25.18	31.37	20.34	6.28	1.90	0.67	0.17	0.08	0.03	0.00	
Wednesday															
05-Apr															
12:00am	.	1	1	4	20	62	95	42	31	8	6	1	1	2	2
01:00am	1	1	.	2	12	30	43	28	10	8	3	2	1	2	1
02:00am	.	1	.	3	8	18	27	20	6	6	.	1	.	2	
03:00am	.	1	1	2	5	15	30	23	11	7	4	2	.	.	1
04:00am	1	10	3	2	15	41	78	57	32	11	5	.	.	.	2
05:00am	1	1	2	10	31	133	211	160	75	17	8	1	.	1	6
06:00am	.	4	12	54	175	297	363	145	62	12	6	.	.	1	11
07:00am	16	23	42	111	310	447	411	124	43	4	1	.	1	.	15
08:00am	14	20	41	151	353	507	354	99	38	9	1	.	.	.	15
09:00am	10	18	28	98	292	445	402	117	34	14	3	.	.	.	14
10:00am	13	13	31	159	355	510	365	97	27	7	.	.	.	.	15
11:00am	12	23	44	147	427	524	338	99	18	7	2	.	1	.	16
12:00pm	18	28	53	179	519	548	282	84	16	3	.	.	.	.	17
01:00pm	7	20	39	152	442	516	336	78	19	4	2	.	.	.	16
02:00pm	16	23	35	106	450	616	341	92	28	6	1	.	.	.	17
03:00pm	16	28	34	175	523	590	343	112	31	8	1	1	1	.	18
04:00pm	18	21	59	220	586	622	336	85	23	6	2	.	.	.	19
05:00pm	6	20	30	156	463	607	396	96	33	7	2	1	.	.	18
06:00pm	5	17	9	74	359	616	427	118	36	9	1	.	1	.	16
07:00pm	.	5	15	78	269	474	372	115	31	10	2	2	.	.	13
08:00pm	2	4	6	50	214	404	314	106	31	9	.	1	.	.	11
09:00pm	.	.	4	23	126	239	269	102	28	9	2	1	.	.	8
10:00pm	.	1	4	13	85	174	222	118	54	12	5	1	.	.	6
11:00pm	.	2	4	11	39	118	169	70	21	10	5	1	.	.	4
Totals	156	285	497	1980	6078	8553	6524	2187	738	203	62	15	6	8	272
Percent	0.57	1.04	1.82	7.25	22.27	31.34	23.90	8.01	2.70	0.74	0.23	0.05	0.02	0.03	
Thursday															
06-Apr															
12:00am	.	.	1	5	15	60	66	41	17	6	2	1	.	.	2
01:00am	.	.	.	8	15	33	30	29	10	8	.	.	.	.	1
02:00am	1	1	.	6	10	14	29	16	6	2	2	1	1	.	
03:00am	.	2	2	4	15	17	37	24	11	6	.	.	.	.	1
04:00am	1	8	3	4	21	42	83	54	39	6	4	.	.	.	2
05:00am	1	4	1	10	33	138	225	138	69	17	3	2	1	.	6
06:00am	3	4	10	46	142	306	350	173	63	14	5	3	.	.	11
07:00am	.	4	23	54	206	462	458	189	55	15	1	.	.	.	14
08:00am	8	21	24	110	300	454	416	126	26	8	2	1	.	.	14
09:00am	8	14	13	79	338	484	388	115	53	12	1	.	.	.	15
10:00am	18	20	19	83	257	486	405	95	29	9	3	.	.	.	14
11:00am	18	27	37	94	386	552	361	91	31	7	2	2	.	.	16
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	58	105	133	503	1738	3048	2848	1091	409	110	25	10	2	0	100
Percent	0.58	1.04	1.32	4.99	17.24	30.24	28.25	10.82	4.06	1.09	0.25	0.10	0.02	0.00	

Status: OK East Combined West Speed

WATB-338 - Combined - e/w

[513]-Homer Street - .17 mi East of Hanover Street

```
Town.............................Waterbury
Station..................................338
Location.............. 41.5858,-73.045758
A.K.A....................................2338
2015-Minor Arterial  4..........2015-Urban
HPMS Section ID..................
Start Report............04-Apr-2023 12:00PM
End Report..............06-Apr-2023 12:00PM
Annualized ADT.......................26000
24-Hour Count...27973 * G4(0.94) = 26294.6
Day 1..........+27292 * G4(0.94) = 51949.1
UnRounded AADT.......51949.1 / 2 = 25974.5
 OK  2023 Tue 04-Apr -this report-...26000
 OK  2020 Tue 21-Jan .................25500
 OK  2017 Mon 27-Feb .................26300
 OK  2014 Wed 02-Apr .................22700
 OK  2011 Mon 14-Mar .................26400
 OK  2008 Mon 05-May .................27800
Dataset Details..........................2
```

	04-Apr Tue	05-Apr Wed	06-Apr Thu
12:00am		274	214
01:00am		143	133
02:00am		92	89
03:00am		101	118
04:00am		255	265
05:00am		651	642
06:00am		1131	1119
07:00am		1533	1467
08:00am		1587	1496
09:00am		1461	1505
10:00am	x	1577	1424
11:00am	x	1642	1608
12:00pm	1696	1730	
01:00pm	1757	1615	
02:00pm	1613	1714	
03:00pm	1992	1863	
04:00pm	1864	1978	
05:00pm	2014	1817	
06:00pm	1719	1672	
07:00pm	1484	1373	
08:00pm	1333	1141	
09:00pm	862	803	
10:00pm	688	689	
11:00pm	504	450	
Totals	17526	27292	10080

Status: OK North Combined South

WATB-661 - Combined - n/s

[226]-Cooke Street - 1.93 mi South of Chase Avenue

Town.....Waterbury
Station.....661
Location..... 41.584825,-73.042498
2015-Major Collector 5.....2015-Urban
Start Report.....12-Apr-2023 02:00PM
End Report.....14-Apr-2023 09:00AM
Dataset Details.....1

All Vehicles Average Speed..... 28 MPH
Total Vehicles.....12278
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 13 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....33.8 MPH
50th Percentile Speed.....28.3 MPH
10 MPH Pace (61%).....24-33 MPH
All Hours Total Vehicles.....12278
In-Period Total Vehicles.....3848
Omitted Vehicles Too Close (31%)...1182
Omitted Vehicles Too Slow (1%).....51
Sampled Vehicles (68%).....2615

Wednesday 12-Apr-2023
85th Percentile Speed.....33.6 MPH
50th Percentile Speed.....28.0 MPH
10 MPH Pace (61%).....24-33 MPH
All Hours Total Vehicles.....3892
In-Period Total Vehicles.....974
Omitted Vehicles Too Close (32%)....314
Omitted Vehicles Too Slow (1%).....14
Sampled Vehicles (66%).....646

Thursday 13-Apr-2023
85th Percentile Speed.....33.9 MPH
50th Percentile Speed.....28.4 MPH
10 MPH Pace (61%).....25-34 MPH
All Hours Total Vehicles.....7195
In-Period Total Vehicles.....2874
Omitted Vehicles Too Close (30%)....868
Omitted Vehicles Too Slow (1%).....37
Sampled Vehicles (69%).....1969

Friday 14-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....1191
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Wednesday															
12-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am															
12:00pm															
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
02:00pm	27	36	103	143	120	35	5	3	.	.	.	.	.	.	47
03:00pm	18	39	102	169	130	37	6	1	.	.	.	.	.	.	50
04:00pm	16	53	99	198	156	45	10	.	.	.	.	.	.	.	57
05:00pm	11	35	103	204	138	34	7	2	.	.	.	.	.	.	53
06:00pm	7	41	62	174	113	29	6	.	.	.	.	.	.	.	43
07:00pm	14	43	91	161	95	28	4	2	.	.	.	.	.	.	43
08:00pm	12	31	59	135	93	27	4	2	.	.	.	.	.	.	36
09:00pm	4	16	37	89	80	21	4	.	1	.	.	.	.	.	25
10:00pm	2	14	28	63	57	11	4	1	.	.	.	.	.	.	18
11:00pm	2	10	18	46	43	16	5	2	.	.	.	.	.	.	14
Totals	113	318	702	1382	1025	283	55	13	1	0	0	0	0	0	389
Percent	2.90	8.17	18.04	35.51	26.34	7.27	1.41	0.33	0.03	0.00	0.00	0.00	0.00	0.00	
Thursday															
13-Apr															
12:00am	5	10	16	19	24	9	2	.	1	.	.	.	.	.	8
01:00am	.	10	10	16	13	2	5	.	.	.	.	.	.	.	5
02:00am	1	5	3	10	5	3	2	.	.	1	.	.	.	.	3
03:00am	.	8	4	5	9	6	.	.	.	.	.	.	.	.	3
04:00am	1	4	10	19	24	11	3	.	.	.	.	.	.	.	7
05:00am	2	9	16	33	36	33	5	1	.	.	.	.	.	.	13
06:00am	5	14	19	63	63	35	8	.	.	.	.	.	.	.	20
07:00am	2	6	26	97	90	39	7	2	.	.	.	.	.	.	26
08:00am	6	14	62	105	87	25	10	.	1	.	.	.	.	.	31
09:00am	11	29	50	105	82	31	5	1	.	.	.	.	.	.	31
10:00am	12	29	58	103	81	31	7	1	.	.	.	.	.	.	32
11:00am	13	40	84	137	79	30	2	1	.	.	.	.	.	.	38
12:00pm	22	40	75	142	93	30	9	1	.	.	.	.	.	.	41
01:00pm	14	35	68	165	115	40	5	.	.	.	.	.	.	.	44
02:00pm	22	48	95	152	114	36	6	.	.	.	.	.	.	.	47
03:00pm	19	41	93	187	134	39	11	1	.	.	.	.	.	.	52
04:00pm	14	47	102	213	133	45	9	1	1	.	.	.	.	.	56
05:00pm	8	40	125	206	132	33	11	1	.	.	.	.	.	.	55
06:00pm	10	48	76	174	123	29	5	.	.	.	.	.	.	.	46
07:00pm	13	35	94	184	116	30	14	1	.	.	.	.	.	.	48
08:00pm	9	27	64	144	95	26	4	1	.	.	.	.	.	.	37
09:00pm	3	11	57	111	83	34	5	1	.	.	.	.	.	.	30
10:00pm	2	20	34	72	55	19	6	.	1	.	.	.	.	.	20
11:00pm	3	10	27	66	36	16	7	2	.	.	.	.	.	.	16
Totals	197	580	1268	2528	1822	632	148	15	4	1	0	0	0	0	719
Percent	2.74	8.06	17.62	35.14	25.32	8.78	2.06	0.21	0.06	0.01	0.00	0.00	0.00	0.00	
Friday															
14-Apr															
12:00am	3	9	10	28	36	7	4	.	1	.	.	.	.	.	9
01:00am	1	9	7	21	13	5	2	.	.	.	.	.	.	.	5
02:00am	2	9	8	6	11	5	2	.	2	.	.	.	.	.	4
03:00am	1	7	4	9	7	3	2	.	.	.	.	.	.	.	3
04:00am	2	5	3	19	14	9	4	.	.	.	.	.	.	.	5
05:00am	2	7	8	31	43	21	9	.	.	.	.	.	.	.	12
06:00am	2	20	19	48	78	29	5	.	.	.	.	.	.	.	20
07:00am	5	13	26	82	86	41	9	1	.	.	.	.	.	.	26
08:00am	7	22	52	108	87	36	4	.	.	.	.	.	.	.	31
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
10:00am															
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	25	101	137	352	375	156	41	1	3	0	0	0	0	0	119
Percent	2.10	8.48	11.50	29.55	31.49	13.10	3.44	0.08	0.25	0.00	0.00	0.00	0.00	0.00	

Status: OK North Combined South Class Speed

WATB-661 - Combined - n/s

[226]-Cooke Street - 1.93 mi South of Chase Avenue

Town.....Waterbury
Station.....661
Location..... 41.584825,-73.042498
2015-Major Collector 5.....2015-Urban
Start Report.....12-Apr-2023 02:00PM
End Report.....14-Apr-2023 09:00AM
Annualized ADT.....6700
24-Hour Count... 6965 * G4(0.94) = 6547.1
Day 1.....+ 7195 * G4(0.94) = 13310.4
UnRounded AADT.....13310.4 / 2 = 6655.2
OK 2023 Wed 12-Apr -this report-...6700
OK 2020 Tue 21-Jan 7600
OK 2017 Tue 21-Feb 7000
OK 2011 Mon 14-Mar 5900
OK 2008 Tue 15-Apr 5800
OK 2008 Mon 31-Mar 4200
Dataset Details.....1

	12-Apr Wed	13-Apr Thu	14-Apr Fri
12:00am		86	98
01:00am		56	58
02:00am		30	45
03:00am		32	33
04:00am		72	56
05:00am		135	121
06:00am		207	201
07:00am		269	263
08:00am		310	316
09:00am		314	x
10:00am		322	
11:00am		386	
12:00pm		412	
01:00pm	x	442	
02:00pm	472	473	
03:00pm	502	525	
04:00pm	577	565	
05:00pm	534	556	
06:00pm	432	465	
07:00pm	438	487	
08:00pm	363	370	
09:00pm	252	305	
10:00pm	180	209	
11:00pm	142	167	
Totals	3892	7195	1191

Status: REJ [West] [Combined] [East]

WATB-202 - Combined - e/w

[303]-East Main Street - .31 mi West of Baldwin St #1

Town.....Waterbury
Station.....202
Location..... 41.554579,-73.035344
2015-Minor Arterial 4.....2015-Urban
Start Report.....08-Jan-2020 09:00AM
End Report.....10-Jan-2020 11:00AM
Dataset Details.....1

All Vehicles Average Speed..... 21 MPH
Total Vehicles.....21872
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 5 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....25.8 MPH
50th Percentile Speed.....19.4 MPH
10 MPH Pace (55%).....18-27 MPH
All Hours Total Vehicles.....21872
In-Period Total Vehicles.....10534
Omitted Vehicles Too Close (56%)...5878
Omitted Vehicles Too Slow (0%).....13
Sampled Vehicles (44%).....4643

Wednesday 08-Jan-2020
85th Percentile Speed.....26.1 MPH
50th Percentile Speed.....19.9 MPH
10 MPH Pace (56%).....18-27 MPH
All Hours Total Vehicles.....8606
In-Period Total Vehicles.....4818
Omitted Vehicles Too Close (56%)...2679
Omitted Vehicles Too Slow (0%).....7
Sampled Vehicles (44%).....2132

Thursday 09-Jan-2020
85th Percentile Speed.....25.5 MPH
50th Percentile Speed.....18.9 MPH
10 MPH Pace (53%).....18-27 MPH
All Hours Total Vehicles.....9988
In-Period Total Vehicles.....4361
Omitted Vehicles Too Close (57%)...2480
Omitted Vehicles Too Slow (0%).....5
Sampled Vehicles (43%).....1876

Friday 10-Jan-2020
85th Percentile Speed.....25.8 MPH
50th Percentile Speed.....19.8 MPH
10 MPH Pace (57%).....18-27 MPH
All Hours Total Vehicles.....3278
In-Period Total Vehicles.....1355
Omitted Vehicles Too Close (53%)....719
Omitted Vehicles Too Slow (0%).....1
Sampled Vehicles (47%).....635

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Wednesday															
08-Jan															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
09:00am	137	152	181	115	22	3	.	.	.	.	.	.	.	.	61(
10:00am	134	159	193	100	27	5	1	.	.	.	.	.	.	.	61!
11:00am	177	181	187	98	23	2	1	.	.	.	.	.	.	.	66!
12:00pm	183	183	204	126	21	.	.	.	.	.	.	.	.	.	71'
01:00pm	157	218	252	99	25	2	.	.	.	.	.	.	.	.	75:
02:00pm	221	230	206	71	13	2	.	.	.	.	.	.	.	.	74:
03:00pm	244	230	167	60	5	1	.	.	.	.	.	.	.	.	70'
04:00pm	264	227	218	76	12	1	.	.	.	.	.	.	.	.	79!
05:00pm	194	171	243	111	27	3	.	.	.	.	.	.	.	.	74!
06:00pm	102	122	186	125	28	8	.	.	.	.	.	.	.	.	57:
07:00pm	85	107	166	95	19	.	2	.	.	.	.	.	.	.	47+
08:00pm	62	81	115	92	14	4	1	1	.	.	.	.	.	.	37(
09:00pm	16	62	122	81	37	2	1	.	.	.	.	.	.	.	32:
10:00pm	22	55	85	70	24	8	.	2	.	.	.	.	.	.	26+
11:00pm	22	66	70	51	25	4	.	.	1	.	.	.	.	.	23!
Totals	2020	2244	2595	1370	322	45	6	3	1	0	0	0	0	0	860+
Percent	23.47	26.07	30.15	15.92	3.74	0.52	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	
Thursday															
09-Jan															
12:00am	5	9	25	19	10	1	.	.	.	.	.	.	.	.	6!
01:00am	7	12	26	12	9	7	.	.	.	.	.	.	.	.	7:
02:00am	.	2	8	12	4	8	3	.	.	.	.	.	.	.	3'
03:00am	.	5	11	10	14	2	.	.	.	.	.	.	.	.	4:
04:00am	.	4	15	15	14	4	2	.	.	.	.	.	.	.	5+
05:00am	4	14	49	50	22	10	3	.	.	.	.	.	.	.	15:
06:00am	32	65	99	92	37	7	3	.	.	.	.	.	.	.	33!
07:00am	83	114	171	95	39	7	1	.	.	.	.	.	.	.	51(
08:00am	113	142	211	120	36	6	2	.	.	.	.	.	.	.	63(
09:00am	147	171	241	84	30	4	.	.	.	.	.	.	.	.	67'
10:00am	133	120	129	76	19	4	.	.	.	.	.	.	.	.	48:
11:00am	180	188	173	96	31	5	2	.	.	.	.	.	.	.	67!
12:00pm	185	171	160	60	9	1	1	.	.	.	.	.	.	.	58'
01:00pm	182	200	174	80	28	5	.	.	.	.	.	.	.	.	66!
02:00pm	195	170	142	77	18	1	1	.	.	.	.	.	.	.	60+
03:00pm	208	234	151	67	8	.	.	.	.	.	.	.	.	.	66!
04:00pm	229	212	176	61	12	1	1	.	.	.	.	.	.	.	69:
05:00pm	214	236	203	85	21	.	.	.	.	.	.	.	.	.	75!
06:00pm	85	129	177	123	47	9	.	.	1	.	.	.	.	.	57:
07:00pm	72	87	162	127	52	4	1	.	.	.	.	.	.	.	50!
08:00pm	63	64	110	118	48	15	3	.	.	.	.	.	.	.	42:
09:00pm	39	45	95	95	42	8	3	.	.	.	.	.	.	.	32'
10:00pm	12	33	92	82	31	8	3	.	.	.	.	.	.	.	26:
11:00pm	11	23	60	53	29	10	1	1	1	.	.	.	.	.	18!
Totals	2199	2450	2860	1709	610	127	30	1	2	0	0	0	0	0	998+
Percent	22.02	24.53	28.63	17.11	6.11	1.27	0.30	0.01	0.02	0.00	0.00	0.00	0.00	0.00	
Friday															
10-Jan															
12:00am	4	11	39	36	19	7	.	.	.	.	.	.	.	.	11(
01:00am	4	8	16	28	13	7	3	2	.	.	.	.	.	.	8:
02:00am	.	2	5	10	11	4	2	.	.	.	.	.	.	.	3+
03:00am	.	1	11	12	6	4	2	.	.	.	.	.	.	.	3(
04:00am	1	2	10	23	11	6	1	.	.	.	.	.	.	.	5+
05:00am	7	12	54	46	23	9	.	.	.	.	.	.	.	.	15:
06:00am	45	49	97	85	28	4	2	.	.	.	.	.	.	.	31(
07:00am	64	111	197	113	25	2	.	.	.	.	.	.	.	.	51:
08:00am	153	175	202	81	14	3	1	.	.	.	.	.	.	.	62!
09:00am	172	177	202	93	23	3	.	.	.	.	.	.	.	.	67(
10:00am	184	173	201	100	26	1	.	.	.	.	.	.	.	.	68!
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	634	721	1034	627	199	50	11	2	0	0	0	0	0	0	327+
Percent	19.34	22.00	31.54	19.13	6.07	1.53	0.34	0.06	0.00	0.00	0.00	0.00	0.00	0.00	

Status: REJ West Combined East Class Speed

WATB-202 - Combined - e/w

[303]-East Main Street - .31 mi West of Baldwin St #1

Town.....Waterbury
Station.....202
Location..... 41.554579,-73.035344
2015-Minor Arterial 4.....2015-Urban
Start Report.....08-Jan-2020 09:00AM
End Report.....10-Jan-2020 11:00AM
Annualized ADT.....10600
24-Hour Count...10508 * G4(1.03) = 10823.2
Day 1.....+ 9988 * G4(1.03) = 21110.9
UnRounded AADT.....21110.9 / 2 = 10555.4
OK 2020 Wed 08-Jan 11400
OK 2017 Mon 30-Jan 13800
OK 2011 Tue 08-Mar 13500
OK 2008 Mon 28-Apr 13100
Dataset Details.....1

	08-Jan Wed	09-Jan Thu	10-Jan Fri
12:00am		69	116
01:00am		73	81
02:00am		37	34
03:00am		42	36
04:00am		54	54
05:00am		152	151
06:00am		335	310
07:00am		510	512
08:00am	x	630	629
09:00am	610	677	670
10:00am	619	481	685
11:00am	669	675	x
12:00pm	717	587	
01:00pm	753	669	
02:00pm	743	604	
03:00pm	707	668	
04:00pm	798	692	
05:00pm	749	759	
06:00pm	571	571	
07:00pm	474	505	
08:00pm	370	421	
09:00pm	321	327	
10:00pm	266	261	
11:00pm	239	189	
Totals	8606	9988	3278

Status: OK North Combined South

WATB-602 - Combined - n/s

[190]-Cherry Street - .08 mi South of Walnut Street

Town.....Waterbury
Station.....602
Location..... 41.555602,-73.034222
2015-Major Collector 5.....2015-Urban
Start Report.....31-Mar-2026 11:00AM
End Report.....02-Apr-2026 10:00AM
Dataset Details.....2

All Vehicles Average Speed..... 27 MPH
Total Vehicles.....21355
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 11 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....33.5 MPH
50th Percentile Speed.....26.7 MPH
10 MPH Pace (57%).....23-32 MPH
All Hours Total Vehicles.....21355
In-Period Total Vehicles.....8107
Omitted Vehicles Too Close (49%)...3932
Omitted Vehicles Too Slow (1%).....121
Sampled Vehicles (50%).....4054

Tuesday 31-Mar-2026
85th Percentile Speed.....33.3 MPH
50th Percentile Speed.....26.8 MPH
10 MPH Pace (57%).....23-32 MPH
All Hours Total Vehicles.....7914
In-Period Total Vehicles.....3350
Omitted Vehicles Too Close (50%)...1681
Omitted Vehicles Too Slow (2%).....58
Sampled Vehicles (48%).....1611

Wednesday 01-Apr-2026
85th Percentile Speed.....33.5 MPH
50th Percentile Speed.....26.4 MPH
10 MPH Pace (56%).....23-32 MPH
All Hours Total Vehicles.....10803
In-Period Total Vehicles.....4222
Omitted Vehicles Too Close (48%)...2026
Omitted Vehicles Too Slow (1%).....55
Sampled Vehicles (51%).....2141

Thursday 02-Apr-2026
85th Percentile Speed.....33.8 MPH
50th Percentile Speed.....28.1 MPH
10 MPH Pace (61%).....24-33 MPH
All Hours Total Vehicles.....2638
In-Period Total Vehicles.....535
Omitted Vehicles Too Close (42%)....225
Omitted Vehicles Too Slow (1%).....8
Sampled Vehicles (56%).....302

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Tuesday															
31-Mar															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	12	46	114	214	144	32	12	3	.	.	.	.	.	.	57
12:00pm	33	42	167	230	134	43	8	1	.	.	.	.	.	.	65
01:00pm	28	52	155	224	130	32	14	3	.	.	.	.	.	.	63
02:00pm	39	74	168	230	156	38	8	4	.	.	.	.	.	.	71
03:00pm	77	108	222	223	92	29	9	.	.	.	.	.	.	.	76
04:00pm	58	94	222	207	115	24	3	1	.	.	.	.	.	.	72
05:00pm	60	86	234	288	153	29	10	.	.	.	.	.	.	.	86
06:00pm	61	93	217	239	107	24	6	2	.	1	.	.	.	.	75
07:00pm	41	80	202	237	92	28	5	.	.	.	.	.	.	.	68
08:00pm	18	51	172	209	104	24	5	.	1	.	.	.	.	.	58
09:00pm	8	22	86	147	116	44	11	3	1	.	.	.	.	.	43
10:00pm	2	11	49	99	101	39	5	2	.	.	.	.	.	.	30
11:00pm	1	10	33	71	58	33	8	1	.	.	.	.	.	.	21
Totals	438	769	2041	2618	1502	419	104	20	2	1	0	0	0	0	791
Percent	5.53	9.72	25.79	33.08	18.98	5.29	1.31	0.25	0.03	0.01	0.00	0.00	0.00	0.00	
Wednesday															
01-Apr															
12:00am	.	.	22	43	46	28	8	3	.	.	.	.	.	.	15
01:00am	6	3	11	26	17	19	3	.	.	.	.	.	.	.	8
02:00am	.	1	10	19	13	15	10	2	.	.	.	.	.	.	7
03:00am	2	2	9	17	14	9	1	.	.	1	.	.	.	.	5
04:00am	1	8	11	15	29	14	5	2	.	.	.	.	.	.	8
05:00am	2	10	28	55	57	26	10	1	.	.	.	.	.	.	18
06:00am	40	46	91	117	81	42	8	1	1	.	.	.	.	.	42
07:00am	37	60	95	153	147	46	11	1	1	.	.	.	.	.	55
08:00am	48	57	139	221	128	47	10	2	.	.	.	.	.	.	65
09:00am	27	34	103	171	138	58	17	.	.	.	.	.	.	.	54
10:00am	21	42	85	208	110	41	12	1	.	.	.	.	.	.	52
11:00am	15	48	133	204	109	35	8	1	.	.	1	.	.	.	55
12:00pm	21	64	181	225	121	34	4	2	.	.	.	.	.	.	65
01:00pm	25	59	184	192	135	41	6	2	.	.	.	.	.	.	64
02:00pm	47	85	195	222	107	19	8	3	.	.	.	.	.	.	68
03:00pm	74	107	198	153	67	17	2	.	.	.	.	.	.	.	61
04:00pm	67	114	269	227	88	21	3	1	.	.	.	.	.	.	79
05:00pm	58	115	265	223	93	13	6	.	.	.	.	.	.	.	77
06:00pm	44	90	243	244	87	30	2	1	.	.	.	.	.	.	74
07:00pm	20	44	165	213	109	27	4	.	.	.	.	.	.	.	58
08:00pm	18	39	163	164	66	17	4	1	.	.	.	.	.	.	47
09:00pm	6	28	78	162	114	35	7	.	.	.	.	.	.	.	43
10:00pm	2	20	55	105	83	36	12	.	.	.	.	.	.	.	31
11:00pm	3	12	29	74	63	25	9	1	.	.	.	.	.	.	21
Totals	584	1088	2762	3453	2022	695	170	25	2	1	1	0	0	0	1080
Percent	5.41	10.07	25.57	31.96	18.72	6.43	1.57	0.23	0.02	0.01	0.01	0.00	0.00	0.00	
Thursday															
02-Apr															
12:00am	1	4	12	27	40	23	7	.	.	.	.	.	.	.	11
01:00am	1	1	14	10	23	9	2	1	.	.	.	.	.	.	6
02:00am	.	1	10	15	14	13	1	2	.	.	.	.	.	.	5
03:00am	.	2	6	11	17	11	4	1	.	.	.	.	.	.	5
04:00am	2	3	20	23	30	10	3	1	.	.	.	.	.	.	9
05:00am	4	10	19	55	50	23	5	.	.	.	.	.	.	.	16
06:00am	32	32	95	120	85	31	3	.	1	.	.	.	.	.	39
07:00am	23	66	124	163	113	32	9	.	.	.	.	.	.	.	53
08:00am	57	82	130	199	134	27	4	.	.	.	.	.	.	.	63
09:00am	24	38	111	187	135	32	5	3	.	.	.	.	.	.	53
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	144	239	541	810	641	211	43	8	1	0	0	0	0	0	263
Percent	5.46	9.06	20.51	30.71	24.30	8.00	1.63	0.30	0.04	0.00	0.00	0.00	0.00	0.00	

Status: OK [North] [Combined] [South] [Class] [Speed]

WATB-602 - Combined - n/s

[190]-Cherry Street - .08 mi South of Walnut Street

Town.....Waterbury
Station.....602
Location..... 41.555602,-73.034222
2015-Major Collector 5.....2015-Urban
Start Report.....31-Mar-2026 11:00AM
End Report.....02-Apr-2026 10:00AM
Annualized ADT.....10600
24-Hour Count...11246 * G4(0.99) = 11133.5
Day 1.....+10803 * G4(0.94) = 21288.4
UnRounded AADT.....21288.4 / 2 = 10644.2
OK 2026 Tue 31-Mar -this report-...10600
OK 2023 Tue 18-Apr 9600
OK 2020 Fri 10-Jan 13300
OK 2011 Tue 08-Mar 11500
OK 2008 Mon 28-Apr 10200
Dataset Details.....2

	31-Mar Tue	01-Apr Wed	02-Apr Thu
12:00am		150	114
01:00am		85	61
02:00am		70	56
03:00am		55	52
04:00am		85	92
05:00am		189	166
06:00am		427	399
07:00am		551	530
08:00am		652	633
09:00am		548	535
10:00am	x	520	x
11:00am	577	554	
12:00pm	658	652	
01:00pm	638	644	
02:00pm	717	686	
03:00pm	760	618	
04:00pm	724	790	
05:00pm	860	773	
06:00pm	750	741	
07:00pm	685	582	
08:00pm	584	472	
09:00pm	438	430	
10:00pm	308	313	
11:00pm	215	216	
Totals	7914	10803	2638

Status: OK [North] [Combined] [South]

WATB-403 - Combined - n/s

[755]-North Main Street - 1.46 mi South of Winchester St

Town.....Waterbury
Station.....403
Location..... 41.571792,-73.026204
2015-Minor Arterial 4.....2015-Urban
Start Report.....12-Apr-2023 02:00PM
End Report.....14-Apr-2023 10:00AM
Dataset Details.....2

All Vehicles Average Speed..... 37 MPH
Total Vehicles.....21237
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 22 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....43.2 MPH
50th Percentile Speed.....36.9 MPH
10 MPH Pace (63%).....33-42 MPH
All Hours Total Vehicles.....21237
In-Period Total Vehicles.....7470
Omitted Vehicles Too Close (52%)...3908
Omitted Vehicles Too Slow (2%).....115
Sampled Vehicles (46%).....3447

Wednesday 12-Apr-2023
85th Percentile Speed.....42.6 MPH
50th Percentile Speed.....36.8 MPH
10 MPH Pace (65%).....33-42 MPH
All Hours Total Vehicles.....6853
In-Period Total Vehicles.....1736
Omitted Vehicles Too Close (57%)....981
Omitted Vehicles Too Slow (1%).....26
Sampled Vehicles (42%).....729

Thursday 13-Apr-2023
85th Percentile Speed.....43.4 MPH
50th Percentile Speed.....36.9 MPH
10 MPH Pace (62%).....34-43 MPH
All Hours Total Vehicles.....12196
In-Period Total Vehicles.....5184
Omitted Vehicles Too Close (52%)...2688
Omitted Vehicles Too Slow (2%).....80
Sampled Vehicles (47%).....2416

Friday 14-Apr-2023
85th Percentile Speed.....43.1 MPH
50th Percentile Speed.....37.4 MPH
10 MPH Pace (65%).....33-42 MPH
All Hours Total Vehicles.....2188
In-Period Total Vehicles.....550
Omitted Vehicles Too Close (43%)....239
Omitted Vehicles Too Slow (2%).....9
Sampled Vehicles (55%).....302

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Wednesday															
12-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am															
12:00pm															
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
02:00pm	4	8	18	83	198	318	151	26	5	2	.	1	.	.	81
03:00pm	12	18	23	85	309	285	152	29	8	.	1	.	.	.	92
04:00pm	2	6	16	64	234	299	217	32	7	1	1	.	.	.	87
05:00pm	1	5	11	56	247	362	216	48	12	4	.	1	.	.	96
06:00pm	2	3	8	61	238	318	171	44	12	.	1	.	1	1	86
07:00pm	2	4	7	52	220	304	166	36	10	5	2	2	.	.	81
08:00pm	2	5	9	59	196	206	109	35	7	5	2	.	.	.	63
09:00pm	.	2	7	22	116	139	117	27	11	6	1	1	.	.	44
10:00pm	1	.	1	12	53	102	83	36	10	3	.	.	2	2	30
11:00pm	.	1	1	5	33	64	66	25	13	4	1	1	1	1	21
Totals	26	52	101	499	1844	2397	1448	338	95	30	9	6	4	4	685
Percent	0.38	0.76	1.47	7.28	26.91	34.98	21.13	4.93	1.39	0.44	0.13	0.09	0.06	0.06	
Thursday															
13-Apr															
12:00am	1	2	5	7	22	36	42	10	10	2	2	.	.	.	13
01:00am	.	.	1	3	11	25	34	8	2	3	2	.	.	5	9
02:00am	.	.	.	3	5	13	20	5	7	7	2	.	.	1	6
03:00am	.	.	.	1	2	15	11	8	7	1	.	2	.	.	4
04:00am	.	.	.	.	5	25	26	8	5	1	2	.	.	.	7
05:00am	.	2	2	.	11	49	39	22	8	6	2	.	.	.	14
06:00am	2	2	5	3	15	52	110	45	9	10	1	.	.	.	25
07:00am	.	.	3	7	58	103	105	48	20	3	4	.	.	.	35
08:00am	.	4	6	19	74	156	125	63	9	2	3	1	.	.	46
09:00am	3	4	21	56	145	169	101	29	11	4	.	.	.	.	54
10:00am	4	7	24	69	168	211	118	33	5	3	.	.	.	.	64
11:00am	9	7	11	60	215	220	130	31	5	1	.	.	.	.	68
12:00pm	10	6	19	72	213	285	149	22	12	.	.	1	.	.	78
01:00pm	10	6	14	68	185	285	157	32	7	2	.	.	.	.	76
02:00pm	10	9	23	100	223	267	139	32	9	3	1	.	.	1	81
03:00pm	8	10	24	120	291	293	149	36	4	3	.	.	.	.	93
04:00pm	1	8	21	76	291	379	141	20	4	1	.	.	.	.	94
05:00pm	5	15	16	78	290	353	170	40	10	4	2	.	.	.	98
06:00pm	1	7	28	72	237	294	194	33	12	5	.	.	.	.	88
07:00pm	8	8	14	73	235	295	171	33	9	1	1	.	.	.	84
08:00pm	7	10	17	59	165	237	85	27	5	.	2	.	.	.	61
09:00pm	2	1	12	34	157	174	96	21	12	3	.	1	1	.	51
10:00pm	1	.	3	17	68	129	93	29	12	2	1	1	.	1	35
11:00pm	.	1	1	3	31	83	79	31	9	4	4	2	.	.	24
Totals	82	109	270	1000	3117	4148	2484	666	203	71	29	8	1	8	1219
Percent	0.67	0.89	2.21	8.20	25.56	34.01	20.37	5.46	1.66	0.58	0.24	0.07	0.01	0.07	
Friday															
14-Apr															
12:00am	.	2	1	10	20	47	38	13	7	4	3	.	1	1	14
01:00am	.	.	.	5	18	19	11	11	6	3	.	1	1	2	7
02:00am	.	1	.	2	10	21	23	6	1	2	.	.	1	.	6
03:00am	.	1	.	1	5	11	17	13	1	5	.	.	.	.	5
04:00am	.	.	.	1	5	15	14	10	10	.	1	.	.	1	5
05:00am	.	.	.	4	10	44	44	23	7	5	3	.	.	.	14
06:00am	.	5	1	1	23	62	92	48	18	8	2	2	.	.	26
07:00am	1	2	3	12	59	123	97	37	15	6	2	.	.	.	35
08:00am	4	8	6	40	82	158	126	35	14	2	2	.	.	.	47
09:00am	3	4	12	36	143	195	127	25	5	.	.	.	.	.	55
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	8	23	23	112	375	695	589	221	84	35	13	3	3	4	218
Percent	0.37	1.05	1.05	5.12	17.14	31.76	26.92	10.10	3.84	1.60	0.59	0.14	0.14	0.18	

Status: OK North Combined South Class Speed

WATB-403 - Combined - n/s

[755]-North Main Street - 1.46 mi South of Winchester St

Town.....Waterbury
Station.....403
Location..... 41.571792,-73.026204
2015-Minor Arterial 4.....2015-Urban
Start Report.....12-Apr-2023 02:00PM
End Report.....14-Apr-2023 10:00AM
Annualized ADT.....11300
24-Hour Count...11905 * G4(0.94) = 11190.7
Day 1.....+12196 * G4(0.94) = 22654.9
UnRounded AADT.....22654.9 / 2 = 11327.5
OK 2023 Wed 12-Apr -this report-...11300
OK 2020 Wed 15-Jan 11400
OK 2017 Wed 22-Feb 12100
OK 2011 Mon 25-Apr 11200
OK 2011 Mon 28-Mar 11200
OK 2008 Mon 05-May 12800
Dataset Details.....2

	12-Apr Wed	13-Apr Thu	14-Apr Fri
12:00am		139	147
01:00am		94	77
02:00am		63	67
03:00am		47	54
04:00am		72	57
05:00am		141	140
06:00am		254	262
07:00am		351	357
08:00am		462	477
09:00am		543	550
10:00am		642	x
11:00am		689	
12:00pm		789	
01:00pm	x	766	
02:00pm	814	817	
03:00pm	922	938	
04:00pm	879	942	
05:00pm	963	983	
06:00pm	860	883	
07:00pm	810	848	
08:00pm	635	614	
09:00pm	449	514	
10:00pm	305	357	
11:00pm	216	248	
Totals	6853	12196	2188

Status: OK West Combined East

WATB-340 - Combined - e/w

[589]-Lakewood Road - .54 mi East of Cushman Street

Town.....Waterbury
Station.....340
Location..... 41.575857,-73.016194
2015-Minor Arterial 4.....2015-Urban
Start Report.....03-Apr-2023 01:00PM
End Report.....05-Apr-2023 12:00PM
Dataset Details.....1

All Vehicles Average Speed..... 31 MPH
Total Vehicles.....34701
Percentile Sampling Period.... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 16 MPH
Speed Lower Limit....15 MPH below Average

All Report Days
85th Percentile Speed.....37.1 MPH
50th Percentile Speed.....32.1 MPH
10 MPH Pace (71%).....28-37 MPH
All Hours Total Vehicles.....34701
In-Period Total Vehicles.....14892
Omitted Vehicles Too Close (73%)...10857
Omitted Vehicles Too Slow (0%).....62
Sampled Vehicles (27%).....3973

Monday 03-Apr-2023
85th Percentile Speed.....36.5 MPH
50th Percentile Speed.....31.7 MPH
10 MPH Pace (71%).....27-36 MPH
All Hours Total Vehicles.....10776
In-Period Total Vehicles.....3888
Omitted Vehicles Too Close (78%)....3016
Omitted Vehicles Too Slow (0%).....15
Sampled Vehicles (22%).....857

Tuesday 04-Apr-2023
85th Percentile Speed.....37.3 MPH
50th Percentile Speed.....32.3 MPH
10 MPH Pace (72%).....28-37 MPH
All Hours Total Vehicles.....17923
In-Period Total Vehicles.....7959
Omitted Vehicles Too Close (72%)....5738
Omitted Vehicles Too Slow (0%).....37
Sampled Vehicles (27%).....2184

Wednesday 05-Apr-2023
85th Percentile Speed.....37.4 MPH
50th Percentile Speed.....32.2 MPH
10 MPH Pace (71%).....28-37 MPH
All Hours Total Vehicles.....6002
In-Period Total Vehicles.....3045
Omitted Vehicles Too Close (69%)....2103
Omitted Vehicles Too Slow (0%).....10
Sampled Vehicles (31%).....932

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tot Vo
Monday															
03-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am															
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
01:00pm	15	21	102	450	455	148	29	2	.	.	.	.	.	.	12
02:00pm	15	17	155	507	460	101	18	2	1	1	.	.	.	.	12
03:00pm	9	23	146	461	543	177	26	3	1	.	.	.	.	.	13
04:00pm	6	17	122	484	569	155	36	.	2	.	.	.	.	.	13
05:00pm	12	42	134	458	459	183	30	3	2	.	.	.	.	.	13
06:00pm	8	12	82	378	534	163	32	6	1	1	.	.	.	.	12
07:00pm	2	9	84	349	421	117	32	6	1	.	.	1	.	.	10
08:00pm	1	8	31	205	340	118	20	2	.	.	.	.	.	1	7
09:00pm	2	6	22	131	235	127	33	4	.	1	.	.	.	.	5
10:00pm	.	1	4	66	174	106	34	5	.	.	1	.	.	.	3
11:00pm	.	.	6	37	112	60	29	9	3	.	1	.	.	.	2
Totals	70	156	888	3526	4302	1455	319	42	11	3	2	1	0	1	107
Percent	0.65	1.45	8.24	32.72	39.92	13.50	2.96	0.39	0.10	0.03	0.02	0.01	0.00	0.01	
Tuesday															
04-Apr															
12:00am	1	.	1	23	47	45	20	6	2	.	.	.	.	.	1
01:00am	.	.	4	6	14	25	13	2	.	.	.	.	.	.	
02:00am	.	.	.	2	17	17	7	3	.	.	1	.	.	.	
03:00am	3	.	2	14	11	18	7	2	.	1	.	.	.	.	
04:00am	1	.	3	5	35	44	20	7	1	1	.	1	.	.	1
05:00am	2	.	3	37	105	117	37	6	.	.	.	.	.	.	3
06:00am	10	14	24	96	189	149	44	5	.	.	.	.	.	.	5
07:00am	7	5	47	206	276	153	41	6	1	.	.	.	.	.	7
08:00am	13	10	53	266	382	195	22	7	1	.	.	.	.	.	9
09:00am	6	5	41	294	396	179	39	5	1	.	.	.	.	.	9
10:00am	16	13	42	328	385	176	25	4	.	.	.	.	.	.	9
11:00am	7	8	77	362	468	133	26	2	1	.	.	.	.	.	10
12:00pm	15	17	80	452	461	141	19	3	.	1	.	.	.	.	11
01:00pm	3	11	116	391	439	160	36	2	.	.	.	.	.	.	11
02:00pm	16	18	112	437	502	174	21	2	1	.	.	.	.	.	12
03:00pm	14	11	127	475	455	167	35	6	.	.	.	.	.	.	12
04:00pm	4	27	123	424	551	161	35	7	1	.	.	.	.	.	13
05:00pm	3	10	115	470	527	167	37	8	2	3	.	.	.	.	13
06:00pm	5	7	89	413	442	157	27	3	.	.	.	.	.	.	11
07:00pm	3	10	59	347	409	149	22	5	.	.	1	.	.	.	10
08:00pm	5	4	63	282	333	108	31	7	.	.	2	.	.	.	8
09:00pm	5	2	33	178	265	103	26	6	2	2	1	.	.	.	6
10:00pm	.	.	14	85	203	106	38	6	.	.	1	.	.	.	4
11:00pm	.	1	4	40	97	83	35	6	3	.	.	.	.	.	2
Totals	139	173	1232	5633	7009	2927	663	116	16	8	6	1	0	0	179
Percent	0.78	0.97	6.87	31.43	39.11	16.33	3.70	0.65	0.09	0.04	0.03	0.01	0.00	0.00	
Wednesday															
05-Apr															
12:00am	.	.	1	18	60	37	15	5	.	.	.	.	.	.	1
01:00am	.	.	3	9	27	23	13	5	.	2	.	1	.	.	
02:00am	2	.	1	9	20	18	3	1	1	.	.	.	.	.	
03:00am	.	.	3	5	15	20	7	2	.	.	.	.	.	.	
04:00am	1	1	2	10	32	44	20	4	3	.	.	.	.	.	1
05:00am	2	1	8	40	111	92	35	8	1	1	.	.	.	.	2
06:00am	1	6	16	108	186	133	34	4	1	.	.	.	.	.	4
07:00am	4	12	60	182	275	174	43	6	1	1	.	.	.	.	7
08:00am	15	21	84	279	369	172	23	3	2	.	.	.	.	.	9
09:00am	4	5	57	297	404	186	28	2	.	.	.	.	.	1	9
10:00am	6	7	54	297	431	156	36	5	1	.	.	.	.	.	9
11:00am	12	22	116	323	438	124	31	1	1	.	.	.	.	.	10
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	47	75	405	1577	2368	1179	288	46	11	4	0	1	0	1	60
Percent	0.78	1.25	6.75	26.27	39.45	19.64	4.80	0.77	0.18	0.07	0.00	0.02	0.00	0.02	

Status: OK West Combined East Class Speed

WATB-340 - Combined - e/w

[589]-Lakewood Road - .54 mi East of Cushman Street

Town.....Waterbury
Station.....340
Location..... 41.575857,-73.016194
2015-Minor Arterial 4.....2015-Urban
Start Report.....03-Apr-2023 01:00PM
End Report.....05-Apr-2023 12:00PM
Annualized ADT.....16900
24-Hour Count...17965 * G4(0.94) = 16887.1
Day 1.....+17923 * G4(0.94) = 33734.7
UnRounded AADT.....33734.7 / 2 = 16867.4
OK 2023 Mon 03-Apr -this report-...16900
OK 2020 Wed 22-Jan 18000
OK 2017 Mon 06-Feb 17500
OK 2011 Mon 18-Apr 17100
OK 2011 Mon 28-Mar 17200
OK 2008 Mon 05-May 19500
Dataset Details.....1

	03-Apr Mon	04-Apr Tue	05-Apr Wed
12:00am		145	136
01:00am		64	83
02:00am		47	55
03:00am		58	52
04:00am		118	117
05:00am		307	299
06:00am		531	489
07:00am		742	758
08:00am		949	968
09:00am		966	984
10:00am		989	993
11:00am		1084	1068
12:00pm	x	1189	x
01:00pm	1222	1158	
02:00pm	1277	1283	
03:00pm	1389	1290	
04:00pm	1391	1333	
05:00pm	1323	1342	
06:00pm	1217	1143	
07:00pm	1022	1005	
08:00pm	726	835	
09:00pm	561	623	
10:00pm	391	453	
11:00pm	257	269	
Totals	10776	17923	6002

Status: OK East Combined West

WATB-252 - Combined - e/w

[303]-East Main Street - .48 mi East of Orange St #1

Town.....Waterbury
Station.....252
Location..... 41.55422,-73.031966
A.K.A.....2252
2015-Minor Arterial 4.....2015-Urban
HPMS Section ID.....
Start Report.....18-Apr-2023 12:00PM
End Report.....20-Apr-2023 12:00PM
Dataset Details.....2

All Vehicles Average Speed..... 32 MPH
Total Vehicles.....36506
Percentile Sampling Period.... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 17 MPH
Speed Lower Limit....15 MPH below Average

All Report Days
85th Percentile Speed.....40.2 MPH
50th Percentile Speed.....33.0 MPH
10 MPH Pace (58%).....28-37 MPH
All Hours Total Vehicles.....36506
In-Period Total Vehicles.....15392
Omitted Vehicles Too Close (65%)...10063
Omitted Vehicles Too Slow (2%).....270
Sampled Vehicles (33%).....5059

Tuesday 18-Apr-2023
85th Percentile Speed.....38.8 MPH
50th Percentile Speed.....32.4 MPH
10 MPH Pace (59%).....28-37 MPH
All Hours Total Vehicles.....11925
In-Period Total Vehicles.....4733
Omitted Vehicles Too Close (68%)....3232
Omitted Vehicles Too Slow (2%).....115
Sampled Vehicles (29%).....1386

Wednesday 19-Apr-2023
85th Percentile Speed.....40.4 MPH
50th Percentile Speed.....33.2 MPH
10 MPH Pace (58%).....28-37 MPH
All Hours Total Vehicles.....18192
In-Period Total Vehicles.....7623
Omitted Vehicles Too Close (65%)....4950
Omitted Vehicles Too Slow (1%).....101
Sampled Vehicles (34%).....2572

Thursday 20-Apr-2023
85th Percentile Speed.....40.9 MPH
50th Percentile Speed.....33.1 MPH
10 MPH Pace (58%).....28-37 MPH
All Hours Total Vehicles.....6389
In-Period Total Vehicles.....3036
Omitted Vehicles Too Close (62%)....1881
Omitted Vehicles Too Slow (2%).....54
Sampled Vehicles (36%).....1101

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tot Vo
Tuesday															
18-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm	46	70	140	263	295	171	43	13	2	1	.	.	.	.	10
01:00pm	27	35	78	288	375	242	72	18	10	1	.	.	.	.	11
02:00pm	33	43	144	328	354	194	69	19	1	3	.	.	.	.	11
03:00pm	62	77	190	407	385	162	58	10	2	1	1	.	.	.	13
04:00pm	70	97	179	419	393	170	50	13	5	2	.	.	1	.	13
05:00pm	56	74	199	363	351	173	50	8	2	2	.	.	.	.	12
06:00pm	38	56	143	321	372	171	63	20	4	2	.	.	.	.	11
07:00pm	27	33	101	276	311	179	66	20	6	4	3	1	.	.	10
08:00pm	12	27	48	149	274	165	77	15	5	1	2	.	.	.	7
09:00pm	12	7	44	140	261	153	67	25	4	3	.	.	.	.	7
10:00pm	1	5	12	56	149	125	74	18	10	5	.	1	.	.	4
11:00pm	5	5	11	51	84	94	65	23	9	4	.	.	.	.	3
Totals	389	529	1289	3061	3604	1999	754	202	60	29	6	2	1	0	119
Percent	3.26	4.44	10.81	25.67	30.22	16.76	6.32	1.69	0.50	0.24	0.05	0.02	0.01	0.00	
Wednesday															
19-Apr															
12:00am	1	5	5	20	48	55	34	16	9	4	1	1	.	.	1
01:00am	1	.	2	19	25	29	20	9	1	2	1	.	.	.	1
02:00am	1	7	6	12	10	24	14	10	5	.	.	.	.	.	
03:00am	.	3	5	14	17	16	12	6	2	2	.	.	.	.	
04:00am	1	2	7	10	23	23	21	12	6	2	2	.	.	.	1
05:00am	1	1	8	17	59	65	66	29	6	4	1	.	.	.	2
06:00am	2	6	23	60	168	147	102	43	12	4	2	1	1	.	5
07:00am	14	30	46	130	302	193	120	25	8	2	.	.	.	.	8
08:00am	20	34	92	243	325	172	93	21	2	4	1	.	1	.	10
09:00am	5	19	37	151	275	213	108	46	15	3	.	.	.	.	8
10:00am	30	23	56	167	268	249	99	33	8	2	1	1	.	.	9
11:00am	19	15	81	252	347	230	105	20	7	2	.	2	.	.	10
12:00pm	40	56	131	258	373	196	73	15	6	3	.	1	.	.	11
01:00pm	23	45	67	273	363	187	72	14	4	.	2	.	1	.	10
02:00pm	28	47	90	302	382	194	97	22	9	3	.	.	.	.	11
03:00pm	54	74	210	371	407	177	48	9	6	1	.	.	.	.	13
04:00pm	47	75	151	388	375	199	79	20	1	3	.	.	.	.	13
05:00pm	34	55	123	354	400	190	79	13	7	4	.	.	.	.	12
06:00pm	31	25	87	250	403	211	82	18	6	1	2	.	.	.	11
07:00pm	28	54	109	266	313	207	67	12	5	4	1	.	.	.	10
08:00pm	16	21	67	231	276	144	84	26	10	.	.	.	.	.	8
09:00pm	6	16	42	157	256	144	74	24	7	2	1	.	.	.	7
10:00pm	.	5	20	76	160	134	84	30	10	5	2	.	.	1	5
11:00pm	2	6	14	45	115	92	63	21	9	2	.	1	.	.	3
Totals	404	624	1479	4066	5690	3491	1696	494	161	59	17	7	3	1	181
Percent	2.22	3.43	8.13	22.35	31.28	19.19	9.32	2.72	0.89	0.32	0.09	0.04	0.02	0.01	
Thursday															
20-Apr															
12:00am	.	2	7	23	58	63	26	16	6	3	.	.	.	.	2
01:00am	.	.	5	15	37	31	28	9	2	1	1	.	.	.	1
02:00am	.	1	5	10	19	26	18	5	2	2	.	.	1	.	
03:00am	.	2	4	6	16	15	18	8	3	1	1	.	.	.	
04:00am	2	6	4	17	31	31	19	6	3	1	.	.	.	.	1
05:00am	3	5	17	22	65	78	59	20	6	.	.	.	.	.	2
06:00am	5	7	30	81	139	143	108	34	14	4	.	.	.	.	5
07:00am	8	14	87	202	284	156	105	23	9	2	1	.	.	.	8
08:00am	31	31	79	238	295	184	99	37	8	3	1	.	.	.	10
09:00am	20	20	64	227	307	206	87	31	6	2	1	.	.	.	9
10:00am	34	44	97	255	287	194	84	20	3	1	.	.	.	.	10
11:00am	31	38	96	264	348	168	81	12	5	2	1	.	.	.	10
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	134	170	495	1360	1886	1295	732	221	67	22	6	0	1	0	63
Percent	2.10	2.66	7.75	21.29	29.52	20.27	11.46	3.46	1.05	0.34	0.09	0.00	0.02	0.00	

Status: OK East Combined West Class Speed

WATB-252 - Combined - e/w [303]-East Main Street - .48 mi East of Orange St #1

Town.....Waterbury
Station.....252
Location..... 41.55422,-73.031966
A.K.A.....2252
2015-Minor Arterial 4.....2015-Urban
HPMS Section ID.....
Start Report.....18-Apr-2023 12:00PM
End Report.....20-Apr-2023 12:00PM
Annualized ADT.....17100
24-Hour Count...18103 * G4(0.94) = 17016.8
Day 1.....+18192 * G4(0.94) = 34117.3
UnRounded AADT.....34117.3 / 2 = 17058.7
OK 2023 Tue 18-Apr -this report-...17100
OK 2020 Wed 08-Jan 17200
OK 2017 Mon 30-Jan 20300
OK 2014 Mon 28-Apr 18100
OK 2011 Tue 08-Mar 18800
OK 2008 Mon 28-Apr 9700
Dataset Details.....2

	18-Apr Tue	19-Apr Wed	20-Apr Thu
12:00am		199	204
01:00am		109	129
02:00am		89	89
03:00am		77	74
04:00am		109	120
05:00am		257	275
06:00am		571	565
07:00am		870	891
08:00am		1008	1006
09:00am		872	971
10:00am		937	1019
11:00am	x	1080	1046
12:00pm	1044	1152	x
01:00pm	1146	1051	
02:00pm	1188	1174	
03:00pm	1355	1357	
04:00pm	1399	1338	
05:00pm	1278	1259	
06:00pm	1190	1116	
07:00pm	1027	1066	
08:00pm	775	875	
09:00pm	716	729	
10:00pm	456	527	
11:00pm	351	370	
Totals	11925	18192	6389

Status: OK [North] [Combined] [South]

WATB-728 - Combined - n/s

[1383]-Brass Mill Drive - .04 mi North of Union Street

Town.....Waterbury
Station.....728
Location..... 41.552338,-73.03023
2015-Minor Arterial 4.....2015-Urban
Start Report.....18-Apr-2023 11:00AM
End Report.....20-Apr-2023 09:00AM
Dataset Details.....2

All Vehicles Average Speed..... 28 MPH
Total Vehicles.....21482
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 12 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....35.5 MPH
50th Percentile Speed.....28.3 MPH
10 MPH Pace (51%).....25-34 MPH
All Hours Total Vehicles.....21482
In-Period Total Vehicles.....8217
Omitted Vehicles Too Close (48%)...3945
Omitted Vehicles Too Slow (2%).....177
Sampled Vehicles (50%).....4095

Tuesday 18-Apr-2023
85th Percentile Speed.....35.1 MPH
50th Percentile Speed.....27.7 MPH
10 MPH Pace (51%).....25-34 MPH
All Hours Total Vehicles.....8170
In-Period Total Vehicles.....3626
Omitted Vehicles Too Close (51%)...1842
Omitted Vehicles Too Slow (3%).....91
Sampled Vehicles (47%).....1693

Wednesday 19-Apr-2023
85th Percentile Speed.....35.8 MPH
50th Percentile Speed.....28.6 MPH
10 MPH Pace (50%).....25-34 MPH
All Hours Total Vehicles.....11181
In-Period Total Vehicles.....4591
Omitted Vehicles Too Close (46%)...2103
Omitted Vehicles Too Slow (2%).....86
Sampled Vehicles (52%).....2402

Thursday 20-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....2131
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Tuesday															
18-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	40	52	115	151	137	66	17	2	1	.	.	.	.	.	58
12:00pm	43	77	137	153	144	65	16	2	1	.	.	.	.	.	63
01:00pm	45	88	140	183	141	74	17	1	1	.	.	.	.	.	69
02:00pm	77	81	163	198	193	81	17	2	1	1	.	.	.	.	81
03:00pm	139	128	138	202	195	76	21	3	1	.	.	.	.	.	90
04:00pm	128	113	140	189	197	91	24	3	.	.	.	.	.	.	88
05:00pm	146	111	122	183	193	87	17	1	.	.	.	.	.	.	86
06:00pm	74	88	163	179	137	69	22	1	.	.	.	.	.	.	73
07:00pm	88	73	127	154	136	58	15	2	.	.	.	.	.	.	65
08:00pm	36	48	128	113	96	42	17	4	1	.	.	.	.	.	48
09:00pm	27	52	97	129	83	38	11	1	.	.	.	.	.	.	43
10:00pm	6	21	62	80	58	41	17	4	.	.	.	.	.	.	28
11:00pm	.	15	46	69	44	19	5	1	.	2	.	.	.	.	20
Totals	849	947	1578	1983	1754	807	216	27	6	3	0	0	0	0	817
Percent	10.39	11.59	19.31	24.27	21.47	9.88	2.64	0.33	0.07	0.04	0.00	0.00	0.00	0.00	
Wednesday															
19-Apr															
12:00am	.	9	32	40	19	14	2	1	.	.	.	.	.	.	11
01:00am	12	7	18	24	14	12	.	.	.	.	.	.	.	.	8
02:00am	2	2	11	12	14	6	4	1	1	.	.	.	.	.	5
03:00am	.	3	12	18	10	11	3	1	.	.	.	.	.	.	5
04:00am	.	4	8	16	20	18	10	1	.	.	.	.	.	.	7
05:00am	3	1	15	34	56	51	26	5	1	.	.	.	.	.	19
06:00am	1	18	36	67	91	88	47	11	3	.	.	.	.	.	36
07:00am	25	39	77	102	154	139	40	5	1	.	.	.	.	.	58
08:00am	28	33	98	136	128	104	43	2	.	.	.	.	.	.	57
09:00am	14	30	76	116	110	69	25	2	.	.	.	.	.	.	44
10:00am	9	28	97	140	117	81	27	4	.	.	.	.	.	.	50
11:00am	40	59	133	179	123	81	28	1	.	.	.	.	.	.	64
12:00pm	60	65	130	158	174	94	21	.	1	.	.	.	.	.	70
01:00pm	28	71	134	195	147	75	19	5	.	.	.	.	.	.	67
02:00pm	56	75	146	171	166	73	30	4	1	.	.	.	.	.	72
03:00pm	156	107	144	192	162	107	30	3	2	.	.	.	.	.	90
04:00pm	90	112	144	176	176	84	13	1	.	.	.	.	.	.	79
05:00pm	105	111	156	174	160	85	21	6	1	1	.	.	.	.	82
06:00pm	76	83	132	167	146	62	15	1	.	.	.	.	.	.	68
07:00pm	72	96	150	153	117	61	13	1	.	.	.	.	.	.	66
08:00pm	27	64	146	121	81	52	12	.	1	.	.	.	.	.	50
09:00pm	11	56	110	127	92	44	10	2	1	.	.	.	.	.	45
10:00pm	16	31	63	74	78	49	17	4	1	.	.	.	.	.	33
11:00pm	2	17	48	87	54	20	7	3	.	1	.	.	.	.	23
Totals	833	1121	2116	2679	2409	1480	463	64	14	2	0	0	0	0	1118
Percent	7.45	10.03	18.92	23.96	21.55	13.24	4.14	0.57	0.13	0.02	0.00	0.00	0.00	0.00	
Thursday															
20-Apr															
12:00am	1	7	24	40	30	7	4	1	.	.	.	.	.	.	11
01:00am	.	3	9	19	16	12	5	.	.	.	.	.	.	.	6
02:00am	.	1	4	21	15	8	4	1	.	.	.	.	.	.	5
03:00am	.	.	10	13	17	11	3	2	.	.	.	.	.	.	5
04:00am	1	5	9	22	32	12	8	1	1	.	.	.	.	.	9
05:00am	2	8	15	44	45	66	29	7	.	.	.	.	.	.	21
06:00am	.	15	46	71	94	94	47	2	3	.	.	.	.	.	37
07:00am	21	38	54	122	160	119	56	2	.	.	.	.	.	.	57
08:00am	22	41	93	117	142	127	40	6	4	.	.	.	.	.	59
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
10:00am															
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	47	118	264	469	551	456	196	22	8	0	0	0	0	0	213
Percent	2.21	5.54	12.39	22.01	25.86	21.40	9.20	1.03	0.38	0.00	0.00	0.00	0.00	0.00	

Status: OK North Combined South Class Speed

WATB-728 - Combined - n/s

[1383]-Brass Mill Drive - .04 mi North of Union Street

Town.....Waterbury
Station.....728
Location..... 41.552338,-73.03023
2015-Minor Arterial 4.....2015-Urban
Start Report.....18-Apr-2023 11:00AM
End Report.....20-Apr-2023 09:00AM
Annualized ADT.....10500
24-Hour Count...11215 * G4(0.94) = 10542.1
Day 1.....+11181 * G4(0.94) = 21052.2
UnRounded AADT.....21052.2 / 2 = 10526.1
OK 2023 Tue 18-Apr -this report-...10500
OK 2020 Thu 09-Jan 9700
OK 2017 Mon 30-Jan 9600
OK 2011 Tue 01-Mar 10800
OK 2011 Wed 09-Mar 9900
OK 2008 Wed 23-Apr 9500
Dataset Details.....2

	18-Apr Tue	19-Apr Wed	20-Apr Thu
12:00am		117	114
01:00am		87	64
02:00am		53	54
03:00am		58	56
04:00am		77	91
05:00am		192	216
06:00am		362	372
07:00am		582	572
08:00am		572	592
09:00am		442	x
10:00am	x	503	
11:00am	581	644	
12:00pm	638	703	
01:00pm	690	674	
02:00pm	814	722	
03:00pm	903	903	
04:00pm	885	796	
05:00pm	860	820	
06:00pm	733	682	
07:00pm	653	663	
08:00pm	485	504	
09:00pm	438	453	
10:00pm	289	333	
11:00pm	201	239	
Totals	8170	11181	2131

Status: OK [North] [Combined] [South]

WATB-473 - Combined - n/s

[1083]-Welton Street - .02 mi North of East Main Street

Internal: REJ class

Town.....Waterbury
Station.....473
Location..... 41.554449,-73.030902
2015-Local 7.....2015-Urban
Start Report.....31-Mar-2026 11:00AM
End Report.....02-Apr-2026 09:00AM
Dataset Details.....1

All Vehicles Average Speed..... 22 MPH
Total Vehicles.....10979
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 6 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....28.0 MPH
50th Percentile Speed.....22.3 MPH
10 MPH Pace (62%).....18-27 MPH
All Hours Total Vehicles.....10979
In-Period Total Vehicles.....3950
Omitted Vehicles Too Close (32%)...1269
Omitted Vehicles Too Slow (1%).....50
Sampled Vehicles (67%).....2631

Tuesday 31-Mar-2026
85th Percentile Speed.....28.2 MPH
50th Percentile Speed.....22.5 MPH
10 MPH Pace (60%).....18-27 MPH
All Hours Total Vehicles.....4016
In-Period Total Vehicles.....1686
Omitted Vehicles Too Close (32%)....542
Omitted Vehicles Too Slow (1%).....24
Sampled Vehicles (66%).....1120

Wednesday 01-Apr-2026
85th Percentile Speed.....27.7 MPH
50th Percentile Speed.....22.2 MPH
10 MPH Pace (63%).....18-27 MPH
All Hours Total Vehicles.....5800
In-Period Total Vehicles.....2264
Omitted Vehicles Too Close (32%)....727
Omitted Vehicles Too Slow (1%).....26
Sampled Vehicles (67%).....1511

Thursday 02-Apr-2026
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....1163
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Tuesday															
31-Mar															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	46	51	71	71	14	2	.	.	.	.	.	.	.	.	25
12:00pm	36	49	96	90	19	3	1	.	.	.	.	.	.	.	29
01:00pm	41	60	106	91	17	2	1	.	.	.	.	.	.	.	31
02:00pm	86	71	133	89	24	3	.	.	.	.	.	.	.	.	40
03:00pm	73	78	159	80	20	3	.	.	.	.	.	.	.	.	41
04:00pm	82	86	147	109	32	1	1	.	.	.	.	.	.	.	45
05:00pm	76	83	143	117	26	1	.	.	.	.	.	.	.	.	44
06:00pm	51	95	141	76	19	4	2	.	.	.	.	.	.	.	38
07:00pm	65	67	128	78	11	3	1	1	.	.	.	.	.	.	35
08:00pm	42	62	110	73	11	.	1	.	.	.	.	.	.	.	29
09:00pm	17	25	50	27	7	1	1	.	.	.	.	.	.	.	12
10:00pm	15	21	52	32	6	1	1	.	.	.	.	.	.	.	12
11:00pm	5	17	49	48	8	2	.	.	.	.	.	.	.	.	12
Totals	635	765	1385	981	214	26	9	1	0	0	0	0	0	0	401
Percent	15.81	19.05	34.49	24.43	5.33	0.65	0.22	0.02	0.00	0.00	0.00	0.00	0.00	0.00	
Wednesday															
01-Apr															
12:00am	2	11	31	15	1	1	.	.	.	.	.	.	.	.	6
01:00am	.	7	18	7	7	1	.	.	.	.	.	.	.	.	4
02:00am	.	3	10	7	7	.	.	.	.	.	.	.	.	.	2
03:00am	2	4	10	11	4	.	.	1	.	.	.	.	.	.	3
04:00am	6	4	20	11	4	.	.	.	.	.	.	.	.	.	4
05:00am	8	37	45	32	5	1	2	.	.	.	.	.	.	.	13
06:00am	65	55	72	30	10	1	.	.	.	.	.	.	.	.	23
07:00am	65	73	79	74	28	1	2	.	.	.	.	.	.	.	32
08:00am	87	71	97	79	22	2	.	.	.	.	.	.	.	.	35
09:00am	28	70	103	64	11	5	.	.	.	.	.	.	.	.	28
10:00am	32	42	73	65	19	2	1	.	.	.	.	.	.	.	23
11:00am	22	58	78	60	25	3	.	.	.	.	.	.	.	.	24
12:00pm	45	41	108	98	18	3	1	.	.	.	.	.	.	.	31
01:00pm	63	68	124	95	19	6	.	.	.	.	.	.	.	.	37
02:00pm	109	74	121	90	19	1	.	1	.	.	.	.	.	.	41
03:00pm	71	69	153	89	15	2	.	.	.	.	.	.	.	.	39
04:00pm	63	71	168	104	20	5	.	.	.	.	.	.	.	.	43
05:00pm	86	87	124	89	11	3	.	.	.	.	.	.	.	.	40
06:00pm	49	77	117	98	15	2	.	.	.	.	.	.	.	.	35
07:00pm	53	61	124	87	6	1	.	.	.	.	.	.	.	.	33
08:00pm	32	62	94	70	13	1	.	.	.	.	.	.	.	.	27
09:00pm	8	35	86	63	10	1	.	.	.	.	.	.	.	.	20
10:00pm	22	26	63	57	9	3	1	.	.	.	.	.	.	.	18
11:00pm	5	10	39	43	12	1	1	.	.	.	.	.	.	.	11
Totals	923	1116	1957	1438	310	46	8	2	0	0	0	0	0	0	580
Percent	15.91	19.24	33.74	24.79	5.34	0.79	0.14	0.03	0.00	0.00	0.00	0.00	0.00	0.00	
Thursday															
02-Apr															
12:00am	2	4	29	27	5	1	.	.	.	.	.	.	.	.	6
01:00am	.	7	11	17	4	.	.	.	.	.	.	.	.	.	3
02:00am	.	2	5	11	6	1	.	.	.	.	.	.	.	.	2
03:00am	.	2	8	5	1	.	.	.	.	.	.	.	.	.	1
04:00am	2	6	23	9	9	.	.	.	.	.	.	.	.	.	4
05:00am	8	35	56	26	4	.	1	.	.	.	.	.	.	.	13
06:00am	39	44	62	39	7	1	.	.	.	.	.	.	.	.	19
07:00am	66	67	92	65	11	5	1	1	.	.	.	.	.	.	30
08:00am	64	70	103	70	28	1	.	.	.	.	.	.	.	.	33
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
10:00am															
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	181	237	389	269	75	9	2	1	0	0	0	0	0	0	116
Percent	15.56	20.38	33.45	23.13	6.45	0.77	0.17	0.09	0.00	0.00	0.00	0.00	0.00	0.00	

Status: OK North Combined South Speed

WATB-473 - Combined - n/s [1083]-Welton Street - .02 mi North of East Main Street

Internal: REJ class

Town.....Waterbury
Station.....473
Location..... 41.554449,-73.030902
2015-Local 7.....2015-Urban
Start Report.....31-Mar-2026 11:00AM
End Report.....02-Apr-2026 09:00AM
Annualized ADT.....5600
24-Hour Count... 5779 * G4(0.99) = 5721.2
Day 1.....+ 5800 * G4(0.94) = 11173.2
UnRounded AADT.....11173.2 / 2 = 5586.6
OK 2026 Tue 31-Mar -this report-...5600
OK 2023 Tue 18-Apr 4800
OK 2020 Thu 09-Jan 5100
OK 2017 Mon 30-Jan 6000
OK 2014 Mon 28-Apr 4500
OK 2011 Wed 02-Mar 4700
OK 2008 Wed 23-Apr 5100
Dataset Details.....1

	31-Mar Tue	01-Apr Wed	02-Apr Thu
12:00am		61	68
01:00am		40	39
02:00am		27	25
03:00am		32	16
04:00am		45	49
05:00am		130	130
06:00am		233	192
07:00am		322	308
08:00am		358	336
09:00am		281	x
10:00am	x	234	
11:00am	255	246	
12:00pm	294	314	
01:00pm	318	375	
02:00pm	406	415	
03:00pm	413	399	
04:00pm	458	431	
05:00pm	446	400	
06:00pm	388	358	
07:00pm	354	332	
08:00pm	299	272	
09:00pm	128	203	
10:00pm	128	181	
11:00pm	129	111	
Totals	4016	5800	1163

Status: OK [South] [Combined] [North]

WATB-090 - Combined - n/s

Route 69 - 16.06 mi South of Washington Street

Town.....Waterbury
Station.....90
Location..... 41.545332,-73.025723
Posted Speed Limit.....35 MPH
2015-Principal Arterial - Other 3...2015-Urban
Start Report.....12-Apr-2023 12:00AM
End Report.....15-Apr-2023 12:00AM
Dataset Details.....2

All Vehicles Average Speed..... 41 MPH
Total Vehicles.....39503
Percentile Sampling Period..... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 20 MPH
Speed Lower Limit.....15 MPH below Posted

All Report Days
85th Percentile Speed.....49.6 MPH
50th Percentile Speed.....41.9 MPH
10 MPH Pace (52%).....38-47 MPH
All Hours Total Vehicles.....39503
In-Period Total Vehicles.....16500
Omitted Vehicles Too Close (60%).....9901
Omitted Vehicles Too Slow (1%).....139
Sampled Vehicles (39%).....6460

Tuesday 11-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Wednesday 12-Apr-2023
85th Percentile Speed.....49.3 MPH
50th Percentile Speed.....41.7 MPH
10 MPH Pace (52%).....36-45 MPH
All Hours Total Vehicles.....12408
In-Period Total Vehicles.....5333
Omitted Vehicles Too Close (58%).....3113
Omitted Vehicles Too Slow (1%).....43
Sampled Vehicles (41%).....2177

Thursday 13-Apr-2023
85th Percentile Speed.....49.8 MPH
50th Percentile Speed.....42.2 MPH
10 MPH Pace (53%).....38-47 MPH
All Hours Total Vehicles.....13071
In-Period Total Vehicles.....5482
Omitted Vehicles Too Close (59%).....3261
Omitted Vehicles Too Slow (1%).....41
Sampled Vehicles (40%).....2180

Friday 14-Apr-2023
85th Percentile Speed.....49.8 MPH
50th Percentile Speed.....41.9 MPH
10 MPH Pace (52%).....38-47 MPH
All Hours Total Vehicles.....14024
In-Period Total Vehicles.....5685
Omitted Vehicles Too Close (62%).....3527
Omitted Vehicles Too Slow (1%).....55
Sampled Vehicles (37%).....2103

Saturday 15-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Sunday 16-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Monday 17-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MP 76
Tuesday														
11-Apr														
12:00am														
01:00am														
02:00am														
03:00am														
04:00am														
05:00am														
06:00am														
07:00am														
08:00am														
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Totals														
Percent														
Wednesday														
12-Apr														
12:00am	.	.	2	4	4	23	31	16	15	6	1	.	.	
01:00am	.	.	.	1	6	14	17	11	7	4	2	.	.	
02:00am	.	.	.	1	5	8	18	19	5	1	4	.	.	
03:00am	.	.	.	.	5	8	19	10	10	.	4	1	.	
04:00am	.	.	2	8	11	25	37	23	14	5	4	.	.	
05:00am	.	.	1	12	33	56	104	62	12	6	7	.	2	
06:00am	.	1	5	20	30	94	155	99	56	22	20	1	3	
07:00am	.	.	3	20	65	145	169	106	63	26	6	4	2	
08:00am	.	.	6	32	74	138	190	108	53	16	13	1	.	
09:00am	.	2	7	33	67	138	184	109	45	15	2	1	2	
10:00am	5	5	8	26	67	180	201	105	38	16	.	3	.	
11:00am	6	6	13	40	74	162	216	112	47	18	13	2	.	
12:00pm	2	6	14	30	105	153	221	136	55	14	3	1	1	
01:00pm	9	6	21	39	77	173	252	137	48	10	3	2	1	
02:00pm	9	10	21	51	95	170	302	133	50	19	8	1	1	
03:00pm	17	22	36	49	133	232	288	124	44	23	6	2	.	
04:00pm	69	69	60	55	79	124	166	70	25	3	1	1	.	
05:00pm	25	44	47	65	72	154	212	74	16	3	1	.	.	
06:00pm	22	24	47	63	116	193	196	93	18	2	3	2	1	
07:00pm	.	1	7	29	57	173	238	96	38	13	9	1	2	
08:00pm	4	1	13	22	64	151	183	88	34	5	9	1	1	1
09:00pm	.	4	9	20	64	129	157	87	37	18	5	5	2	2
10:00pm	.	.	2	5	42	92	119	72	32	9	2	1	.	1
11:00pm	.	.	2	5	18	46	77	63	23	11	4	2	.	
Totals	168	201	326	630	1363	2781	3752	1953	785	265	130	32	18	4
Percent	1.35	1.62	2.63	5.08	10.98	22.41	30.24	15.74	6.33	2.14	1.05	0.26	0.15	0.0
Thursday														
13-Apr														
12:00am	.	.	1	4	14	30	38	36	17	6	2	.	.	
01:00am	.	.	.	2	10	10	25	14	10	6	2	.	1	
02:00am	.	2	.	1	5	11	19	20	9	4	3	1	1	
03:00am	.	.	.	2	2	12	16	20	5	2	1	2	.	
04:00am	.	.	2	6	12	16	36	18	12	11	3	1	1	
05:00am	.	.	.	6	30	54	108	43	31	9	2	3	.	
06:00am	.	1	5	22	47	118	135	117	49	17	12	1	5	
07:00am	.	4	3	20	58	113	171	142	48	22	12	2	3	
08:00am	1	5	4	26	47	122	207	119	60	12	6	.	.	
09:00am	3	10	15	31	62	159	199	105	42	14	4	2	2	
10:00am	2	8	18	45	75	153	208	107	64	13	5	3	.	
11:00am	3	8	18	39	83	196	231	133	52	12	5	2	.	1
12:00pm	6	9	15	36	78	192	272	136	49	15	11	1	.	1
01:00pm	6	7	26	42	86	180	199	124	52	13	7	2	1	
02:00pm	8	10	22	32	64	177	281	147	71	17	4	3	.	
03:00pm	12	16	35	60	104	212	285	144	63	14	3	.	.	
04:00pm	30	53	81	106	128	171	213	107	33	8	6	2	.	
05:00pm	19	35	41	58	101	155	212	103	31	12	4	.	.	
06:00pm	7	8	21	39	93	169	236	121	61	18	5	2	1	
07:00pm	.	6	19	27	87	171	204	114	54	21	5	3	.	
08:00pm	1	2	5	18	65	145	179	87	50	6	1	1	.	
09:00pm	3	6	11	27	92	174	165	102	38	12	5	.	.	
10:00pm	.	.	8	14	58	78	127	73	40	12	5	3	1	2
11:00pm	.	.	.	7	29	63	95	43	19	7	.	1	1	1
Totals	101	190	350	670	1430	2881	3861	2175	960	283	113	35	17	5
Percent	0.77	1.45	2.68	5.13	10.94	22.04	29.54	16.64	7.34	2.17	0.86	0.27	0.13	0.0
Friday														
14-Apr														

10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

12:00am	.	.	1	4	14	37	53	32	16	4	3	1	.	1
01:00am	.	.	1	4	5	22	25	21	14	7	3	.	.	2
02:00am	.	.	.	2	6	15	24	21	12	6	8	1	.	
03:00am	.	.	1	1	5	11	20	21	6	1	1	1	.	
04:00am	.	.	2	5	9	18	24	24	14	4	3	2	.	
05:00am	.	.	1	11	24	57	92	44	35	10	4	2	2	
06:00am	2	3	7	24	39	106	160	92	47	20	9	6	1	1
07:00am	.	1	7	16	47	126	188	121	60	19	7	5	2	
08:00am	.	6	8	26	58	150	208	112	68	16	8	3	1	
09:00am	10	6	14	21	63	132	199	141	54	20	8	.	2	1
10:00am	3	4	15	29	60	153	210	104	53	13	4	3	.	
11:00am	12	17	23	32	88	179	237	116	36	12	6	.	2	
12:00pm	10	19	24	41	97	206	278	128	50	14	4	1	.	
01:00pm	6	7	26	33	92	205	296	146	54	18	4	3	1	
02:00pm	4	16	26	47	107	204	273	137	73	26	8	2	.	
03:00pm	12	19	37	61	114	187	259	142	56	19	9	2	.	
04:00pm	5	13	30	61	96	221	307	161	59	20	6	4	1	
05:00pm	22	32	37	48	118	191	288	140	57	17	14	2	1	
06:00pm	11	19	24	37	98	188	273	131	43	22	5	.	.	
07:00pm	3	5	16	52	88	178	242	113	57	17	10	2	1	1
08:00pm	1	2	11	30	84	210	213	84	23	10	4	2	.	
09:00pm	9	10	14	41	88	164	174	70	33	14	2	1	.	1
10:00pm	.	1	8	24	49	130	158	81	34	14	7	1	1	
11:00pm	.	.	1	3	25	94	124	51	34	9	6	.	1	1
Totals	110	180	334	653	1474	3184	4325	2233	988	332	143	44	16	8
Percent	0.78	1.28	2.38	4.66	10.51	22.70	30.84	15.92	7.05	2.37	1.02	0.31	0.11	0.06
Saturday														
15-Apr														
12:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Totals														
Percent														
Sunday														
16-Apr														
12:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Totals														
Percent														
Monday														
17-Apr														
12:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am														
11:00am														
12:00pm														
01:00pm														

02:00pm
03:00pm
04:00pm
05:00pm
06:00pm
07:00pm
08:00pm
09:00pm
10:00pm
11:00pm
Totals
Percent

Status: OK South Combined North Class Speed

WATB-090 - Combined - n/s

Route 69 - 16.06 mi South of Washington Street

```
Town.................................Waterbury
Station.....................................90
Location.................. 41.545332,-73.025723
Posted Speed Limit.......................35 MPH
2015-Principal Arterial - Other  3...2015-Urban
Start Report.................12-Apr-2023 12:00AM
End Report...................15-Apr-2023 12:00AM
Annualized ADT............................12200
24-Hour Count........12408 * G4(0.94) = 11663.5
Day 1...............+13071 * G4(0.94) = 23950.3
Day 2...............+14024 * G4(0.91) = 36712.1
UnRounded AADT............36712.1 / 3 = 12237.4
 OK  2023 Tue 11-Apr -this report-.........12200
 OK  2020 Mon 06-Jan ......................13200
 OK  2017 Thu 02-Feb ......................9600
 OK  2014 Mon 28-Apr ......................13700
 OK  2011 Mon 10-Jan ......................6000
 OK  2011 Tue 29-Mar ......................15200
 OK  2008 Wed 23-Apr ......................15300
Dataset Details...............................2
```

	11-Apr Tue	12-Apr Wed	13-Apr Thu	14-Apr Fri	15-Apr Sat	16-Apr Sun	17-Apr Mon
12:00am		102	148	166	x	x	x
01:00am		62	80	104	x	x	x
02:00am		61	76	95	x	x	x
03:00am		57	62	68	x	x	x
04:00am		129	118	105	x	x	x
05:00am		295	286	282	x	x	x
06:00am		506	529	517	x	x	x
07:00am		609	598	599	x	x	x
08:00am		631	609	664	x	x	x
09:00am	x	605	648	671	x	x	x
10:00am	x	654	701	651	x	x	
11:00am	x	709	783	760	x	x	
12:00pm	x	741	821	872	x	x	
01:00pm	x	778	745	891	x	x	
02:00pm	x	870	836	923	x	x	
03:00pm	x	976	948	917	x	x	
04:00pm	x	722	938	984	x	x	
05:00pm	x	713	771	967	x	x	
06:00pm	x	780	781	851	x	x	
07:00pm	x	664	711	785	x	x	
08:00pm	x	577	560	674	x	x	
09:00pm	x	539	635	621	x	x	
10:00pm	x	377	421	508	x	x	
11:00pm	x	251	266	349	x	x	
Totals	0	12408	13071	14024	0	0	0

Status: OK [North] [Combined] [South]

WATB-701 - Combined - n/s

Route 69 - 16.14 mi East of Union Street

Town.....Waterbury
Station.....701
Location..... 41.54626,-73.025311
2015-Principal Arterial - Other 3...2015-Urban
Start Report.....12-Apr-2023 12:00AM
End Report.....15-Apr-2023 12:00AM
Dataset Details.....2

All Vehicles Average Speed..... 42 MPH
Total Vehicles.....52398
Percentile Sampling Period..... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 26 MPH
Speed Lower Limit.....15 MPH below Average

All Report Days
85th Percentile Speed.....51.6 MPH
50th Percentile Speed.....43.6 MPH
10 MPH Pace (51%).....41-50 MPH
All Hours Total Vehicles.....52398
In-Period Total Vehicles.....21973
Omitted Vehicles Too Close (75%).....16493
Omitted Vehicles Too Slow (0%).....94
Sampled Vehicles (25%).....5386

Tuesday 11-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Wednesday 12-Apr-2023
85th Percentile Speed.....51.8 MPH
50th Percentile Speed.....43.5 MPH
10 MPH Pace (50%).....41-50 MPH
All Hours Total Vehicles.....17358
In-Period Total Vehicles.....7471
Omitted Vehicles Too Close (75%).....5628
Omitted Vehicles Too Slow (0%).....36
Sampled Vehicles (24%).....1807

Thursday 13-Apr-2023
85th Percentile Speed.....51.5 MPH
50th Percentile Speed.....43.7 MPH
10 MPH Pace (53%).....41-50 MPH
All Hours Total Vehicles.....17151
In-Period Total Vehicles.....7144
Omitted Vehicles Too Close (74%).....5321
Omitted Vehicles Too Slow (0%).....27
Sampled Vehicles (25%).....1796

Friday 14-Apr-2023
85th Percentile Speed.....51.5 MPH
50th Percentile Speed.....43.7 MPH
10 MPH Pace (52%).....41-50 MPH
All Hours Total Vehicles.....17889
In-Period Total Vehicles.....7358
Omitted Vehicles Too Close (75%).....5544
Omitted Vehicles Too Slow (0%).....31
Sampled Vehicles (24%).....1783

Saturday 15-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Sunday 16-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Monday 17-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MP 76
Tuesday														
11-Apr														
12:00am														
01:00am														
02:00am														
03:00am														
04:00am														
05:00am														
06:00am														
07:00am														
08:00am														
09:00am														
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Totals														
Percent														
Wednesday														
12-Apr														
12:00am	.	.	.	4	5	34	46	17	20	9	4	2	.	1
01:00am	.	.	.	.	5	18	25	20	18	8	.	3	.	2
02:00am	.	.	.	.	2	18	14	17	12	3	4	.	.	
03:00am	.	.	.	.	4	16	14	9	9	4	1	.	.	2
04:00am	.	.	.	1	6	23	44	18	12	12	1	.	.	
05:00am	.	.	.	4	27	70	81	65	40	14	11	2	.	
06:00am	.	.	.	10	71	160	245	114	73	24	7	4	.	1
07:00am	1	1	3	27	114	230	225	110	80	36	14	1	1	
08:00am	.	1	6	23	88	200	268	173	91	37	12	4	1	
09:00am	2	2	3	38	137	235	260	167	61	34	8	2	1	1
10:00am	3	1	11	50	132	220	238	153	84	19	6	1	.	
11:00am	2	6	11	40	146	243	277	153	64	32	15	5	1	
12:00pm	.	2	26	74	167	261	254	179	92	26	8	2	.	2
01:00pm	5	6	16	39	147	301	317	160	69	43	9	4	3	
02:00pm	6	11	50	90	191	224	269	175	81	33	10	4	2	
03:00pm	1	13	29	80	188	281	320	170	107	46	7	1	2	2
04:00pm	10	19	61	122	191	296	312	201	85	23	9	.	3	
05:00pm	18	17	32	67	175	299	309	210	75	23	8	1	2	
06:00pm	1	4	8	54	165	282	282	189	81	34	7	1	1	
07:00pm	.	4	6	30	120	212	268	130	83	25	10	1	3	1
08:00pm	.	2	4	36	122	171	213	103	67	23	9	3	5	1
09:00pm	.	.	.	13	61	140	171	105	53	20	9	3	3	1
10:00pm	.	.	1	4	45	91	137	70	32	23	7	1	2	1
11:00pm	.	.	1	3	26	61	80	71	35	19	8	2	.	
Totals	49	89	268	809	2335	4086	4669	2779	1424	570	184	47	30	19
Percent	0.28	0.51	1.54	4.66	13.45	23.54	26.90	16.01	8.20	3.28	1.06	0.27	0.17	0.11
Thursday														
13-Apr														
12:00am	.	.	.	3	8	32	58	36	20	6	.	2	2	
01:00am	.	.	.	.	8	9	34	14	9	11	2	1	1	1
02:00am	.	.	.	.	.	14	10	12	4	5	4	.	1	
03:00am	.	.	.	.	3	13	23	12	6	7	1	1	1	
04:00am	.	.	.	1	13	22	43	33	13	7	4	1	.	
05:00am	.	.	.	.	26	63	90	74	49	15	8	2	.	
06:00am	.	.	.	15	103	177	166	130	60	25	7	3	1	
07:00am	3	.	7	24	80	228	240	161	65	24	8	4	.	
08:00am	.	1	7	29	94	184	244	187	91	28	13	7	2	1
09:00am	.	5	8	49	120	184	238	164	79	28	4	3	2	1
10:00am	2	2	4	46	131	192	220	198	72	18	5	2	.	1
11:00am	1	6	10	39	122	228	287	174	84	35	6	4	.	2
12:00pm	.	.	7	48	149	234	303	144	85	31	5	10	1	
01:00pm	2	7	13	36	144	258	281	203	69	29	8	3	.	1
02:00pm	1	5	17	63	186	247	273	176	84	27	10	2	.	1
03:00pm	15	11	21	52	190	270	314	202	80	33	11	3	1	2
04:00pm	2	10	29	78	198	358	316	172	91	22	10	4	2	2
05:00pm	6	12	24	73	228	316	323	191	77	34	11	2	.	1
06:00pm	1	6	13	51	132	258	322	149	67	29	8	3	2	1
07:00pm	.	1	11	33	126	225	238	147	70	23	2	5	1	
08:00pm	.	1	14	32	112	197	223	129	69	19	7	5	3	2
09:00pm	1	1	2	26	113	159	163	114	50	25	6	6	1	2
10:00pm	.	.	1	5	40	78	143	86	47	32	9	7	.	2
11:00pm	.	.	1	8	31	52	70	60	43	21	7	6	2	1
Totals	34	68	189	711	2357	3998	4622	2968	1384	534	156	86	23	21
Percent	0.20	0.40	1.10	4.15	13.74	23.31	26.95	17.31	8.07	3.11	0.91	0.50	0.13	0.12
Friday														
14-Apr														

All Hours Total Vehicles.....0
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

12:00am	.	.	.	4	25	31	42	38	22	13	3	2	1	
01:00am	.	.	.	.	7	11	27	18	15	7	3	2	2	
02:00am	.	.	.	2	7	14	23	16	11	4	4	1	2	
03:00am	.	.	.	.	1	13	17	16	9	5	2	.	.	
04:00am	.	.	.	1	6	29	33	22	17	6	1	.	1	
05:00am	.	.	.	3	16	53	95	60	33	24	12	4	.	
06:00am	1	.	1	9	71	168	195	130	68	25	3	5	2	1
07:00am	.	.	2	40	91	196	253	150	79	36	10	2	1	
08:00am	.	3	11	39	94	212	258	162	104	26	10	1	3	
09:00am	.	.	3	24	122	227	256	186	85	27	11	6	1	
10:00am	6	5	8	50	143	240	254	167	70	26	9	1	.	
11:00am	1	3	6	33	147	226	267	146	80	26	4	3	1	
12:00pm	2	9	18	40	124	247	318	164	85	35	7	4	1	1
01:00pm	3	6	17	62	188	264	288	165	83	24	8	4	1	
02:00pm	1	8	32	84	187	248	273	174	73	21	9	6	2	
03:00pm	8	10	15	62	158	270	312	226	93	35	11	2	.	
04:00pm	10	12	29	72	180	259	339	174	114	29	7	4	1	1
05:00pm	7	10	32	77	220	283	311	175	86	22	7	3	.	2
06:00pm	8	9	21	61	220	270	277	173	82	28	16	6	2	2
07:00pm	2	6	26	77	149	248	234	127	71	31	16	5	2	
08:00pm	2	2	5	42	113	226	224	132	64	32	13	4	.	1
09:00pm	.	.	5	48	114	170	198	125	64	20	5	1	1	1
10:00pm	.	.	2	21	61	121	144	107	49	16	12	10	2	1
11:00pm	.	.	3	14	49	85	113	92	43	26	5	6	1	1
Totals	51	83	236	865	2493	4111	4751	2945	1500	544	188	82	27	13
Percent	0.29	0.46	1.32	4.84	13.94	22.98	26.56	16.46	8.39	3.04	1.05	0.46	0.15	0.07
Saturday														
15-Apr														
12:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Totals														
Percent														
Sunday														
16-Apr														
12:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Totals														
Percent														
Monday														
17-Apr														
12:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
07:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
08:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10:00am														
11:00am														
12:00pm														
01:00pm														

02:00pm
03:00pm
04:00pm
05:00pm
06:00pm
07:00pm
08:00pm
09:00pm
10:00pm
11:00pm
Totals
Percent

Status: OK North Combined South Class Speed

WATB-701 - Combined - n/s

Route 69 - 16.14 mi East of Union Street

```
Town.................................Waterbury
Station.....................................701
Location.................. 41.54626,-73.025311
2015-Principal Arterial - Other  3...2015-Urban
Start Report...............12-Apr-2023 12:00AM
End Report.................15-Apr-2023 12:00AM
Annualized ADT.............................16200
24-Hour Count........17358 * G4(0.94) = 16316.5
Day 1...............+17151 * G4(0.94) = 32438.5
Day 2...............+17889 * G4(0.91) = 48717.4
UnRounded AADT.............48717.4 / 3 = 16239.2
 OK  2023 Tue 11-Apr -this report-........16200
 OK  2020 Mon 06-Jan .....................20200
 OK  2014 Mon 28-Apr .....................22100
 OK  2011 Mon 10-Jan .....................26000
 OK  2011 Tue 29-Mar .....................26200
 OK  2008 Wed 23-Apr .....................26000
Dataset Details.............................2
```

	11-Apr Tue	12-Apr Wed	13-Apr Thu	14-Apr Fri	15-Apr Sat	16-Apr Sun	17-Apr Mon
12:00am		142	167	181	x	x	x
01:00am		99	90	92	x	x	x
02:00am		70	50	84	x	x	x
03:00am		59	67	63	x	x	x
04:00am		117	137	116	x	x	x
05:00am		314	327	300	x	x	x
06:00am		711	687	679	x	x	x
07:00am		843	844	860	x	x	x
08:00am		904	888	923	x	x	x
09:00am		953	885	948	x	x	x
10:00am	x	918	893	979	x	x	
11:00am	x	995	998	943	x	x	
12:00pm	x	1093	1017	1055	x	x	
01:00pm	x	1119	1054	1113	x	x	
02:00pm	x	1146	1092	1118	x	x	
03:00pm	x	1247	1205	1202	x	x	
04:00pm	x	1332	1294	1231	x	x	
05:00pm	x	1236	1298	1235	x	x	
06:00pm	x	1109	1042	1175	x	x	
07:00pm	x	893	882	994	x	x	
08:00pm	x	759	813	862	x	x	
09:00pm	x	579	669	752	x	x	
10:00pm	x	414	450	546	x	x	
11:00pm	x	306	302	438	x	x	
Totals	0	17358	17151	17889	0	0	0

Status: OK West Combined East

WATB-397 - Combined - e/w

[453]-Grove Street - .25 mi East of Second Avenue

Town.....Waterbury
Station.....397
Location..... 41.559898,-73.042074
2015-Minor Arterial 4.....2015-Urban
Start Report.....24-Apr-2023 11:00AM
End Report.....27-Apr-2023 10:00AM
Dataset Details.....1

All Vehicles Average Speed..... 30 MPH
Total Vehicles.....18367
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 14 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....35.2 MPH
50th Percentile Speed.....29.7 MPH
10 MPH Pace (66%).....26-35 MPH
All Hours Total Vehicles.....18367
In-Period Total Vehicles.....7446
Omitted Vehicles Too Close (28%)...2103
Omitted Vehicles Too Slow (1%).....86
Sampled Vehicles (71%).....5257

Monday 24-Apr-2023
85th Percentile Speed.....35.3 MPH
50th Percentile Speed.....29.6 MPH
10 MPH Pace (64%).....26-35 MPH
All Hours Total Vehicles.....4354
In-Period Total Vehicles.....1940
Omitted Vehicles Too Close (30%)....579
Omitted Vehicles Too Slow (2%).....32
Sampled Vehicles (69%).....1329

Tuesday 25-Apr-2023
85th Percentile Speed.....35.3 MPH
50th Percentile Speed.....29.9 MPH
10 MPH Pace (65%).....26-35 MPH
All Hours Total Vehicles.....6343
In-Period Total Vehicles.....2650
Omitted Vehicles Too Close (28%)....754
Omitted Vehicles Too Slow (1%).....23
Sampled Vehicles (71%).....1873

Wednesday 26-Apr-2023
85th Percentile Speed.....35.0 MPH
50th Percentile Speed.....29.6 MPH
10 MPH Pace (67%).....26-35 MPH
All Hours Total Vehicles.....6128
In-Period Total Vehicles.....2518
Omitted Vehicles Too Close (27%)....672
Omitted Vehicles Too Slow (1%).....24
Sampled Vehicles (72%).....1822

Thursday 27-Apr-2023
85th Percentile Speed.....34.0 MPH
50th Percentile Speed.....29.0 MPH
10 MPH Pace (70%).....24-33 MPH
All Hours Total Vehicles.....1542
In-Period Total Vehicles.....338
Omitted Vehicles Too Close (29%).....98
Omitted Vehicles Too Slow (2%).....7
Sampled Vehicles (69%).....233

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Monday															
24-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	6	11	44	106	100	43	10	2	.	.	.	.	.	.	32
12:00pm	1	9	39	126	126	46	8	2	1	.	.	.	.	.	35
01:00pm	3	3	38	135	128	50	11	.	.	.	.	.	.	.	36
02:00pm	5	15	69	161	140	41	9	4	.	.	.	.	.	.	44
03:00pm	39	54	110	132	79	25	7	2	.	.	.	.	.	.	44
04:00pm	4	27	110	182	118	31	8	2	.	.	.	.	.	.	48
05:00pm	3	14	78	166	150	47	8	3	.	.	.	.	.	.	46
06:00pm	4	8	54	134	124	44	6	1	.	.	.	.	.	.	37
07:00pm	.	5	38	90	122	34	5	2	1	.	.	.	.	.	29
08:00pm	4	17	72	119	60	14	2	.	.	.	.	.	.	.	28
09:00pm	4	21	61	88	44	8	3	1	.	.	.	.	.	.	23
10:00pm	.	13	24	46	51	20	5	.	.	.	.	.	.	.	15
11:00pm	.	3	13	39	39	11	6	.	1	.	1	1	.	.	11
Totals	73	200	750	1524	1281	414	88	19	3	0	1	1	0	0	435
Percent	1.68	4.59	17.23	35.00	29.42	9.51	2.02	0.44	0.07	0.00	0.02	0.02	0.00	0.00	
Tuesday															
25-Apr															
12:00am	.	7	12	23	25	5	6	.	.	.	1	.	.	.	7
01:00am	1	3	8	10	15	6	3	1	.	1	.	.	.	.	4
02:00am	.	2	5	20	21	6	.	1	.	.	1	.	.	.	5
03:00am	.	1	4	21	11	9	6	1	.	.	.	.	.	.	5
04:00am	.	1	11	16	15	5	.	.	1	.	.	.	.	.	4
05:00am	1	4	21	39	38	20	6	1	.	.	.	.	.	.	13
06:00am	.	8	31	61	54	31	10	1	1	.	.	.	.	.	19
07:00am	3	10	38	87	93	31	6	2	.	.	.	.	.	.	27
08:00am	18	21	49	103	124	45	13	2	.	.	1	.	.	.	37
09:00am	2	6	39	121	88	39	9	2	2	.	.	.	.	.	30
10:00am	4	8	44	112	116	39	10	3	1	.	.	.	.	.	33
11:00am	5	11	55	115	118	39	9	.	.	.	.	.	.	.	35
12:00pm	2	12	61	128	122	44	9	2	.	.	.	.	.	.	38
01:00pm	.	11	59	122	110	54	10	1	.	.	.	.	.	.	36
02:00pm	.	12	66	128	131	55	15	.	1	.	.	.	.	.	40
03:00pm	25	55	94	151	125	44	3	1	.	.	.	.	.	.	49
04:00pm	5	12	62	156	154	52	9	4	.	.	.	.	.	.	45
05:00pm	13	12	69	169	124	52	9	1	.	.	.	.	.	.	44
06:00pm	1	12	40	148	97	38	7	3	1	.	.	.	.	.	34
07:00pm	3	11	65	116	103	40	14	2	.	.	.	.	.	.	35
08:00pm	4	8	72	92	79	28	6	2	2	.	1	.	.	.	29
09:00pm	1	15	42	93	74	31	6	1	.	.	.	.	.	.	26
10:00pm	3	8	24	42	48	18	4	4	2	.	.	.	.	.	15
11:00pm	2	8	23	38	30	12	6	.	2	.	.	.	.	.	12
Totals	93	258	994	2111	1915	743	176	35	13	1	4	0	0	0	634
Percent	1.47	4.07	15.67	33.28	30.19	11.71	2.77	0.55	0.20	0.02	0.06	0.00	0.00	0.00	
Wednesday															
26-Apr															
12:00am	2	3	12	18	19	6	5	.	.	.	.	.	.	.	6
01:00am	.	2	10	15	25	8	2	.	.	.	.	.	.	.	6
02:00am	.	2	12	13	8	7	5	1	.	.	.	.	.	.	4
03:00am	.	3	10	22	11	8	4	.	.	.	.	.	.	.	5
04:00am	.	1	5	16	20	5	.	.	.	.	.	.	.	.	4
05:00am	1	2	16	37	28	23	11	2	1	.	.	.	.	.	12
06:00am	3	5	26	44	57	34	14	.	.	.	.	.	.	.	18
07:00am	.	10	30	85	84	59	14	3	.	.	.	.	.	.	28
08:00am	12	19	58	109	100	52	7	.	.	.	.	.	.	.	35
09:00am	.	6	27	115	90	39	11	1	.	.	.	.	.	.	28
10:00am	2	14	41	110	94	36	5	.	.	.	.	.	.	.	30
11:00am	2	14	73	139	103	33	10	2	1	.	.	.	.	.	37
12:00pm	19	47	68	132	126	24	3	.	.	.	.	.	.	.	41
01:00pm	2	7	42	117	123	34	6	.	1	.	.	.	.	.	33
02:00pm	6	10	56	128	117	42	5	1	.	.	.	.	.	.	36
03:00pm	4	10	75	142	145	50	6	1	.	1	.	.	.	.	43
04:00pm	6	15	75	180	126	43	5	5	1	.	.	.	.	.	45
05:00pm	1	15	80	185	136	42	14	.	1	.	.	.	.	.	47
06:00pm	.	6	42	115	108	38	12	3	.	.	1	.	.	.	32
07:00pm	.	7	36	107	101	41	15	4	1	.	.	.	.	.	31
08:00pm	4	11	68	100	79	35	9	1	.	.	.	.	.	.	30
09:00pm	3	7	32	78	72	34	11	1	.	.	.	.	.	.	23
10:00pm	.	1	18	55	43	20	7	.	1	1	.	.	.	.	14
11:00pm	2	3	22	43	33	18	4	1	.	.	.	.	.	.	12
Totals	69	220	934	2105	1848	731	185	26	7	2	1	0	0	0	612
Percent	1.13	3.59	15.24	34.35	30.16	11.93	3.02	0.42	0.11	0.03	0.02	0.00	0.00	0.00	
Thursday															
27-Apr															

12:00am	.	5	18	26	26	17	5	.	.	.	.	.	.	.	9
01:00am	1	1	5	18	16	6	2	.	.	.	.	.	.	.	4
02:00am	1	.	12	11	13	7	4	.	.	.	1	.	.	.	4
03:00am	.	.	3	16	5	8	.	.	.	.	.	.	.	.	3
04:00am	.	1	6	17	17	7	3	2	.	.	.	.	.	.	5
05:00am	3	3	13	14	37	13	8	1	.	.	.	.	.	.	9
06:00am	.	5	28	58	79	23	6	.	.	.	.	.	.	.	19
07:00am	5	8	36	85	76	46	13	2	.	.	.	.	.	.	27
08:00am	13	20	43	127	123	29	7	.	.	.	.	.	.	.	36
09:00am	15	13	64	122	90	26	6	2	.	.	.	.	.	.	33
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	38	56	228	494	482	182	54	7	0	0	1	0	0	0	154
Percent	2.46	3.63	14.79	32.04	31.26	11.80	3.50	0.45	0.00	0.00	0.06	0.00	0.00	0.00	

Status: OK West Combined East Class Speed

WATB-397 - Combined - e/w

[453]-Grove Street - .25 mi East of Second Avenue

Town.....Waterbury
Station.....397
Location..... 41.559898,-73.042074
2015-Minor Arterial 4.....2015-Urban
Start Report.....24-Apr-2023 11:00AM
End Report.....27-Apr-2023 10:00AM
Annualized ADT.....5900
24-Hour Count... 6257 * G4(0.94) = 5881.6
Day 1.....+ 6343 * G4(0.94) = 11844.0
Day 2.....+ 6128 * G4(0.94) = 17604.3
UnRounded AADT.....17604.3 / 3 = 5868.1
OK 2023 Mon 24-Apr -this report-...5900
OK 2020 Mon 13-Jan 6800
OK 2017 Tue 10-Jan 7100
OK 2011 Mon 14-Mar 7700
OK 2011 Mon 18-Apr 7400
OK 2008 Thu 01-May 8900
Dataset Details.....1

	24-Apr Mon	25-Apr Tue	26-Apr Wed	27-Apr Thu
12:00am		79	65	97
01:00am		48	62	49
02:00am		56	48	49
03:00am		53	58	32
04:00am		49	47	53
05:00am		130	121	92
06:00am		197	183	199
07:00am		270	285	271
08:00am		376	357	362
09:00am		308	289	338
10:00am	x	337	302	x
11:00am	322	352	377	
12:00pm	358	380	419	
01:00pm	368	367	332	
02:00pm	444	408	365	
03:00pm	448	498	434	
04:00pm	482	454	456	
05:00pm	469	449	474	
06:00pm	375	347	325	
07:00pm	297	354	312	
08:00pm	288	294	307	
09:00pm	230	263	238	
10:00pm	159	153	146	
11:00pm	114	121	126	
Totals	4354	6343	6128	1542

Status: OK [North] [Combined] [South]

WATB-660 - Combined - n/s

[226]-Cooke Street - .11 mi South of Grove Street

Town.....Waterbury
Station.....660
Location..... 41.559552,-73.038581
2015-Minor Arterial 4.....2015-Urban
Start Report.....24-Apr-2023 11:00AM
End Report.....27-Apr-2023 09:00AM
Dataset Details.....1

All Vehicles Average Speed..... 28 MPH
Total Vehicles.....15798
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 13 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....34.6 MPH
50th Percentile Speed.....29.2 MPH
10 MPH Pace (68%).....26-35 MPH
All Hours Total Vehicles.....15798
In-Period Total Vehicles.....6276
Omitted Vehicles Too Close (34%)...2132
Omitted Vehicles Too Slow (1%).....78
Sampled Vehicles (65%).....4066

Monday 24-Apr-2023
85th Percentile Speed.....34.3 MPH
50th Percentile Speed.....28.9 MPH
10 MPH Pace (68%).....26-35 MPH
All Hours Total Vehicles.....3738
In-Period Total Vehicles.....1660
Omitted Vehicles Too Close (34%)....568
Omitted Vehicles Too Slow (2%).....26
Sampled Vehicles (64%).....1066

Tuesday 25-Apr-2023
85th Percentile Speed.....34.4 MPH
50th Percentile Speed.....29.3 MPH
10 MPH Pace (69%).....26-35 MPH
All Hours Total Vehicles.....5570
In-Period Total Vehicles.....2367
Omitted Vehicles Too Close (34%)....810
Omitted Vehicles Too Slow (1%).....29
Sampled Vehicles (65%).....1528

Wednesday 26-Apr-2023
85th Percentile Speed.....35.0 MPH
50th Percentile Speed.....29.4 MPH
10 MPH Pace (65%).....25-34 MPH
All Hours Total Vehicles.....5399
In-Period Total Vehicles.....2249
Omitted Vehicles Too Close (34%)....754
Omitted Vehicles Too Slow (1%).....23
Sampled Vehicles (65%).....1472

Thursday 27-Apr-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....1091
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Monday															
24-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	7	6	42	95	62	25	6	.	.	.	.	.	.	.	24
12:00pm	6	14	32	120	82	22	11	.	.	.	.	.	.	.	28
01:00pm	3	13	41	126	84	25	3	1	1	.	.	.	.	.	29
02:00pm	10	24	57	159	120	28	4	.	.	.	.	.	.	.	40
03:00pm	31	46	97	154	76	25	2	.	.	.	.	.	.	.	43
04:00pm	15	39	102	205	85	39	8	.	.	.	.	.	.	.	49
05:00pm	12	30	91	144	106	29	7	2	.	.	.	.	.	.	42
06:00pm	19	22	68	104	62	23	2	.	.	.	.	.	.	.	30
07:00pm	25	19	67	99	40	9	1	.	.	.	.	.	.	.	26
08:00pm	16	35	44	73	38	12	1	2	.	.	.	.	.	.	22
09:00pm	17	21	42	63	28	10	.	.	.	.	.	.	.	.	18
10:00pm	3	7	18	31	40	18	3	1	1	.	.	.	.	.	12
11:00pm	1	1	11	28	30	8	1	.	.	.	.	.	.	.	8
Totals	165	277	712	1401	853	273	49	6	2	0	0	0	0	0	373
Percent	4.41	7.41	19.05	37.48	22.82	7.30	1.31	0.16	0.05	0.00	0.00	0.00	0.00	0.00	
Tuesday															
25-Apr															
12:00am	1	1	3	6	12	11	3	.	1	.	.	.	.	.	3
01:00am	.	.	2	5	7	5	.	.	.	.	.	.	.	.	1
02:00am	.	.	2	6	6	6	1	.	.	.	.	.	.	.	2
03:00am	.	.	3	1	10	2	2	.	.	.	.	.	.	.	1
04:00am	.	.	2	10	18	9	2	.	.	.	.	.	.	.	4
05:00am	.	2	4	29	41	20	6	.	.	.	.	.	.	.	10
06:00am	3	12	22	64	77	25	6	.	.	.	.	.	.	.	20
07:00am	12	11	47	101	97	41	8	.	1	.	.	.	.	.	31
08:00am	8	14	60	120	85	27	2	1	.	.	.	.	.	.	31
09:00am	6	15	54	87	85	23	7	.	.	.	.	.	.	.	27
10:00am	5	10	41	119	76	18	5	1	.	.	.	.	.	.	27
11:00am	6	13	62	130	71	21	.	.	.	.	.	.	.	.	30
12:00pm	11	16	48	122	101	28	5	.	.	.	.	.	.	.	33
01:00pm	1	13	41	118	121	32	5	1	.	.	.	.	.	.	33
02:00pm	7	18	93	159	108	30	4	1	.	.	.	.	.	.	42
03:00pm	39	35	78	138	101	35	3	.	.	.	.	.	.	.	42
04:00pm	8	50	110	181	99	30	8	1	.	.	.	.	.	.	48
05:00pm	7	24	71	159	112	31	8	.	.	.	.	.	.	.	41
06:00pm	17	19	62	108	73	24	5	1	.	.	.	.	.	.	30
07:00pm	16	25	69	112	51	18	6	.	.	.	.	.	.	.	29
08:00pm	8	20	72	64	31	9	2	.	1	.	.	.	.	.	20
09:00pm	10	18	51	43	43	14	3	3	1	.	.	.	.	.	18
10:00pm	9	13	16	38	29	14	2	.	.	.	.	.	.	.	12
11:00pm	.	3	15	27	32	17	5	2	.	.	.	.	.	.	10
Totals	174	332	1028	1947	1486	490	98	11	4	0	0	0	0	0	557
Percent	3.12	5.96	18.46	34.96	26.68	8.80	1.76	0.20	0.07	0.00	0.00	0.00	0.00	0.00	
Wednesday															
26-Apr															
12:00am	2	.	8	13	11	6	2	2	.	.	.	.	.	.	4
01:00am	.	.	1	7	7	4	.	.	.	.	.	.	.	.	1
02:00am	.	.	3	10	6	4	1	.	.	.	.	.	.	.	2
03:00am	.	.	3	3	6	3	.	.	.	.	.	.	.	.	1
04:00am	.	1	1	8	15	7	3	.	1	.	.	.	.	.	3
05:00am	1	1	8	18	31	25	3	1	.	.	.	.	.	.	8
06:00am	6	9	40	64	67	24	6	1	.	.	.	.	.	.	21
07:00am	2	8	35	79	97	42	7	.	.	.	.	.	.	.	27
08:00am	5	13	48	117	103	29	8	.	.	.	.	.	.	.	32
09:00am	3	16	58	93	76	20	3	1	.	.	.	.	.	.	27
10:00am	4	8	39	79	66	33	6	.	.	.	.	.	.	.	23
11:00am	6	10	52	103	80	29	5	2	1	.	.	.	.	.	28
12:00pm	9	14	63	121	97	41	5	.	.	.	.	.	.	.	35
01:00pm	6	10	53	113	96	27	7	1	.	.	.	.	.	.	31
02:00pm	4	12	76	116	103	29	6	1	.	.	.	.	.	.	34
03:00pm	8	28	98	167	112	26	7	.	.	.	.	.	.	.	44
04:00pm	11	32	85	143	103	30	4	1	1	.	.	.	.	.	41
05:00pm	7	9	67	181	131	30	5	1	.	.	.	.	.	.	43
06:00pm	13	27	66	123	65	26	4	.	.	.	.	.	.	.	32
07:00pm	16	32	63	89	54	10	1	.	.	.	.	.	.	.	26
08:00pm	10	23	71	79	56	12	2	2	.	.	.	.	.	.	25
09:00pm	13	15	64	65	51	12	9	.	.	.	.	.	.	.	22
10:00pm	1	1	14	27	42	18	6	2	1	.	.	.	.	.	11
11:00pm	.	2	13	34	25	11	2	1	.	.	.	.	.	.	8
Totals	127	271	1029	1852	1500	498	102	16	4	0	0	0	0	0	539
Percent	2.35	5.02	19.06	34.30	27.78	9.22	1.89	0.30	0.07	0.00	0.00	0.00	0.00	0.00	
Thursday															
27-Apr															

12:00am	.	1	4	6	12	11	3	.	.	.	.	.	.	.	3
01:00am	.	.	3	5	11	5	.	2	.	.	.	.	.	.	2
02:00am	.	.	1	5	9	4	.	.	.	.	.	.	.	.	1
03:00am	.	.	.	3	3	4	1	.	.	.	.	.	.	.	1
04:00am	1	1	3	13	13	8	2	.	.	.	.	.	.	.	4
05:00am	2	3	5	18	28	20	3	.	.	.	.	.	.	.	7
06:00am	17	13	37	48	65	21	6	1	.	.	.	.	.	.	20
07:00am	1	11	51	113	90	32	12	.	.	.	.	.	.	.	31
08:00am	10	13	61	116	101	47	11	1	.	.	.	.	.	.	36
09:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
10:00am															
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	31	42	165	327	332	152	38	4	0	0	0	0	0	0	109
Percent	2.84	3.85	15.12	29.97	30.43	13.93	3.48	0.37	0.00	0.00	0.00	0.00	0.00	0.00	

Status: OK North Combined South Class Speed

WATB-660 - Combined - n/s

[226]-Cooke Street - .11 mi South of Grove Street

Town.....Waterbury
Station.....660
Location..... 41.559552,-73.038581
2015-Minor Arterial 4.....2015-Urban
Start Report.....24-Apr-2023 11:00AM
End Report.....27-Apr-2023 09:00AM
Annualized ADT.....5100
24-Hour Count... 5373 * G4(0.94) = 5050.6
Day 1.....+ 5570 * G4(0.94) = 10286.4
Day 2.....+ 5399 * G4(0.94) = 15361.5
UnRounded AADT.....15361.5 / 3 = 5120.5
OK 2023 Mon 24-Apr -this report-...5100
OK 2020 Mon 13-Jan 5600
OK 2017 Tue 10-Jan 7500
OK 2011 Mon 14-Mar 5100
OK 2008 Tue 29-Apr 6000
Dataset Details.....1

	24-Apr Mon	25-Apr Tue	26-Apr Wed	27-Apr Thu
12:00am		38	44	37
01:00am		19	19	26
02:00am		21	24	19
03:00am		18	15	11
04:00am		41	36	41
05:00am		102	88	79
06:00am		209	217	208
07:00am		318	270	310
08:00am		317	323	360
09:00am		277	270	x
10:00am	x	275	235	
11:00am	243	303	288	
12:00pm	287	331	350	
01:00pm	297	332	313	
02:00pm	402	420	347	
03:00pm	431	429	446	
04:00pm	493	487	410	
05:00pm	421	412	431	
06:00pm	300	309	324	
07:00pm	260	297	265	
08:00pm	221	207	255	
09:00pm	181	186	229	
10:00pm	122	121	112	
11:00pm	80	101	88	
Totals	3738	5570	5399	1091

Status: OK North Combined South

WATB-433 - Combined - n/s

[295]-East Aurora Street - .38 mi SW of Gear Street

Town.....Waterbury
Station.....433
Location..... 41.574252,-73.057063
2015-Minor Arterial 4.....2015-Urban
Start Report.....29-Mar-2023 02:00PM
End Report.....31-Mar-2023 11:00AM
Dataset Details.....1

All Vehicles Average Speed..... 34 MPH
Total Vehicles.....14733
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 19 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....41.6 MPH
50th Percentile Speed.....34.0 MPH
10 MPH Pace (52%).....30-39 MPH
All Hours Total Vehicles.....14733
In-Period Total Vehicles.....5786
Omitted Vehicles Too Close (44%)...2566
Omitted Vehicles Too Slow (1%).....71
Sampled Vehicles (54%).....3149

Wednesday 29-Mar-2023
85th Percentile Speed.....41.6 MPH
50th Percentile Speed.....34.3 MPH
10 MPH Pace (53%).....31-40 MPH
All Hours Total Vehicles.....3694
In-Period Total Vehicles.....1188
Omitted Vehicles Too Close (46%)....550
Omitted Vehicles Too Slow (1%).....8
Sampled Vehicles (53%).....630

Thursday 30-Mar-2023
85th Percentile Speed.....41.6 MPH
50th Percentile Speed.....34.0 MPH
10 MPH Pace (52%).....30-39 MPH
All Hours Total Vehicles.....8065
In-Period Total Vehicles.....3589
Omitted Vehicles Too Close (44%)...1586
Omitted Vehicles Too Slow (1%).....49
Sampled Vehicles (54%).....1954

Friday 31-Mar-2023
85th Percentile Speed.....41.1 MPH
50th Percentile Speed.....33.9 MPH
10 MPH Pace (54%).....30-39 MPH
All Hours Total Vehicles.....2974
In-Period Total Vehicles.....1009
Omitted Vehicles Too Close (43%)....430
Omitted Vehicles Too Slow (1%).....14
Sampled Vehicles (56%).....565

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Wednesday															
29-Mar															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am															
12:00pm															
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
02:00pm	5	9	29	102	185	128	69	22	7	.	.	.	.	.	55
03:00pm	5	17	46	137	163	148	88	25	3	.	.	.	.	.	63
04:00pm	3	14	45	114	173	146	91	24	4	4	2	.	.	.	62
05:00pm	6	8	27	78	141	177	111	19	13	.	.	.	.	.	58
06:00pm	1	2	9	60	100	128	82	16	6	.	.	1	.	.	40
07:00pm	.	1	11	32	76	106	49	8	3	1	2	.	.	.	28
08:00pm	.	1	2	30	62	72	54	15	7	.	.	.	.	1	24
09:00pm	.	.	2	21	46	44	35	13	5	1	.	1	1	.	16
10:00pm	.	.	1	11	26	43	33	4	3	2	.	.	.	.	12
11:00pm	.	.	3	9	27	15	11	5	3	.	2	1	.	.	7
Totals	20	52	175	594	999	1007	623	151	54	8	6	3	1	1	369
Percent	0.54	1.41	4.74	16.08	27.04	27.26	16.87	4.09	1.46	0.22	0.16	0.08	0.03	0.03	
Thursday															
30-Mar															
12:00am	1	.	1	8	12	15	3	2	.	.	.	.	.	.	4
01:00am	.	.	.	4	6	11	4	1	1	.	.	1	.	1	2
02:00am	.	.	.	5	6	2	3	.	.	.	.	.	.	.	1
03:00am	.	.	2	4	13	11	12	2	.	.	.	.	.	.	4
04:00am	1	.	2	13	17	16	7	6	3	.	.	.	.	.	6
05:00am	.	3	6	43	76	48	23	6	1	.	1	.	.	.	20
06:00am	3	3	52	91	120	83	40	6	4	.	.	.	.	.	40
07:00am	.	8	32	94	159	103	80	24	6	3	.	.	.	.	50
08:00am	12	13	54	150	169	120	67	21	9	.	.	.	.	1	61
09:00am	9	17	56	117	179	90	47	10	2	1	1	.	.	.	52
10:00am	1	10	31	82	121	107	49	15	6	3	.	.	.	.	42
11:00am	1	4	12	78	130	96	54	13	1	.	.	.	.	.	38
12:00pm	.	14	21	94	151	116	62	13	1	.	.	.	.	.	47
01:00pm	5	12	32	89	140	141	83	13	6	1	.	.	.	.	52
02:00pm	8	25	35	150	168	120	75	17	4	1	.	1	.	.	60
03:00pm	3	10	42	144	183	146	89	22	3	3	2	1	.	.	64
04:00pm	6	12	33	103	179	146	110	23	9	1	.	.	1	.	62
05:00pm	6	4	21	100	146	152	100	22	8	1	1	.	.	.	56
06:00pm	1	2	19	44	102	114	95	30	3	1	1	.	.	.	41
07:00pm	1	.	7	49	78	96	66	19	6	.	.	.	.	.	32
08:00pm	.	2	13	29	51	72	43	13	5	1	.	.	.	.	22
09:00pm	.	.	2	24	34	41	42	15	1	1	.	.	.	1	16
10:00pm	1	.	4	14	43	38	27	8	2	.	.	.	.	1	13
11:00pm	.	.	5	16	25	22	20	5	6	.	1	.	.	.	10
Totals	59	139	482	1545	2308	1906	1201	306	87	17	7	3	1	4	806
Percent	0.73	1.72	5.98	19.16	28.62	23.63	14.89	3.79	1.08	0.21	0.09	0.04	0.01	0.05	
Friday															
31-Mar															
12:00am	.	.	2	6	13	12	10	4	1	1	.	.	.	.	4
01:00am	.	1	4	7	5	9	2	2	.	1	.	.	.	.	3
02:00am	.	.	.	3	6	7	8	4	5	1	1	.	.	.	3
03:00am	.	.	.	8	6	6	10	3	1	1	1	.	.	.	3
04:00am	.	.	.	9	19	20	15	2	3	.	.	.	.	.	6
05:00am	.	5	9	48	84	44	16	8	2	1	.	.	.	.	21
06:00am	6	4	43	106	127	95	35	12	3	1	.	.	.	.	43
07:00am	.	9	32	91	157	113	62	19	4	.	1	.	.	.	48
08:00am	4	18	57	163	165	125	50	18	6	1	.	1	1	.	60
09:00am	4	14	43	149	154	115	52	18	4	.	.	.	.	.	55
10:00am	1	8	26	99	122	131	53	11	5	.	.	.	.	.	45
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	15	59	216	689	858	677	313	101	34	7	3	1	1	0	297
Percent	0.50	1.98	7.26	23.17	28.85	22.76	10.52	3.40	1.14	0.24	0.10	0.03	0.03	0.00	

Status: OK North Combined South Class Speed

WATB-433 - Combined - n/s

[295]-East Aurora Street - .38 mi SW of Gear Street

Town.....Waterbury
Station.....433
Location..... 41.574252,-73.057063
2015-Minor Arterial 4.....2015-Urban
Start Report.....29-Mar-2023 02:00PM
End Report.....31-Mar-2023 11:00AM
Annualized ADT.....7900
24-Hour Count... 7961 * G4(0.99) = 7881.4
Day 1.....+ 8065 * G4(0.99) = 15865.7
UnRounded AADT.....15865.7 / 2 = 7932.9
OK 2023 Wed 29-Mar -this report-...7900
OK 2020 Mon 13-Jan 8300
OK 2017 Thu 02-Mar 8300
OK 2014 Wed 26-Mar 7600
OK 2011 Mon 10-Jan 8700
OK 2008 Thu 03-Apr 7700
Dataset Details.....1

	29-Mar Wed	30-Mar Thu	31-Mar Fri
12:00am		42	49
01:00am		29	31
02:00am		16	35
03:00am		44	36
04:00am		65	68
05:00am		207	217
06:00am		402	432
07:00am		509	488
08:00am		616	609
09:00am		529	553
10:00am		425	456
11:00am		389	x
12:00pm		472	
01:00pm	x	522	
02:00pm	556	604	
03:00pm	632	648	
04:00pm	620	623	
05:00pm	580	561	
06:00pm	405	412	
07:00pm	289	322	
08:00pm	244	229	
09:00pm	169	161	
10:00pm	123	138	
11:00pm	76	100	
Totals	3694	8065	2974

Status: OK East Combined West

WATB-731 - Combined - e/w

Route 73 - 302 mi SE of East Aurora Street

Town.....Waterbury
Station.....731
Location..... 41.570574,-73.059722
A.K.A.....2731
2015-Principal Arterial - Other 3...2015-Urban
HPMS Section ID.....
Start Report.....22-Mar-2023 05:00PM
End Report.....27-Mar-2023 09:00PM
Dataset Details.....2

All Vehicles Average Speed..... 44 MPH
Total Vehicles.....122244
Percentile Sampling Period..... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 28 MPH
Speed Lower Limit.....15 MPH below Average

All Report Days
85th Percentile Speed.....52.3 MPH
50th Percentile Speed.....44.3 MPH
10 MPH Pace (46%).....41-50 MPH
All Hours Total Vehicles.....122244
In-Period Total Vehicles.....52124
Omitted Vehicles Too Close (75%).....39315
Omitted Vehicles Too Slow (0%).....245
Sampled Vehicles (24%).....12564

Wednesday 22-Mar-2023
85th Percentile Speed.....N/A
50th Percentile Speed.....N/A
10 MPH Pace ().....N/A
All Hours Total Vehicles.....7164
In-Period Total Vehicles.....0
Omitted Vehicles Too Close (0%).....0
Omitted Vehicles Too Slow (0%).....0
Sampled Vehicles ().....0

Thursday 23-Mar-2023
85th Percentile Speed.....50.6 MPH
50th Percentile Speed.....42.6 MPH
10 MPH Pace (48%).....38-47 MPH
All Hours Total Vehicles.....26158
In-Period Total Vehicles.....10840
Omitted Vehicles Too Close (77%).....8313
Omitted Vehicles Too Slow (1%).....67
Sampled Vehicles (23%).....2460

Friday 24-Mar-2023
85th Percentile Speed.....51.4 MPH
50th Percentile Speed.....43.6 MPH
10 MPH Pace (46%).....41-50 MPH
All Hours Total Vehicles.....26190
In-Period Total Vehicles.....10772
Omitted Vehicles Too Close (77%).....8302
Omitted Vehicles Too Slow (1%).....69
Sampled Vehicles (22%).....2401

Saturday 25-Mar-2023
85th Percentile Speed.....51.9 MPH
50th Percentile Speed.....44.2 MPH
10 MPH Pace (49%).....41-50 MPH
All Hours Total Vehicles.....21483
In-Period Total Vehicles.....10786
Omitted Vehicles Too Close (76%).....8183
Omitted Vehicles Too Slow (0%).....27
Sampled Vehicles (24%).....2576

Sunday 26-Mar-2023
85th Percentile Speed.....54.5 MPH
50th Percentile Speed.....47.1 MPH
10 MPH Pace (48%).....45-54 MPH
All Hours Total Vehicles.....18306
In-Period Total Vehicles.....9253
Omitted Vehicles Too Close (71%).....6578
Omitted Vehicles Too Slow (0%).....15
Sampled Vehicles (29%).....2660

Monday 27-Mar-2023
85th Percentile Speed.....52.4 MPH
50th Percentile Speed.....44.1 MPH
10 MPH Pace (44%).....41-50 MPH
All Hours Total Vehicles.....22943
In-Period Total Vehicles.....10473
Omitted Vehicles Too Close (76%).....7939
Omitted Vehicles Too Slow (1%).....67
Sampled Vehicles (24%).....2467

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76
Wednesday 22-Mar														
12:00am														
01:00am														
02:00am														
03:00am														
04:00am														
05:00am														
06:00am														
07:00am														
08:00am														
09:00am														
10:00am														
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
02:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
03:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
04:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
05:00pm	3	13	17	81	254	457	595	426	186	45	3	1	.	
06:00pm	3	4	7	24	159	278	426	365	218	68	18	3	1	1
07:00pm	.	.	1	21	84	183	384	308	156	55	11	4	1	1
08:00pm	.	.	2	17	62	114	246	246	153	40	12	3	3	
09:00pm	.	.	3	9	40	87	147	165	102	35	18	6	6	1
10:00pm	.	.	.	10	31	59	117	120	74	36	21	4	2	
11:00pm	.	.	.	2	12	32	73	86	66	24	10	1	2	
Totals	6	17	30	164	642	1210	1988	1716	955	303	93	22	15	1
Percent	0.08	0.24	0.42	2.29	8.96	16.89	27.75	23.95	13.33	4.23	1.30	0.31	0.21	0.0
Thursday 23-Mar														
12:00am	.	.	.	3	11	19	31	53	35	20	8	4	.	
01:00am	.	.	.	.	10	7	21	21	24	9	5	1	1	
02:00am	.	.	3	4	10	9	13	16	13	10	6	2	1	
03:00am	.	.	1	3	10	14	21	29	20	13	7	.	.	
04:00am	.	.	.	5	16	21	45	37	53	25	11	2	1	
05:00am	1	1	3	16	39	71	119	152	161	82	30	12	3	1
06:00am	8	23	26	80	180	189	305	291	172	56	13	5	.	1
07:00am	15	26	41	82	229	313	412	336	178	57	8	1	.	1
08:00am	7	6	7	57	288	409	454	326	166	41	9	2	.	
09:00am	.	1	4	83	200	337	360	259	150	51	18	4	1	
10:00am	.	.	13	50	133	263	370	272	147	49	8	5	.	2
11:00am	.	5	15	47	169	268	392	293	154	48	8	2	1	1
12:00pm	1	5	9	64	233	313	465	294	123	31	6	2	.	
01:00pm	.	.	8	63	304	474	464	208	70	13	5	1	.	
02:00pm	5	11	13	76	316	481	533	261	94	20	5	.	.	
03:00pm	2	4	11	50	259	415	553	290	81	17	2	2	.	
04:00pm	8	7	35	98	355	483	579	387	158	23	10	.	1	
05:00pm	.	1	2	39	229	446	561	425	196	41	9	1	1	
06:00pm	.	.	1	27	147	269	376	387	247	70	26	2	1	
07:00pm	.	.	6	32	88	151	341	295	150	45	20	2	.	2
08:00pm	.	.	1	10	59	145	271	208	143	41	6	4	1	1
09:00pm	.	.	1	9	40	79	200	168	103	41	6	2	2	
10:00pm	.	.	1	8	31	81	150	121	55	25	4	2	1	
11:00pm	.	.	3	9	35	38	82	61	60	11	3	.	1	
Totals	47	90	204	915	3391	5295	7118	5190	2753	839	233	58	16	9
Percent	0.18	0.34	0.78	3.50	12.96	20.24	27.21	19.84	10.52	3.21	0.89	0.22	0.06	0.0
Friday 24-Mar														
12:00am	.	2	2	6	12	16	35	52	28	23	6	1	2	2
01:00am	.	.	2	2	8	19	32	29	25	14	8	3	1	
02:00am	.	.	2	3	5	10	20	19	13	12	5	2	2	1
03:00am	.	.	.	5	10	17	21	26	22	11	7	2	.	1
04:00am	.	1	2	8	14	21	45	51	46	23	14	3	.	
05:00am	.	.	3	13	59	84	118	158	152	62	30	8	1	1
06:00am	.	.	1	44	146	197	347	346	236	79	30	10	3	
07:00am	1	2	8	58	159	243	387	328	173	36	7	4	1	
08:00am	.	.	13	61	207	308	370	277	163	43	12	2	.	
09:00am	2	6	15	48	146	208	321	286	133	37	4	2	.	
10:00am	1	1	5	38	150	230	367	293	178	50	14	.	2	
11:00am	.	1	5	51	180	298	394	326	184	50	15	2	.	
12:00pm	.	.	9	56	211	342	489	312	175	39	13	4	.	
01:00pm	.	.	12	60	243	394	513	320	147	36	11	.	.	2
02:00pm	2	9	11	71	214	387	468	343	127	26	4	1	.	
03:00pm	2	6	24	93	271	345	507	292	117	16	5	.	.	
04:00pm	.	6	20	38	252	437	611	327	151	31	5	1	1	
05:00pm	.	1	2	40	238	401	602	477	240	47	10	2	1	
06:00pm	4	5	15	37	108	235	450	377	206	53	11	.	.	
07:00pm	.	.	2	25	102	236	398	317	160	40	6	3	.	
08:00pm	.	.	.	10	78	150	274	259	142	50	8	4	1	1
09:00pm	.	.	.	4	54	106	191	211	117	46	10	4	.	1
10:00pm	.	.	2	5	45	106	189	178	105	31	9	3	1	
11:00pm	.	.	.	4	34	67	134	146	84	39	14	5	.	
Totals	12	40	155	780	2946	4857	7283	5750	3124	894	258	66	16	9
Percent	0.05	0.15	0.59	2.98	11.25	18.55	27.81	21.95	11.93	3.41	0.99	0.25	0.06	0.0
Saturday 25-Mar														

12:00am	.	.	.	6	23	46	62	64	69	38	13	8	6	2
01:00am	.	1	1	4	17	32	45	33	30	15	10	2	3	
02:00am	.	.	.	4	18	21	46	40	28	20	10	4	2	1
03:00am	.	.	1	1	7	11	22	20	16	10	4	2	2	
04:00am	.	.	.	3	10	8	36	36	31	21	10	4	1	
05:00am	.	.	.	2	13	22	38	58	59	27	6	5	4	1
06:00am	.	.	3	7	31	54	78	132	98	52	23	5	.	
07:00am	.	1	2	13	59	79	143	145	149	71	27	2	.	
08:00am	.	.	2	10	72	137	209	237	205	89	28	5	1	
09:00am	.	.	.	16	154	237	313	252	203	64	19	3	3	
10:00am	.	.	2	43	210	347	410	263	142	33	11	.	.	
11:00am	.	.	7	53	178	349	447	348	175	20	9	1	.	
12:00pm	1	6	19	57	225	359	513	319	127	31	7	1	.	
01:00pm	2	1	.	35	248	416	493	290	146	36	10	1	.	
02:00pm	.	1	3	55	160	300	486	380	156	33	7	.	.	
03:00pm	2	1	3	26	135	281	505	375	175	35	9	3	.	
04:00pm	.	.	.	18	80	210	440	352	198	40	6	5	.	
05:00pm	.	.	.	16	98	214	413	320	160	29	7	1	.	
06:00pm	.	.	.	18	100	184	321	297	139	25	3	1	1	1
07:00pm	.	.	2	12	87	177	290	256	109	26	7	.	.	
08:00pm	.	.	.	19	50	113	266	229	119	33	4	1	.	
09:00pm	.	.	.	7	50	110	206	190	110	43	6	4	.	
10:00pm	.	.	.	2	40	83	177	166	97	34	12	2	1	
11:00pm	.	.	1	8	30	64	135	122	75	26	8	3	2	
Totals	5	11	46	435	2095	3854	6094	4924	2816	851	256	63	26	7
Percent	0.02	0.05	0.21	2.02	9.75	17.94	28.37	22.92	13.11	3.96	1.19	0.29	0.12	0.03
Sunday														
26-Mar														
12:00am	.	.	1	3	14	42	82	91	62	26	4	1	.	
01:00am	.	.	.	1	14	26	37	59	54	20	4	3	1	
02:00am	.	.	1	2	13	13	31	43	32	14	8	.	3	1
03:00am	.	.	.	.	5	9	18	26	15	9	5	2	1	1
04:00am	.	.	.	.	5	9	21	20	22	5	.	.	2	2
05:00am	.	.	.	2	4	12	20	26	23	23	8	1	1	1
06:00am	.	.	.	4	14	29	37	64	72	37	14	5	4	1
07:00am	.	.	.	4	16	42	61	120	127	58	20	4	3	
08:00am	.	1	.	5	49	41	104	164	148	81	34	5	4	
09:00am	.	.	.	8	76	132	162	260	209	84	26	4	2	1
10:00am	.	.	.	16	108	158	256	289	221	96	26	9	3	
11:00am	.	.	.	18	103	195	356	297	264	89	35	9	2	1
12:00pm	.	.	3	17	137	231	358	355	268	89	24	5	1	
01:00pm	.	.	8	22	112	234	302	383	261	78	22	5	.	
02:00pm	.	.	3	17	98	213	355	348	278	92	18	3	3	1
03:00pm	.	.	.	9	118	241	338	335	242	81	25	4	1	
04:00pm	.	.	1	17	84	184	363	338	250	75	23	9	1	
05:00pm	.	.	.	6	87	134	241	348	257	73	23	3	3	1
06:00pm	.	.	.	15	73	144	249	313	257	79	31	4	3	1
07:00pm	.	.	.	4	54	106	268	260	214	57	23	3	1	
08:00pm	.	.	2	8	53	121	214	221	121	48	13	2	3	1
09:00pm	.	1	2	11	30	67	121	133	76	42	13	3	2	1
10:00pm	.	.	.	7	32	50	83	81	78	40	18	7	5	2
11:00pm	.	.	1	9	19	29	66	60	57	25	12	1	2	
Totals	0	2	22	205	1318	2462	4143	4634	3608	1321	429	92	51	19
Percent	0.00	0.01	0.12	1.12	7.20	13.45	22.63	25.31	19.71	7.22	2.34	0.50	0.28	0.10
Monday														
27-Mar														
12:00am	.	.	1	3	7	17	41	38	29	13	6	1	.	2
01:00am	.	.	.	3	6	13	30	29	15	6	4	2	2	2
02:00am	.	1	.	4	10	16	16	12	17	5	3	1	.	1
03:00am	.	.	.	9	10	12	20	29	24	6	4	.	2	1
04:00am	1	1	4	10	13	20	42	42	60	36	9	2	.	
05:00am	.	.	1	11	50	67	135	165	170	64	25	1	1	
06:00am	.	3	21	41	137	157	262	324	234	74	26	4	.	
07:00am	2	5	48	68	221	285	388	362	197	41	9	1	.	
08:00am	.	2	12	42	173	289	378	234	127	33	21	3	.	
09:00am	.	2	12	49	156	312	300	265	176	49	20	2	1	
10:00am	.	.	8	19	154	234	321	252	157	67	15	2	.	
11:00am	1	1	4	26	136	247	333	267	184	57	13	3	.	
12:00pm	.	2	7	46	180	235	338	325	167	37	9	4	1	
01:00pm	.	.	8	80	224	308	458	330	141	49	9	2	.	1
02:00pm	.	14	14	56	183	272	447	324	164	34	14	4	.	
03:00pm	.	3	11	80	353	558	564	346	178	39	9	.	.	
04:00pm	2	7	24	83	254	447	583	328	133	41	6	1	1	
05:00pm	.	1	11	69	257	424	587	360	141	30	9	1	2	1
06:00pm	.	2	15	43	164	295	395	291	141	22	1	.	1	
07:00pm	.	.	2	12	74	172	315	217	115	31	5	3	.	
08:00pm	.	.	1	17	69	131	261	160	63	16	4	2	.	
09:00pm														
10:00pm														
11:00pm														
Totals	6	44	204	771	2831	4511	6214	4700	2633	750	221	39	11	8
Percent	0.03	0.19	0.89	3.36	12.34	19.66	27.08	20.49	11.48	3.27	0.96	0.17	0.05	0.03

Status: OK East Combined West Class Speed

WATB-731 - Combined - e/w

Route 73 - 302 mi SE of East Aurora Street

Town.....Waterbury
Station.....731
Location..... 41.570574,-73.059722
A.K.A.....2731
2015-Principal Arterial - Other 3...2015-Urban
HPMS Section ID.....
Start Report.....22-Mar-2023 05:00PM
End Report.....27-Mar-2023 09:00PM
Annualized ADT.....24800
24-Hour Count.....26363 * G4(0.99) = 26099.4
Day 1.....+26158 * G4(0.99) = 51995.8
Day 2.....+26190 * G4(0.93) = 76352.5
Day 3.....+21483 * G4(1.15) = 101057.9
Day 4.....+18306 * G4(1.25) = 123940.4
UnRounded AADT.....123940.4 / 5 = 24788.1
OK 2023 Wed 22-Mar -this report-.....24800
OK 2020 Wed 08-Jan 24500
OK 2017 Mon 06-Mar 26600
OK 2014 Tue 01-Apr 27400
Dataset Details.....2

	22-Mar Wed	23-Mar Thu	24-Mar Fri	25-Mar Sat	26-Mar Sun	27-Mar Mon
12:00am		184	187	337	326	158
01:00am		99	143	193	219	112
02:00am		87	94	196	161	86
03:00am		118	122	96	91	117
04:00am		216	228	160	86	240
05:00am		691	689	235	121	690
06:00am		1349	1439	483	281	1283
07:00am		1699	1407	691	455	1627
08:00am		1772	1456	995	636	1314
09:00am		1468	1208	1264	964	1344
10:00am		1312	1329	1461	1182	1229
11:00am	x	1403	1506	1587	1369	1272
12:00pm	x	1546	1650	1665	1488	1351
01:00pm	x	1610	1738	1678	1427	1610
02:00pm	x	1815	1663	1581	1429	1526
03:00pm	x	1686	1678	1550	1394	2141
04:00pm	x	2144	1880	1349	1345	1910
05:00pm	2081	1951	2061	1258	1178	1893
06:00pm	1575	1553	1501	1090	1171	1370
07:00pm	1209	1132	1289	966	990	946
08:00pm	898	890	977	834	807	724
09:00pm	619	651	744	726	502	
10:00pm	474	479	674	614	403	
11:00pm	308	303	527	474	281	
Totals	7164	26158	26190	21483	18306	22943

Status: OK

WATB-116 - South

Route 849 - 0.09 mi (Watertown Ave 1W SB)-S of Robbins St

Town.....Waterbury
Station.....116
Location..... 41.558536,-73.056868
Posted Speed Limit.....25 MPH
2015-Minor Arterial 4.....2015-Urban
Start Report.....21-Aug-2023 12:00PM
End Report.....24-Aug-2023 11:00AM
Dataset Details.....1

All Vehicles Average Speed..... 35 MPH
Total Vehicles.....18042
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 10 MPH
Speed Lower Limit....15 MPH below Posted

All Report Days
85th Percentile Speed.....41.1 MPH
50th Percentile Speed.....34.5 MPH
10 MPH Pace (56%).....31-40 MPH
All Hours Total Vehicles.....18042
In-Period Total Vehicles.....7828
Omitted Vehicles Too Close (47%)...3658
Omitted Vehicles Too Slow (0%).....22
Sampled Vehicles (53%).....4148

Monday 21-Aug-2023
85th Percentile Speed.....41.2 MPH
50th Percentile Speed.....34.0 MPH
10 MPH Pace (55%).....30-39 MPH
All Hours Total Vehicles.....3783
In-Period Total Vehicles.....1622
Omitted Vehicles Too Close (48%)....778
Omitted Vehicles Too Slow (0%).....2
Sampled Vehicles (52%).....842

Tuesday 22-Aug-2023
85th Percentile Speed.....41.3 MPH
50th Percentile Speed.....35.1 MPH
10 MPH Pace (57%).....31-40 MPH
All Hours Total Vehicles.....6050
In-Period Total Vehicles.....2669
Omitted Vehicles Too Close (47%)...1243
Omitted Vehicles Too Slow (0%).....8
Sampled Vehicles (53%).....1418

Wednesday 23-Aug-2023
85th Percentile Speed.....41.0 MPH
50th Percentile Speed.....34.4 MPH
10 MPH Pace (56%).....30-39 MPH
All Hours Total Vehicles.....6259
In-Period Total Vehicles.....2809
Omitted Vehicles Too Close (47%)...1328
Omitted Vehicles Too Slow (0%).....11
Sampled Vehicles (52%).....1470

Thursday 24-Aug-2023
85th Percentile Speed.....40.8 MPH
50th Percentile Speed.....34.0 MPH
10 MPH Pace (55%).....31-40 MPH
All Hours Total Vehicles.....1950
In-Period Total Vehicles.....728
Omitted Vehicles Too Close (42%)....309
Omitted Vehicles Too Slow (0%).....1
Sampled Vehicles (57%).....418

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Monday 21-Aug															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm	7	11	24	65	115	95	50	8	3	.	.	.	.	.	37
01:00pm	.	1	11	60	114	108	60	9	3	.	.	.	.	.	36
02:00pm	5	5	15	66	124	104	49	13	5	2	.	.	.	.	38
03:00pm	5	6	44	119	144	113	47	10	2	.	.	.	.	.	49
04:00pm	9	11	44	111	161	108	51	12	2	.	.	.	.	.	50
05:00pm	3	2	16	69	143	112	62	11	1	4	.	.	.	.	42
06:00pm	1	1	8	59	93	108	55	16	6	.	.	.	.	.	34
07:00pm	.	3	18	40	90	85	47	12	4	.	.	.	.	.	29
08:00pm	.	1	10	33	48	52	49	14	4	1	.	.	.	.	21
09:00pm	.	.	7	18	41	40	25	7	3	2	.	1	1	.	14
10:00pm	.	.	3	24	23	36	22	5	4	.	.	.	.	.	11
11:00pm	.	.	6	16	36	24	15	10	1	.	.	1	.	.	10
Totals	30	41	206	680	1132	985	532	127	38	9	0	2	1	0	378
Percent	0.79	1.08	5.45	17.98	29.92	26.04	14.06	3.36	1.00	0.24	0.00	0.05	0.03	0.00	
Tuesday 22-Aug															
12:00am	.	.	.	9	10	10	10	4	3	.	.	.	.	.	4
01:00am	.	.	1	3	8	6	9	2	3	.	.	.	.	.	3
02:00am	.	.	.	5	2	.	5	1	.	.	.	.	.	.	1
03:00am	1	.	.	7	8	4	5	2	1	.	.	.	.	.	2
04:00am	.	.	.	.	9	12	9	3	5	.	.	.	.	.	3
05:00am	.	1	.	9	20	27	25	13	3	.	.	.	.	.	9
06:00am	2	1	5	20	39	59	52	28	11	1	1	.	.	1	22
07:00am	.	1	12	41	73	106	68	25	7	1	.	.	.	.	33
08:00am	4	3	16	40	92	107	56	14	2	.	.	.	.	.	33
09:00am	1	2	8	47	97	115	52	6	1	.	.	.	.	.	32
10:00am	3	4	18	57	82	114	40	10	5	.	.	.	.	.	33
11:00am	5	4	16	59	106	106	58	7	2	1	.	.	.	.	36
12:00pm	7	5	24	62	116	113	52	8	6	.	.	.	.	.	39
01:00pm	8	2	11	48	101	112	61	16	1	.	.	.	.	.	36
02:00pm	3	6	31	86	123	91	54	10	1	.	.	.	.	.	40
03:00pm	8	6	26	99	166	110	56	11	2	1	.	.	.	.	48
04:00pm	9	5	34	102	170	105	54	14	3	.	.	.	.	.	49
05:00pm	5	7	24	82	142	119	53	14	2	.	.	.	.	.	44
06:00pm	.	4	13	59	108	100	56	9	1	.	1	.	.	.	35
07:00pm	.	1	8	53	92	91	45	12	3	.	1	.	.	.	30
08:00pm	.	.	1	46	78	61	23	5	4	1	.	.	.	.	21
09:00pm	1	2	5	16	44	51	27	10	2	1	1	.	.	.	16
10:00pm	.	.	7	17	32	35	26	11	2	2	2	.	.	.	13
11:00pm	1	1	4	22	40	27	22	5	.	2	.	.	.	.	12
Totals	58	55	264	989	1758	1681	918	240	70	10	6	0	0	1	605
Percent	0.96	0.91	4.36	16.35	29.06	27.79	15.17	3.97	1.16	0.17	0.10	0.00	0.00	0.02	
Wednesday 23-Aug															
12:00am	.	.	3	7	8	11	14	2	2	.	.	.	.	.	4
01:00am	.	1	.	.	8	6	3	2	1	.	.	.	1	.	2
02:00am	.	.	.	1	1	8	3	1	1	.	.	.	.	.	1
03:00am	1	.	1	4	4	5	2	1	.	.	.	.	.	.	1
04:00am	.	.	.	1	10	9	8	4	.	1	.	.	.	.	3
05:00am	.	.	2	9	20	39	26	14	3	1	.	.	.	.	11
06:00am	1	1	5	14	50	65	54	31	7	.	.	.	.	.	22
07:00am	3	3	8	46	71	106	89	23	6	.	.	.	.	.	35
08:00am	.	2	11	48	89	109	75	15	4	1	.	.	.	.	35
09:00am	4	1	15	55	88	101	63	12	7	2	.	.	.	.	34
10:00am	5	6	11	53	106	116	44	7	3	.	.	.	.	.	35
11:00am	6	8	11	65	125	104	47	6	1	.	.	.	.	.	37
12:00pm	7	1	13	72	132	102	55	10	2	.	1	.	.	.	39
01:00pm	8	5	31	73	125	125	43	11	3	.	.	.	.	.	42
02:00pm	8	4	19	100	103	117	59	10	.	1	.	.	.	.	42
03:00pm	17	26	51	102	130	112	49	6	3	1	.	.	.	.	49
04:00pm	5	9	32	110	176	121	50	8	1	1	1	.	.	.	51
05:00pm	12	3	35	85	153	128	42	12	2	.	.	.	.	.	47
06:00pm	3	4	18	62	77	93	47	9	3	.	.	.	.	.	31
07:00pm	.	3	12	49	96	97	45	11	4	1	.	.	.	.	31
08:00pm	1	2	10	42	86	70	28	8	2	2	.	.	1	.	25
09:00pm	.	.	4	20	46	48	27	10	5	2	.	.	.	.	16
10:00pm	1	.	4	16	33	22	30	10	2	1	.	.	.	.	11
11:00pm	.	1	7	26	31	18	19	6	1	1	.	1	.	.	11
Totals	82	80	303	1060	1768	1732	922	229	63	15	2	1	2	0	625
Percent	1.31	1.28	4.84	16.94	28.25	27.67	14.73	3.66	1.01	0.24	0.03	0.02	0.03	0.00	
Thursday 24-Aug															

12:00am	.	.	.	5	9	14	12	7	4	.	.	.	.	.	5
01:00am	.	.	.	6	11	8	6	3	.	1	1	1	.	.	3
02:00am	.	.	.	3	6	9	3	.	1	.	.	.	.	.	2
03:00am	1	.	.	2	6	5	3	1	1	.	.	.	.	.	1
04:00am	.	1	1	.	8	12	9	8	.	.	.	.	.	.	3
05:00am	.	.	2	5	20	35	34	11	4	.	.	.	.	.	11
06:00am	2	2	4	11	42	55	66	24	6	4	.	.	.	.	21
07:00am	1	2	16	41	100	125	63	19	8	4	.	.	.	.	37
08:00am	5	.	15	45	100	114	57	11	.	1	.	.	.	.	34
09:00am	2	5	17	85	116	92	50	8	3	1	.	.	.	.	37
10:00am	4	2	16	73	92	108	41	10	3	.	.	.	.	.	34
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	15	12	71	276	510	577	344	102	30	11	1	1	0	0	195
Percent	0.77	0.62	3.64	14.15	26.15	29.59	17.64	5.23	1.54	0.56	0.05	0.05	0.00	0.00	

Status: OK Class Speed

WATB-116 - South

Route 849 - 0.09 mi (Watertown Ave 1W SB)-S of Robbins St

Town.....Waterbury
Station.....116
Location..... 41.558536,-73.056868
Posted Speed Limit.....25 MPH
2015-Minor Arterial 4.....2015-Urban
Start Report.....21-Aug-2023 12:00PM
End Report.....24-Aug-2023 11:00AM
Annualized ADT.....5700
24-Hour Count... 5952 * G4(0.94) = 5594.9
Day 1.....+ 6050 * G4(0.94) = 11281.9
Day 2.....+ 6259 * G4(0.94) = 17165.3
UnRounded AADT.....17165.3 / 3 = 5721.8
OK 2023 Mon 21-Aug -this report-...5700
OK 2020 Wed 15-Jan 6400
OK 2017 Tue 17-Jan 5600
OK 2014 Tue 08-Apr 6300
OK 2011 Mon 28-Mar 6200
OK 2008 Tue 13-May 6800
Dataset Details.....1

	21-Aug Mon	22-Aug Tue	23-Aug Wed	24-Aug Thu
12:00am		46	47	51
01:00am		32	22	37
02:00am		13	15	22
03:00am		28	18	19
04:00am		38	33	39
05:00am		98	114	111
06:00am		220	228	216
07:00am		334	355	379
08:00am		334	354	348
09:00am		329	348	379
10:00am		333	351	349
11:00am	x	364	373	x
12:00pm	378	393	395	
01:00pm	366	360	424	
02:00pm	388	405	421	
03:00pm	490	485	497	
04:00pm	509	496	514	
05:00pm	423	448	472	
06:00pm	347	351	316	
07:00pm	299	306	318	
08:00pm	212	219	252	
09:00pm	145	160	162	
10:00pm	117	134	119	
11:00pm	109	124	111	
Totals	3783	6050	6259	1950

Status: OK East Combined West

WATB-732 - Combined - e/w

[1094]-West Main Street #1 - .98 mi E of SR 846 (Watertown Ave)

Town.....Waterbury
Station.....732
Location..... 41.556898,-73.056008
A.K.A.....2732
2015-Principal Arterial - Other 3...2015-Urban
Start Report.....21-Aug-2023 01:00PM
End Report.....24-Aug-2023 11:00AM
Dataset Details.....2

All Vehicles Average Speed..... 24 MPH
Total Vehicles.....53941
Percentile Sampling Period..... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 8 MPH
Speed Lower Limit.....15 MPH below Average

All Report Days
85th Percentile Speed.....28.7 MPH
50th Percentile Speed.....23.1 MPH
10 MPH Pace (70%).....18-27 MPH
All Hours Total Vehicles.....53941
In-Period Total Vehicles.....22700
Omitted Vehicles Too Close (81%).....18459
Omitted Vehicles Too Slow (0%).....94
Sampled Vehicles (18%).....4147

Monday 21-Aug-2023
85th Percentile Speed.....29.2 MPH
50th Percentile Speed.....23.2 MPH
10 MPH Pace (68%).....18-27 MPH
All Hours Total Vehicles.....10244
In-Period Total Vehicles.....3678
Omitted Vehicles Too Close (82%).....3020
Omitted Vehicles Too Slow (0%).....18
Sampled Vehicles (17%).....640

Tuesday 22-Aug-2023
85th Percentile Speed.....28.4 MPH
50th Percentile Speed.....22.7 MPH
10 MPH Pace (70%).....18-27 MPH
All Hours Total Vehicles.....18861
In-Period Total Vehicles.....8466
Omitted Vehicles Too Close (81%).....6891
Omitted Vehicles Too Slow (1%).....46
Sampled Vehicles (18%).....1529

Wednesday 23-Aug-2023
85th Percentile Speed.....28.6 MPH
50th Percentile Speed.....23.2 MPH
10 MPH Pace (71%).....18-27 MPH
All Hours Total Vehicles.....19165
In-Period Total Vehicles.....8388
Omitted Vehicles Too Close (82%).....6844
Omitted Vehicles Too Slow (0%).....26
Sampled Vehicles (18%).....1518

Thursday 24-Aug-2023
85th Percentile Speed.....29.0 MPH
50th Percentile Speed.....23.4 MPH
10 MPH Pace (68%).....18-27 MPH
All Hours Total Vehicles.....5671
In-Period Total Vehicles.....2168
Omitted Vehicles Too Close (79%).....1704
Omitted Vehicles Too Slow (0%).....4
Sampled Vehicles (21%).....460

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76
Monday														
21-Aug														
12:00am														
01:00am														
02:00am														
03:00am														
04:00am														
05:00am														
06:00am														
07:00am														
08:00am														
09:00am														
10:00am														
11:00am														
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x
01:00pm	50	168	423	392	77	7	1	.	.	.	.	.	.	
02:00pm	82	219	450	351	88	14	2	.	.	.	.	.	.	
03:00pm	88	222	554	388	83	17	2	.	.	.	.	.	.	
04:00pm	147	202	498	408	103	19	1	.	.	.	.	.	.	
05:00pm	103	192	474	370	80	16	5	2	.	.	.	.	.	
06:00pm	19	130	393	309	87	18	1	.	.	.	.	.	.	
07:00pm	12	135	324	273	64	11	3	1	1	1	.	.	.	
08:00pm	9	103	288	222	66	15	4	1	.	.	.	.	1	
09:00pm	9	65	214	192	44	11	2	1	.	.	.	.	.	
10:00pm	6	52	188	165	49	13	2	.	.	.	.	.	.	
11:00pm	3	56	173	151	45	10	3	1	.	.	.	.	.	
Totals	528	1544	3979	3221	786	151	26	6	1	1	0	0	1	0
Percent	5.15	15.07	38.84	31.44	7.67	1.47	0.25	0.06	0.01	0.01	0.00	0.00	0.01	0.00
Tuesday														
22-Aug														
12:00am	4	22	61	80	27	9	1	2	.	.	.	.	.	
01:00am	.	18	53	38	10	1	5	2	.	.	.	.	.	
02:00am	4	7	31	24	9	1	.	.	.	.	.	.	.	
03:00am	.	10	29	26	11	3	1	.	.	.	.	.	.	
04:00am	3	14	48	41	12	4	.	.	.	.	.	.	.	
05:00am	11	44	145	87	33	11	3	.	.	.	.	.	.	
06:00am	20	96	214	160	33	10	4	.	.	.	.	.	.	
07:00am	45	135	335	273	96	10	1	1	.	.	.	.	.	
08:00am	69	204	370	305	87	10	4	.	.	.	.	.	.	
09:00am	91	216	402	302	46	6	1	.	.	.	.	.	.	
10:00am	118	224	439	318	79	9	.	.	.	.	.	.	.	
11:00am	85	231	503	312	73	8	3	.	.	.	.	.	.	
12:00pm	74	202	507	372	69	8	1	.	.	.	.	.	.	
01:00pm	70	186	501	305	54	12	2	.	.	.	.	.	.	
02:00pm	69	190	499	372	87	11	3	.	.	.	.	.	.	
03:00pm	128	242	550	386	89	7	3	.	1	.	.	.	.	
04:00pm	164	283	524	313	71	9	.	.	.	.	.	.	.	
05:00pm	80	172	535	433	102	10	6	.	.	.	.	.	.	
06:00pm	35	148	425	329	78	13	2	.	.	.	.	.	.	
07:00pm	21	119	401	284	72	11	3	4	.	.	1	.	.	
08:00pm	16	115	297	232	60	10	.	2	.	.	.	.	.	
09:00pm	6	76	238	151	50	13	1	1	1	.	.	.	.	
10:00pm	9	50	219	166	53	18	4	.	.	.	.	.	.	
11:00pm	9	55	241	161	52	10	4	.	.	.	.	.	.	
Totals	1131	3059	7567	5470	1353	214	52	12	2	0	1	0	0	0
Percent	6.00	16.22	40.12	29.00	7.17	1.13	0.28	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Wednesday														
23-Aug														
12:00am	8	25	99	90	34	10	1	2	.	.	.	.	.	
01:00am	2	18	52	34	13	4	2	.	.	.	.	.	.	
02:00am	.	11	28	20	8	4	1	1	.	.	.	.	.	
03:00am	2	5	22	20	10	4	1	.	.	.	.	.	.	
04:00am	1	14	53	41	18	3	.	.	.	.	.	.	.	
05:00am	19	52	144	120	39	11	3	.	.	.	.	.	.	
06:00am	26	121	233	140	38	11	2	.	.	1	.	.	.	
07:00am	49	160	363	277	85	14	2	.	.	.	.	.	.	
08:00am	70	167	402	306	92	19	2	1	.	.	.	.	.	
09:00am	78	207	405	287	76	14	2	.	.	.	.	.	.	
10:00am	61	174	471	286	74	5	4	1	.	.	.	.	.	
11:00am	48	220	488	332	49	13	1	.	.	.	.	.	.	
12:00pm	54	197	493	373	80	16	1	1	.	.	.	.	.	
01:00pm	54	191	479	352	86	10	7	.	.	.	.	.	.	
02:00pm	71	197	537	350	86	15	.	1	.	.	.	.	.	
03:00pm	98	243	623	383	79	8	7	.	.	.	.	.	.	
04:00pm	147	233	531	442	84	10	3	.	.	.	.	.	.	
05:00pm	125	219	516	381	100	10	1	.	.	.	.	.	.	
06:00pm	53	155	428	309	100	11	3	.	.	.	.	.	.	
07:00pm	21	98	386	291	84	19	5	2	.	.	.	.	.	
08:00pm	11	117	359	253	52	11	.	1	.	.	.	.	.	
09:00pm	2	83	264	191	55	9	5	1	.	.	.	.	.	
10:00pm	18	71	203	166	55	13	4	2	.	.	.	.	.	
11:00pm	3	53	160	154	48	12	4	.	.	.	.	.	.	
Totals	1021	3031	7739	5598	1445	256	61	13	0	1	0	0	0	0
Percent	5.33	15.82	40.38	29.21	7.54	1.34	0.32	0.07	0.00	0.01	0.00	0.00	0.00	0.00
Thursday														
24-Aug														

12:00am	2	23	99	52	33	6	.	1	.	.	.	.	.	
01:00am	3	19	46	40	17	7	.	.	.	.	.	.	.	
02:00am	3	17	34	20	7	1	.	.	.	.	.	.	.	
03:00am	.	11	22	22	6	2	.	.	.	.	.	.	.	
04:00am	5	22	46	41	12	3	.	.	.	.	.	.	.	
05:00am	5	52	141	87	45	12	2	3	.	.	.	.	.	
06:00am	28	100	216	150	44	15	3	.	.	.	.	.	.	
07:00am	46	194	381	303	89	8	1	1	.	.	.	.	.	
08:00am	53	170	353	260	98	17	3	1	.	.	.	.	.	
09:00am	58	218	427	300	76	11	1	.	.	.	.	.	.	
10:00am	47	174	458	317	72	7	2	.	.	.	.	.	.	
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:00pm														
01:00pm														
02:00pm														
03:00pm														
04:00pm														
05:00pm														
06:00pm														
07:00pm														
08:00pm														
09:00pm														
10:00pm														
11:00pm														
Totals	250	1000	2223	1592	499	89	12	6	0	0	0	0	0	0
Percent	4.41	17.63	39.20	28.07	8.80	1.57	0.21	0.11	0.00	0.00	0.00	0.00	0.00	0.00

Status: OK East Combined West Class Speed

WATB-732 - Combined - e/w

[1094]-West Main Street #1 - .98 mi E of SR 846 (Watertown Ave)

```
Town.................................Waterbury
Station.....................................732
Location.................. 41.556898,-73.056008
A.K.A.......................................2732
2015-Principal Arterial - Other  3...2015-Urban
Start Report................21-Aug-2023 01:00PM
End Report..................24-Aug-2023 11:00AM
Annualized ADT............................17700
24-Hour Count........18370 * G4(0.94) = 17267.8
Day 1...............+18861 * G4(0.94) = 34997.1
Day 2...............+19165 * G4(0.94) = 53012.2
UnRounded AADT............53012.2 / 3 = 17670.7
 OK  2023 Mon 21-Aug -this report-.........17700
 OK  2017 Tue 17-Jan ......................18900
 OK  2014 Tue 15-Apr ......................18400
Dataset Details...............................2
```

	21-Aug Mon	22-Aug Tue	23-Aug Wed	24-Aug Thu
12:00am		206	269	216
01:00am		127	125	132
02:00am		76	73	82
03:00am		80	64	63
04:00am		122	130	129
05:00am		334	388	347
06:00am		537	572	556
07:00am		896	950	1023
08:00am		1049	1059	955
09:00am		1064	1069	1091
10:00am		1187	1076	1077
11:00am		1215	1151	x
12:00pm	x	1233	1215	
01:00pm	1118	1130	1179	
02:00pm	1206	1231	1257	
03:00pm	1354	1406	1441	
04:00pm	1378	1364	1450	
05:00pm	1242	1338	1352	
06:00pm	957	1030	1059	
07:00pm	825	916	906	
08:00pm	709	732	804	
09:00pm	538	537	610	
10:00pm	475	519	532	
11:00pm	442	532	434	
Totals	10244	18861	19165	5671

Status: OK Class

WATB-812 - South

Route 8 - 30.89 mi SB Off Ramp to West Main St #1 (Exit 34)

Town.....Waterbury
Station.....812
Location..... 41.560279,-73.057215
A.K.A.....7135
2015-Principal Arterial - Xway 2...2015-Urban
Start Report.....17-Jul-2024 12:00PM
End Report.....19-Jul-2024 12:00PM
Annualized ADT.....2700
24-Hour Count..... 2917 * G4(0.92) = 2683.6
Day 1.....+ 2897 * G4(0.92) = 5348.9
UnRounded AADT.....5348.9 / 2 = 2674.4
OK 2024 Wed 17-Jul -this report-.....2700
OK 2013 Mon 20-May 3100
OK 2010 Tue 13-Jul 3000
OK 2007 Thu 28-Jun 3100
Dataset Details.....1

	17-Jul Wed	18-Jul Thu	19-Jul Fri
12:00am		16	34
01:00am		15	26
02:00am		11	15
03:00am		11	12
04:00am		13	15
05:00am		50	50
06:00am		127	124
07:00am		230	173
08:00am		235	224
09:00am		188	161
10:00am		164	182
11:00am	x	149	170
12:00pm	214	176	x
01:00pm	173	164	
02:00pm	181	172	
03:00pm	231	190	
04:00pm	198	209	
05:00pm	186	176	
06:00pm	138	136	
07:00pm	112	117	
08:00pm	74	95	
09:00pm	90	91	
10:00pm	51	94	
11:00pm	60	68	
Totals	1708	2897	1186

Status: OK East Combined West

WATB-255 - Combined - e/w

[303]-East Main Street - .09 mi East of Brook Street

Town.....Waterbury
Station.....255
Location..... 41.555424,-73.039229
A.K.A.....2255
2015-Minor Arterial 4.....2015-Urban
HPMS Section ID.....
Start Report.....24-Apr-2023 01:00PM
End Report.....27-Apr-2023 10:00AM
Dataset Details.....2

All Vehicles Average Speed..... 25 MPH
Total Vehicles.....25225
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 10 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....30.8 MPH
50th Percentile Speed.....25.0 MPH
10 MPH Pace (61%).....22-31 MPH
All Hours Total Vehicles.....25225
In-Period Total Vehicles.....10767
Omitted Vehicles Too Close (59%)...6374
Omitted Vehicles Too Slow (2%).....226
Sampled Vehicles (39%).....4167

Monday 24-Apr-2023
85th Percentile Speed.....29.7 MPH
50th Percentile Speed.....24.0 MPH
10 MPH Pace (63%).....21-30 MPH
All Hours Total Vehicles.....5029
In-Period Total Vehicles.....1891
Omitted Vehicles Too Close (61%)...1149
Omitted Vehicles Too Slow (2%).....45
Sampled Vehicles (37%).....697

Tuesday 25-Apr-2023
85th Percentile Speed.....30.9 MPH
50th Percentile Speed.....25.1 MPH
10 MPH Pace (61%).....22-31 MPH
All Hours Total Vehicles.....8729
In-Period Total Vehicles.....3965
Omitted Vehicles Too Close (58%)...2314
Omitted Vehicles Too Slow (2%).....88
Sampled Vehicles (39%).....1563

Wednesday 26-Apr-2023
85th Percentile Speed.....31.0 MPH
50th Percentile Speed.....25.2 MPH
10 MPH Pace (61%).....22-31 MPH
All Hours Total Vehicles.....9350
In-Period Total Vehicles.....4363
Omitted Vehicles Too Close (60%)...2605
Omitted Vehicles Too Slow (2%).....89
Sampled Vehicles (38%).....1669

Thursday 27-Apr-2023
85th Percentile Speed.....30.9 MPH
50th Percentile Speed.....25.8 MPH
10 MPH Pace (63%).....21-30 MPH
All Hours Total Vehicles.....2117
In-Period Total Vehicles.....548
Omitted Vehicles Too Close (56%)....306
Omitted Vehicles Too Slow (1%).....4
Sampled Vehicles (43%).....238

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Monday															
24-Apr															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am															
11:00am															
12:00pm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
01:00pm	48	86	225	159	50	10	1	.	.	.	.	.	.	.	57
02:00pm	77	102	221	171	50	9	.	.	.	.	.	.	.	.	63
03:00pm	88	133	259	154	36	10	1	1	.	.	.	.	.	.	68
04:00pm	89	135	240	147	46	10	.	.	.	.	.	.	.	.	66
05:00pm	64	105	203	156	49	6	2	.	.	.	.	.	.	.	58
06:00pm	22	40	147	185	75	16	4	3	.	.	.	.	.	.	49
07:00pm	.	20	107	153	79	19	7	1	.	.	.	.	.	.	38
08:00pm	8	39	117	143	54	16	2	.	.	.	.	.	.	.	37
09:00pm	2	13	79	106	56	21	4	1	1	.	.	.	.	.	28
10:00pm	4	6	35	79	41	23	3	4	.	.	.	.	.	.	19
11:00pm	.	1	21	55	45	26	2	.	1	.	.	.	.	.	15
Totals	402	680	1654	1508	581	166	26	10	2	0	0	0	0	0	502
Percent	7.99	13.52	32.89	29.99	11.55	3.30	0.52	0.20	0.04	0.00	0.00	0.00	0.00	0.00	
Tuesday															
25-Apr															
12:00am	.	.	5	17	21	11	10	2	1	1	.	.	.	.	6
01:00am	.	.	4	12	17	7	3	1	.	.	.	.	.	.	4
02:00am	.	.	2	11	5	8	5	1	.	.	.	.	.	.	3
03:00am	.	.	.	2	7	4	3	.	.	1	.	.	.	.	1
04:00am	.	.	6	12	15	12	6	1	.	.	.	.	.	.	5
05:00am	1	2	10	38	52	19	10	1	.	.	.	.	.	.	13
06:00am	6	19	32	97	74	36	7	.	1	.	.	.	.	.	27
07:00am	20	44	133	123	62	13	2	.	.	.	.	.	.	.	39
08:00am	19	29	143	209	79	22	4	4	1	.	.	.	.	.	51
09:00am	19	48	129	192	102	17	.	1	.	.	.	.	.	.	50
10:00am	32	60	182	181	79	17	1	.	.	.	.	.	.	.	55
11:00am	37	86	216	160	62	7	2	.	.	.	.	.	.	.	57
12:00pm	52	92	185	155	40	9	.	.	.	.	.	.	.	.	53
01:00pm	75	112	221	115	46	8	2	.	.	.	.	.	.	.	57
02:00pm	91	105	196	134	27	9	4	.	.	.	.	.	.	.	56
03:00pm	115	141	204	148	40	9	.	.	.	.	.	.	.	.	65
04:00pm	67	113	223	196	66	7	3	.	.	.	.	.	.	.	67
05:00pm	54	111	196	184	71	9	4	.	.	.	1	.	.	.	63
06:00pm	26	62	161	145	44	12	1	.	.	.	.	.	.	.	45
07:00pm	14	31	121	166	72	10	3	.	.	.	.	.	.	.	41
08:00pm	21	26	95	144	53	10	4	.	1	.	.	.	.	.	35
09:00pm	10	38	63	111	64	33	3	1	.	.	.	.	.	.	32
10:00pm	1	7	39	75	58	38	6	1	.	.	.	.	.	.	22
11:00pm	.	1	15	53	55	31	4	4	1	.	.	.	.	.	16
Totals	660	1127	2581	2680	1211	358	87	17	5	2	1	0	0	0	872
Percent	7.56	12.91	29.57	30.70	13.87	4.10	1.00	0.19	0.06	0.02	0.01	0.00	0.00	0.00	
Wednesday															
26-Apr															
12:00am	2	2	.	13	39	19	6	5	.	.	1	.	.	.	8
01:00am	.	1	2	6	22	12	9	1	.	.	.	.	.	.	5
02:00am	.	.	6	11	7	9	3	.	.	.	.	.	.	.	3
03:00am	1	1	1	1	8	4	3	.	.	.	.	.	.	.	1
04:00am	2	2	3	9	15	12	12	3	3	.	.	.	.	.	6
05:00am	.	2	6	27	38	20	5	1	.	.	.	.	.	.	9
06:00am	8	14	37	80	84	23	8	.	1	.	.	.	.	.	25
07:00am	11	21	74	123	125	43	14	2	1	.	.	.	.	.	41
08:00am	15	20	96	179	133	28	3	1	.	.	.	.	.	.	47
09:00am	27	33	124	230	96	22	2	2	.	.	.	.	.	.	53
10:00am	36	101	160	180	70	23	1	.	.	.	.	.	.	.	57
11:00am	93	122	216	183	60	8	.	.	.	.	.	.	.	.	68
12:00pm	90	114	192	137	44	4	.	.	.	.	.	.	.	.	58
01:00pm	73	111	213	179	48	16	3	.	.	.	.	.	.	.	64
02:00pm	90	132	209	147	51	6	1	1	.	.	.	.	.	.	63
03:00pm	68	142	232	199	59	10	2	1	.	.	.	.	.	.	71
04:00pm	70	134	252	188	50	4	.	.	.	.	.	.	.	.	69
05:00pm	58	89	198	211	74	13	4	.	.	.	.	.	.	.	64
06:00pm	33	61	161	221	79	11	4	.	.	.	.	.	.	.	57
07:00pm	8	35	107	175	74	22	2	.	.	.	.	.	.	.	42
08:00pm	16	41	111	133	72	19	3	.	.	.	.	.	.	.	39
09:00pm	4	26	82	148	72	23	8	1	2	.	.	.	.	.	36
10:00pm	1	4	22	81	69	40	11	2	.	.	.	.	.	.	23
11:00pm	.	2	19	54	38	32	11	2	1	.	.	.	.	.	15
Totals	706	1210	2523	2915	1427	423	115	22	8	0	1	0	0	0	935
Percent	7.55	12.94	26.98	31.18	15.26	4.52	1.23	0.24	0.09	0.00	0.01	0.00	0.00	0.00	
Thursday															
27-Apr															

12:00am	1	2	5	21	31	21	9	3	1	.	1	.	.	.	9
01:00am	.	1	2	19	20	18	6	.	1	.	.	.	.	.	6
02:00am	.	.	2	7	14	10	6	.	1	.	.	.	.	.	4
03:00am	1	.	5	11	11	9	4	1	.	.	.	.	.	.	4
04:00am	.	2	3	9	13	18	4	1	2	.	.	.	.	.	5
05:00am	.	3	7	21	38	29	7	2	1	.	.	.	.	.	10
06:00am	10	10	27	82	79	21	4	.	.	.	.	.	.	.	23
07:00am	7	36	91	163	78	24	2	.	.	.	.	.	.	.	40
08:00am	27	48	147	194	86	22	5	2	.	.	.	.	.	.	53
09:00am	26	82	182	186	60	11	1	.	.	.	.	.	.	.	54
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am															
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	72	184	471	713	430	183	48	9	6	0	1	0	0	0	211
Percent	3.40	8.69	22.25	33.68	20.31	8.64	2.27	0.43	0.28	0.00	0.05	0.00	0.00	0.00	

Status: OK East Combined West Class Speed

WATB-255 - Combined - e/w

[303]-East Main Street - .09 mi East of Brook Street

Town.....Waterbury
Station.....255
Location..... 41.555424,-73.039229
A.K.A.....2255
2015-Minor Arterial 4.....2015-Urban
HPMS Section ID.....
Start Report.....24-Apr-2023 01:00PM
End Report.....27-Apr-2023 10:00AM
Annualized ADT.....8400
24-Hour Count... 8717 * G4(0.94) = 8194.0
Day 1.....+ 8729 * G4(0.94) = 16399.2
Day 2.....+ 9350 * G4(0.94) = 25188.2
UnRounded AADT.....25188.2 / 3 = 8396.1
OK 2023 Mon 24-Apr -this report-...8400
OK 2020 Wed 08-Jan 8400
OK 2017 Mon 30-Jan 7700
OK 2011 Mon 14-Mar 10600
OK 2008 Mon 19-May 10000
Dataset Details.....2

	24-Apr Mon	25-Apr Tue	26-Apr Wed	27-Apr Thu
12:00am		68	87	95
01:00am		44	53	67
02:00am		32	36	40
03:00am		17	19	42
04:00am		52	61	52
05:00am		133	99	108
06:00am		272	255	233
07:00am		397	414	401
08:00am		510	475	531
09:00am		508	536	548
10:00am		552	571	x
11:00am		570	682	
12:00pm	x	533	581	
01:00pm	579	579	643	
02:00pm	630	566	637	
03:00pm	682	657	713	
04:00pm	667	675	698	
05:00pm	585	630	647	
06:00pm	492	451	570	
07:00pm	386	417	423	
08:00pm	379	354	395	
09:00pm	283	323	366	
10:00pm	195	225	230	
11:00pm	151	164	159	
Totals	5029	8729	9350	2117

Status: OK

WATB-257 - North

[952]-South Main St - .10 mi North of Scovill St

Town.....Waterbury
Station.....257
Location..... 41.554251,-73.040317
2015-Minor Arterial 4.....2015-Urban
Start Report.....15-Aug-2023 11:00AM
End Report.....18-Aug-2023 11:00AM
Dataset Details.....1

All Vehicles Average Speed..... 23 MPH
Total Vehicles.....12092
Percentile Sampling Period... 9AM to 4PM
Vehicle Too Close.....5 secs
Vehicle Too Slow..... < 7 MPH
Speed Lower Limit...15 MPH below Average

All Report Days
85th Percentile Speed.....27.8 MPH
50th Percentile Speed.....21.6 MPH
10 MPH Pace (61%).....18-27 MPH
All Hours Total Vehicles.....12092
In-Period Total Vehicles.....5528
Omitted Vehicles Too Close (39%)...2140
Omitted Vehicles Too Slow (1%).....73
Sampled Vehicles (60%).....3315

Tuesday 15-Aug-2023
85th Percentile Speed.....24.7 MPH
50th Percentile Speed.....18.9 MPH
10 MPH Pace (61%).....16-25 MPH
All Hours Total Vehicles.....2673
In-Period Total Vehicles.....1313
Omitted Vehicles Too Close (38%)....499
Omitted Vehicles Too Slow (2%).....31
Sampled Vehicles (60%).....783

Wednesday 16-Aug-2023
85th Percentile Speed.....28.0 MPH
50th Percentile Speed.....21.7 MPH
10 MPH Pace (63%).....18-27 MPH
All Hours Total Vehicles.....4071
In-Period Total Vehicles.....1861
Omitted Vehicles Too Close (40%)....740
Omitted Vehicles Too Slow (1%).....13
Sampled Vehicles (60%).....1108

Thursday 17-Aug-2023
85th Percentile Speed.....28.6 MPH
50th Percentile Speed.....22.4 MPH
10 MPH Pace (62%).....18-27 MPH
All Hours Total Vehicles.....4230
In-Period Total Vehicles.....1884
Omitted Vehicles Too Close (39%)....727
Omitted Vehicles Too Slow (1%).....27
Sampled Vehicles (60%).....1130

Friday 18-Aug-2023
85th Percentile Speed.....29.8 MPH
50th Percentile Speed.....23.8 MPH
10 MPH Pace (61%).....21-30 MPH
All Hours Total Vehicles.....1118
In-Period Total Vehicles.....470
Omitted Vehicles Too Close (37%)....174
Omitted Vehicles Too Slow (0%).....2
Sampled Vehicles (63%).....294

Hour	MPH 0-15	MPH 16-20	MPH 21-25	MPH 26-30	MPH 31-35	MPH 36-40	MPH 41-45	MPH 46-50	MPH 51-55	MPH 56-60	MPH 61-65	MPH 66-70	MPH 71-75	MPH 76+	Tota Vol
Tuesday															
15-Aug															
12:00am															
01:00am															
02:00am															
03:00am															
04:00am															
05:00am															
06:00am															
07:00am															
08:00am															
09:00am															
10:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
11:00am	110	93	67	11	3	1	.	.	.	.	.	.	.	.	285
12:00pm	89	78	55	22	3	.	1	.	.	.	.	.	.	.	248
01:00pm	45	51	62	25	8	.	.	.	.	.	.	.	.	.	191
02:00pm	77	92	78	28	6	.	.	.	.	.	.	.	.	.	281
03:00pm	85	109	86	23	5	.	.	.	.	.	.	.	.	.	308
04:00pm	79	90	92	30	1	1	.	.	.	.	.	.	.	.	293
05:00pm	92	84	95	27	5	.	.	.	.	.	.	.	.	.	303
06:00pm	33	41	83	46	11	2	.	.	.	.	.	.	.	.	216
07:00pm	6	27	54	51	24	13	1	.	.	.	.	.	.	.	176
08:00pm	3	9	38	58	28	9	1	.	.	.	.	.	.	.	146
09:00pm	8	11	29	26	14	11	1	.	.	.	.	.	.	.	100
10:00pm	.	5	24	25	13	2	2	1	.	.	.	.	.	.	72
11:00pm	.	1	16	21	12	4	.	.	.	.	.	.	.	.	54
Totals	627	691	779	393	133	43	6	1	0	0	0	0	0	0	2673
Percent	23.46	25.85	29.14	14.70	4.98	1.61	0.22	0.04	0.00	0.00	0.00	0.00	0.00	0.00	
Wednesday															
16-Aug															
12:00am	.	1	7	6	7	.	2	.	.	.	.	.	.	.	23
01:00am	.	.	4	12	4	5	.	.	.	.	.	.	.	.	25
02:00am	.	1	3	5	7	3	2	1	.	.	.	.	.	.	22
03:00am	.	.	1	5	4	2	.	.	.	.	.	.	.	.	12
04:00am	.	1	10	6	6	.	.	.	.	.	.	.	.	.	23
05:00am	2	1	6	16	12	4	1	.	.	.	.	.	.	.	42
06:00am	.	4	23	37	23	11	.	.	.	.	.	.	.	.	98
07:00am	.	21	37	81	38	12	4	.	.	.	.	.	.	.	193
08:00am	15	25	98	62	24	3	.	.	.	.	.	.	.	.	227
09:00am	31	49	87	56	17	5	.	.	.	.	.	.	.	.	245
10:00am	36	78	99	40	8	5	.	.	.	.	.	.	.	.	266
11:00am	50	67	88	51	14	.	.	.	.	.	.	.	.	.	270
12:00pm	51	85	89	31	13	2	.	1	.	.	.	.	.	.	272
01:00pm	44	55	81	52	14	3	1	.	.	.	.	.	.	.	250
02:00pm	34	53	92	62	10	1	.	.	.	.	.	.	.	.	252
03:00pm	45	61	118	61	18	3	.	.	.	.	.	.	.	.	306
04:00pm	47	80	120	68	27	7	.	.	.	.	.	.	.	.	349
05:00pm	23	55	101	85	23	5	2	.	.	.	.	.	.	.	294
06:00pm	26	46	100	52	17	3	.	.	.	.	.	.	.	.	244
07:00pm	11	36	78	50	28	5	1	.	.	.	.	.	.	.	209
08:00pm	9	28	51	46	17	7	.	.	.	.	.	.	.	.	158
09:00pm	2	10	56	44	32	5	1	.	.	.	.	.	.	.	150
10:00pm	2	6	19	30	12	8	1	.	.	.	.	.	.	.	78
11:00pm	.	5	19	18	14	6	.	.	.	.	1	.	.	.	63
Totals	428	768	1387	976	389	105	15	2	0	0	1	0	0	0	4071
Percent	10.51	18.87	34.07	23.97	9.56	2.58	0.37	0.05	0.00	0.00	0.02	0.00	0.00	0.00	
Thursday															
17-Aug															
12:00am	1	4	2	7	11	3	1	.	.	.	.	.	.	.	29
01:00am	.	2	2	7	6	2	.	.	.	.	.	.	.	.	19
02:00am	.	1	2	7	5	3	3	.	.	.	.	.	.	.	21
03:00am	.	.	2	3	5	1	.	.	.	.	.	.	.	.	11
04:00am	.	.	3	5	3	4	1	.	.	.	.	.	.	.	16
05:00am	1	3	7	11	15	3	1	.	.	.	.	.	.	.	41
06:00am	.	7	23	43	29	3	1	1	1	.	.	.	.	.	108
07:00am	8	20	39	81	33	5	3	.	.	.	.	.	.	.	189
08:00am	4	21	74	101	45	4	1	.	.	.	.	.	.	.	250
09:00am	23	47	78	70	13	6	.	.	.	.	.	.	.	.	237
10:00am	13	59	87	50	25	3	1	.	.	.	.	.	.	.	238
11:00am	37	85	89	48	21	5	.	.	.	.	.	.	.	.	285
12:00pm	23	73	107	56	16	3	1	.	.	.	.	.	.	.	275
01:00pm	24	52	88	60	17	5	.	.	.	.	.	.	.	.	246
02:00pm	52	52	80	63	20	3	1	.	.	.	.	.	.	.	271
03:00pm	88	94	89	42	13	1	1	.	.	.	.	.	.	.	328
04:00pm	49	71	106	54	22	3	.	.	.	.	.	.	.	.	305
05:00pm	82	84	98	37	19	2	1	.	.	.	.	.	.	.	323
06:00pm	33	66	77	62	15	6	.	.	.	.	.	.	.	.	259
07:00pm	23	36	79	40	13	1	.	.	.	.	.	.	.	.	192
08:00pm	10	27	46	48	14	4	2	1	.	.	.	.	.	.	152
09:00pm	16	29	49	46	19	7	.	.	.	.	.	.	.	.	166
10:00pm	21	45	38	36	9	5	.	.	.	.	.	.	.	.	154
11:00pm	23	20	25	29	10	3	1	.	.	.	.	.	.	.	111
Totals	531	898	1290	1006	398	85	19	2	1	0	0	0	0	0	4230
Percent	12.55	21.23	30.50	23.78	9.41	2.01	0.45	0.05	0.02	0.00	0.00	0.00	0.00	0.00	
Friday															
18-Aug															

12:00am	11	18	16	11	3	3	1	.	.	.	.	.	.	.	6
01:00am	10	5	13	12	9	3	2	.	.	.	.	.	.	.	5
02:00am	.	1	1	6	9	.	1	.	.	.	.	.	.	.	1
03:00am	.	1	4	6	2	4	.	.	.	.	.	.	.	.	1
04:00am	.	.	4	7	1	3	3	.	.	.	.	.	.	.	1
05:00am	3	3	13	10	6	1	.	.	.	.	.	.	.	.	3
06:00am	34	4	14	15	8	3	.	.	.	.	.	.	.	.	7
07:00am	6	20	48	53	16	5	.	.	.	.	.	.	.	.	14
08:00am	8	23	78	68	32	5	2	.	.	.	.	.	.	.	21
09:00am	14	37	79	61	22	5	.	.	.	.	.	.	.	.	21
10:00am	21	49	97	60	20	4	.	1	.	.	.	.	.	.	25
11:00am	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
12:00pm															
01:00pm															
02:00pm															
03:00pm															
04:00pm															
05:00pm															
06:00pm															
07:00pm															
08:00pm															
09:00pm															
10:00pm															
11:00pm															
Totals	107	161	367	309	128	36	9	1	0	0	0	0	0	0	111
Percent	9.57	14.40	32.83	27.64	11.45	3.22	0.81	0.09	0.00	0.00	0.00	0.00	0.00	0.00	

Status: OK Class Speed

WATB-257 - North

[952]-South Main St - .10 mi North of Scovill St

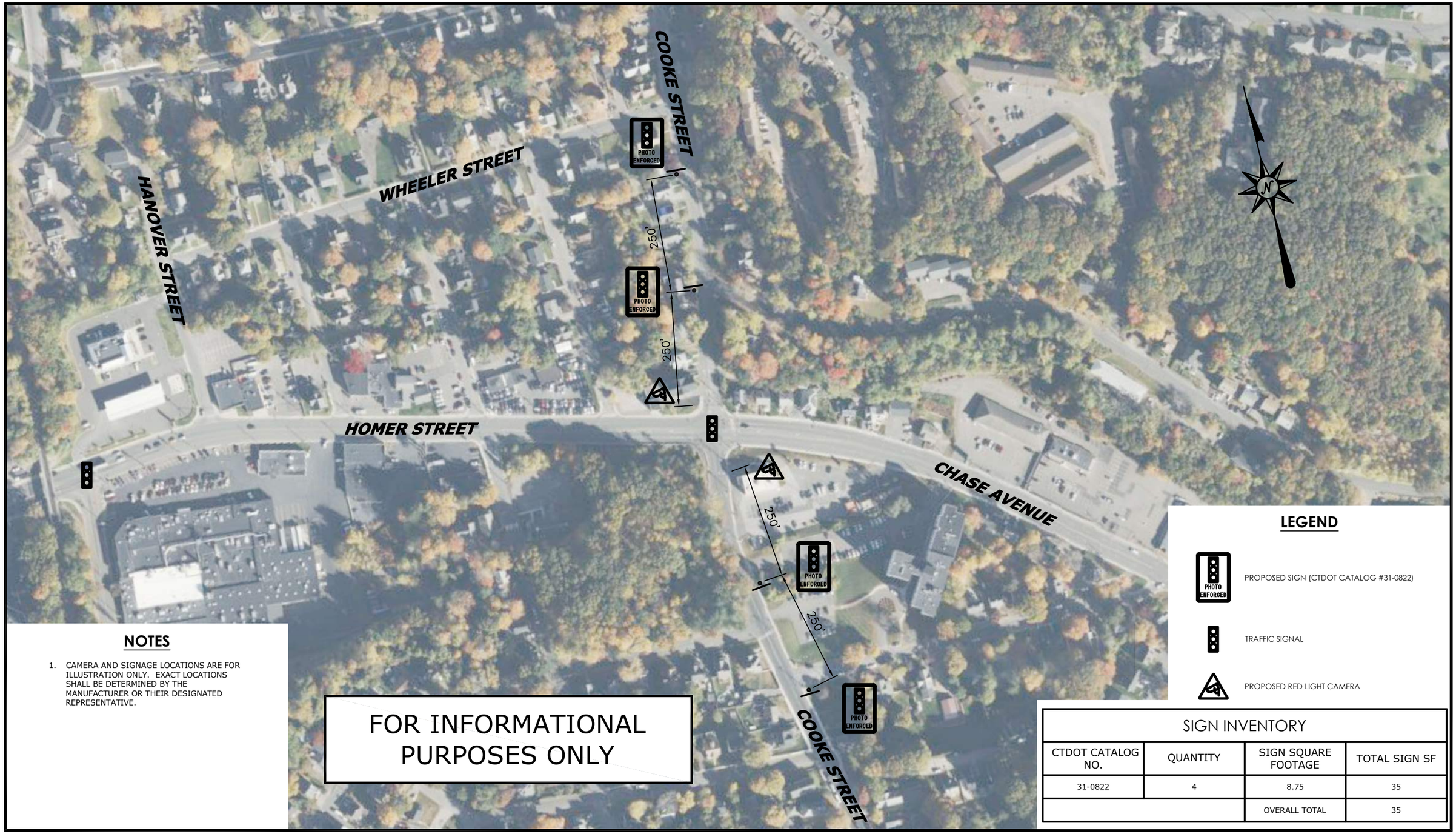
```
Town.............................Waterbury
Station..................................257
Location.............. 41.554251,-73.040317
2015-Minor Arterial  4.........2015-Urban
Start Report..........15-Aug-2023 11:00AM
End Report............18-Aug-2023 11:00AM
Annualized ADT.......................3800
24-Hour Count... 3849 * G4(0.94) = 3618.1
Day 1..........+ 4071 * G4(0.94) = 7444.8
Day 2.........+ 4230 * G4(0.94) = 11421.0
UnRounded AADT.......11421.0 / 3 = 3807.0
 OK  2023 Tue 15-Aug -this report-...3800
 OK  2020 Wed 08-Jan .................4600
 OK  2017 Mon 30-Jan .................7000
 OK  2011 Tue 01-Mar .................5300
 OK  2011 Wed 09-Mar .................5200
 OK  2008 Mon 19-May .................3600
 OK  2008 Mon 30-Jun .................4200
Dataset Details.........................1
```

	15-Aug Tue	16-Aug Wed	17-Aug Thu	18-Aug Fri
12:00am		23	29	63
01:00am		25	19	54
02:00am		22	21	18
03:00am		12	11	17
04:00am		23	16	18
05:00am		42	41	36
06:00am		98	108	78
07:00am		193	189	148
08:00am		227	250	216
09:00am		245	237	218
10:00am	x	266	238	252
11:00am	285	270	285	x
12:00pm	248	272	279	
01:00pm	191	250	246	
02:00pm	281	252	271	
03:00pm	308	306	328	
04:00pm	293	349	305	
05:00pm	303	294	323	
06:00pm	216	244	259	
07:00pm	176	209	192	
08:00pm	146	158	152	
09:00pm	100	150	166	
10:00pm	72	78	154	
11:00pm	54	63	111	
Totals	2673	4071	4230	1118

Architecture
Engineering
Environmental
Land Surveying
Companies



SITE PLAN



NOTES

1. CAMERA AND SIGNAGE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR THEIR DESIGNATED REPRESENTATIVE.

FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PHOTO ENFORCED — PROPOSED SIGN (CTDOT CATALOG #31-0822)

TRAFFIC SIGNAL

PROPOSED RED LIGHT CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	4	8.75	35
		OVERALL TOTAL	35

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 1.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

CHASE AVENUE AT HOMER STREET & COOKE STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 1

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NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PROPOSED SIGN (40 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	2	7.5	15
31-0808	2	2	4
31-0813	2	6	12
		OVERALL TOTAL	31

6/9/2026, MSUITERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 2.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

600 THOMASTON AVENUE

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 2

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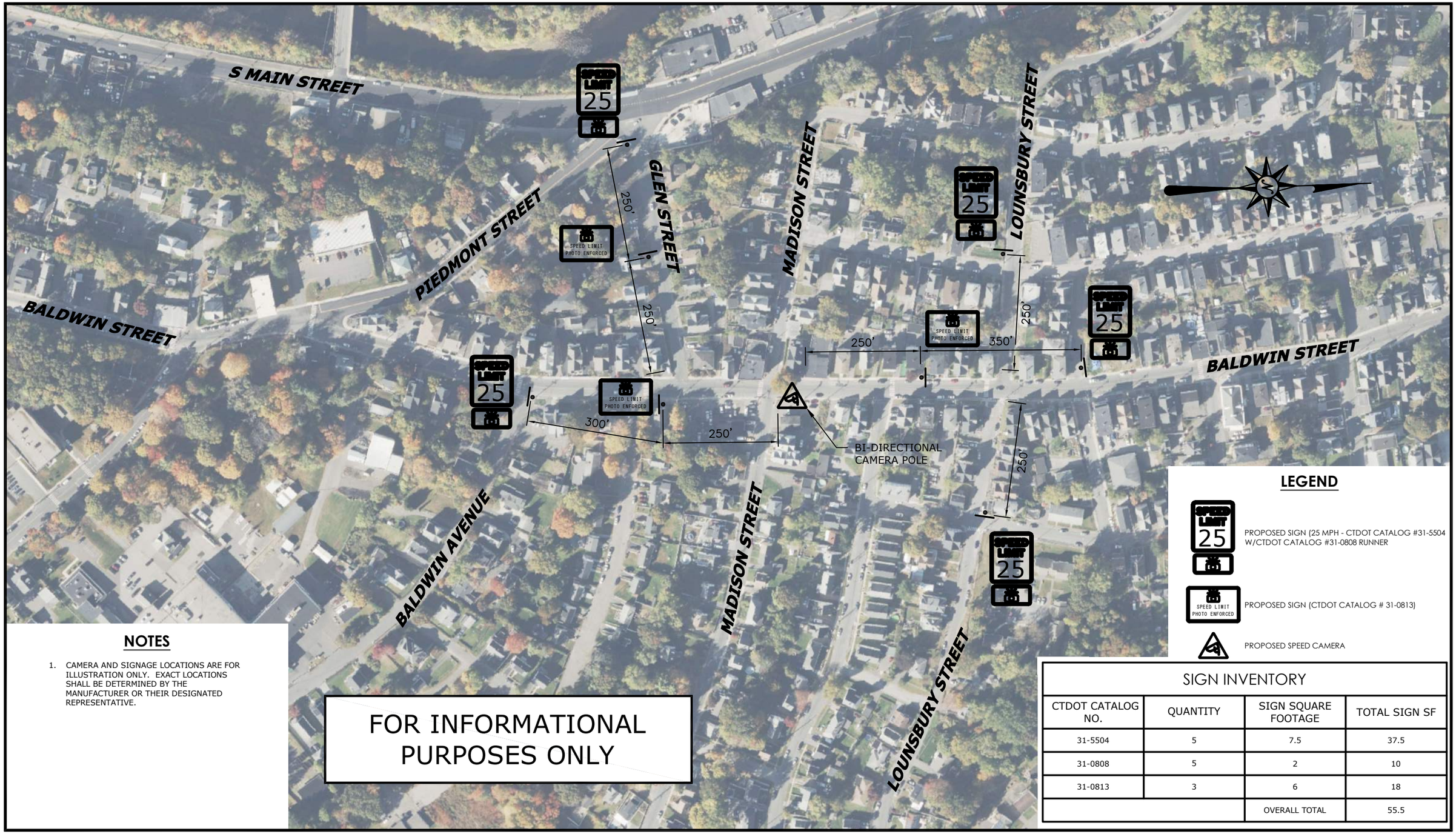

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PROPOSED SIGN (25 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	5	7.5	37.5
31-0808	5	2	10
31-0813	3	6	18
		OVERALL TOTAL	55.5

6/5/2026, MSUITERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 3.

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

BALDWIN STREET AT MADISON STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 3

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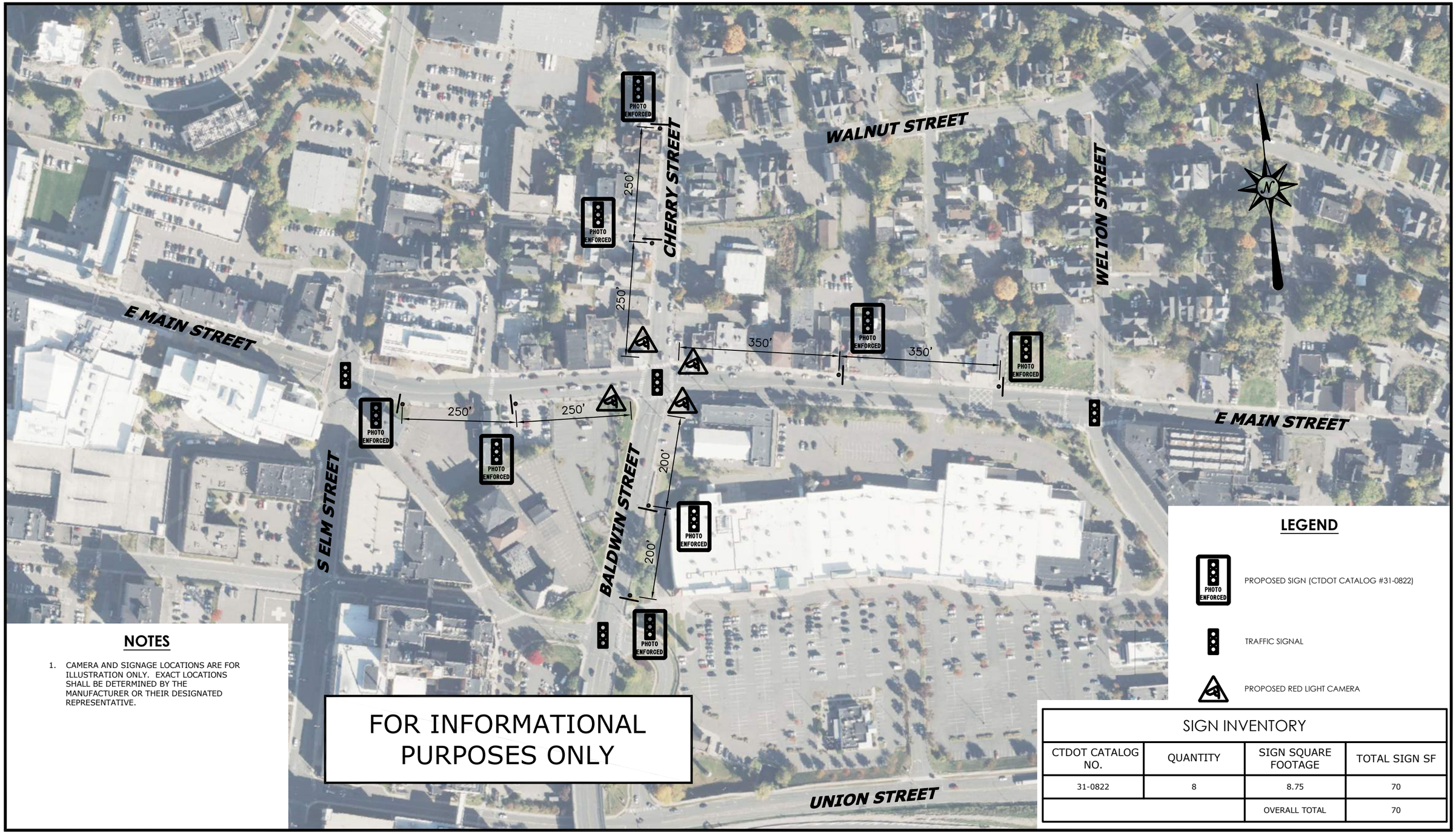

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

- PROPOSED SIGN (CTDOT CATALOG #31-0822)
- TRAFFIC SIGNAL
- PROPOSED RED LIGHT CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	8	8.75	70
		OVERALL TOTAL	70

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

EAST MAIN STREET AT BALDWIN STREET AND CHERRY STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 4

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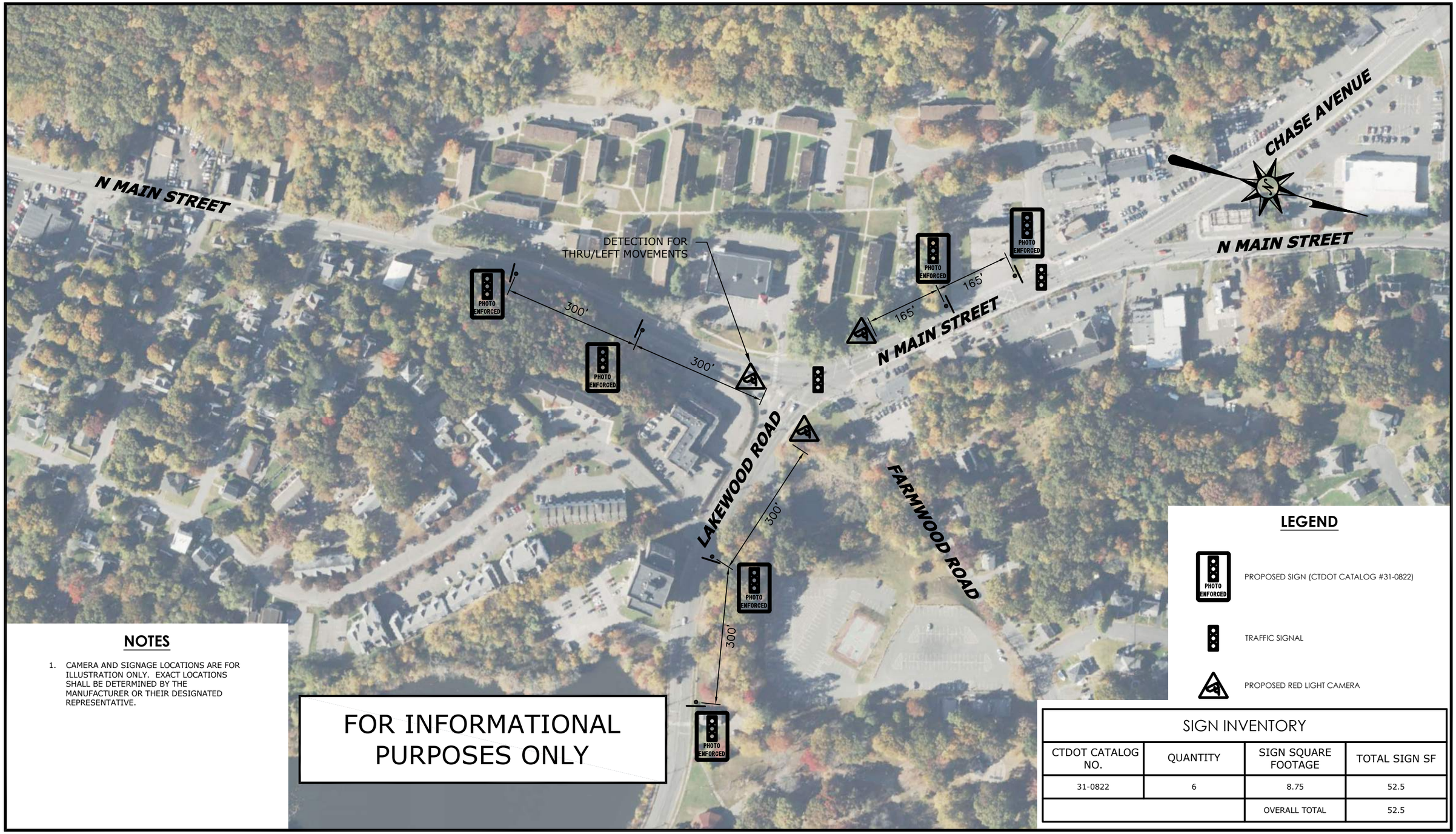
6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 4.



NOTES

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LEGEND

PHOTO ENFORCED — PROPOSED SIGN (CTDOT CATALOG #31-0822)

TRAFFIC SIGNAL

PROPOSED RED LIGHT CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	6	8.75	52.5
		OVERALL TOTAL	52.5

6/9/2026, MSUTTERBY, G:\JOBS25\3025030\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 5.

ARCHITECTURE
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LAND SURVEYING

BL Companies

NORTH MAIN STREET AT LAKEWOOD ROAD

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 5

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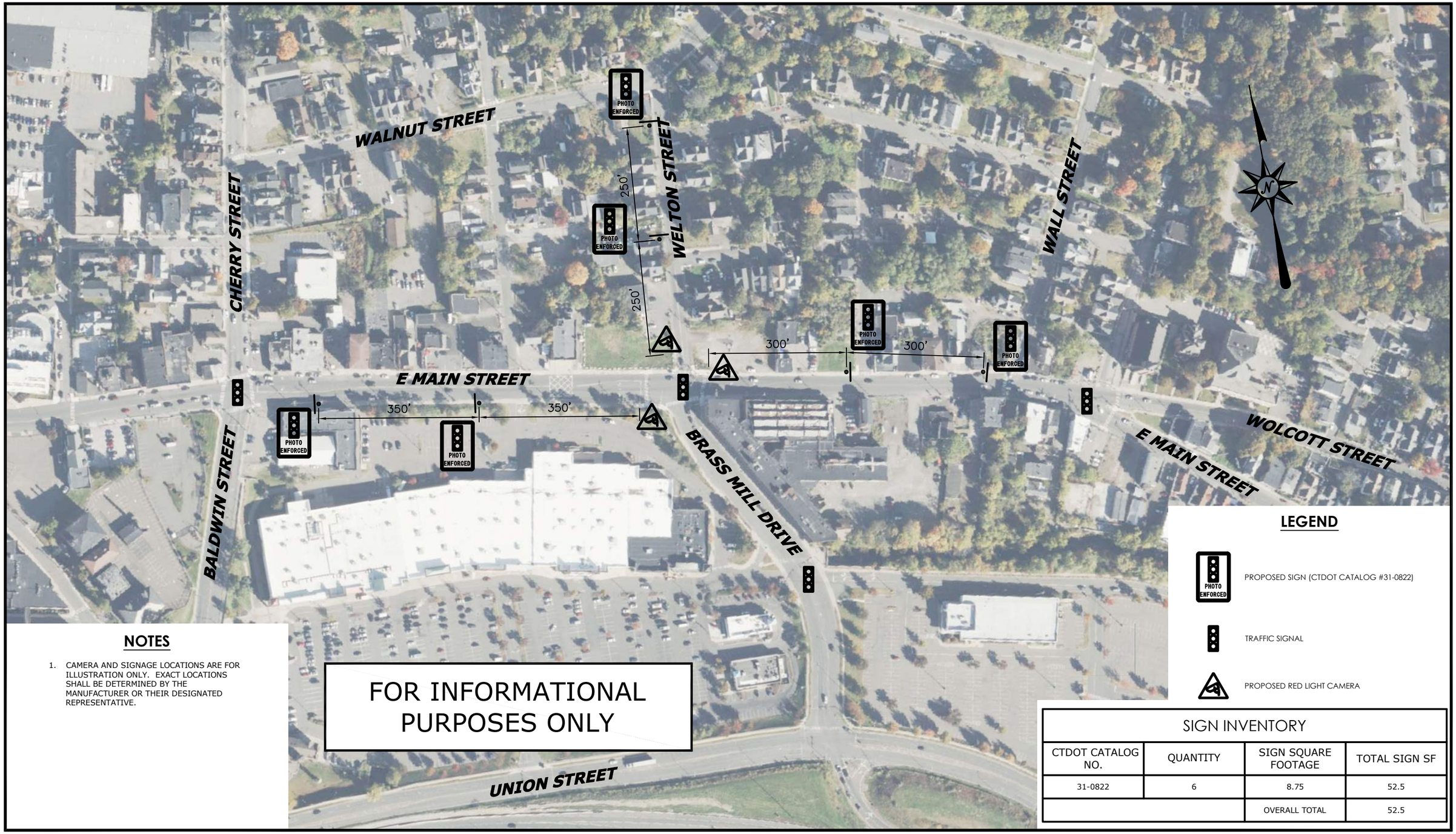

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PHOTO ENFORCED — PROPOSED SIGN (CTDOT CATALOG #31-0822)

TRAFFIC SIGNAL

PROPOSED RED LIGHT CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	6	8.75	52.5
		OVERALL TOTAL	52.5

6/5/2026, MSUTTERBY, G:\JOBS25\301.2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 6.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

EAST MAIN STREET AT BRASS MILL DRIVE AND WELTON STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 6

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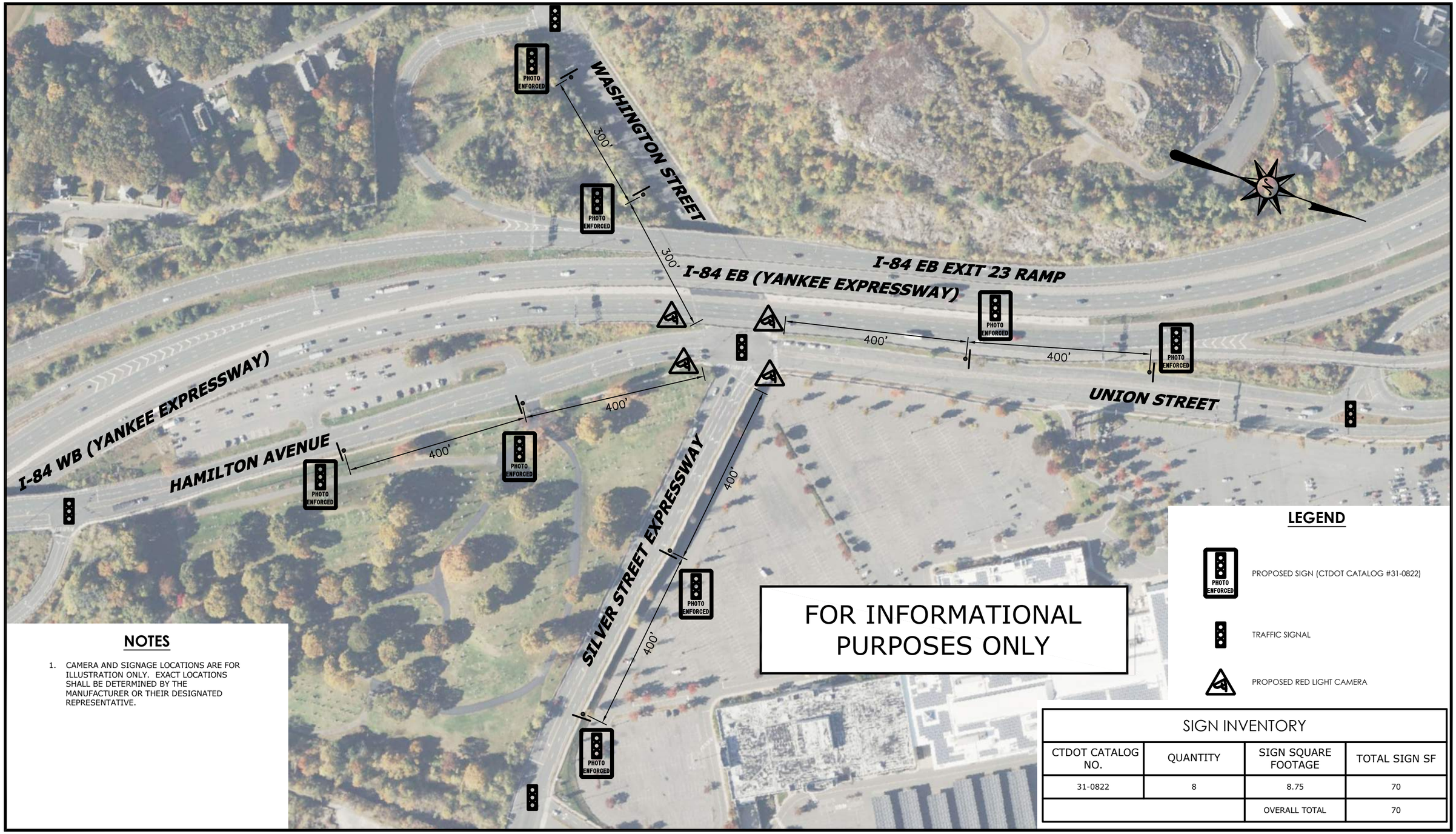

NOTES

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LEGEND

PROPOSED SIGN (CTDOT CATALOG #31-0822)

TRAFFIC SIGNAL

PROPOSED RED LIGHT CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	8	8.75	70
		OVERALL TOTAL	70

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 7.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

HAMILTON AVENUE AT UNION STREET, SILVER STREET EXPRESSWAY AND WASHINGTON STREET
SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 7

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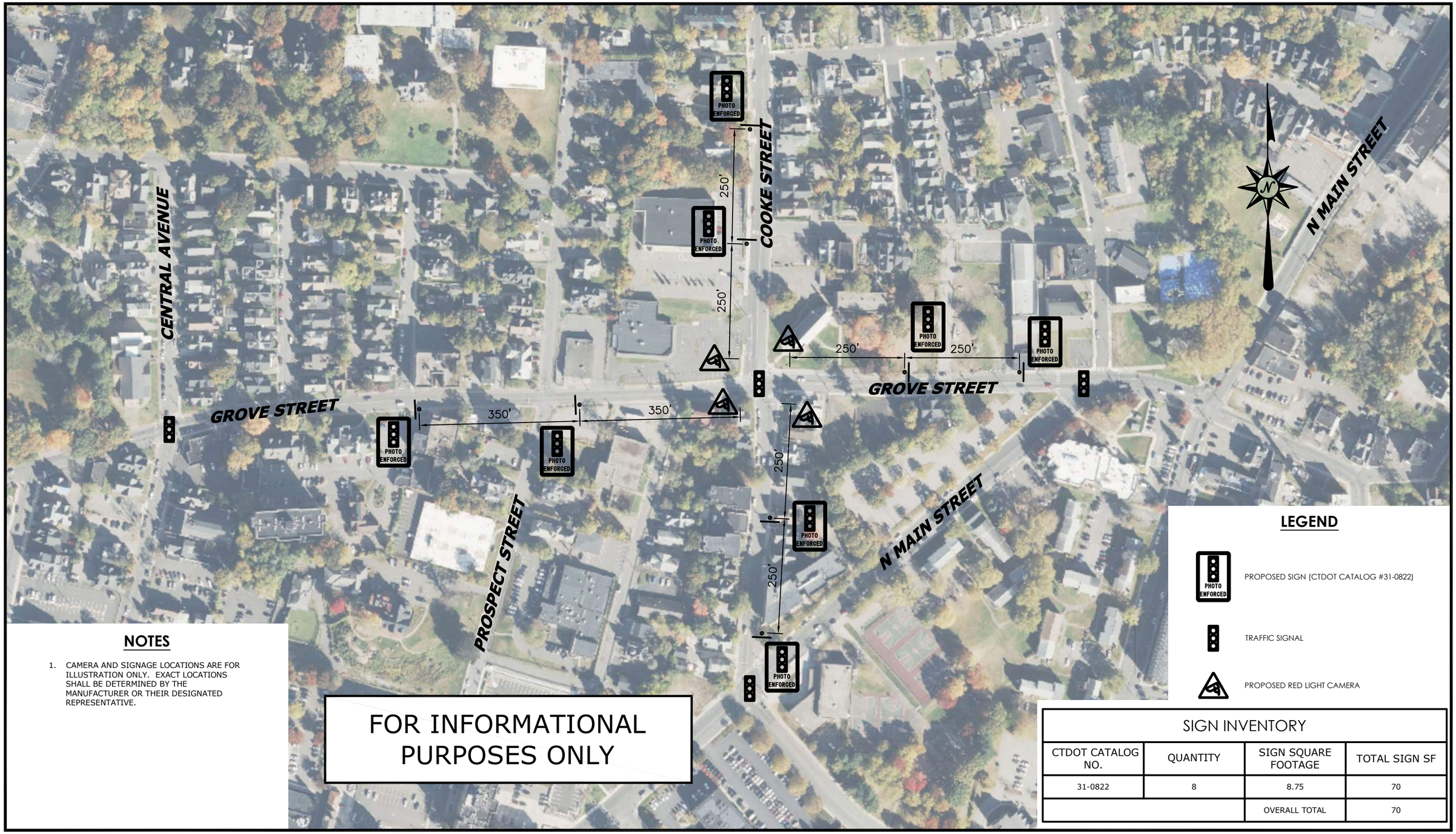

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PHOTO ENFORCED — PROPOSED SIGN (CTDOT CATALOG #31-0822)

TRAFFIC SIGNAL

PROPOSED RED LIGHT CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	8	8.75	70
		OVERALL TOTAL	70

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

COOKE STREET AT GROVE STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 8

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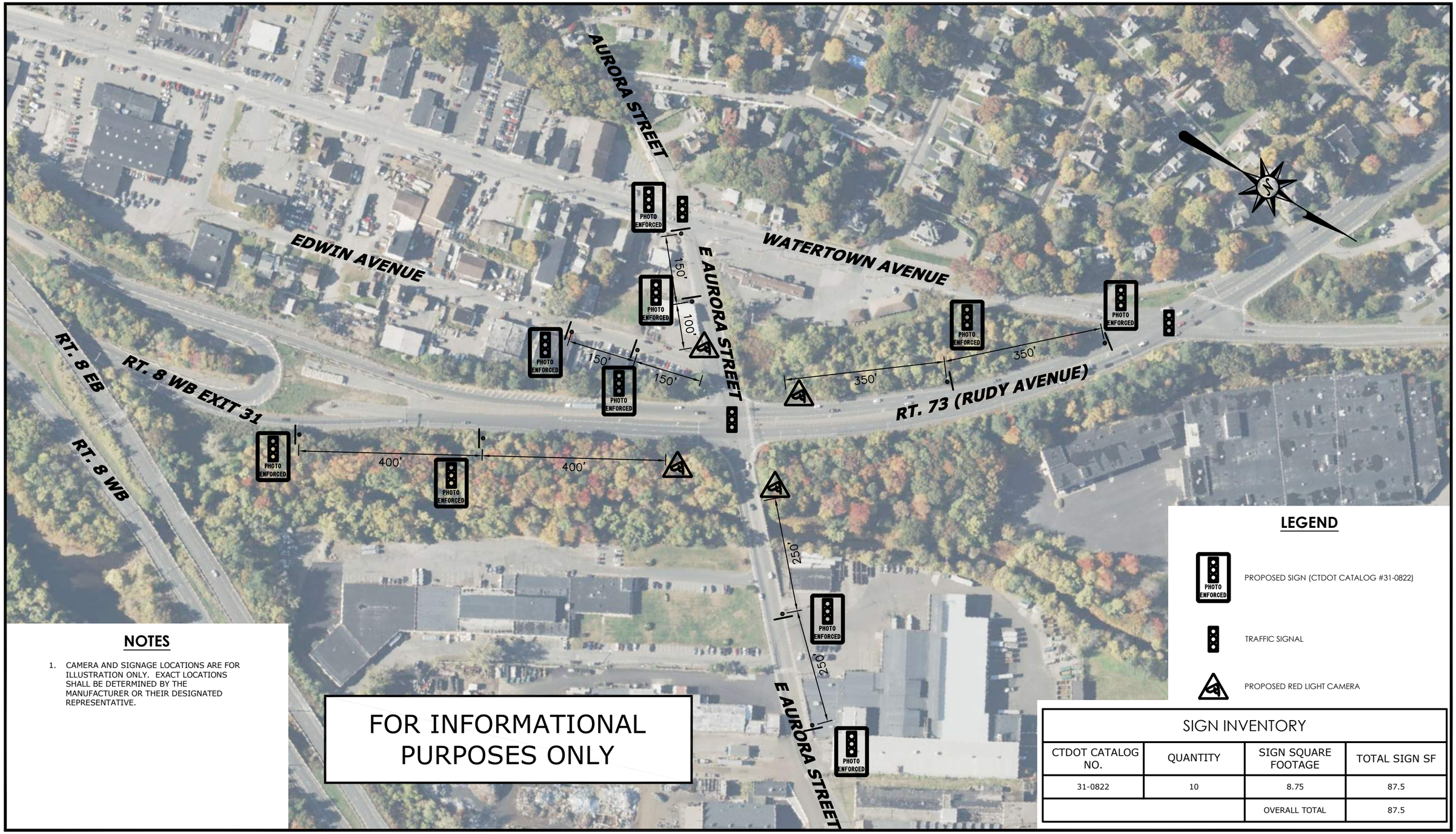
6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 8.



NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

- PROPOSED SIGN (CTDOT CATALOG #31-0822)
- TRAFFIC SIGNAL
- PROPOSED RED LIGHT CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	10	8.75	87.5
		OVERALL TOTAL	87.5

6/9/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 9.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

ROUTE 73 (RUDY AVENUE) AT EAST AURORA STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 9

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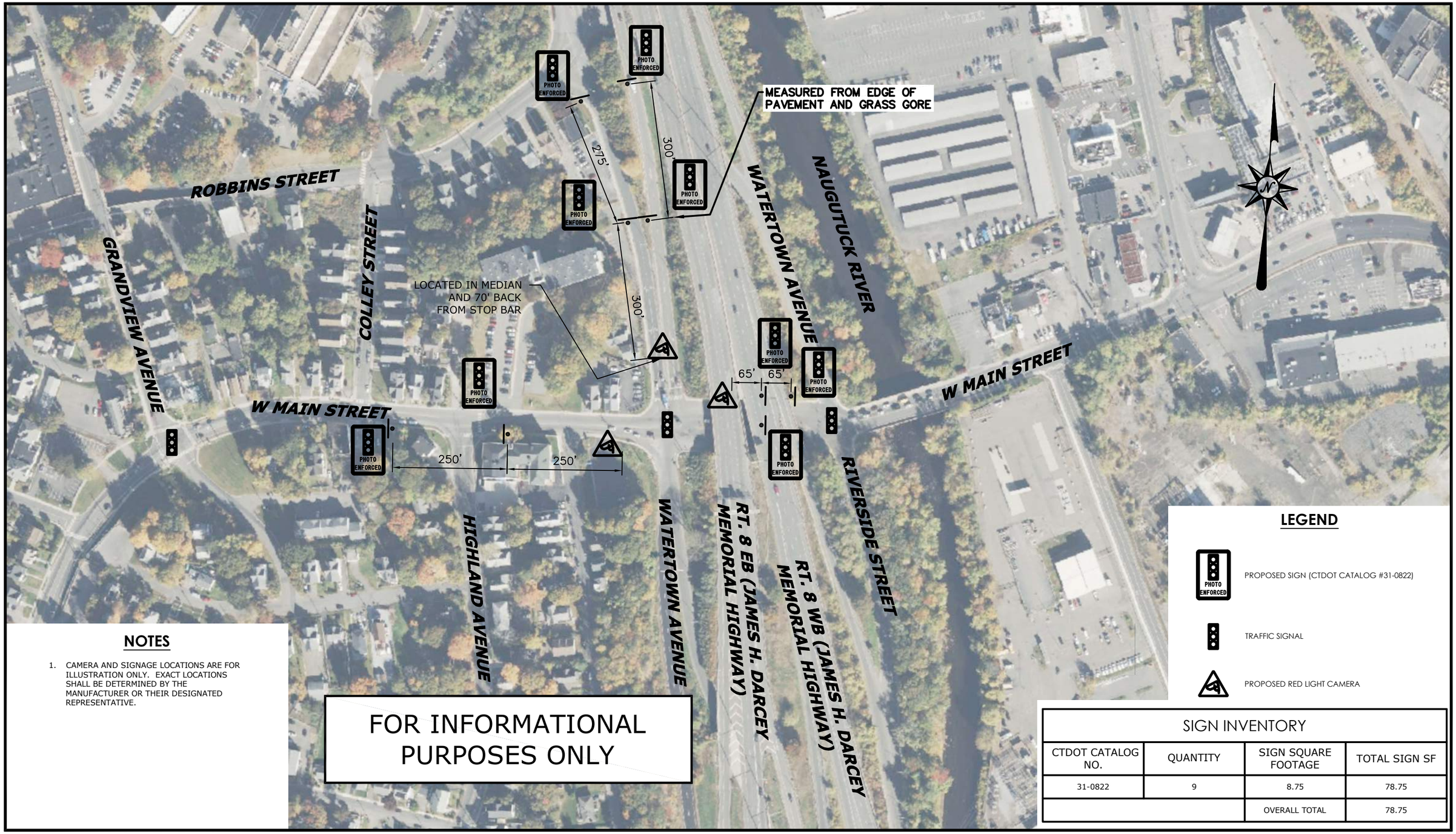

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

- PROPOSED SIGN (CTDOT CATALOG #31-0822)
- TRAFFIC SIGNAL
- PROPOSED RED LIGHT CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	9	8.75	78.75
		OVERALL TOTAL	78.75

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

WEST MAIN STREET AT WATERTOWN AVENUE

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 10

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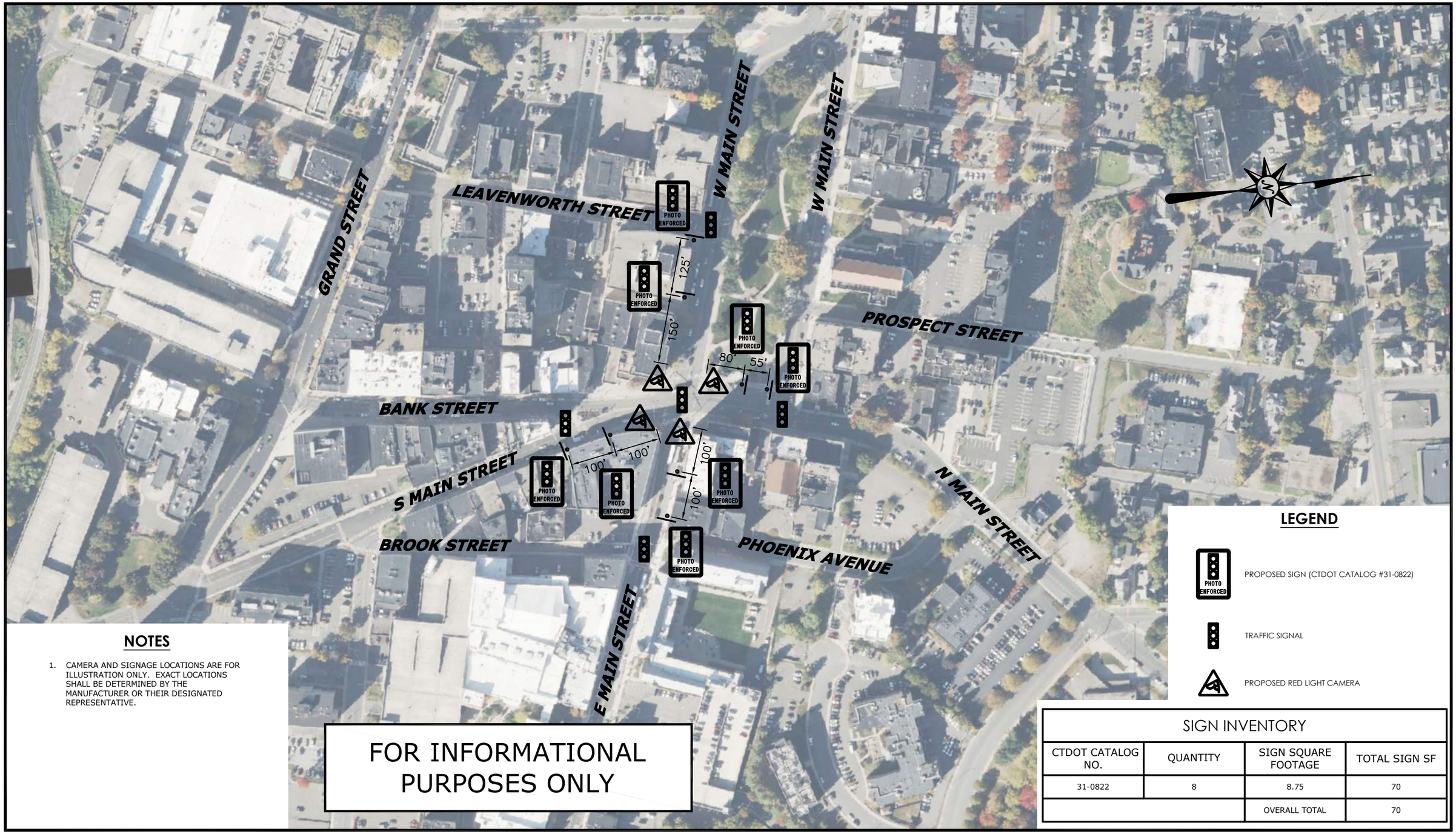
6/9/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 10.



NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PHOTO ENFORCED — PROPOSED SIGN (CTDOT CATALOG #31-0822)

TRAFFIC SIGNAL

PROPOSED RED LIGHT CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-0822	8	8.75	70
		OVERALL TOTAL	70

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 11.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

WEST/EAST MAIN STREET AT NORTH/SOUTH MAIN STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 11

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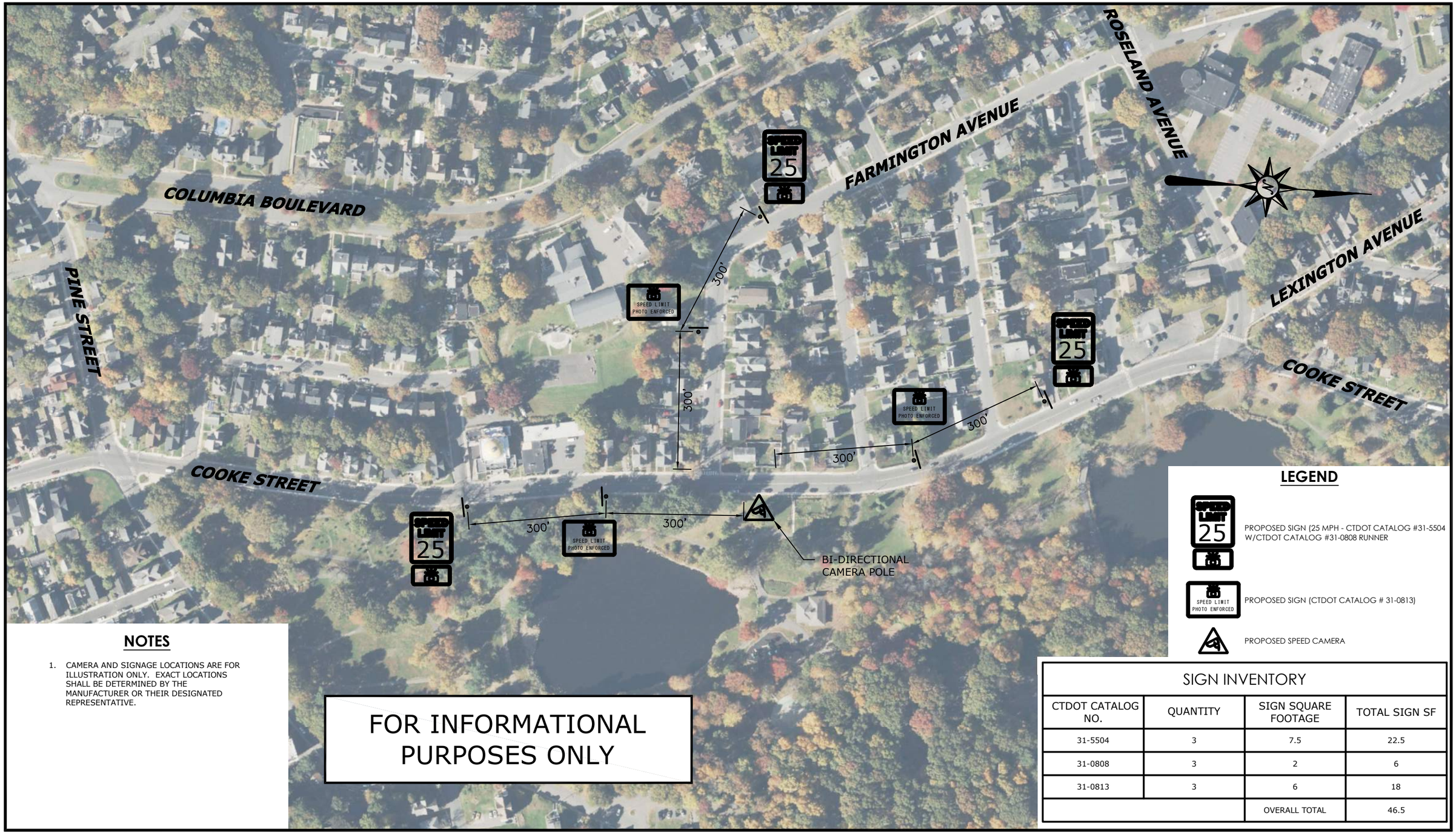

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

- PROPOSED SIGN (25 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER
- PROPOSED SIGN (CTDOT CATALOG # 31-0813)
- PROPOSED SPEED CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	3	7.5	22.5
31-0808	3	2	6
31-0813	3	6	18
		OVERALL TOTAL	46.5

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 12.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

COOKE STREET AT FARMINGTON AVENUE

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 12

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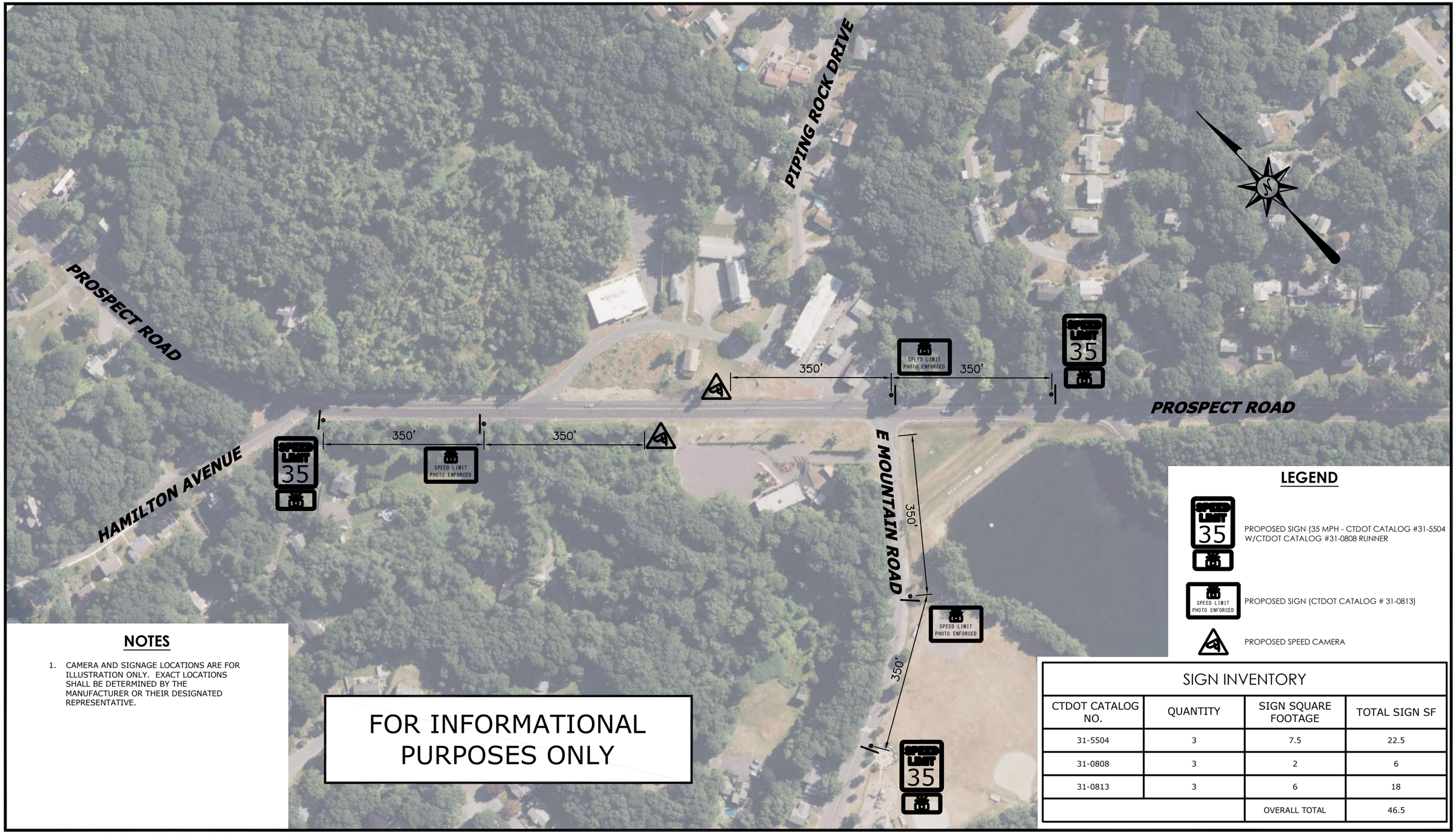

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PROPOSED SIGN (35 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	3	7.5	22.5
31-0808	3	2	6
31-0813	3	6	18
		OVERALL TOTAL	46.5

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 13.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

PROSPECT ROAD AT EAST MOUNTAIN ROAD

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 13

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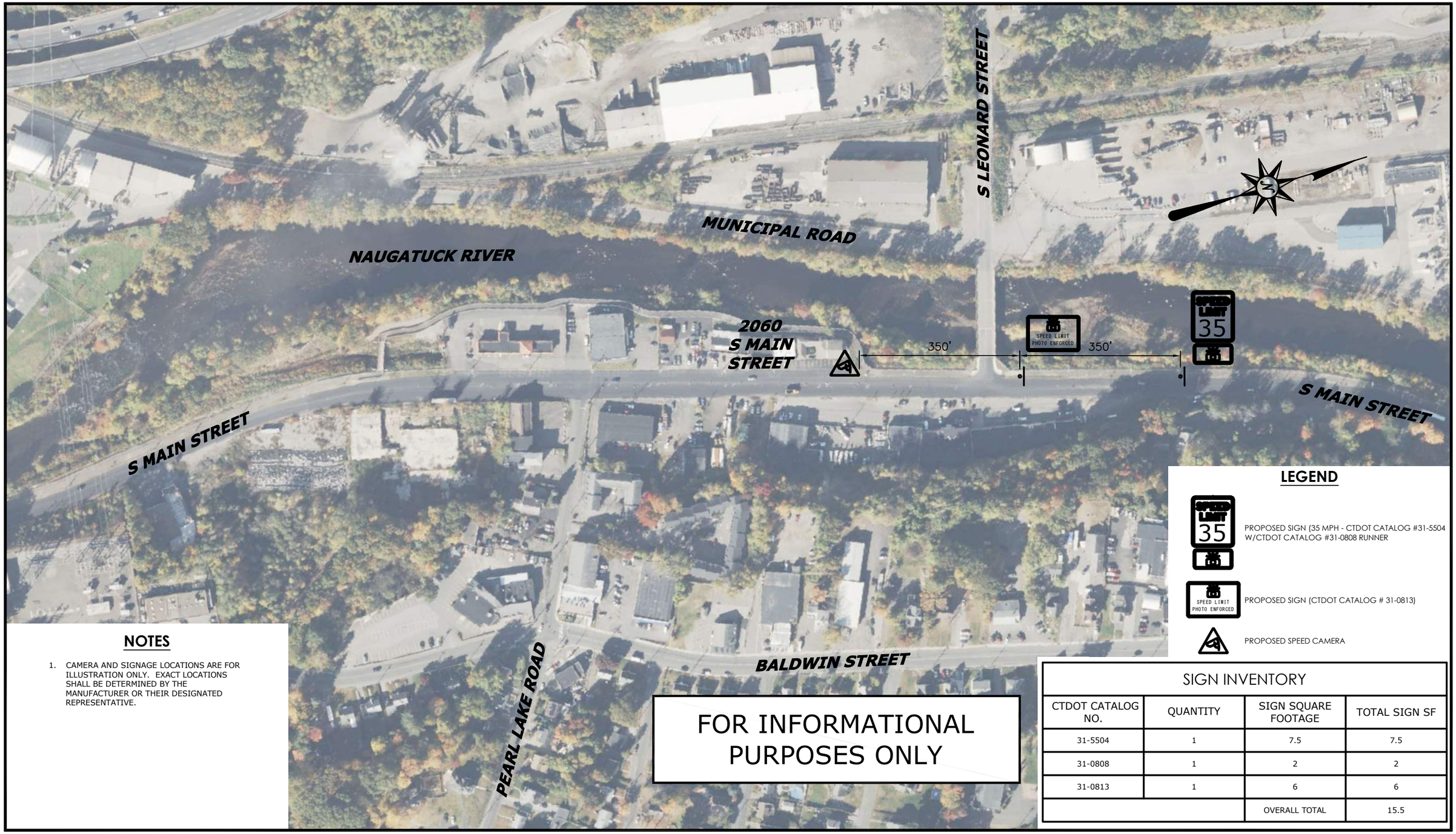

NOTES

1. CAMERA AND SIGNAGE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR THEIR DESIGNATED REPRESENTATIVE.

FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PROPOSED SIGN (35 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	1	7.5	7.5
31-0808	1	2	2
31-0813	1	6	6
		OVERALL TOTAL	15.5

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

2060 SOUTH MAIN STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 14

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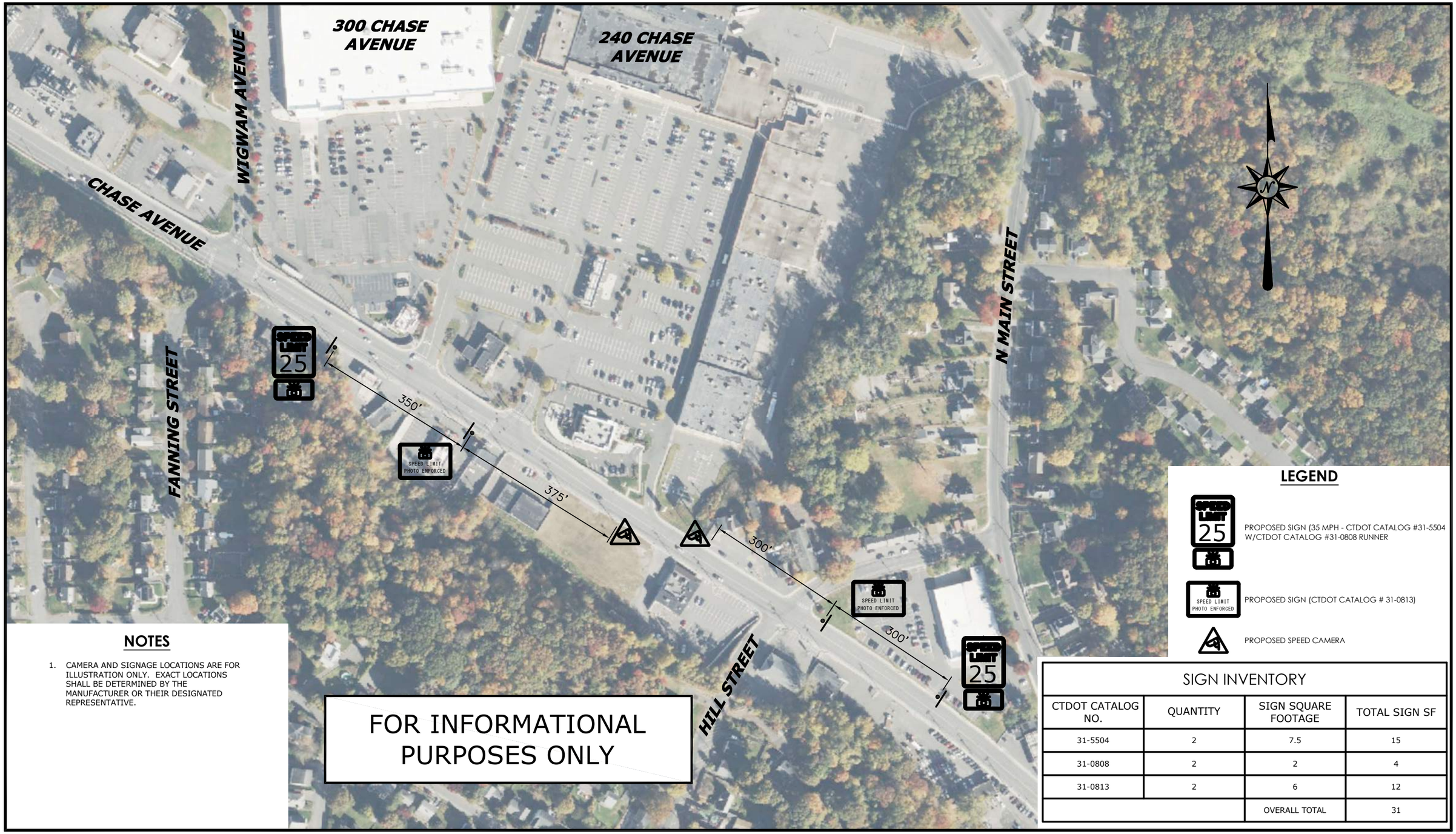
6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 14.



NOTES

1. CAMERA AND SIGNAGE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR THEIR DESIGNATED REPRESENTATIVE.

FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PROPOSED SIGN (35 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	2	7.5	15
31-0808	2	2	4
31-0813	2	6	12
		OVERALL TOTAL	31

6/9/2026, MSUTTERBY, G:\JOBS25\301.2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 15.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

300 CHASE AVENUE

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 15

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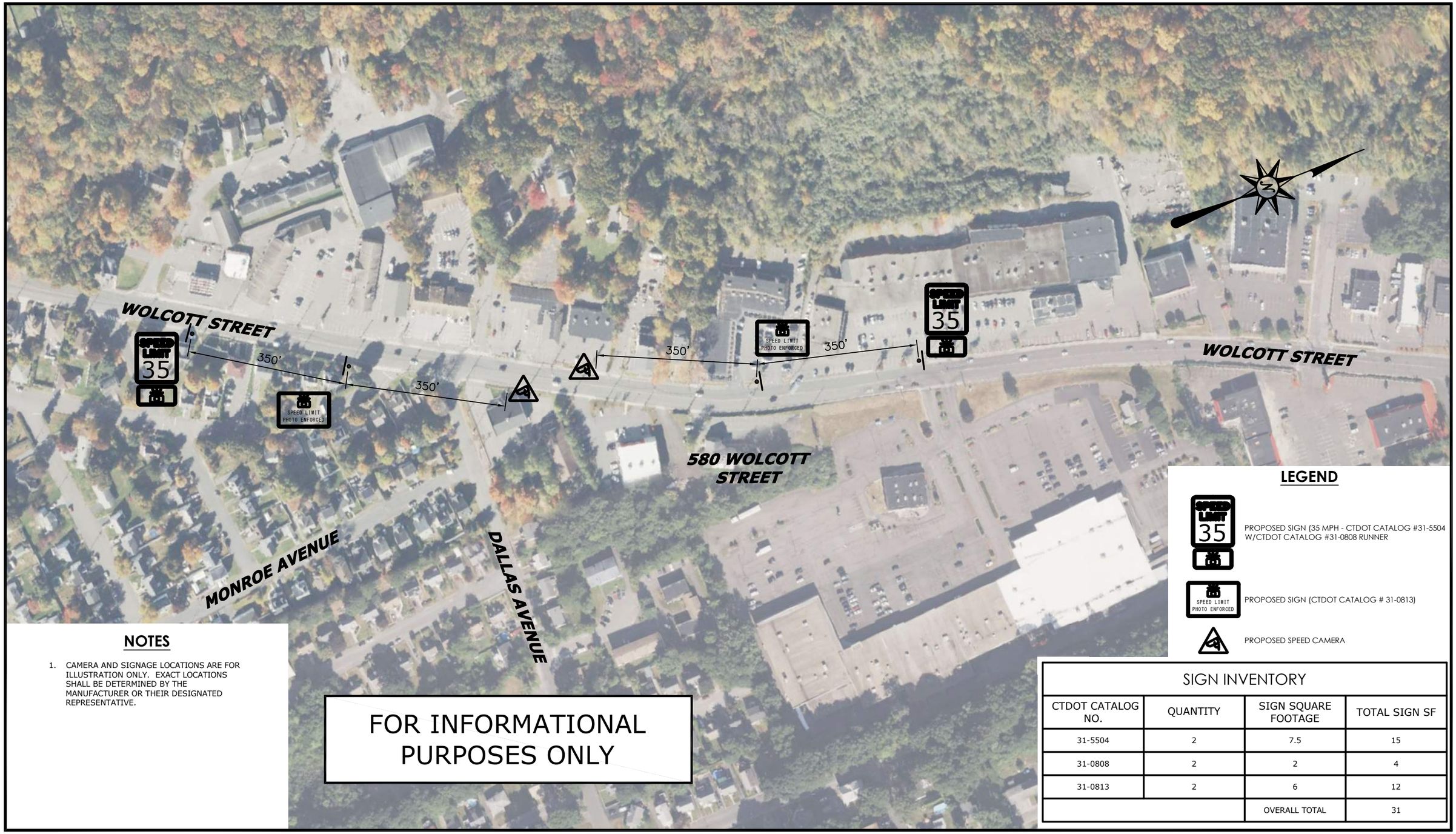

NOTES

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FOR INFORMATIONAL PURPOSES ONLY

LEGEND

PROPOSED SIGN (35 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY			
CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	2	7.5	15
31-0808	2	2	4
31-0813	2	6	12
		OVERALL TOTAL	31

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 16.

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

580 WOLCOTT STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 16

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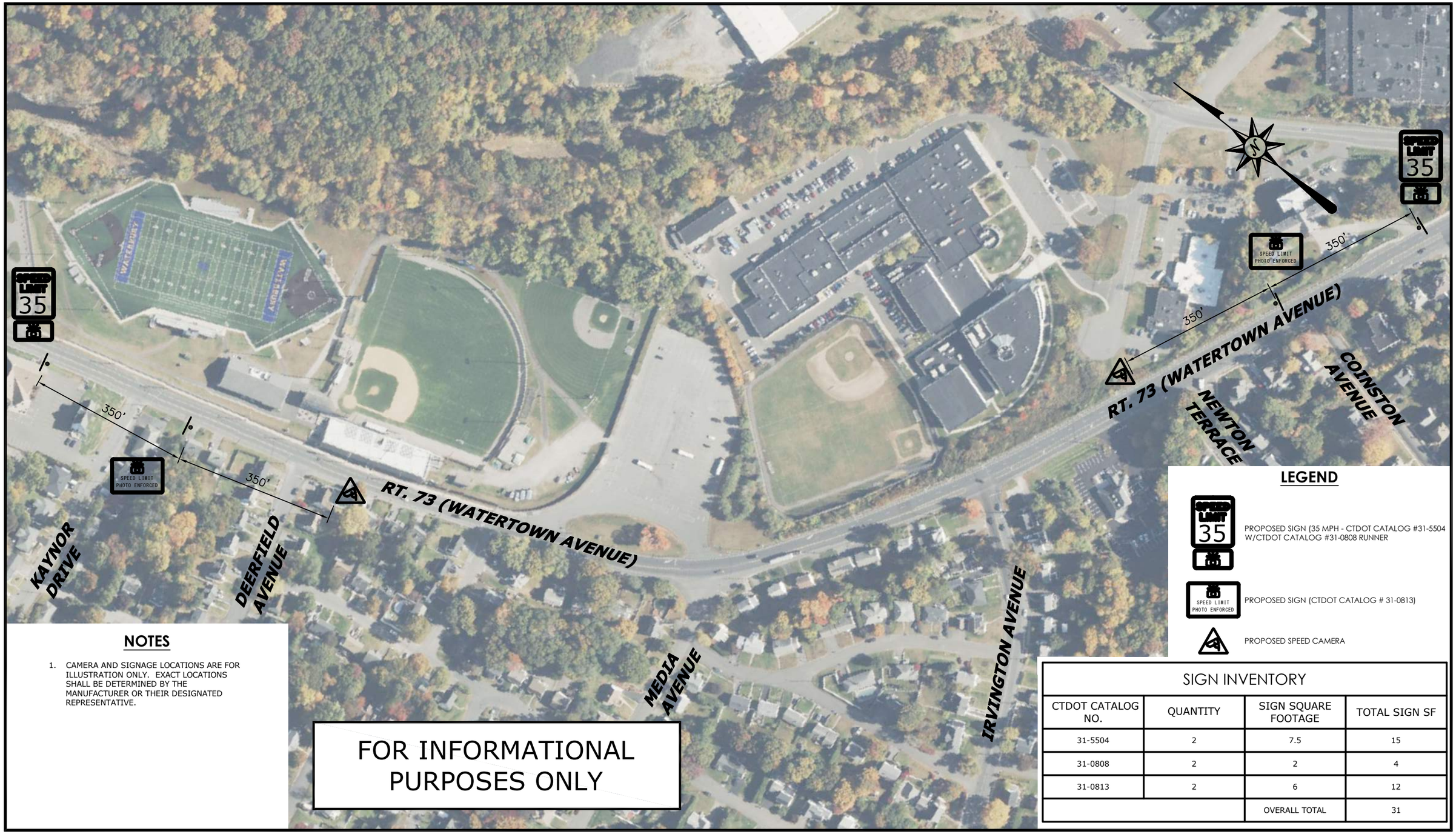

NOTES

1. CAMERA AND SIGNAGE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR THEIR DESIGNATED REPRESENTATIVE.

FOR INFORMATIONAL PURPOSES ONLY

LEGEND

- PROPOSED SIGN (35 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER
- PROPOSED SIGN (CTDOT CATALOG # 31-0813)
- PROPOSED SPEED CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	2	7.5	15
31-0808	2	2	4
31-0813	2	6	12
		OVERALL TOTAL	31

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 17.

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

WATERTOWN AVENUE AT MEDIA AVENUE

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 17

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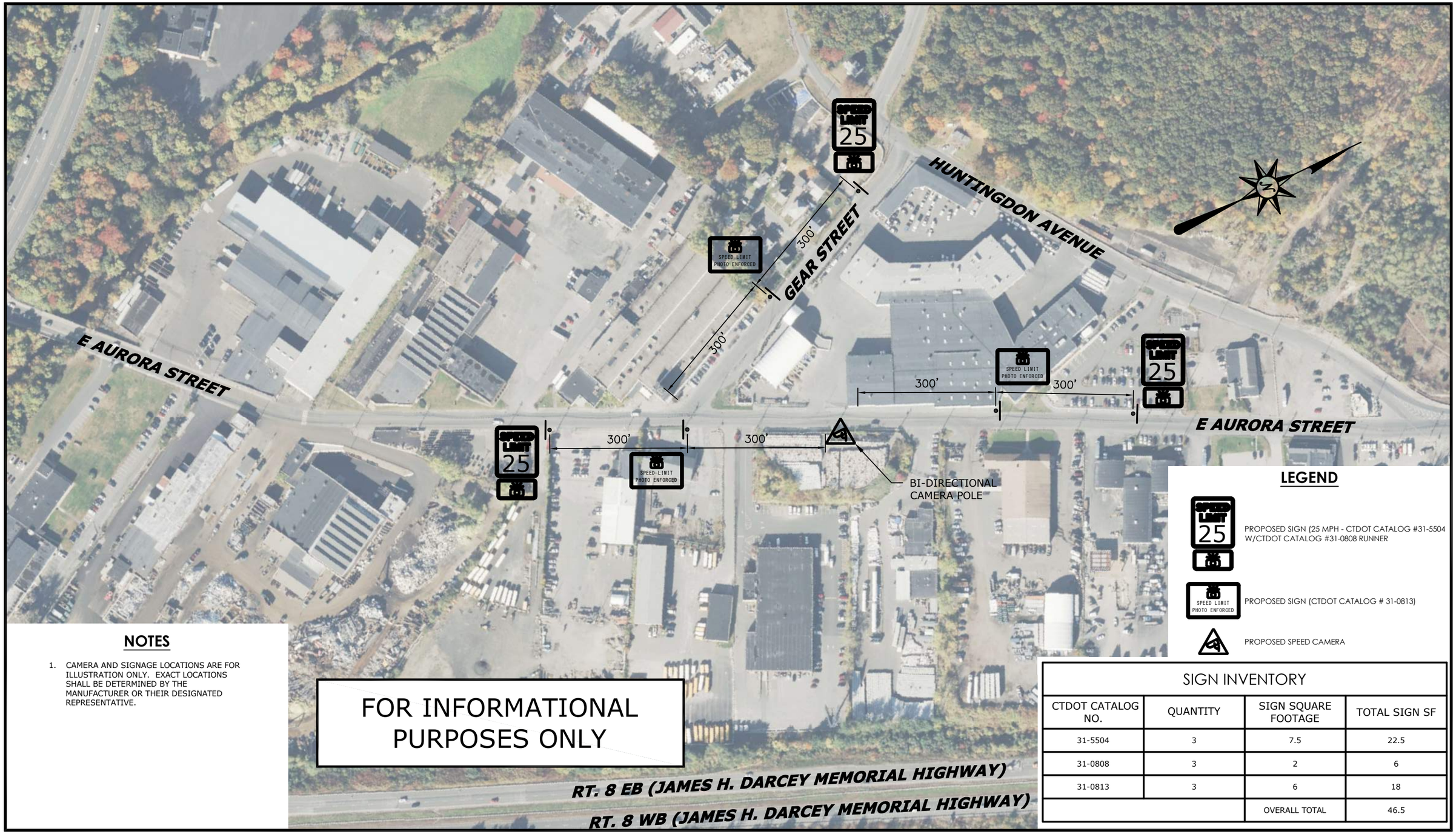

NOTES

1. CAMERA AND SIGNAGE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR THEIR DESIGNATED REPRESENTATIVE.

LEGEND

PROPOSED SIGN (25 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER

PROPOSED SIGN (CTDOT CATALOG # 31-0813)

PROPOSED SPEED CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	3	7.5	22.5
31-0808	3	2	6
31-0813	3	6	18
		OVERALL TOTAL	46.5

6/5/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 18.

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

EAST AURORA STREET AT GEAR STREET

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 18

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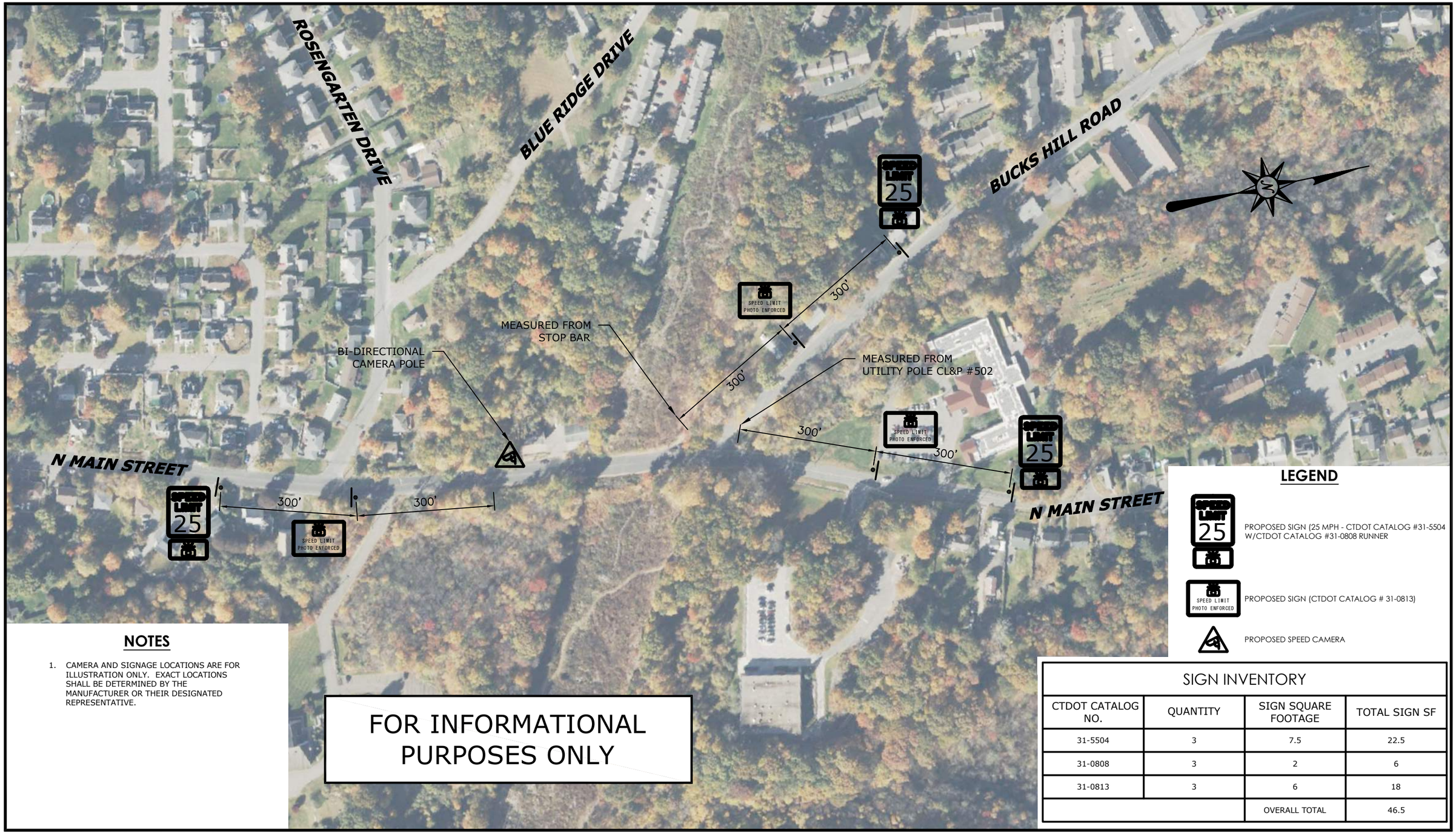

NOTES

1. CAMERA AND SIGNAGE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR THEIR DESIGNATED REPRESENTATIVE.

LEGEND

- PROPOSED SIGN (25 MPH - CTDOT CATALOG #31-5504 W/CTDOT CATALOG #31-0808 RUNNER
- PROPOSED SIGN (CTDOT CATALOG # 31-0813)
- PROPOSED SPEED CAMERA

SIGN INVENTORY

CTDOT CATALOG NO.	QUANTITY	SIGN SQUARE FOOTAGE	TOTAL SIGN SF
31-5504	3	7.5	22.5
31-0808	3	2	6
31-0813	3	6	18
		OVERALL TOTAL	46.5

6/9/2026, MSUTTERBY, G:\JOBS25\30\2503024\DWG\TRA2503024_CAMERA_DESIGN_LAYOUTS.DWG,FIGURE 19.

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

NORTH MAIN STREET AT BUCKS HILL ROAD

SPEED LIMIT AND RED LIGHT CAMERA INSTALLATION
WATERBURY, CT
SCALE: 1" : 200'

Project No. 2503024
Date JUNE, 2026

FIGURE 19

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Architecture
Engineering
Environmental
Land Surveying
Companies



ENFORCEMENT DATA

CreatedDate	ProfileNo	Organizatic	Departmen	Organizatic	ReportingO	Intervention	Identificati	Intervention	Month	SubjectRac	SubjectEth	SubjectSex	SubjectAge	ResidentIn	TownRecid	InterventionL	InterventionL	InterventionI	InterventionI	InterventionI	InterventionI	TowedIndic	StatuteCod	ReasonforS	Statutatory	VehicleSea	SearchAuth	Contraban	CustodialA	InterventionI	InterventionI	InterventionI	IsStatuteCv	IsStatutato	IsaTest	RecordCou	SourceId	SourceRefe	InterventionI	InterventionTime
4/17/2022 20:58	5995554	CT0015100	Waterbury	Racial Profi	1000348	2.2E+09	Incident ID	Tuesday, M	March	B	N	F	25	TRUE	TRUE	WATERBUF	1485 East M		I	B	1	FALSE	14-12(a)**	Registratior	14-12(a)*	FALSE	N		FALSE	FALSE	N			FALSE			1	CT0015100	1.33E+17	########	4:27 PM
2/17/2022 21:00	5930010	CT0015100	Waterbury	Racial Profi	1001036	2.2E+09	Incident ID	Thursday, J	January	W	N	F	32	TRUE	FALSE	WATERBUF	100 Baldwi		V	B	1	FALSE	14-299	Traffic Cont	14-299	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	8:32 PM
3/17/2022 20:59	5952012	CT0015100	Waterbury	Racial Profi	1001036	2.2E+09	Incident ID	Friday, Feb	February	W	M	F	30	TRUE	TRUE	WATERBUF	E Maain @		V	G	1	FALSE	14-243(b)	Moving Violation		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	7:31 AM
5/31/2022 10:40	6051864	CT0015100	Waterbury	Racial Profi	1001036	2.2E+09	Incident ID	Sunday, Mc	May	W	H	F	59	TRUE	TRUE	WATERBUF	400 E Main		V	G	1	FALSE	14-299	Traffic Cont	14-36(a)	FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:40 AM
5/31/2022 10:40	6051865	CT0015100	Waterbury	Racial Profi	1001036	2.2E+09	Incident ID	Sunday, Mc	May	W	H	F	63	TRUE	FALSE	WATERBUF	00400 E M/		V	G	1	FALSE	14-299	Traffic Cont	14-36(a)	FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:40 AM
2/16/2023 11:59	6369138	CT0015100	Waterbury	Racial Profi	1001036	2.2E+09	Incident ID	Tuesday, Ja	July	W	H	M	70	TRUE	TRUE	WATERBUF	Baldwin @		V	G	1	FALSE	14-299	Traffic Control	Signal	FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	5:56 PM
5/17/2022 20:58	6046603	CT0015100	Waterbury	Racial Profi	1001067	2.2E+09	Incident ID	Friday, Apri	April	W	N	M	59	TRUE	TRUE	WATERBUF	West Main :		V	G	1	FALSE	14296	Other	14296a	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	10:37 AM
5/17/2022 20:58	6046604	CT0015100	Waterbury	Racial Profi	1001067	2.2E+09	Incident ID	Friday, Apri	April	B	N	M	43	TRUE	TRUE	WATERBUF	West Main :		V	G	1	FALSE	14-296aab	Cell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:25 AM
5/31/2022 10:40	6051866	CT0015100	Waterbury	Racial Profi	1001085	2.2E+09	Incident ID	Monday, M	May	W	H	M	17	TRUE	TRUE	WATERBUF	Easton ave		V	G	1	TRUE	14-213b	Administrative Offense		TRUE	I		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	12:14 AM
5/31/2022 10:40	6051867	CT0015100	Waterbury	Racial Profi	1001087	2.2E+09	Incident ID	Thursday, I	May	W	H	M	31	TRUE	TRUE	WATERBUF	E Main St/W		V	G	2	TRUE	14-279	Other	14-279	TRUE	I		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	8:21 AM
11/17/2022 20:59	6282123	CT0015100	Waterbury	Racial Profi	1001087	2.2E+09	Incident ID	Friday, Oct	October	B	H	M	24	TRUE	FALSE	WATERBUF	Colonial Av		V	G	2	FALSE	14-299	Traffic Cont	14-215(a)	FALSE	N		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	9:43 PM
2/17/2022 21:00	5930011	CT0015100	Waterbury	Racial Profi	1001092	2.2E+09	Incident ID	Tuesday, Ja	January	W	H	M	27	TRUE	TRUE	WATERBUF	Wolcott STi		E	B	2	TRUE	14-12(a)	Registratior	14-215(a)*	TRUE	C		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	4:57 PM
4/17/2022 20:58	5995555	CT0015100	Waterbury	Racial Profi	1001092	2.2E+09	Incident ID	Friday, Mar	March	W	N	M	56	TRUE	TRUE	WATERBUF	North Main		V	B	1	FALSE	14-223	Other	14-223	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	10:07 AM
5/31/2022 10:40	6051868	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, M	May	W	H	M	20	TRUE	TRUE	WATERBUF	City Mills Lo		V	G	1	FALSE	14-299	Traffic Cont	14-299	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	2:11 AM
5/31/2022 10:40	6051869	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, M	May	W	N	F	52	TRUE	TRUE	WATERBUF	1387 Wate		V	G	1	FALSE	14-100a	Seatbelt		FALSE	N		FALSE	TRUE	N			FALSE			1	CT0015100	1.33E+17	########	1:06 PM
5/31/2022 10:40	6051870	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, M	May	W	H	F	35	TRUE	TRUE	WATERBUF	1481 Wate		V	G	1	FALSE	14-215a	Administrative Offense		FALSE	N		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	1:15 PM
5/31/2022 10:40	6051871	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, M	May	W	N	M	39	TRUE	TRUE	WATERBUF	kaynor at w		V	G	2	FALSE	14-100	Seatbelt		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	1:34 PM
5/31/2022 10:40	6051872	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, M	May	W	N	F	70	TRUE	TRUE	WATERBUF	1481 Wate		V	G	2	FALSE	14-100a	Seatbelt		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	1:58 PM
5/31/2022 10:40	6051873	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, M	May	W	N	M	64	TRUE	TRUE	WATERBUF	1481 Wate		V	G	2	FALSE	14-100a	Seatbelt		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	2:12 PM
7/17/2022 20:57	6125992	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Tuesday, Ju	July	B	N	M	52	TRUE	TRUE	WATERBUF	N MAIN ST /		V	G	1	FALSE	14-99G	Window Tint		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	5:50 PM
8/17/2022 20:58	6178826	CT0015100	Waterbury	Racial Profi	1001099	2.2E+09	Incident ID	Thursday, A	August	W	N	F	70	TRUE	TRUE	WATERBUF	columbia b		V	G	1	FALSE	light	Detective Lights		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	9:29 PM
2/16/2023 11:14	6368870	CT0015100	Waterbury	Racial Profi	1001116	2.2E+09	Incident ID	Friday, June	June	B	N	M	41	TRUE	TRUE	WATERBUF	80 Charles		V	G	1	FALSE	14-299	Traffic Control	Signal	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	10:43 PM
3/17/2022 20:59	5952013	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Tuesday, Fe	February	W	N	M	46	TRUE	FALSE	WATERBUF	West Libert		I	G	2	TRUE	14-213b	Administrative Offense		TRUE	I		FALSE	TRUE	U			FALSE			1	CT0015100	1.33E+17	########	4:04 PM
5/17/2022 20:58	6046605	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Monday, Ap	April	W	H	M	33	TRUE	FALSE	WATERBUF	S MAIN ST/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:09 AM
5/17/2022 20:58	6046606	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Monday, Ap	April	W	H	F	51	TRUE	FALSE	WATERBUF	S MAIN ST/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:10 AM
5/17/2022 20:58	6046607	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Monday, Ap	April	B	N	F	25	TRUE	FALSE	WATERBUF	S MAIN ST/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:25 AM
5/17/2022 20:58	6046608	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Monday, Ap	April	W	N	M	52	TRUE	FALSE	WATERBUF	BANK ST/G		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:56 AM
5/17/2022 20:58	6046609	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Tuesday, Ap	April	B	N	M	34	TRUE	FALSE	WATERBUF	MEADOW !		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:14 AM
5/17/2022 20:58	6046610	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Tuesday, Ap	April	W	H	M	53	FALSE	FALSE	WATERBUF	Meadow St		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:41 AM
5/17/2022 20:58	6046611	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Tuesday, Ap	April	W	H	F	19	TRUE	FALSE	WATERBUF	I-84 /MEAD		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:55 AM
5/17/2022 20:58	6046612	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	H	F	31	FALSE	FALSE	WATERBUF	MEADOW !		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:28 AM
5/17/2022 20:58	6046613	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Tuesday, Ap	April	W	H	F	21	TRUE	FALSE	WATERBUF	BANK ST/JA		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:06 AM
5/17/2022 20:58	6046614	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	H	M	28	TRUE	FALSE	WATERBUF	02457 E M/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:46 AM
5/17/2022 20:58	6046615	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	B	N	F	56	TRUE	FALSE	WATERBUF	E MAIN ST/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:06 AM
5/17/2022 20:58	6046616	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	B	N	F	58	TRUE	FALSE	WATERBUF	East Main S		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	10:27 AM
5/17/2022 20:58	6046617	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	H	M	27	TRUE	FALSE	WATERBUF	E MAIN ST/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:54 AM
5/17/2022 20:58	6046618	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	N	M	63	TRUE	FALSE	WATERBUF	East Main S		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	11:09 AM
5/17/2022 20:58	6046619	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	N	M	28	TRUE	FALSE	WATERBUF	ACADEMY		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:36 AM
5/17/2022 20:58	6046620	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	B	N	M	54	TRUE	FALSE	WATERBUF	MERIDEN I		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:51 AM
5/17/2022 20:58	6046621	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	N	M	29	TRUE	FALSE	WATERBUF	00037 WO(		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:17 AM
5/17/2022 20:58	6046622	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	H	F	29	TRUE	FALSE	WATERBUF	MERIDEN I		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:47 AM
5/17/2022 20:58	6046623	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	H	M	44	TRUE	FALSE	WATERBUF	HIGHLANC		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:57 AM
5/17/2022 20:58	6046624	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	B	N	F	31	TRUE	FALSE	WATERBUF	HIGHLANC		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:25 AM
5/17/2022 20:58	6046625	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	N	F	28	TRUE	FALSE	WATERBUF	05102 HIGI		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:48 AM
5/17/2022 20:58	6046626	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	H	F	33	TRUE	FALSE	WATERBUF	HIGHLANC		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:24 AM
5/17/2022 20:58	6046627	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	N	M	43	TRUE	FALSE	WATERBUF	HIGHLANC		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:33 AM
5/17/2022 20:58	6046628	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	H	F	27	TRUE	FALSE	WATERBUF	00561 HIGI		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:50 AM
5/17/2022 20:58	6046629	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	H	F	25	TRUE	TRUE	WATERBUF	Highland Av		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	12:05 PM
5/17/2022 20:58	6046630	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	N	F	37	TRUE	FALSE	Waterbury	E MAIN ST/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:50 AM
5/17/2022 20:58	6046631	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	M	M	55	TRUE	TRUE	WATERBUF	3722 East M		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:19 AM
5/17/2022 20:58	6046632	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	April	W	N	M	63	FALSE	FALSE	WATERBUF	03580 E M/		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:54 AM
5/17/2022 20:58	6046633	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	W	H	M	32	TRUE	TRUE	WATERBUF	Cooke St at		V	S	1	FALSE	14-296aa	tCell Phone		TRUE	I		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	9:55 AM
5/17/2022 20:58	6046634	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	W	N	M	36	TRUE	FALSE	WATERBUF	CHASE AVI		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:32 AM
5/17/2022 20:58	6046635	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	W	H	M	55	TRUE	TRUE	WATERBUF	Chase Ave		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	10:49 AM
5/17/2022 20:58	6046636	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	B	N	M	66	TRUE	TRUE	WATERBUF	Chase Ave		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:12 AM
5/17/2022 20:58	6046637	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	B	N	M	29	TRUE	TRUE	WATERBUF	Homer St a		V	S	2	TRUE	14-296aa	tCell Phone		TRUE	I		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	11:28 AM
5/17/2022 20:58	6046638	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	B	N	F	24	TRUE	FALSE	WATERBUF	HOMER ST		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	12:23 PM
5/17/2022 20:58	6046639	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, J	April	W	H	F	44	TRUE	TRUE	WATERBUF	Homer St a		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	12:51 PM
5/17/2022 20:58	6046640	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	H	M	24	TRUE	TRUE	WATERBUF	564 West M		V	S	2	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	10:14 AM
5/17/2022 20:58	6046641	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	N	M	39	TRUE	FALSE	WATERBUF	W MAIN ST		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	10:50 AM
5/17/2022 20:58	6046642	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	N	M	42	TRUE	FALSE	WATERBUF	00034 THO		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:05 AM
5/17/2022 20:58	6046643	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	W	H	M	32	TRUE	FALSE	WATERBUF	W MAIN ST		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	11:29 AM
5/17/2022 20:58	6046644	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, Apri	April	B	N	M	25	TRUE	TRUE	WATERBUF	West Main :		V	S	1	FALSE	14-296aa	tCell Phone		FALSE	N		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	11:43 AM
5/31/2022 10:40	6051874	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, I	May	W	N	M	23	TRUE	TRUE	WATERBUF	207 North E		V	G	1	FALSE	14-147	Administrative Offense		FALSE	N		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	8:33 PM
5/31/2022 10:40	6051875	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, May	May	W	N	M	52	TRUE	TRUE	WATERBUF	Giles St at \		V	G	1	FALSE	14-236	Moving Violation		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	9:51 PM
5/31/2022 10:40	6051876	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, May	May	W	H	M	21	TRUE	TRUE	WATERBUF	144 Wolcot		E	G	1	FALSE	14-96a(a)	Defective Lights		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	10:01 PM
5/31/2022 10:40	6051877	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Thursday, I	May	W	H	F	51	TRUE	TRUE	WATERBUF	Wood Stree		V	G	2	FALSE	14-303	Other		FALSE	N		FALSE	FALSE	W			FALSE			1	CT0015100	1.33E+17	########	6:03 PM
6/17/2022 21:01	6086312	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, June	June	B	N	M	19	TRUE	TRUE	WATERBUF	18 Pine Stn		E	G	1	FALSE	14-18(a)	Display of Plates		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	6:58 PM
7/17/2022 20:57	6125993	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Wednesda	July	W	H	M	31	TRUE	TRUE	WATERBUF	Fairview St		E	G	1	FALSE	14-18(a)	Display of Plates		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	4:22 PM
2/16/2023 11:59	6369141	CT0015100	Waterbury	Racial Profi	1001137	2.2E+09	Incident ID	Friday, July	July	W	H	M	35	TRUE	TRUE	WATERBUF	Willow St a		V	G	1	FALSE	14-219	Speed Related		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	8:31 PM
5/31/2022 10:40	6051878	CT0015100	Waterbury	Racial Profi	1001138	2.2E+09	Incident ID	Thursday, I	May	W	N	M	69	TRUE	FALSE	WATERBUF	100 Johnsc		V	G	1	FALSE	14-301	Stop Sign	14-301	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	4:18 PM
6/17/2022 21:01	6086313	CT0015100	Waterbury	Racial Profi	1001138	2.2E+09	Incident ID	Thursday, J	June	W	H	F	37	TRUE	TRUE	WATERBUF	Bishop St. E		I	G	1	FALSE	14-101	Moving Viol	14-101	TRUE	O		TRUE	TRUE	M			FALSE			1	CT0015100	1.33E+17	########	10:57 PM
7/17/2022 20:57	6125994	CT0015100	Waterbury	Racial Profi	1001138	2.2E+09	Incident ID	Thursday, J	July	I	M	M	22	TRUE	FALSE	WATERBUF	46 Cherry S		E	G	1	FALSE	14-99g	Window Tin	14-99g	FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	6:08 PM
5/17/2022 20:58	6046645	CT0015100	Waterbury	Racial Profi	1001142	2.2E+09	Incident ID	Wednesda	April	W	H	M	37	TRUE	TRUE	WATERBUF	E Main at C		V	G	1	FALSE	14-296aa	tCell Phone	14-296aa(t	FALSE	N		FALSE	FALSE	I			FALSE			1	CT0015100	1.33E+17	########	9:37 AM
5/17/2022 20:58	6046646	CT0015100	Waterbury	Racial Profi	1001142	2.2E+09	Incident ID	Wednesda	April	W	H	F	45	TRUE	TRUE	WATERBUF	E Main at B		V	G	2	TRUE	14-296aa	tCell Phone	14-213b	TRUE	I		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	10:09 AM
4/17/2022 20:58	5995556	CT0015100	Waterbury	Racial Profi	1001143	2.2E+09	Incident ID	Wednesda	March	B	N	M	20	TRUE	TRUE	WATERBUF	1 W Main St		V	G	1	TRUE	14-147(a)	Administral	14-213b	FALSE	N		FALSE	FALSE	M			FALSE			1	CT0015100	1.33E+17	########	12:16 AM
2/16/2023 11:59	6369143	CT0015100	Waterbury	Racial Profi	1001145	2.2E+09	Incident ID	Tuesday, Ja	July	W	H	M	44	TRUE	TRUE	WATERBUF	Boyden St/		I	G	2	FALSE	53a-222a	Other	53a-222a	FALSE	N		FALSE	TRUE	N			FALSE			1	CT0015100	1.33E+17	########	7:40 PM
8/17/2022 20:58	6178827	CT0015100	Waterbury	Racial Profi	1001147	2.2E+09	Incident ID	Saturday, A	August	B	N	M	28	TRUE	TRUE	WATERBUF	Byrneside A		I	G	3	TRUE	14-12(a)*	Registratior	14-12(a)*	TRUE	I		FALSE	FALSE	N			FALSE			1	CT0015100	1.33E+17	########	2:48 AM
2/17/2022 21:00	5930012	CT0015100	Waterbury	Racial Profi	1001148	2.2E+09	Incident ID	Sunday, Jar	January	W	N	F	42	TRUE	TRUE	WATERBUF	Lakewood a		V	G	1	FALSE	7-313a	Other		FALSE	N		FALSE	FALSE	V			FALSE			1	CT0015100	1.33E+17	########	11:42 PM
2/17/2022 21:00	5930013	CT0015100	Waterbury	Racial Profi	1001148	2.2E+09	Incident ID	Sunday, Jar	January	B	N	F	33	TRUE	FALSE	WATERBUF	willow st @

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Architecture
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OTHER SPEED REDUCTION MEASURES DOCUMENTATION

CT-REDV Red Light Violation 2020-2023

Municipality	Road Name	Intersecting Road
Waterbury	CHASE AV	COOKE ST

Intersection Crashes by Municipality



Intersection Crashes by Town | Intersections | Red Light

Intersection Crashes

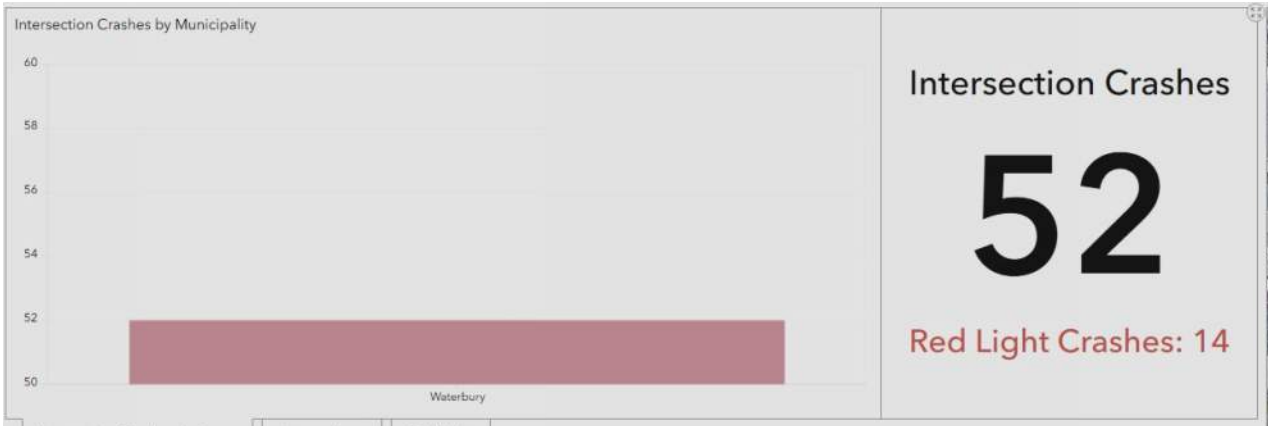
41

Red Light Crashes: 13



Municipality	Intersection	Count of Intersection Crashes	Count of Red Light Crashes	Percentage Of Red Light Crashes
Waterbury	CHASE AV, COOKE ST	41	13	31.71

Totals | All Records



Intersection Crashes

52

Red Light Crashes: 14



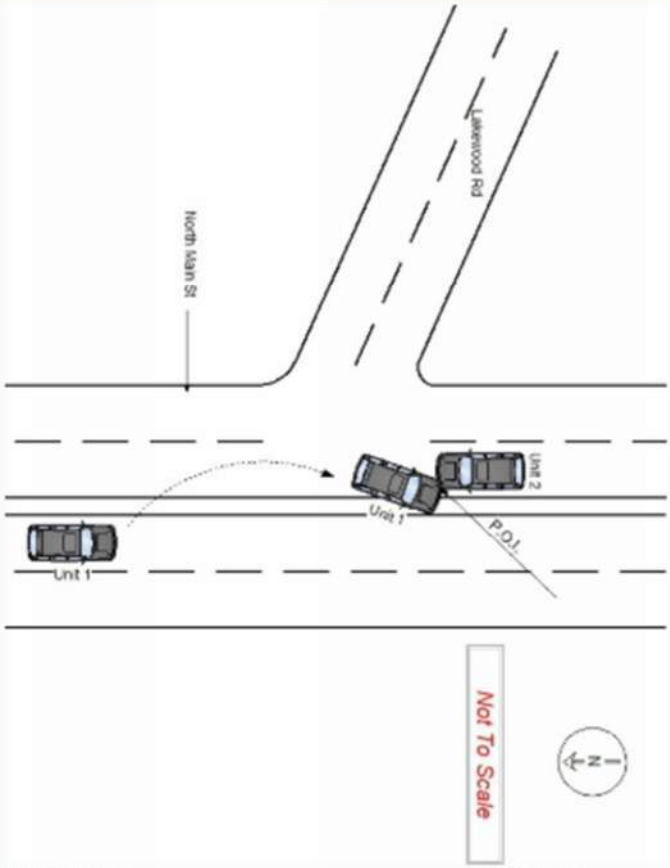
Intersection Crashes by Town | Intersections | Red Light

Municipality	Intersection	Count of Intersection Crashes	Count of Red Light Crashes	Percentage Of Red Light Crashes
Waterbury	EAST MAIN ST, CHERRY ST	52	14	26.92

Totals | All Records

N Main at Lakewood Year by Manner of Crash / Collision Impact: Crashes											
	Front to rear	**Front to front**	**Angle**	**Sideswipe, same direction**	**Sideswipe, opposite direction**	**Rear to side**	**Rear to rear**	**Not Applicable**	**Other**	**Unknown**	**Total**
2023	0	0	3	0	0	0	0	0	0	0	3
2024	0	0	5	0	0	0	0	0	0	0	5
2025	0	0	2	0	0	0	0	0	0	0	2

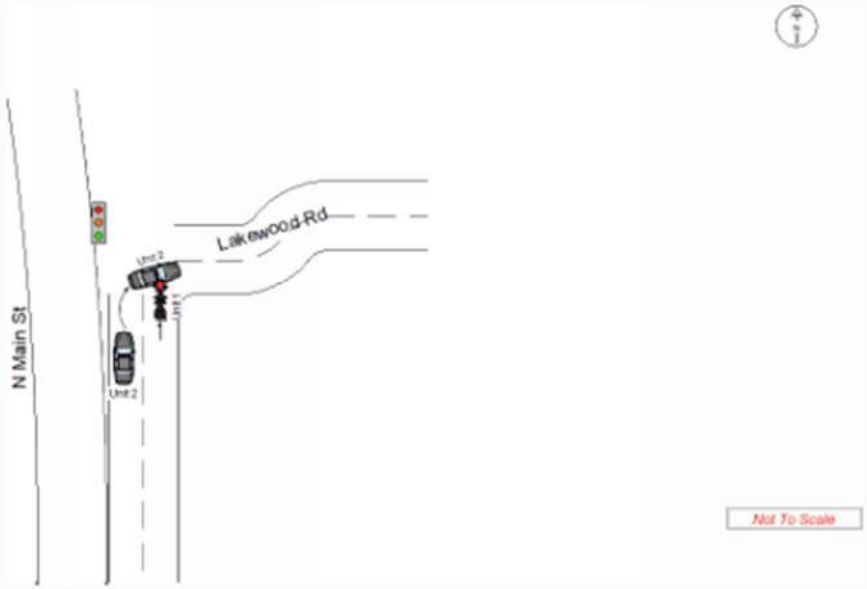
Diagrams of the Current Page of Results



CrashID:	1034938
Town Name:	Waterbury
Date Of Crash:	2023-03-27
Time of Crash:	12:06:00
Crash Severity:	Injury of any type (Serious, Minor, Possible)
Most Severe Injury:	Possible Injury (C)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	LAKEWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Daylight
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash Next Crash

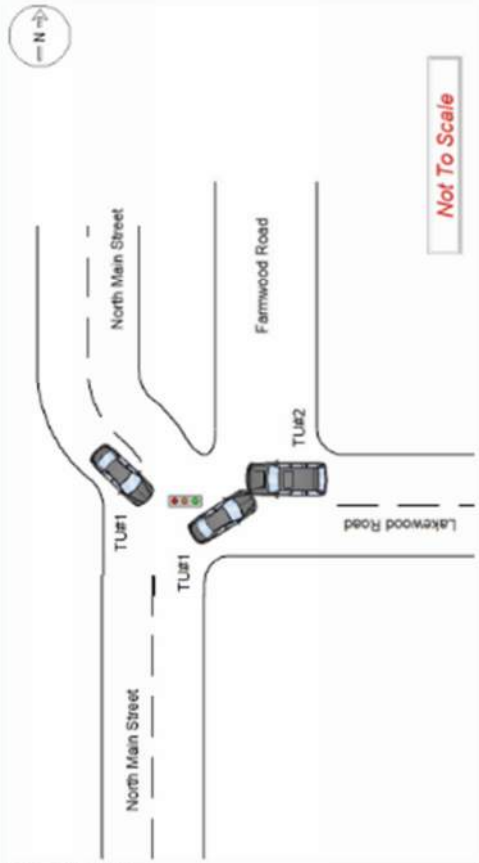
Diagrams of the Current Page of Results



CrashID:	1088407
Town Name:	Waterbury
Date Of Crash:	2023-09-14
Time of Crash:	18:27:00
Crash Severity:	Injury of any type (Serious, Minor, Possible)
Most Severe Injury:	Suspected Minor Injury (B)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	LAKEWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Daylight
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash | Next Crash

Diagrams of the Current Page of Results



CrashID:	1113098
Town Name:	Waterbury
Date Of Crash:	2023-12-14
Time of Crash:	17:40:00
Crash Severity:	Injury of any type (Serious, Minor, Possible)
Most Severe Injury:	Possible Injury (C)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	FARMWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Dark-Lighted
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash | Next Crash

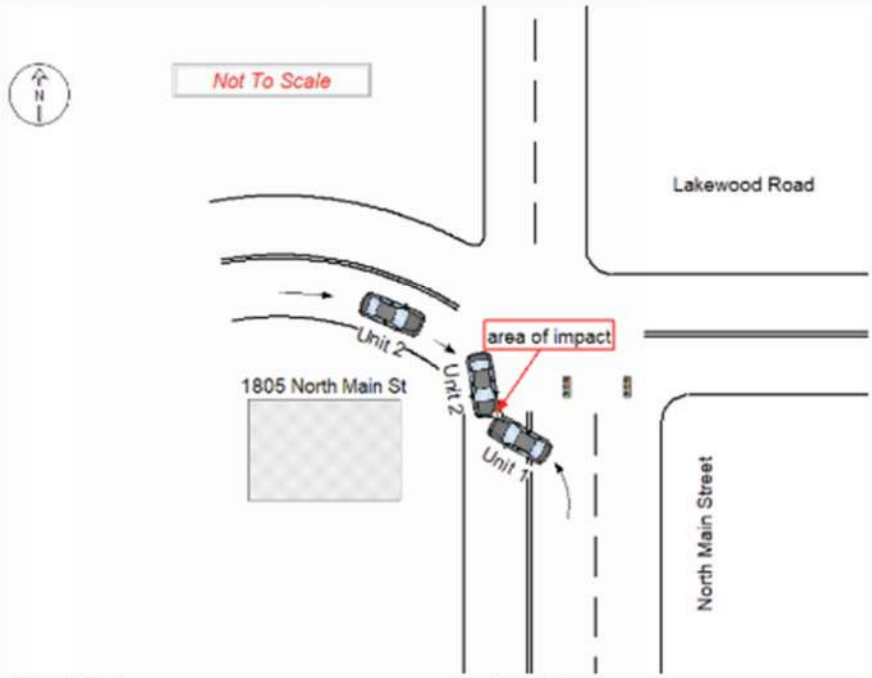
Diagrams of the Current Page of Results



CrashID:	1129252
Town Name:	Waterbury
Date Of Crash:	2024-02-02
Time of Crash:	20:42:00
Crash Severity:	Property Damage Only
Most Severe Injury:	No Apparent Injury (O)
Route Class:	Local
Road Description:	LAKEWOOD RD
Roadway Name:	LAKEWOOD RD
Intersecting Roadway Name:	North Main St
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Dark-Lighted
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash | Next Crash

Diagrams of the Current Page of Results



CrashID:	1140661
Town Name:	Waterbury
Date Of Crash:	2024-03-16
Time of Crash:	19:35:00
Crash Severity:	Injury of any type (Serious, Minor, Possible)
Most Severe Injury:	Possible Injury (C)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	LAKEWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Dark-Lighted
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash Next Crash

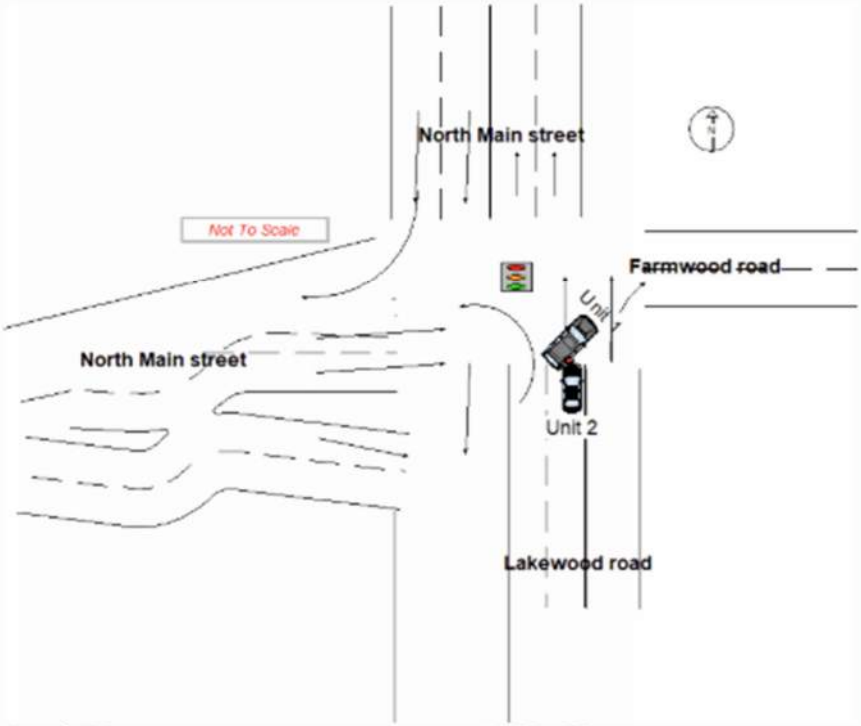
Diagrams of the Current Page of Results



CrashID:	1144675
Town Name:	Waterbury
Date Of Crash:	2024-03-27
Time of Crash:	22:33:00
Crash Severity:	Injury of any type (Serious, Minor, Possible)
Most Severe Injury:	Possible Injury (C)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	null
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Dark-Lighted
Road Surface Condition:	Wet
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash Next Crash

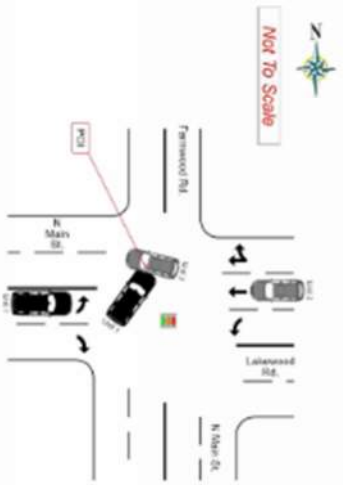
Diagrams of the Current Page of Results



CrashID:	1206163
Town Name:	Waterbury
Date Of Crash:	2024-09-20
Time of Crash:	18:01:00
Crash Severity:	Property Damage Only
Most Severe Injury:	No Apparent Injury (O)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	FARMWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Daylight
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash Next Crash

Diagrams of the Current Page of Results



CrashID:	1229051
Town Name:	Waterbury
Date Of Crash:	2024-12-18
Time of Crash:	07:35:00
Crash Severity:	Injury of any type (Serious, Minor, Possible)
Most Severe Injury:	Suspected Minor Injury (B)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	FARMWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Daylight
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash | Next Crash

Diagrams of the Current Page of Results



CrashID:	1278141
Town Name:	Waterbury
Date Of Crash:	2025-05-31
Time of Crash:	13:00:00
Crash Severity:	Property Damage Only
Most Severe Injury:	No Apparent Injury (O)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	FARMWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Daylight
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

Previous Crash | Next Crash

Diagrams of the Current Page of Results



CrashID:	1291594
Town Name:	Waterbury
Date Of Crash:	2025-07-04
Time of Crash:	16:56:00
Crash Severity:	Property Damage Only
Most Severe Injury:	No Apparent Injury (O)
Route Class:	Local
Road Description:	NORTH MAIN ST
Roadway Name:	NORTH MAIN ST
Intersecting Roadway Name:	FARMWOOD RD
First Harmful Event:	Motor Vehicle in Operation
Manner of Crash / Collision Impact:	Angle
Weather Condition:	Clear
Weather 2:	Not Applicable
Light Condition:	Daylight
Road Surface Condition:	Dry
Average Daily Traffic:	null
Functional Classification:	null
Rural or Urban:	null

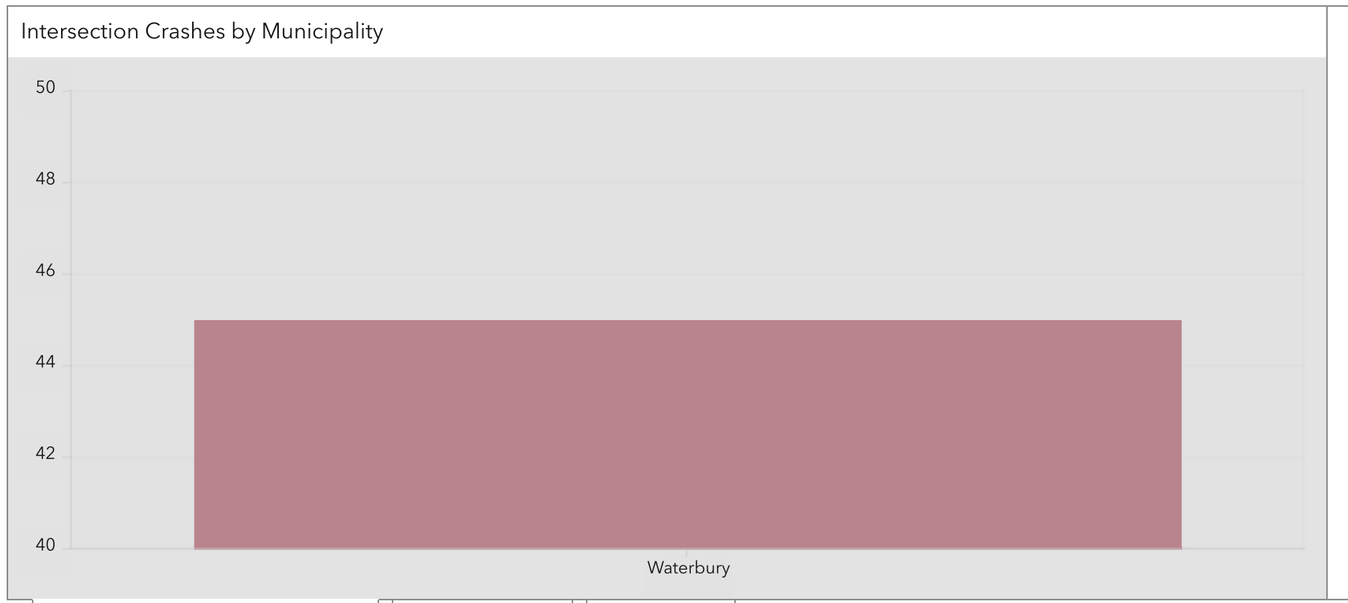
Previous Crash | Next Crash

CT-REDV Red Light Violation 2020-2023

Municipality: Waterbury

Road Name: EAST MAIN ST

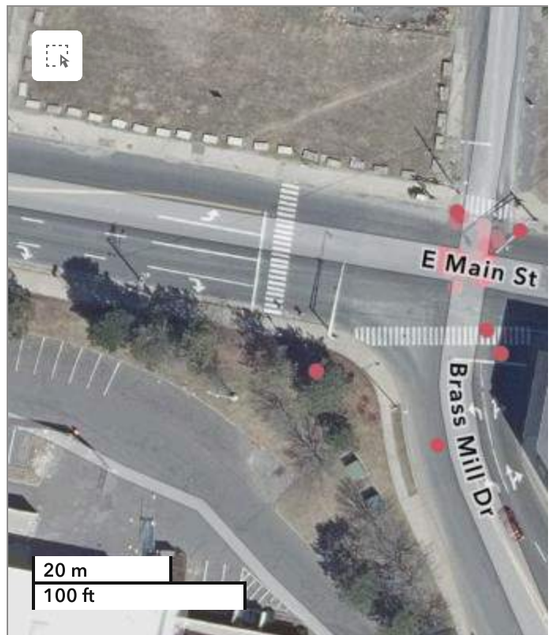
Intersecting Road: BRASS MILL DR



Intersection Crashes

45

Red Light Crashes: 15



Intersection Crashes by Town | Intersections | Red Light

Municipality	Intersection	Count of Intersection Crashes	Count of Red Light Crashes
Waterbury	EAST MAIN ST, BRASS MILL DR	45	15

Totals | All Records

Open Tool in Browser

CT-REDV Red Light Violation 2020-2023

Municipality	Road Name	Intersecting Road
Waterbury	None	Selection required



Intersection Crashes

53

Red Light Crashes: 9



Intersection Crashes by Town | Intersections | Red Light

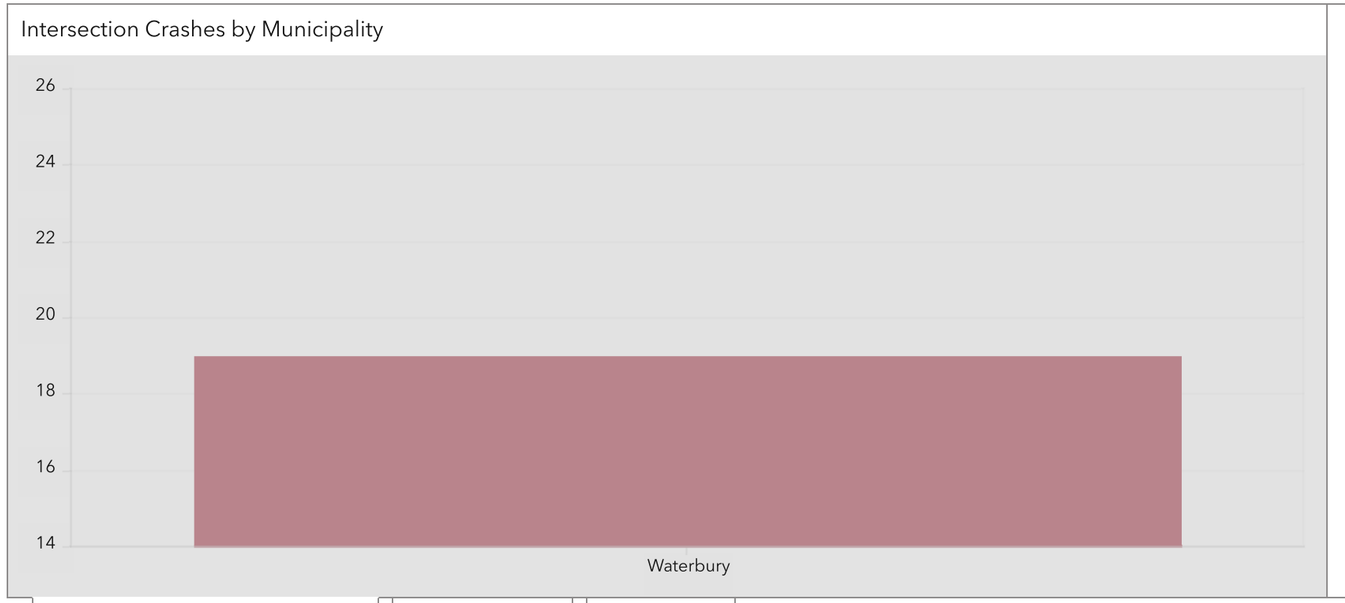
Municipality	Intersection	Count of Intersection Crashes	Count of Red Light Crashes	Percentage Of Red Light Crashes
Waterbury	69-N, UNION ST	45	8	17.78
Waterbury	69-N, WASHINGTON ST	8	1	12.50

CT-REDV Red Light Violation 2020-2023

Municipality: Waterbury

Road Name: GROVE ST

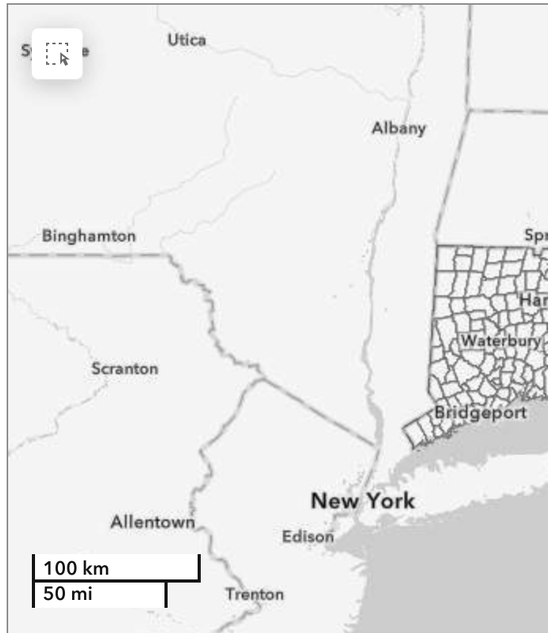
Intersecting Road: COOKE ST



Intersection Crashes

19

Red Light Crashes: 5



Intersection Crashes by Town | Intersections | Red Light

Municipality	Intersection	Count of Intersection Crashes	Count of Red Light Crashes
Waterbury	GROVE ST, COOKE ST	19	5

Totals | All Records

City of Waterbury

Engineering Department

OFFICE: (203) 574-6851
FAX: (203) 574-8277

Memorandum

To: Board of Aldermen

From: Ryan D. Bushka, Assistant Project Manager, Engineering

Date: September 22, 2026

Re: **Board of Aldermen Approval Request / Engineering Department Executive Summary** – Construction Contract for Esther Avenue & Crown Street Drainage Improvements Project between the City of Waterbury and Birmingham Construction Company, LLC.

The Engineering Department respectfully requests your approval of the above-referenced Contract for the Esther Avenue & Crown Street Drainage Improvements Project between the City of Waterbury and Birmingham Construction Company, LLC (Birmingham).

This Contract was initiated under the Request for Proposal process (RFP #8802). There were three (3) responses to the Request for Proposal; Birmingham Construction Co. LLC, Stonybrook Construction LLC, and H.I. Stone & Son, Inc. After review of the submissions, the Selection Committee requested that further negotiations be conducted with Birmingham. This selection was based on a number of factors, including a thorough evaluation and review of all proposals submitted Based upon Birmingham's experience with the work required and were the lowest bidder by 15%, the Selection Committee recommended that this work be awarded to Birmingham. (see attached September 4, 2026 Selection Committee Award Recommendation which lists all committee members).

This project will take place at 2 separate locations. Location #1 at Crown Street: this will include installing 1 catch basin and 145 L.F. of 12" HDPE. The purpose of this project is to provide a drainage system for future wall drains to connect to and prevent possible icing on the sidewalk. Location #2 at Esther Avenue: this project will include installing 1 catch basin and 290 L.F. of 12" HDPE including a 4" perorated PVC, which will run along-side the 12" HDPE. This will act as a curtain drain. The leader/footing drains will connect to the new pipe. This will eliminate icing from forming on the road. Both projects will include pavement trench repairs. All work and services will be performed per plans and specifications. The work will be supervised by the Engineering Department.

The project will have a one-year Contractor Warranty for materials, workmanship and installation. The Contractor shall reach Final Completion of all work and services required by this Contract on or before June 30, 2027.

The amount of the Contract shall not exceed $196,542.50 and is being funded by a state grant for drainage projects.

Accordingly, attached for your review and consideration are copies of the proposed Contract, the Selection Committee's Award Recommendation, Stonybrook's Price Proposal, Disclosure and Certification of Obligations Affidavit and the Tax Clearance issued by the Office of Tax Collections.

Please note further that one "record copy" of the Construction Documents, including the Contract and Plans and Specifications, plus all attachments in our possession to date, has been placed on file with the City Clerk's Office.

Lastly, please be advised that the Engineering Department will have a representative present at your upcoming meeting to answer any questions you may have regarding this matter.

Thank you.

SDP/rdb
Attachment

cc: Attorney Joseph P. Yamin, via email, w/o attachment.
File: C308

City of Waterbury

Public Works Department

Bureau of Engineering

OFFICE: (203) 574-6851
FAX: (203) 574-8277

Memorandum

To: Kevin McCaffrey, Purchasing Director

From: Ryan Bushka, Assistant Project Manager, Engineering

Date: August 28, 2026

Re: RFP #8802 for Esther Ave & Crown St Drainage Improvements (C308) Selection Committee's Recommendation of Negotiation

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The Selection Committee for the above-referenced RFP, consisting of Roy Cavanaugh P.E., City Engineer, Vincent Caterino, Assistant City Engineer, and Ryan Bushka, Assistant Project Manager, recommends that further negotiations be entered into with the following Proposer:

- Birmingham Construction Co. LLC

This selection was based on a number of factors, including a thorough evaluation and review of all Proposals submitted. Birmingham has a good reputation with the City and was the lowest bidder by 15%.

Accordingly, the Selection Committee requests that your office initiate further negotiations with the Proposers listed above to determine if they are willing to revise their price proposal.

If you have any questions or require additional information concerning this matter, please feel free to contact me at your earliest convenience.

Thank you.

RDB/rdb

cc: Committee Members, via email
File: C308

City of Waterbury

Public Works Department

Engineering

OFFICE: (203) 574-6851
FAX: (203) 574-8277

Memorandum

To: Kevin McCaffery, Director of Purchasing

From: Ryan Bushka, Assistant Project Manager

Date: September 4, 2026

Re: **RFP #8802 for Esther Ave & Crown Street Drainage Improvements** (C308) - Selection Committee Award Recommendation of Birmingham Construction Co. LLC

Responses to Request for Proposals #8802 for Esther Ave & Crown Street Drainage Improvements were received from three (3) Proposers; Birmingham Construction Co. LLC, Stonybrook Construction LLC, and H.I. Stone **&** Son, Inc., were reviewed by a Selection Committee comprised of the following three (3) members:

Roy Cavanaugh, City Engineer
Vincent Caterino, Assistant City Engineer
Ryan Bushka, Assistant Project Manager

Subsequent to a comprehensive review of all submitted documentation and conducting negotiations with the lowest bidder, the Selection Committee unanimously voted to award the Project to Birmingham Construction Co. LLC.

Accordingly, kindly issue the appropriate notification to Birmingham Construction Co. LLC, with a copy to the Corporation Counsel and the Engineering Department.

If you have any questions or require additional information concerning this matter, please feel free to contact me at your earliest convenience.

Thank you.

Ryan Bushka
Assistant Project Manager
RDB
Cc: Selection Committee Members, via email

The City of Waterbury
MEMORANDUM

From: Delinquent Tax Office **Date 9/21/2026**

To: **Ryan Bushka- Asst. Project Manager**
Public Works

Subject: Tax Clearance

As of this date, the records in the Tax Collector's Office indicate that the following ***are not delinquent.***

Birmingham Construction Company, LLC
Anthony Cassetti
454 Lopus Road
Beacon Falls, CT 06403

If you have any questions regarding this issue, do not hesitate to call our office at (203) 574-6815.

Very truly yours,

Heidi Barbieri

HB/wmf

Heidi Barbieri, CCMC
Deputy Tax Collector
City of Waterbury

CONSTRUCTION CONTRACT
for

ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS
between
The City of Waterbury, Connecticut
and

BIRMINGHAM CONSTRUCTION COMPANY, LLC

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the CITY OF WATERBURY, City Hall, 235 Grand Street, Waterbury, Connecticut 06702 (the "City") and BIRMINGHAM CONSTRUCTION COMPANY, LLC located at 454 LOPUS ROAD, BEACON FALLS, CT 06403, a State of Connecticut duly registered domestic limited liability company (the "Contractor").

WHEREAS, the Contractor submitted a Proposal to the City in response to **Request for Proposal ("RFP") Number 8802** for **ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS** and;

WHEREAS, the City selected the Contractor for **RFP Number 8802** and;

WHEREAS, the City desires to obtain the Contractor's services for **ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS** pursuant to the terms set forth in this Contract (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all of the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** any and all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of **ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS** as detailed and described in the Proposal Documents in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been

received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 8802** (acknowledged by the Contractor as having been received);

1.1.2 **RFP Number 8802** Addendum #1, dated August 3, 2026 and consisting of 1 page (attached hereto);

1.1.3 **RFP Number 8802** Addendum #2, dated August 14, 2026 and consisting of 69 pages (attached hereto);

1.1.4 Contractor's Proposal, dated August 26, 2026 and consisting of 9 pages, including Contractor's Price Proposal, dated August 26, 2026 and consisting of 5 pages submitted in response to **RFP Number 8802**, and Contractor's 5 page Revised Price Proposal, dated September 4, 2026 (all attached hereto);

1.1.5 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.6 Certificates of Insurance (attached hereto);

1.1.7 Performance Bond and Payment Bond (attached hereto);

1.1.8 Technical Specifications consisting of 55 pages (attached hereto);

1.1.9 Design Plans & Details cover page and 5 Sheets entitled "Storm Drainage Profile, Ester Ave, Showing Proposed Drainage Improvements", prepared by the City of Waterbury Engineering Department, dated April 2026; "Standard Details, Ester Ave", prepared by the City of Waterbury Engineering Department, dated April 2026; "Storm Drainage Profile, Crown Street", prepared by the City of Waterbury Engineering Department, dated December 2025; "Standard Detail, Crown Street", prepared by the City of Waterbury Engineering Department, dated December 2025; and "Water Standard Detail, Ester Ave and Crown Street", prepared by the City of Waterbury Engineering Department, dated April 2026 (attached hereto);

1.1.10 Special Conditions (Article 1 – Article 22) consisting of 15 pages (attached hereto);

1.1.11 General Conditions (Article 1 – Article 114) consisting of 36 pages (attached hereto);

1.1.12 State Wage Rates (attached hereto);

1.1.13 CHRO Documentation (attached hereto);

1.1.14 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.15 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.16 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

1.2. The entirety of **Attachment A and Attachment B-1** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically.

1.2.1 Federal laws and regulations
1.2.2 State, and local laws, regulations, charter and ordinances
1.2.3 Contract Amendment(s) and Change Orders
1.2.4 Contract
1.2.5 Contractor's Revised Price Proposal
1.2.6 Special Conditions
1.2.7 General Conditions
1.2.8 Technical Specifications
1.2.9 Design Plans and Details

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under

this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide to the City a copy of the Consultant's licenses, certifications, registrations, etc.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibilities to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume any and all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP Number 8802** (collectively "Proposal Documents");

3.1.7. it agrees that the Proposal Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately

correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall confirm in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense **(i)** adequate off-site storage space for equipment, materials, incidentals, etc., and **(ii)** all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall at all times keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity, unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the

Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. **Contractor's Employees.** The Contractor shall at all times enforce strict discipline and good order among its employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are **(i)** subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or **(ii)** unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed. The Contractor shall thereafter wait for written instructions from the City before proceeding with regard to such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for

use under conditions similar to those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained complete records documenting compliance with its obligations under the Connecticut General Statutes, the regulations of the Commission on Human Rights and Opportunities, and this Contract, including records of good-faith-efforts, subcontractor solicitations, bids received, awards, payments, documents relative to charges, costs, expenses fees, alleged breaches of contract, settlement of claims or other matters pertaining to the Contractor's demand for payment, workforce information, certifications, correspondence and filings with the Commission on Human Rights and Opportunities, for the period required by applicable law and regulations of the Commission on Human Rights and Opportunities.

3.15. FUNDING REQUIREMENTS. The Contractor is hereby put on notice that this Contract is a public works contract anticipated to be funded in whole or in part by Municipal Grants-In-Aid (MGIA) grant funding (CT Public Act 25-174, Section 55) and Contractor shall comply with all MGIA requirements, including but not limited to those provided in Section 12.4, Section 13.3, and **"Non-Discrimination Contract Language"**, dated REV 7-1-2026, attached hereto as **Attachment B-1** and incorporated herein.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such

parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract by **May 30, 2027** and shall reach Final Completion of all work and services required under this Contract by **June 30, 2027** (hereinafter referred to as "Contract Time").

5.1. Within one (1) week of the City's issuance of its written notice to proceed, and prior to the commencement of any work on the Project site, the Contractor shall submit for the City's written approval a construction progress schedule. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **TWO HUNDRED FIFTY DOLLARS AND ZERO CENTS ($250.00)** per calendar day for each and every calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall

be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay

In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all of the goods and services set forth in this Contract as follows in this Section 6. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed **ONE HUNDRED NINETY-SIX THOUSAND FIVE HUNDRED FORTY-TWO DOLLARS AND FIFTY CENTS ($196,542.50)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Proposal set forth in **Attachment A's** "Contractor's Revised Price Proposal, dated September 4, 2026 and consisting of 5 pages), which is summarized below:

i. $ 178,675.00....(Bid Items #1-#19)

And,

ii. $ 17,867.50….(Owner Controlled Contingency Allowance, only to be used upon prior written approval of the City Engineer, or his designee)

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage five percent (5.0 %) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not does not include additional sums that the City may withhold due to the Contractor's failure to comply with provisions of this Contract.

6.2.1 On public works contracts valued at one million dollars or more or for projects for which a construction manager has entered into a public

works contract providing for a guaranteed maximum price valued at one hundred fifty thousand dollars or more, C.G.S. § 46a-68e requires that the awarding agency "shall withhold two percent of the total contract price per month from any payment made to such contractor until such time as the contractor has submitted all compliance reports required by the Commission." The term "awarding agency" is defined by C.G.S. § 4a-60g as "a state agency or political subdivision of the state, including a municipality or quasi-public agency.

6.2.2 Contractor is hereby put on notice that CHRO's written approval is required prior to the City releasing withheld retainage per Section 6.2.1.

6.2.3 The two percent (2.0 %) provided in Section 6.2.1 is part of the five percent (5.0 %) retainage provided in Section 6.2, not in addition to such retainage.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc, all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Vendor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

6.4. Proposal Costs. All costs of the Contractor in preparing its bid for **RFP Number 8802** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all of the foregoing payment obligations have been fully completed. Additionally, during the Project, at the City's option, it may require partial waivers of lien and claim from the Contractor and all subcontractors and materialmen with each payment application.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

6.7. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.8. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.9. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.9.1 submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment can not be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.9.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price on the basis of the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents, and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i) three hundred sixty-five (365)** calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time period or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from any and all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. City beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the

Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project work-site and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project work-site without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of City's boards, agents, employees or officers by the Contractor or any employee of the Contractor, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the

responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, agents, employees as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, agents, employees or officers as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** three hundred sixty-five (365) calendar days after the City delivers its written notice of its acceptance of the Project.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, at all times during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance:
$1,000,000.00 each Occurrence
$2,000,000.00 General Aggregate
$2,000,000.00 Products/Completed Operations Aggregate
Providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance:
$1,000,000.00 Combined Single Limit Each Accident
Any Auto, All Owned and Hired Autos
Providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employer Liability (EL):
EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance:
$1,000,000.00 each Occurrence
$1,000,000.00 Aggregate
Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances.

11.4.5 Contractor's Pollution Liability Insurance:
$1,000,000.00 each Occurrence/Claim
$1,000,000.00 Aggregate
There will be no exclusion for Hazardous Materials, including asbestos and Lead.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: All Contractor's Insurance except Workers' Compensation shall be endorsed to add the City as additional insured and provide waiver of subrogation on all policies. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury is listed as Additional Insured on a primary and non-contributory basis on all policies except Workers' Compensation. All policies shall include a Waiver of Subrogation".** The City's Request for Proposal Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies).

11.8. No later than thirty (30) calendar days after Consultant receipt, the Consultant shall deliver to the City a copy of the Consultant's insurance policies and endorsements and riders.

11.9. If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

11.10. Original, completed Certificates of Insurance must be presented to the City of Waterbury prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least thirty (30) calendar days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, thirty (30) calendar days written notice must be given to the City of Waterbury.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); DAVIS BACON ACT as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the HOUSING and COMMUNITY DEVELOPMENT ACT of 1974, as amended; TITLE 31 and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The

provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn.Gen.Statute 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.4. Compliance with CONN. GEN. STAT. § 4a-60g, as amended by Public Act 25-168, and as may be amended from time to time.

12.4.1 Definitions – For purposes of Section 12.4 and Section 13.3 of this Contract:

i. "Awarding agency" means a state agency or political subdivision of the state, including a municipality or quasi-public agency.

ii. "Minority business enterprise" means any small contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons who (i) exercise operational authority over the daily affairs of the enterprise, (ii) have the power to direct the management and policies and

receive the beneficial interest of the enterprise, (iii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, and (iv) are members of a minority, as defined in subsection (a) of section 32-9n, or are individuals with a disability, or (B) which is a nonprofit corporation in which fifty-one per cent or more of the persons who exercise operational authority over the enterprise, (i) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, (ii) have the power to direct the management and policies of the enterprise, and (iii) are members of a minority, as defined in this subsection, or are individuals with a disability.

iii. "Public works contract" means any agreement (A) for construction, rehabilitation, conversion, extension, demolition or repair of changes or improvements in real property, and (B) that is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees, where such funding equals one hundred fifty thousand dollars or more.

iv. "Small contractor" means (A) any contractor, subcontractor, manufacturer, service company or corporation that (i) maintains its principal place of business in the state, and (ii) is registered as a small business in the federal database maintained by the United States General Services Administration, as required to do business with the federal government, or (B) any nonprofit corporation that (i) maintains its principal place of business in the state, (ii) that had gross revenues not exceeding twenty million dollars in the most recently completed fiscal year prior to such application, and (iii) that is independent.

12.4.2 The Contractor and subcontractor shall comply with the specific requirements of the State of Connecticut Set Aside Program, CONN. GEN. STAT. § 4a-60g, **amended by Public Act 25-168, and as may be amended from time to time,** if the public works contact awarded to the Contactor is funded as provided in 12.4.3 below.

12.4.3 The Contactor shall be subject to the following set-aside requirements if the public works contact, is funded in whole or in part by the State of Connecticut, and is equal to, or in excess of, ONE HUNDRED FIFTY THOUSAND DOLLARS ($150,000.00).

12.4.4 Set-Aside requirements – Any contractor awarded a public works contract, on the basis of competitive bidding procedures, shall comply with the following Set –Aside requirements:

i. This contract is subject to state contract compliance requirements, including nondiscrimination statutes and spending allocation goals. There is

anticipated to be **$178,675.00** in state-funding for this project. State law requires project-specific goals be set for this project based on the project's needs and available Small Business Enterprises ("SBEs") and Minority Business Enterprises ("MBEs"). The SBE goal for this project is **17.48%.** The MBE goal for this project is **7.77%**. The selected contractor must demonstrate good faith effort to meet the spending allocation goals.

12.4.5 No Affiliated Subcontracting to Satisfy Goal. The Contractor shall not subcontract with an affiliated person or entity in violation of Conn. Gen. Stat. § 4a-60g. An affiliated contractor or subcontractor shall not be credited toward the City's spending-allocation goals where such credit is prohibited by law.

12.4.5.1 Changes in Subcontractors. The Contractor shall not replace, terminate, materially reduce the work of, or otherwise alter the participation of a small contractor or minority business entity identified for purposes of satisfying a spending allocation goal without providing the City with prior written notice and satisfying all requirements imposed by the Commission on Human Rights and Opportunities and applicable law. The Contractor shall document good-faith efforts to replace any subcontractor with another qualified certified contractor where required by law or the Commission on Human Rights and Opportunities**.**

12.4.6 Failure of the Contractor or subcontractor to comply with the State of Connecticut Set-Aside program requirements, including, but not limited to, good faith efforts plan and compliance report submissions, shall be a material breach of this Contract. If required by the City, the Contractor shall provide the City with evidence of submission and disposition of all required State of Connecticut Set-Aside programs reports.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as herein specified. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated

against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors

13.3. Affirmative Action/Nondiscrimination.

13.3.1. Pursuant to CONN. GEN. STAT. § 4a-60, as amended by Public Act 25-168, and as may be amended from time to time, the following are required for every Public Works Contract:

(b) Except as provided in section 10a-151i, every contract to which an awarding agency is a party shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, sexual orientation, gender identity or expression, status as a veteran, status as a victim of domestic violence, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take affirmative action to ensure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, sexual orientation, status as a veteran, status as a victim of domestic violence, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;
(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;
(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46a-68e, 46a-68f and 46a-86; and
(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56.

(c) If the contract is a public works contract, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works project.

(d) Except as provided in section 10a-151i:
(1) Any contractor who has one or more contracts with an awarding agency or who is a party to a public works contract shall include a nondiscrimination affirmation provision certifying that the contractor understands the obligations of this section and will maintain a policy for the duration of the contract to assure that the contract will be performed in compliance with the nondiscrimination requirements of subsection (b) of this section. The authorized signatory of the contract shall demonstrate his or her understanding of this obligation by (A) initialing the nondiscrimination affirmation provision in the body of the contract, (B) providing an affirmative response in the required online bid or response to a proposal question which asks if the contractor understands its obligations, or (C) signing the contract.

(e) Determination of the contractor's good faith efforts shall include, but shall not be limited to, the following factors: The contractor's employment and subcontracting policies, patterns and practices; the timing and value of bids; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission on Human Rights and Opportunities may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(f) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission on Human Rights and Opportunities, of its good faith efforts.

(g) The contractor shall include the provisions of subsections (b) and (c) of this section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state, and in every subcontract entered into in order to fulfill any obligation of a public works contract, and such provisions shall be binding on a subcontractor, vendor or manufacturer, unless exempted by regulations or orders of the Commission on Human Rights and Opportunities.

13.3.2. Pursuant to CONN. GEN. STAT. § 4a-60a, as amended by Public Act 23-204, and as may be amended from time to time, the following are required for every Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56;

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56; and

(5) Nondiscrimination affirmation provision. The Contractor understands the obligations of this section 13.3 and will maintain a policy for the duration of the Contract to assure that the Contract will be performed in conformance with the nondiscrimination requirements of this section 13.3. The authorized signatory of the Contract shall demonstrate his or her understanding of this obligation by either (A) initialing the nondiscrimination affirmation provision in the body of the Contract, [or] (B) providing an affirmative response in the required online bid or response to a proposal question which asks if the Contractor understands its obligations, or (C) signing the Contract.

14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly-Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of

construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term “Good Faith Efforts” shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job

positions required for the Work. Not later than five (5) business day prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due the City, as liquidated damages, as a result of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Housing and Urban Development Section 3 Clause. In the event this Contract is funded, in whole or in part, through Housing and Urban Development assistance, 24 C.F.R. §135.38 may apply and the Contractor shall then be required to comply with the following (referred to as the "Section 3 clause"):

15.1. The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. § 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other

economic opportunities generated by HUD assistance or HUD-assisted Projects covered by Section 3, shall, to the greatest extent feasible, be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

15.2. The parties to this Contract agree to comply with HUD's regulations in 24 C.F.R. part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

15.3. The Contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the Contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

15.4. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. part 135. The Contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. part 135.

15.5. The Contractor will certify that any vacant employment positions, including training positions, that are filled **(i)** after the Contractor is selected but before the Contract is executed, and **(ii)** with persons other than those to whom the regulations of 24 C.F.R. part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 C.F.R. part 135.

15.6. Noncompliance with HUD's regulations in 24 C.F.R. part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

15.7. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450e) also applies to the work to be performed under this Contract. Section 7(b) requires that to the greatest extent feasible **(i)** preference and

opportunities for training and employment shall be given to Indians, and **(ii)** preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this Contract that are subject to the provisions of Section 3 and section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City in the event that sufficient funds to provide for City payment(s)

under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. With regard to third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, any and all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law, order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured

party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work so as to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor’s books of account in relation to this Contract any time during the period of this Contract or at any time during the twelve month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or

any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor, and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition, or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth

in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period of time as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional cost or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request**.**

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change

Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 8802** and **(ii)** the Contractor's response to **RFP Number 8802**. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party due to the fact that the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that its waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: BIRMINGHAM CONSTRUCTION COMPANY, LLC
454 LOPUS ROAD
BEACON FALLS, CT 06403

City: City of Waterbury
c/o Engineering Department
185 South Main Street, 5th Floor
Waterbury, CT 06706

with copy to:

City of Waterbury
Office of the Corporation Counsel
City Hall Municipal Building - 3rd Floor
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions.
The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether or not they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to

solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of

Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to

the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of any and all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder or Proposer is to submit a bid or Proposal for the Work contemplated.

35.3 Bidder or Proposer: A person, partnership, corporation or other business organization submitting a bid or Proposal on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or other City duly authorized person.

35.6 Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion (ii) Final Completion and any other identified Project Milestone.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion and includes, but it not limited to, documentation being provided by the Contractor as provided in General Conditions Article 108.3.

35.9 General Conditions and/or Special Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.10 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.11 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.12 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.13 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.14 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.15 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.16 Substantial Completion: The time at which, in the opinion of the Project Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work mean Substantial Completion thereof.

35.17 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: **City of Waterbury Engineering Department.**

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

CITY OF WATERBURY

By:_____
Paul K. Pernerewski, Jr.
Mayor

Date: _____

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

BIRMINGHAM CONSTRUCTION COMPANY, LLC

By:_____
Print name:
Its _____

Date: _____

ATTACHMENT A

Attachment A shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 8802** (acknowledged by the Contractor as having been received);

1.1.2 **RFP Number 8802** Addendum #1, dated August 3, 2026 and consisting of 1 page (attached hereto);

1.1.3 **RFP Number 8802** Addendum #2, dated August 14, 2026 and consisting of 69 pages (attached hereto);

1.1.4 Contractor's Proposal, dated August 26, 2026 and consisting of 9 pages, including Contractor's Price Proposal, dated August 26, 2026 and consisting of 5 pages submitted in response to **RFP Number 8802**, and Contractor's 5 page Revised Price Proposal, dated September 4, 2026 (all attached hereto);

1.1.5 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.6 Certificates of Insurance (attached hereto);

1.1.7 Performance Bond and Payment Bond (attached hereto);

1.1.8 Technical Specifications consisting of 55 pages (attached hereto);

1.1.9 Design Plans & Details cover page and 5 Sheets entitled "Storm Drainage Profile, Ester Ave, Showing Proposed Drainage Improvements", prepared by the City of Waterbury Engineering Department, dated April 2026; "Standard Details, Ester Ave", prepared by the City of Waterbury Engineering Department, dated April 2026; "Storm Drainage Profile, Crown Street", prepared by the City of Waterbury Engineering Department, dated December 2025; "Standard Detail, Crown Street", prepared by the City of Waterbury Engineering Department, dated December 2025; and "Water Standard Detail, Ester Ave and Crown Street", prepared by the City of Waterbury Engineering Department, dated April 2026 (attached hereto);

1.1.10 Special Conditions (Article 1 – Article 22) consisting of 15 pages (attached hereto);

1.1.11 General Conditions (Article 1 – Article 114) consisting of 36 pages (attached hereto);

1.1.12 State Wage Rates (attached hereto);

1.1.13 CHRO Documentation (attached hereto);

1.1.14 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.15 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.16 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

ATTACHMENT B-1

"Non-Discrimination Contract Language", dated REV.7-1-2026, attached hereto and incorporated herein.

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #1

August 3, 2026

RFP 8802 Esther Ave. & Crown Street Drainage Improvements

Please Be Advised:
1. All Proposers are hereby notified that this Addendum No. 1 shall be part of the Contract Documents for the above referenced **RFP #8802**.
2. This Addendum amends or supplements the RFP Documents. All provisions which are not so amended or supplemented remain in full force and effect.
3. Each Proposer shall be responsible for determining that it has received all Addenda issued and shall acknowledge receipt of all Addenda on the Addendum Acknowledgment Form (see Attachment C). Failure to do so may subject the Proposer to disqualification.

The Contract Documents are hereby amended as follows:

CORRECTION: REGARDING THE MANDATORY MEETING ON AUGUST 10, 2026:

MEET IN FRONT OF #74 ESTHER AVENUE, WATERBURY, CT AT 10:00A.M..

NOTE: Each Proposal over $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of ten (10) percent of the Total Proposal Price.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #2

August 14, 2026

RFP 8802 Esther Ave. & Crown Street Drainage Improvements

Please Be Advised:
1. All Proposers are hereby notified that this Addendum No. 2 shall be part of the Contract Documents for the above referenced **RFP #8802**.
2. This Addendum amends or supplements the RFP Documents. All provisions which are not so amended or supplemented remain in full force and effect.
3. Each Proposer shall be responsible for determining that it has received all Addenda issued and shall acknowledge receipt of all Addenda on the Addendum Acknowledgment Form (see Attachment C). Failure to do so may subject the Proposer to disqualification.

The Contract Documents are hereby amended as follows:

1) The attached/posted "E Price Proposal RFP 8802-REVISED 08142026" MUST be used when completing your proposal.

Revised Price Proposal Sheet, Pay Items added and various quantities adjusted as follows:

ITEM OF WORK	UNIT	ORIGINAL QTY	REVISED QTY
Test Pit	EA	10	12
Rock in drainage trench excavation	C.Y.	50	75
Pavement Restoration	S.Y.	300	350
CT DOT Type "C" Catch Basin	EA	2	4
CT DOT Type "CL" Catch Basin	EA	0	1
CT DOT Type "C Dog House" Catch Basin	EA	0	1
(12") Dia. HDPE Corrugated Pipe	L.F.	470	530
(6") Dia. HDPE Corrugated Pipe	L.F.	70	30
(4") Dia. PVC Perforated Pipe	L.F.	300	440
Bituminous Concrete Curbing	L.F.	15	100
Portland Cement Concrete (PCC)	S.F.	80	125
Topsoil and Turf Establishment	S.Y.	80	150

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

2) <u>Revisions Made to the Construction Plans and Specifications:</u>

Revised Construction Plans:
Sheet 1 of 5 Esther Avenue, Storm Drainage Profile, revised: August 14, 2026
Sheet 2 of 5 Esther Avenue, Standard Detail, revised: August 14, 2026
Sheet 3 of 5 Crown Street, Drainage Improvements, revised: August 14, 2026
Sheet 4 of 5 Crown Street, Standard Detail, revised: August 14, 2026
Sheet 5 of 5 Esther Avenue and Crown Street, Details, revised: August 14, 2026

3) Technical Specifications 5.86R Catch Basins, Manholes and Drop Inlets Added (2) additional Pay Items:

ITEM No.	Pay Item	Pay Unit
5.86R-2	CT DOT Type "CL" Catch Basin	EA
5.86R-3	CT DOT Type "C" Dog House CB	EA

Please refer to the questions and answers below.

Question: Will the contractor be responsible for excavation for the gas lateral relocations?
Answer: No.

Question: Will the contractor be compensated for multiple mobilizations?
Answer: No, there will be only ONE (1) lump sum payment for all mobilizations.

Question: Will there be extra compensation for water handling?
Answer: No.

Question: Will the contractor be compensated for the sidewalk repair on Crown Street?
Answer: Yes, per pay item: "Portland Cement Concrete" PCC Sidewalk 5", which will also include the concrete curb.

Question: Will the 6" laterals be installed under the sidewalks?
Answer: No.

Question: On Esther Ave, plans show tie ins for 4" pipe into the new 12"HDPE and 12"x6" reducers. What line item will these tie ins be paid under?
Answer: There will not be any additional payment for the tie-ins. The 6" pipe will be paid under pay item #9, "(6") Dia. HDPE Corrugated pipe" and the cost of all couplings and fittings will be included in the cost of the pipe.

Question: Can you provide the sign in sheet from today's mandatory pre-bid meeting?
Answer: Please see attached.

NOTE: Each Proposal over $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of ten (10) percent of the Total Proposal Price.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

REQUEST FOR PROPOSAL
BY
THE CITY OF WATERBURY
FOR
ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS
ATTACHMENT E

Price Proposal - REVISED 08/14/2026

(Must be submitted as part of RFP # response in a separate sealed envelope, marked "Confidential Price")

Date: _____

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

_____
(Print or Type Company/Corporate Name)

_____
(Print or Type Business Address)

_____

_____

_____

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

Continued on Page 2 of 5

BID ITEM #	SPEC ITEM #	UNIT	QTY	ITEMS OF WORK WITH UNIT PRICES WRITTEN IN WORDS	UNIT PRICES (In Figures)		TOTAL AMOUNT (In Figures)	
					DOLLARS	CENTS	DOLLARS	CENTS
1	2.03R	EA	12	TEST PIT FOR_____ DOLLARS CENTS				
2	2.19R	L.F.	10	SEDIMENTATION CONTROL SYSTEM FOR DOLLARS CENTS				
3	2.86R	C.Y.	75	ROCK IN DRAINAGE TRENCH EXCAVATION FOR_____ DOLLARS CENTS				
4	4.06R-1	S.Y.	350	PAVEMENT RESTORATION-Local Road FOR_____ DOLLARS CENTS				
5	5.86R-1	EA	4	CT DOT "Type C" Catch Basin FOR_____ DOLLARS CENTS				
6	5.86R-2	EA	1	CT DOT "Type CL" Catch Basin FOR_____ DOLLARS CENTS				
7	5.86R-3	EA	1	CT DOT "Type C Dog House" Catch Basin FOR_____ DOLLARS CENTS				
8	6.86R-1	L.F.	530	(12") Dia. HDPE Corrugated Pipe FOR _____ DOLLARS CENTS				
9	6.86R-2	L.F.	30	(6") Dia. HDPE Corrugated Pipe FOR _____ DOLLARS CENTS				
10	6.86R-3	L.F.	440	(4") Dia. PVC Perforated Pipe FOR _____ DOLLARS CENTS				

Continued on Page 3 of 5

BID ITEM #	SPEC ITEM #	UNIT	QTY	ITEMS OF WORK WITH UNIT PRICES WRITTEN IN WORDS	UNIT PRICES (In Figures)		TOTAL AMOUNT (In Figures)	
					DOLLARS	CENTS	DOLLARS	CENTS
11	8.15R	L.F.	100	Bituminous Concrete Curbing FOR _____ DOLLARS CENTS				
12	9.21R	S.F.	125	Portland Cement Concrete (PCC) Sidewalk 5” FOR _____ DOLLARS CENTS				
13	9.50R-1	S.Y.	150	Topsoil and Turf Establishment FOR _____ DOLLARS CENT				
14	9.71R-1	LS	1	Maintenance and Protection of Traffic FOR _____ DOLLARS CENT				
15	9.75R	LS	1	Mobilization and Project Closeout FOR _____ DOLLARS CENT				
16	14.10	L.F.	20	Replacement/Relocate Sanitary Sewer Lateral FOR _____ DOLLARS CENT				
17	16.00-1	L.F.	40	1” K COPPER TUBING FOR _____ DOLLARS CENT				
18	16.00-2	E.A.	2	1” Corporation Stop Valve FOR _____ DOLLARS CENT				
19	16.00-3	E.A.	2	1” Curb Stop Valve FOR _____ DOLLARS CENT				

Continued on Page 4 of 5

TOTAL PRICE - (Sum of Total Amounts for Bid Items 1-19 set out above):

_____Dollars

and_____Cents

(Amount in Words)

$_____
(Amount in Figures)

Continued on Page 5 of 5

All items in the Price Proposal shall include all applicable taxes, fees and other costs of any nature whatsoever related to, or in connection with, performing and completing the Work required by this RFP, including, but not limited to, profit and overhead, delivery charges and charges for standard warranties provided in the normal course of business for such items, etc., as well as all charges and fees for all benefits, insurances, taxes, transportation, vacation, sick leave, holidays, clothing, etc. or for any increase in wage scales, material prices, delivery delays, taxes, insurance, cost indexes or any other rates affecting the construction industry or this project, and that each and every such claim is hereby expressly waived by the Proposer.

In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount using any estimated quantities and/or unit prices shall govern in determining the pricing.

The undersigned also agrees that the quantities indicated are for price comparison purposes only and are not represented to be actual quantities for completion of the Work.

Respectfully submitted by:

_____	_____
Social Security Number or Federal Identification Number (Print or Type)	Company/Corporate Name (Print or Type)
	_____
	Signature of Authorized Official
	_____
	Name of Authorized Official (Print or Type)
	_____
	Title of Authorized Official (Print or Type)

Bidder shall provide Bidders Contact Information below:

_____	_____
Business Address: (Print or Type)	Business Fax Number: (Print or Type)
_____	_____
City, State, Zip Code: (Print or Type)	Business Mobile Number: (Print or Type)
_____	_____
Business Telephone Number: (Print or Type)	Business Email Address: (Print or Type)

Note: If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF ATTACHMENT E

CITY OF WATERBURY ENGINEERING DEPARTMENT

TECHNICAL SPECIFICATIONS

CONSTRUCTION AND MATERIAL SPECIFICATIONS

The Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction Form 818 (2020), including supplements to date, (herein called "Form 818"), with the exception of certain sections of Division 1 "General Requirements and Covenants" as enumerated below, shall be the basic specification for the performance of the required work:

- Section 1.01 Definitions of Terms and Permissible Abbreviations
- Section 1.02 Proposal Requirements and Conditions
- Section 1.03 Award and Execution of Contract
- Section 1.04.01— Intent of Contract (last sentence only deleted "The Contract as it existed when first duly executed by the Engineer is sometimes referred to herein as "the original Contract.")
- Section 1.04.02—Changes in Quantities of Pay Items, Including Elimination of Such Items (Everything after 2nd paragraph):
- Section 1.04.03—Changes in Quantities and Significant Changes in the Character of Work Section 1.04.04—Differing Site Conditions
- Section 1.04.05—Extra Work
- Section 1.05.01—Authority of Engineer (delete only sentence in 3rd paragraph referring to CGS-4-61)
- Section 1.05.05—Cooperation by Contractor (delete all but 1st two paragraphs)
- Section 1.05.01—Authority of Engineer (delete only sentence in 3rd paragraph referring to CGS-4-61)
- Section 1.05.14 Termination for Convenience Clause
- Section 1.07 – Legal Relations and Responsibilities
- Section 1.08.06(2) Suspensions of Work Ordered by the Engineer
- Section 1.08.07 Determination of Contract Time
- Section 1.08.08 Extension of Time
- Section 1.08.09 Failure to Complete Work on Time
- Section 1.08.10 Termination of Contract for Cause
- Section 1.09 Measurement and Payment
- Section 1.10.02—Compliance with Laws and Regulations
- Section 1.10.06—Protection of Archaeological and Paleontological Remains and Materials (delete last paragraph)
- Section 1.11 Claims
- Section 1.20 General Clauses for Facilities Construction

All references in Form 819 to Division 1 Sections listed above are not applicable to this Project. Further, all remaining Sections of Form 818 shall be interpreted so as to be in conformance with the Contract, General Conditions and Special Conditions and the City's Project Technical Specifications, as set forth herein.

Please refer to the following webpage for the appropriate link to the Form 819:
https://portal.ct.gov/DOT/IT/ConnDOT-Publications-Manuals

Unless expressly provided for otherwise, any references to the State of Connecticut, the Department, the Commissioner, Engineer, or other terms indicating the State of Connecticut and/or its agents as party to the contract shall for this Project mean the City and its designated agents or employees.

Except as may be set forth herein and/or expressly added by addendum, there are no Connecticut Department of Transportation "Special Provisions" applicable to this Project.

The term "Engineer" in this section shall mean "City Engineer".

CITY PROJECT TECHNICAL SPECIFICATIONS

City Project Technical Specifications are provided herein for special work or where more detail and/or control is required by the City. These City Project Technical Specifications supplement and/or amend the associated Sections of Form 818. The method of measurement and basis for payment may also deviate from that of Form 818.

TECHNICAL SPECIFICATIONS INDEX

The following listing of all Contract Pay Items, cross referenced to applicable Sections of Form 819 and/or to applicable City Project Technical Specifications, is provided for the purpose of clarification.

Any Pay Item that has an associated City Project Technical Specification is indicated below by a "YES".

For all Pay Items that reference Form 819 and have an associated City Project Technical Specification (and thus have requirements/provisions that are different than Form 819), the requirements/provisions contained in Form 818 are supplemented and/or amended as provided for by the associated City Technical Specification.

Bid Item No.	**Spec. Item No.**	**Form 819 Section Reference**	**Item Description**	**City Project Technical Specification**
1	2.03R	2.03	Test Pit	Yes
2	2.19R	2.19	Sedimentation Control System	Yes
3	2.86R	2.86	Rock in Drainage Trench Excavation	Yes
4	4.06R-1	4.06	Pavement Restoration-Local Road	Yes
5	5.86R-1	5.86	CT DOT “Type C” Catch Basin	Yes
6	5.86R-2	5.86	CT DOT “Type CL” Catch Basin	Yes
7	5.86R-3	5.86	CT DOT “Type C Dog House” Catch Basin	yes
8	6.86R-1	6.86	(12”) Dia. HDPE Corrugated Pipe	Yes
9	6.86R-2	6.86	(6”) Dia. HDPE Corrugated Pipe	Yes
10	6.86R-3	6.86	(4”) Dia. PVC Perorated Pipe	Yes
11	8.15R	8.15	Bituminous Concrete Curbing	Yes
12	9.21R	9.21	Portland Cement Concrete (PCC) Sidewalk 5”	Yes
13	9.50R-1	9.50	Topsoil and Turf Establishment	Yes
	9.70R	9.70	Uniformed Traffic Persons	Yes
14	9.71R-1	9.71	Maintenance and Protection of Traffic	Yes
15	9.75R	9.75	Mobilization and Project Closeout	Yes
16	14.10		Replacement/Relocate Sanitary Sewer Lateral	Yes
16	16.00-1		1” K COPPER TUBING	Yes
18	16.00-2		1” Corporation Stop Valve	Yes
19	16.00-3		1” Curb Stop Valve	Yes

The applicable sections of Form 819, together with the City Project Technical Specifications provided herein, shall constitute the “Technical Specifications” for this Project.

NOTE: Any provision of Form 819 - State of Connecticut Department of Transportation “Standard Specifications for Road, Bridges, and Incidental Construction,” including the latest supplements thereto, that conflicts with these "Special Provisions” or with any other provision the Contract Documents shall be of no effect relative to this Project.

Reference is made to Section 1.2 of the City of Waterbury Contract for controlling hierarchy of the Contract Documents.

END OF TECHNICAL SPECIFICATION INTRODUCTION

TECHNICAL SPECIFICATION 2.03R
TEST PIT

2.03.01 DESCRIPTION

This work shall consist of excavating a shallow test pit to the depths, dimensions, and at the locations established by the Engineer. The test pit shall be excavated in a manner to allow an effective and safe visual examination of the subsurface conditions exposed. Disturbed area is then to be raked to remove stones, seeded and hayed, in paved areas, the area is to be paved, or, with prior approval from the Engineer, processed gravel can be used to bring the surface up to grade. Care is to be taken so as not to damage or destroy adjacent sidewalks, curbing, driveways or roadway.

2.03.02 MATERIALS

Hot asphalt or cold patch, or processed gravel to be approved by engineer prior to placement, topsoil, seed and hay as required.

2.03.03 CONSTRUCTION METHODS

The contractor shall excavate a shallow test pit, to the satisfaction of the City, to allow safe and effective visual examination of subsurface conditions. The methods and equipment used shall be approved by the City. Upon completion, the test pit will be backfilled, compacted, and the site returned to a condition acceptable to the Engineer.

2.03.04 METHOD OF MEASUREMENT

This work will be measured for payment by the number of each test pits, complete and accepted in place as shown on the plans or as directed by the City. This specification shall not be used to cover excavations required for the contractor's basic operations.

2.03.05 BASIS OF PAYMENT

This work will be paid for at the Contract unit price per each "Test Pit". This price shall include all equipment, tools, labor, and materials, etc. incidental thereto necessary to excavate and backfill the test pit.

No additional or separate payments will be made for traffic control, backfill, compaction, sawcutting, topsoil or seeding, haying or turf establishment.

ITEM NO	PAY ITEM	PAY UNIT
2.03R	Test Pit	EA

END OF SECTION

TECHNICAL SPECIFICATION 2.08R
FREE-DRAINING MATERIAL

2.08.01 DESCRIPTION

Free-draining material shall consist of material meeting the requirements stated elsewhere herein. This material shall be furnished and placed in accordance with these specifications and as indicated on the plans, special provisions, or as ordered by the Engineer for the stabilization of embankments, or for fill in free water areas, or wherever specified, or as replacement of excavated unsuitable material after all suitable excavated material has been used to backfill.

2.08.02 MATERIALS

Material for this work shall meet the requirements of M.02.03 of the Form 818.

2.08.03 CONSTRUCTION METHODS

The Contractor shall notify the Engineer at least 3 days prior to obtaining free-draining material from any source so that an examination may be made of the material and the necessary measurements may be taken.

The limits of the proposed source shall be shown to the Engineer; and prior to the taking of measurements, the Contractor shall be required to clear the area of all unsuitable material. No payment will be made for any material removed outside of the area measured or which was not used in the Contract work. No excavation shall be made within the confines of a source after the Engineer has taken the original measurements, except for material to be used for the purposes hereinbefore indicated, except with the permission of the Engineer.

The Contractor may, with the approval of the Engineer, obtain free-draining material, if available, from within the roadway excavation limits subject to the provisions of 1.04.07.

If the Contractor elects to obtain free-draining material from a commercial pit, it will be necessary to have a section of the pit set off for its use solely, so that the amount of material removed may be accurately determined. During the period between the original and the final release by the Engineer, no material shall be taken from a measured pit except by the Contractor and for use only in the work under the Contract.

If the Contractor elects to use stone from a quarry or reclaimed miscellaneous aggregate, the Contractor shall use only the materials from stockpiles which have been approved for use.

Free-draining material will be permitted only to the extent necessary to construct embankments to 3 feet above free water, or to promote free drainage in areas specified on the plans, in the special provisions, or as directed by the Engineer.

Free-draining material shall be placed in accordance with the provisions for the formation of embankment of 2.02 of the Form 818.

2.08.04 METHOD OF MEASUREMENT

The amount of free-draining material to be paid per cubic yard (C.Y.) which will be determined by using the results of cross-sectional elevations taken before and after the free-draining material has been excavated in the average end area method, or by a method approved by the Engineer. When material is drawn from a quarry stockpile or stockpile formed from reclaimed miscellaneous aggregate, the material shall be weighed on scales furnished by and at the expense of the Contractor. The scales shall be of a type satisfactory to the Engineer and shall be sealed at the expense of the Contractor as often as the Engineer may require. All weighing shall be done in the presence of a representative of the City. From the weight so obtained, the volume shall be computed based on a specific gravity of 2.92 for the aggregate and smaller particles. For material having a different specific gravity, an appropriate correction shall be made.

2.08.05 BASIS OF PAYMENT

Payment will be made at the Contract unit price per cubic yard for "Free-Draining Material," complete in place, which price shall include furnishing and placing the material and all equipment, tools and labor necessary thereto.

ITEM NO	PAY ITEM	PAY UNIT
2.08R	Free-Draining Material	C.Y.

END OF SECTION

TECHNICAL SPECIFICATION 2.19R
SEDIMENTATION CONTROL SYSTEM

2.19.01 DESCRIPTION

This work shall consist of furnishing, placing, maintaining and removing sedimentation control systems as shown on the plans or as directed by the Engineer. Maintaining shall include the clean out and disposal of accumulated sediment.

2.19.02 MATERIALS

The sedimentation control system materials for this work shall meet the following requirements:
Hay bales shall be made of hay with 40 lb. minimum weight and 120 lb. maximum weight held together by twine or wire.
Geotextile shall meet the requirements of 7.55 and M.08.

2.19.03 CONSTRUCTION METHODS

Sedimentation Control Systems shall be installed by the Contractor in locations shown on the plans or as directed by the Engineer.
Hay Bale systems shall be installed lengthwise along the contour with ends of adjacent bales tightly abutting each other. All hay bales shall be installed so that bindings are oriented around the sides, rather than along the tops and bottoms. Each hay bale shall be entrenched 4 inches deep and backfilled, with the backfilled soil placed toward the potential silt source. They shall be held in place by 2 wooden stakes in each hay bale and each wooden stake shall be driven 18 inches deep into the ground. Gaps shall be filled
with hay or straw to prevent water or debris escaping between bales.
Geotextile systems shall be installed along the contour so that the bottom 6 inches of the fabric is buried by either trenching or by laying the 6 inches section horizontally on the ground and burying by ramping the soil up to the control fence. All geotextile fences shall be exposed at least 30 inches high as installed. Spacing between posts shall not exceed 10 feet and all wooden posts shall be driven a minimum of 12 inches deep into the ground. When joints between sections of geotextile sedimentation control systems are necessary, geotextile shall be spliced together only at a support post, with a minimum 6 inch overlap, and securely sealed.
When trench excavation of a hay bale or geotextile fence is obstructed by an occasional stone or tree root, provide a smooth transition between the trench bottom and the obstruction. Clean out of accumulated sediment shall be accomplished when 1/2 of the original height of the sedimentation control system, as installed, becomes filled with sediment or as directed by the Engineer. The sedimentation control systems shall be maintained or replaced until they are no longer necessary for the purpose intended or are ordered removed from the Site at the completion of the Project when full stabilization has occurred, unless specifically authorized by the Engineer to be left in place.

2.19.04 METHOD OF MEASUREMENT

This work will be measured for payment by the actual number of linear feet of "Sedimentation Control System" or "Sedimentation Control (Type) System" installed and accepted. Measurement shall be made along the top center-line of the system. Replacement systems will not be measured for payment.

2.19.05 BASIS OF PAYMENT

Payment for this work will be made at the Contract unit price per linear foot for "Sedimentation Control System" or "Sedimentation Control (Type) System" complete in place, which price shall include all materials, equipment, tools and labor incidental to the installation, maintenance, replacement, removal and disposal of the system and surplus material. No additional payment will be made for the clean out of accumulated sediment.

ITEM NO	PAY ITEM	PAY UNIT
2.19R	Sedimentation Control System	L.F.

END OF SECTION

TECHNICAL SPECIFICATION 2.86R
DRAINAGE TRENCH EXCAVATION,
ROCK IN DRAINAGE TRENCH EXCAVATION

2.86.01 DESCRIPTION

Drainage trench excavation consists of the excavation necessary for the proper installation of drainage structures, pipes, pipe ends and any other incidental drainage items. It shall include earth and rock excavation, removal of existing pipes, dewatering, backfill, and disposal of materials; to the trench limits described herein, to the dimensions shown on the plans, or as directed by the Engineer.

Classifications:
(1) Drainage Trench Excavation will include only the excavation necessary for the construction of the drainage items and the removals specified above.
(2) Rock in Drainage Trench Excavation, insofar as it applies to drainage trench excavation, shall be defined as **1/2 cubic yard or more** in volume of the following obstructions removed from the limits of the drainage trench:
(a) rock in definite ledge formation
(b) boulders, or portions of boulders
(c) cement masonry structures
(d) concrete or reinforced concrete structures
(e) reinforced concrete pipe
(f) subsurface concrete pavement or concrete base
The removal shall be as indicated or directed from within the limits defined in 2.86.03 for drainage trench excavation.

2.86.02 MATERIALS

Not Applicable

2.86.03 CONSTRUCTION METHODS

(1) Drainage Trench Excavation Limits:
Horizontal Limits: Trench widths for pipes, pipe ends, pipe arches, and drainage structures shall be as follows:
(a) 2 feet greater than the nominal inside diameter of circular pipe or nominal inside span of elliptical pipe or pipe arch for such diameters or spans of less than 30 inches
(b) 3 feet greater than the nominal inside diameter of circular pipe or the nominal inside span of elliptical pipe or pipe arch for such diameters or spans that are 30 inches or greater
(c) 4 feet greater than the nominal inside diameter or nominal horizontal inside span for pipe arches fabricated from structural plates
(d) 2 feet beyond the neat lines of all exterior or foundation walls of drainage structures
Vertical Limits: Trench depths shall extend vertically as follows:
(a) From the bottom of the trench to the bottom of the roadway excavation, or in areas away from roadway excavation, to the top of existing ground surface.
(b) Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Drainage Trench Excavation: Drainage trench excavation shall be made in conformity with the requirements of the plans, or as directed by the Engineer. The Contractor shall furnish and employ such shores, braces, pumps, or ancillary equipment as needed for the proper protection of property, proper completion of the work, as well as safety of the public and employees of both the Contractor and the Department. All bracing and shoring shall be removed when no longer required for the construction or safety of the work. When required, the Contractor shall provide or have on the Site at all times any OSHA certification for equipment to be used, per 1.07.07. For support of trenches greater than 10 feet in depth, working drawings shall be submitted, in accordance with 1.05.02. The Contractor shall control erosion and sedimentation at trench locations and ensure that pumped water from the drainage excavation is discharged in accordance with the requirements of 1.10.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved backfill, thoroughly compacted in lifts not to exceed 6 inches, for the full trench width. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

After the excavation is complete, the Contractor shall notify the Engineer and no drainage structure or material shall be placed in the excavated area until the Engineer has approved the depth of excavation and the character of the foundation material.

(3) Rock in Drainage Trench Excavation:

(a) Rock in Drainage Trench Excavation - Ledge: When rock in definite ledge form is encountered, the Contractor shall excavate a minimum of 12 inches below the bottom of the proposed pipe or drainage structure; and this depth shall be filled with bedding material (as specified in M.08.03-1) below the proposed pipe; or granular fill (as specified in M.02.01) below the proposed drainage structure, which shall be thoroughly compacted in lifts not to exceed 6 inches.

(b) Rock in Drainage Trench Excavation - Boulders: When boulders are encountered, the Contractor shall remove them from the trench and if backfill is required, the void shall be filled with bedding material, surplus excavated material (as specified in 2.02.03-8) or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(c) Rock in Drainage Trench Excavation –Structures: When cement masonry, concrete or reinforced concrete structures are encountered within the drainage trench limits, the Contractor shall remove the structure in its entirety or as directed by the Engineer, and if backfill is required, the void shall be filled with bedding material, surplus excavated material or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(4) Backfill: Suitable material excavated from the drainage trench shall be used as backfill material prior to consideration of using any other source of backfill. Backfill material used shall be of a quality satisfactory to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. Rock fill or stones larger than 5 inches shall not be placed within 1 foot of the drainage structure or pipe. The grading shall be completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material, placed in layers not to exceed 6 inches in depth after compaction, which shall be thoroughly compacted with equipment approved by the Engineer.

All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it may be obtained from the Project surplus excavation in accordance with 2.02.03-8 or from borrow pits, gravel pits, or elsewhere as directed by the Engineer.

2.86.04 METHOD OF MEASUREMENT

Drainage Trench Excavation: Drainage trench excavation will not be measured for payment. If granular fill or borrow is required to replace unsuitable material it will be measured for payment as directed by the Engineer.

Rock in Drainage Trench Excavation: If any material meeting the definition of Rock in Drainage Trench Excavation is encountered, the Contractor shall strip it of sufficient overlying material to allow for proper measurement and shall then notify the Engineer that the rock surface is ready for measurement. If the Contractor fails to give such notice, the Engineer will presume that the measurements taken at the time the Engineer first saw the material in question will give the true quantity of excavation.

Rock in Drainage Trench Excavation will be measured according to the classification provided in 2.86.01 and within the drainage trench excavation limits provided in 2.86.03.

For the removal of underground obstructions, as classified in 2.86.01-2, the measurement shall be the actual volume of rock removed (1/2 cubic yard or more) as approved by the Engineer.

Rock in Drainage Trench Excavation will not be measured for payment in fills.

Bedding Material or other suitable fill, as specified in 2.86.03(3), used to fill voids after rock is excavated will not be measured for payment.

2.86.05 BASIS OF PAYMENT

Drainage Trench Excavation: There will be no direct payment for drainage trench excavation required for the installation of drainage pipes, pipe ends, catch basins, drop inlets, manholes, and other drainage structures, or any other incidental drainage work including materials, tools, equipment and labor necessary to complete the drainage trench excavation in conformity with the plans or as directed by the Engineer.

There will be no direct payment for backfill or disposal of surplus material necessary for the satisfactory completion of this work. There will be no direct payment made for shoring, bracing, dewatering, or for material or equipment necessary for the satisfactory completion of the work.

Where called for on the plans to install temporary earth retaining systems for the support of existing facilities, pavement, utilities, or for other constraints, payment will be made in accordance with such items in the Contract.

If granular fill or borrow is used to replace unsuitable material, payment will be made at the respective Contract unit prices, or in the absence of such items in the Contract, as Extra Work in accordance with 1.04.05.

Rock in Drainage Trench Excavation: When rock, conforming to the description in 2.86.01 is encountered within the limits of drainage trench excavation, its removal will be classified and paid for at the Contract unit price per cubic yard for "Rock in Drainage Trench Excavation 0' – 10' Deep," or "Rock in Drainage Trench Excavation 0' – 20' Deep," as the case may be.

Those portions of drainage trench excavation classified and paid for as "Rock in Drainage Trench Excavation" of the various depths will be the actual volumes of rock excavated within the limits for drainage trench excavation, at the applicable bottom depth price.

Where no item or items for "Rock in Drainage Trench Excavation" at the applicable depth appear in the proposal and rock is encountered in drainage trench excavation, its removal will be paid for as Extra Work in accordance with 1.04.05.

When excavation is necessary in fill, no such excavation will be paid for as "Rock in Drainage Trench Excavation."

When excavation is necessary for any purpose other than drainage-related items, no such excavation will be paid under this item.

Bedding material or any other suitable material used to fill voids vacated by excavated rock will not be paid for but shall be included in the unit price per cubic yard for "Rock in Drainage Trench Excavation."

ITEM NO	PAY ITEM	PAY UNIT
2.86R	Rock in Drainage Trench Excavation 0’-10’Deep	C.Y.

END OF SECTION

TECHNICAL SPECIFICATION 4.06R
PAVEMENT RESTORATION

4.06.01 DESCRIPTION

Work under this item shall consist of removal of existing roadway pavement of all types, excavation to the proper depth, formation of subgrade, saw cutting, placement and compaction of processed gravel base material (if required), applying tack and placement of bituminous concrete pavement to the lines and grades as shown on the plans and/or as directed by the Engineer. For drainage pipe and catch basin installations, the 12" processed gravel base shall be included and paid for as part of sections 6.86R and 5.86R.

Work under this item shall conform to the applicable requirements of Sections 2.02, 2.09, 3.04, 3.05R and 4.06 of Form 819, amended as follows:

4.06.02 MATERIALS

Base material shall be processed aggregate conforming to the requirements of Article M.02.03. Bituminous concrete and tack coat shall conform to the requirements of Article M.04.

4.06.03 CONSTRUCTION METHODS

Construction methods used shall conform to the requirements of Articles 2.02.03, 2.09.03, 3.04.03 and 4.06.03, respectively.

Equipment used for sawing bituminous concrete pavement shall be gasoline powered wet blade concrete saw. Cutting roller blades will not be allowed. Existing bituminous concrete shall be carefully removed so as not to disturb the existing pavement to remain.

The existing pavement structure shall be removed to subgrade within the neat lines of the pavement sawcut and the existing curbing to the depth shown on the detail for the class of road being worked on. Subgrade shall be compacted by approved means. Processed gravel conforming to Section M.02.06 Grading B of the Form 819 shall be placed and compacted in six-inch (6") maximum lifts to the depths shown on detail or as directed by City. All excavated materials shall be properly disposed of off-site at a location approved by the City. No permanent pavement shall be placed over backfill until compaction has been completed. Material removed during this operation shall be properly disposed of off-site.

Contractor will be required to hose clean or sweep all road surfaces after backfilling and before any surfacing is done.

Pavement restoration cross-section shall be as specified on the Contract Plans for Roadway Class indicated or as directed by City:

Crown Street and Esther Avenue are classified as Local roads. The trench restoration is to follow the detail on the plans.

The pavement shall be sawcut at least 1' from the edge of the trench on each side to provide a neat, straight line.
Existing roadway pavement shall be sawcut two (2') feet from the face of curb at the location of each pedestrian ramp or concrete curb and 2'from the face of each structure to be installed. Tack coat shall be applied to all vertical sawcut faces prior to placing bituminous concrete pavement repair at a rate of 0.05 to 0.15 gallons per square yard. Once structure, pedestrian ramp, curb or sidewalk has been installed, area between face of curb or structure and pavement sawcut shall be backfilled with compacted processed aggregate material to a minimum depth of twelve (12") inches.

Local Roads, base course shall be (2) two, 2" courses (compacted) of bituminous concrete. Base course shall be Class I (S0.50) and finish course shall be Class II (S0.375) bituminous concrete. Collector Road base course shall be a minimum of four inches (4") of Class 4 bituminous concrete under a 2" lift of Class 1.

Seam between new and existing bituminous concrete shall then be sealed hot crack sealer.

Bituminous pavement courses shall be rolled thoroughly using rollers weighing approximately ten (10) tons, but not heavy enough to damage existing pavement to remain. Begin compaction as soon as placed hot mix paving will bear roller weight without excessive displacement. Compact hot mix paving with hot, hand tampers or with vibratory plate compactors in areas inaccessible to rollers.

For new drainage pipe and drainage structures installations, remove any temporary gravel material, compact, sawcut the edges of the trench at least 1' on each side, to provide a neat straight line, tack the edges and apply the bituminous concrete per the appropriate detail.

4.06.04 MEASUREMENT

This work shall be measured for payment as the actual area, in square yards to the pay limits specified or indicated, of pavement removed and replaced on a reconstructed base course, or as directed by the City Engineer. Pay limit is two feet (2') beyond face of curb or structure and one foot on each side of trench limit which is the inside diameter of the pipe plus two feet (2').

Sawcutting of bituminous concrete pavement will not be measured separately but will be included in the overall cost of the project.
The 12" Processed Gravel base shall not be measured for payment under this section but will be included in the work required under sections 5.86R Catch Basin, Manholes…. and 6.86R Drainage Pipes, …
Tack coat will not be measured or paid for separately but shall be included in the work for which it is required.

4.06.05 PAYMENT

This work will be paid for at the contract unit price, per square yard, for "Pavement Restoration", complete and in place, which price shall include earth and roadway material excavation; removal and disposal of existing materials; placement and compacting of base materials and bituminous concrete, saw cutting, tack; and all equipment, tools and labor incidental thereto.

ITEM NO	PAY ITEM	PAY UNIT
4.06R - 1	Pavement Restoration – Local Road	S.Y.

END OF SECTION

TECHNICAL SPECFICATION 5.86R
CATCH BASINS, MANHOLES AND DROP INLETS

5.86.01 DESCRIPTION

The work under this Section shall consist of furnishing, preparing, and installing catch basins, manholes, custom manholes and drop inlets (and also the removal, abandonment, alteration, reconstruction, or conversion of such existing structures) in conformity with the lines, grades, dimensions and details shown on the plans. Backfill shall include providing, installing and compaction of a 12" processed gravel base around the structure.
This Section shall also include resetting or replacing catch basin tops as well as manhole frames and covers.

A. Submittals

Contractor shall submit catalog cuts or shop drawings of proposed materials for review and approval by the City prior to installation of any work.

5.86.02 MATERIAL

The materials for this work shall meet the following requirements:
CT DOT Form 819
CT DOT Structures
Drainage structures shall meet the requirements of M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.
Processed Gravel per section 3.05R
Galvanizing shall meet the requirements of M.06.03.
Mortar shall meet the requirements of M.11.04.
Butyl rubber joint seal shall meet the requirements of ASTM C990.
Granular fill, if necessary, shall meet the requirements of M.02.01.
Protective compound material shall be a type appearing on the Department of Transportation's Qualified Products List and be acceptable to the Engineer, as specified in M.03.09.

All new catch basin tops, frames or grates shall have the words "Dump No Waste – Drains to Waterways" or equal either cast into material or have a sticker permanent affixed to top.

5.86.03 CONSTRUCTION METHODS

Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.
Where a drainage structure is to be installed below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the proposed drainage structure or to ensure a uniform foundation for the structure.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

When a drainage structure outside of proposed drainage trench limits is to be removed, it shall be completely removed and all pipes shall be removed or plugged with cement masonry.

When a drainage structure is to be abandoned, the structure shall be removed to a depth 2 feet below the subgrade or as directed by the Engineer. The floor of the structure shall be broken and all pipes shall be plugged with cement masonry.

Drainage structures shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved. The provisions of 6.02.03 pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval unless called for in the plans, Contract or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

When it becomes necessary to increase the horizontal dimensions of manholes, catch basins and drop inlets to sizes greater than those shown on the plans in order to provide for multiple pipe installations, large pipes or for other reasons, the Contractor shall construct such manholes, catch basins and drop inlets to modified dimensions as directed by the Engineer.

The surfaces of the tops of all catch basins, and drop inlets shall be given a coat of protective compound material, at the manufacturer's recommended application rate, immediately upon completion of the concrete curing period.

All masonry units shall be laid in full mortar beds.

Metal fittings for catch basins, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

All inlet and outlet pipes shall be set flush with the inside face of the wall of the drainage structure as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections, and the concrete or masonry shall be constructed around them neatly to prevent leakage along their outer surfaces.

When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size extending from the drainage structure to the nearest joint of the existing pipe in accordance with 6.86.03 or as directed by the Engineer. Connection shall be secure and water-tight using methods approved by City.

Backfilling shall be performed in accordance with 2.86.03.

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the frames, covers and tops shall be reset as shown on the plans or as directed by the Engineer.

5.86.04 METHOD OF MEASUREMENT

Drainage Trench Excavation: In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for the type of structure being installed.
Rock in Drainage Trench Excavation: The volume in cubic yards of Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.
Manholes, Catch Basins and Drop Inlets will be measured as separate units.
Resetting of Manholes, Catch Basins and Drop Inlets will be measured as separate units.
Replacement of frames, covers, and tops will be measured as a unit for catch basin top or manhole frame and cover.
Conversion of drainage structures as specified on the plans, or as directed by the Engineer, including structure reconstruction will be measured for payment as a unit.
Removal or abandonment of drainage structures outside of drainage trench excavation limits, as defined in 2.86.03, will be measured as separate units.
There will be no measurement or direct payment for the application of the protective compound material, the cost of this work shall be considered as included in the general cost of the work.
Measurement for payment for work and materials involved with installing pipes to connect new drainage structures into a run of existing pipe will be as provided for under the applicable Contract items in accordance with 6.86.04.
There will be no measurement or direct payment for plugging existing pipes with cement masonry, connecting drainage pipes to structure, stone bedding, dewatering, saw-cutting, dust control, the cost of this work will be considered as included in the general cost of the work.

5.86.05 BASIS OF PAYMENT

Drainage Trench Excavation: No Pay Item.
Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05, per cubic yard.
Manholes and Catch Basins will be paid for at the Contract unit price for each "Manhole," or "Catch Basin," of the type specified, at "0' to 10' Deep" or "0' to 20' Deep," complete in place, which price shall include all excavation, backfill, 12” processed gravel base, saw cutting, materials, equipment, tools and labor incidental thereto.
Drop Inlets will be paid for at the Contract unit price for each "Drop Inlet," of the type specified, complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.
Reset Units will be paid for at the Contract unit price each for "Reset Manhole," "Reset Catch Basin," or "Reset Drop Inlet," of the type specified, respectively, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto, except when the work requires reconstruction greater than 3 feet, measured vertically, then the entire cost of resetting the unit will be paid for as Extra Work in accordance with the provisions of 1.04.05.
Frames, Covers, and Tops when required in connection with reset units, will be paid for at the Contract unit price each for such "Manhole Frame and Cover" or "(Type) Catch Basin Top," complete in place, including all incidental expense; or when no price exists, the furnishing and

placing of such material will be paid for as Extra Work in accordance with the provisions of 1.04.05.
When the catch basin top has a stone or granite curb in its design, the curb or inlet shall be included in the cost of the "(Type) Catch Basin Top."
Conversion of drainage structures will be paid for at the Contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to (Type) Manhole," or "Convert Manhole to (Type) Catch Basin," complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, all alterations to existing structure, all materials including catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

The maximum change in elevation of frame under these items shall not exceed 3 feet. Greater depth changes, if required, shall be paid for as Extra Work, in accordance with 1.04.05.
Removal or abandonment of drainage structures outside of drainage trench or structure excavation limits as defined in 2.86.03 will be paid for at the Contract unit price each for "Remove Drainage Structure – 0' to 10' Deep," "Remove Drainage Structure – 0' to 20' Deep," or "Abandon Drainage Structure," which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, and all equipment, tools and labor incidental thereto.

ITEM NO	PAY ITEM	PAY UNIT
5.86R-1	CT DOT Type "C" Catch Basin	EA
5.86R-2	CT DOT Type "CL" Catch Basin	EA
5.86R-3	CT DOT Type "C" Dog House CB	EA

TECHNICAL SPECIFICATION 6.86R
DRAINAGE PIPES, DRAINAGE PIPE ENDS

6.86.01 DESCRIPTION

Work under this item shall consist of the installation of the size and type of pipe specified or as shown on the plans, or as directed by the Engineer. Work shall also include the placement of stone around the pipe, filter fabric, excavation, backfill, placement of processed gravel as road base, compaction, sheeting, shoring, bracing, dewatering, saw cutting and dust control. All work under this item shall conform to the applicable requirements of Sections 2.02, 2.86 and 6.86 of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 819, as supplemented herein.
In accordance with Section 2.01 of the Form 819, clearing and grubbing will not be measured or paid for separately but the cost of the work shall be included in the cost of the items and no direct payment will be made.
All road signs, mailboxes, etc. shall be removed and reset as directed.

A. Submittals

Contractor shall submit catalog cuts of proposed materials for review and approval by the City prior to installation of any work. The following shall be submitted: pipe, filter fabric, drainage structures.

6.86.02 MATERIALS

All materials shall be as specified in CT DOT Standard Form 818, Section 6.86.02 and M 02.01. and M02.03. It should be noted that either Reinforced concrete pipe, (RCP), Ductile Iron Pipe (class 52 unlined), or HighDensity Polyethylene pipe (HDPE, smooth wall) are acceptable.
HDPE pipe shall be corrugated double wall, smooth interior, N-12 Soil Tight (ST), IB HDPE
4" PVC drain pipe shall be Hancor 10' lengths
Filter fabric Nonwoven Geotextile US 80N or equal.

6.86.03 CONSTRUCTION METHODS

Construction methods used shall conform to Sections 2.02, 2.86 and 6.86.03 of Form 818 and shall be in accordance with Manufacturer's recommendations. Pipes into new structures or pipe connections to existing structures shall be flush with inner walls, sealed to be waterproof and required invert shaped as required. All edges of excavation shall be neatly sawcut to provide a clean, vertical edge for placing bituminous concrete.

Suitable material, as determined by the Engineer, removed in making the excavation shall be used for backfill. No stones or coarse material shall be placed adjacent to the conduit, cable or pipe. All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it shall be obtained from sources approved by the Engineer and paid for as the contract item 2.08R Free -Draining Material or 3.05R Processed Gravel.

All backfill shall be placed in layers of not more than 6 inches deep after compaction and shall be thoroughly compacted by means of vibrators or by pneumatic tampers. Hand tampers shall be used only with permission of the Engineer. The backfill material shall be brought to the elevation just below the Processed Gravel Base Material, in paved areas and approximately 6" below the topsoil layer in grass areas.
Unsuitable material includes but not limited to the following: wet muddy material, silty, clay, large rocks, cluster of rocks, frozen material, organic matter, debris or other deleterious material or other material as determined by the Engineer.

6.86.04 METHOD OF MEASUREMENT

New and re-laid pipe and pipe arches will be measured for payment by the actual number of linear feet of pipe of the various sizes and types, completed and accepted and measured in place along the invert to inside of structure or pipe end. Couplings and fittings will not be measured for payment, they shall be included in the cost of installing the pipe.
Pipe ends and connections to existing structures will be measured per each, complete and accepted in place.

Excavation, backfill, 12" processed gravel base, saw cutting, compaction, bedding, dewatering, installation of filter fabric and dust control for pipe will not be measured separately for payment but shall be included in the work for which it is required.
Rock in trench excavation will be measured in accordance with Section 2.86R as part of these specs.
Material required to replace or supplement backfill as determined by the Engineer will be paid for by the Contract unit price for the material being used.
Connecting pipe to existing structures shall not be measured for payment.

6.86.05 BASIS OF PAYMENT

All pipe will be paid for at the contract unit price per linear foot for pipe of the type and size specified, directed by the City or shown on the plans, complete in place, including all materials, gravel fill, fittings, couplings, equipment, tools and labor incidental thereto**.**

Trench excavation, bedding, backfill, 12" processed gravel base, dewatering, dust control, pavement saw-cutting, tack coating, clearing and grubbing, construction staking and incidental work thereto shall not be measured or paid for separately but shall be included in the work for which it is required.
Pipe will be paid for at the contract unit price per each of the type and size specified, complete in place, including all materials, gravel fill, fittings, couplings, equipment, tools and labor incidental thereto.
There shall be no payment for connecting to existing structures.

ITEM NO	PAY ITEM	PAY UNIT
6.86R-1	(12") Dia. HDPE Corrugated Pipe	L.F.
6.86 R-2	(6") Dia. HDPE Corrugated Pipe	L.F.
6.86R-3	4" PVC Perforated Pipe	L.F.

END OF SECTION

TECHNICAL SPECIFICATION 8.15R
BITUMINOUS CONCRETE CURBING

8.15.01 DESCRIPTION

Bituminous concrete curbing shall consist of machine laid bituminous concrete, constructed on the pavement to the dimensions and details shown on the plans, or as ordered, and in accordance with the specifications.

8.15.02 MATERIALS

Materials, including tack coat, for this work shall meet the requirements of M.04, curb mix.

A. Submittals

Contractor shall submit catalog cuts or shop drawings of proposed materials for review and approval by the City prior to installation of any work.

8.15.03 CONSTRUCTION METHODS

The provisions of 4.06 shall govern except that the requirements pertaining to density will not apply. In addition, the curbing shall be constructed in accordance with the following requirements:

Prior to the arrival of the mixture on the Project Site, the surface of the pavement where the curbing is to be constructed shall be cleaned of all loose and foreign material. The surface, which shall be perfectly dry and clean at the time the mix is placed, shall be coated with an approved tack coat just prior to placing the mixture.

On arrival at the Site, the mixture shall be transferred from the truck to the hopper of the curbing machine; and the mixture shall be kept clean and free from dirt and foreign materials at all times.

The surface of the curbing shall be tested with a 10 foot straightedge, and any variation from a true line exceeding 1/4 inch shall be satisfactorily corrected. The only compaction required shall be that obtained by the approved mechanical curbing machine.

Where machine work is impractical, the Engineer may permit hand-laid curbing to be constructed.

If the design of the curbing machine is such that the outside wheels operate outside of the curb, the Contractor will be required to obtain a smooth surface by grading and consolidating the area on which the outside wheel of the machine rides, and this work shall be done at the Contractor's expense.

After the completion of curbing, traffic shall be kept at a safe distance for a period of not less than 24 hours and until the curbing has set sufficiently to prevent injury or damage to the work.

8.15.04 METHOD OF MEASUREMENT

This work will be measured for payment along the top of the curb and will be the actual number of linear feet of bituminous concrete curbing completed and accepted.

8.15.05 BASIS OF PAYMENT

This work will be paid for at the Contract unit price per linear foot of "Bituminous Concrete Curbing " of the type specified, complete in place, which price shall include all materials,

ITEM NO	PAY ITEM	PAY UNIT
8.15R	Bituminous Concrete Curbing	L.F.

END OF SECTION

TECHNICAL SPECIFICATION 9.21R
CONCRETE SIDEWALKS AND PEDESTRIAN RAMPS

9.21.01 DESCRIPTION

Work under this section shall consist of the construction of Portland Cement Concrete (PCC) sidewalks and pedestrian ramps (PCC Pedestrian Ramps) in conformance with Section 9.21 of the Conn DOT Form 816.

The work of the PCC Pedestrian Ramp shall include furnishing and installing an ADA compliant tactile tile warning surface in the location and to the dimensions and details shown in the plans, or as directed by the Engineer.

9.21.02 MATERIALS

Materials used for concrete sidewalks and concrete pedestrian ramps shall conform to Article 9.21.02 of Form 816 with the following addition:

Detectable/Tactile Warning Surface shall be Armor-Tile ADA-C2436-YW tile or approved equal. Color as directed by City.

Liquid membrane-forming curing compound shall be as specified in M.03.04-3 of Form 818 and shall be used on all sidewalks and ramps except as directed otherwise.

Welded wire fabric of the size and type indicated on plans must be used on driveway aprons. Upon approval of City, fiber mesh reinforcement may be used in lieu of welded wire fabric on sidewalks and ramps.

Submittals:

The following shop drawings or submittals must be reviewed and approved by City prior to work:

a. Source of concrete and concrete design mix
b. Detectable /Tactile Warning Surface
c. Fiber mesh
d. Welded wire fabric
e. Preformed expansion joint material

9.21.03 CONSTRUCTION METHODS

Work shall be performed in conformance with the requirements of Articles 9.21.03 of Form 816 with these additions:

Excavation, including removal of any existing sidewalk, ramp or curb must be made to the required depths below the finished grade, as shown on the plans or details. All soft and yielding material must be removed and replaced with granular fill.
Where new concrete curbing is called for adjacent to the proposed sidewalk curbing **shall** be poured monolithic with adjacent PCC Sidewalk or Pedestrian Ramps.

The ADA compliant tactile tile, for the PCC Pedestrian Ramps, shall be set directly in poured concrete in accordance with the Manufacturer's recommendations at the locations shown on the plans or as directed by the Engineer. The contractor shall place two 25-pound concrete blocks or sandbags on each tile to prevent the tile from floating after installation in wet concrete.

When removing granite stone, bluestone or concrete curbing adjacent to the roadway for the installation of the sidewalk or ramp, saw cut two feet (2'0 / twenty-four inches (24") into the roadway. After ramp, curb or sidewalk has been completed, place bituminous concrete repair as described below. .

All existing gas and water service curb boxes and sewer vent covers within the limits of sidewalk construction shall be reset flush to the finished grade of the sidewalk prior to the placement of concrete. All utilities penetrating vertically through the sidewalk shall be separated from the concrete by the installation of expansion joint filler around their perimeter. PVC sleeves for sign and fence posts shall be cast-in-place within the sidewalk at the same locations as the existing sign and fence posts, and at other locations as directed by the Engineer. All other work within the sidewalk/curb limits shall be completed prior to placement of the concrete, including but not limited to, adjustment of frames, grates, covers, vents and utility boxes.

Tree roots 1 inch in diameter and greater shall be carefully cut at the limit of excavation and temporarily covered with wet burlap. Exposed roots shall be permanently covered with earth as soon as possible. If work is not completed in the area of exposed roots by the end of the day, the exposed root shall be temporarily covered with earth overnight. The cost of root protection and pruning shall be included in the unit price bid.

Existing roadway pavement shall be sawcut two (2') feet from the face of curb at the location of each pedestrian ramp to be installed. Tack coat shall be applied to all vertical sawcut faces prior to placing bituminous concrete pavement repair. Once pedestrian ramp, curb or sidewalk has been installed, area between face of curb and pavement sawcut shall be backfilled with compacted processed aggregate material to a minimum depth of twelve (12") inches.
Local Roads shall then be paved with a two- inch (2") thickness of bituminous concrete Class 1 (HMA S0.375) base course.
Arterial Road base course shall be six inches (6") minimum of bituminous concrete Class 4 (S1.0) and then two inches of Class 1.
Collector Road bas course shall be a minimum of four inches (4") of Class 4 bituminous concrete under a tow inch lift of Class 1.
All areas shall then be paved with a two (2") inch thickness of bituminous concrete Class 1 (HMA S0.375) top course. Seam between pavement repair and existing bituminous concrete shall then be sealed.

When connecting a new concrete sidewalk, ramp or curb to a section of existing material, the connection point must be at the nearest joint not to exceed fifteen feet (15') unless otherwise directed by the City.

The City reserves the right to perform on-site concrete testing, air tests, slump tests and constructing concrete cylinders for break test. Contractor shall assist as required and provide concrete materials for such tests as required or as directed.

It should be noted that the thicknesses and depths shown on the project plans and details are the MINIMUM acceptable thickness and depths. Installed materials that do not meet these minimums shall be removed and replaced at Contractor's expense.

Backfilling and Removal of Surplus Material:

The sides of the sidewalk or ramp must be backfilled with suitable material thoroughly compacted flush with the surface of the sidewalk or ramp including turf establishment. All surplus material must be removed and the site left in a clean, neat and presentable condition to the sole satisfaction of the City.

9.21.04 METHOD OF MEASUREMENT:

Portland Cement Concrete Sidewalk and Ramp: This work will be measured for payment by the actual number of square feet completed. Width shall be measured horizontally from the back of the curb to the back of the sidewalk. Concrete curb poured monolithically with the sidewalk will be measured for payment under a separate item. Concrete thickness shall be a minimum of five inches (5") for pedestrian sidewalks and eight inches (8") for Driveway Ramps or Aprons.

Portland Cement Concrete Sidewalk with Monolithic Curb: This work will be measured for payment by the actual number of square feet completed. Width shall be measured horizontally from the front of the curb to the back of the sidewalk.

PCC Pedestrian Ramp: This work will be measured for payment by the actual number of square feet completed. Width shall be measured horizontally from the front of the curb to the back of the sidewalk. Concrete curb poured monolithically with the ramp is included under this item and will **not** be measured for payment.

Removal of Existing Sidewalk and Driveway Aprons: Removal of existing bituminous concrete and portland cement concrete sidewalks and driveway aprons shall be included under this item. No separate payment shall be made for this work. Saw cutting associated with excavation for new concrete sidewalk, curb or ramps shall be measured and paid for separately but shall be included in the item of work for which it is required.

Excavation, Backfill, Disposal of Surplus Material and Granular Fill: This work will not be measured for payment, but the cost shall be considered as included in the Contract unit price for the sidewalks, curbs, ramps and driveway aprons.

Reinforcement: This work will not be measured for payment, but the cost shall be considered as included in the Contract unit price for the sidewalks, ramps and driveway aprons.

Detectable/Tactile Warning Surface: For new construction (cast in place)**, t**his work will be measured for payment by the actual number of each ramp where detectable warning trip has been installed and accepted, regardless of number of tiles installed.

9.21.05 BASIS OF PAYMENT

This work will be paid for at the Contract Unit Price per square foot for "Portland Cement Concrete (PCC) Sidewalk (Thickness")", "Portland Cement Concrete (PCC) with Monolithic Curb" or "PCC Pedestrian Ramp", complete and in place, which price shall include excavation, backfill, disposal of surplus material, granular base, reinforcement, equipment, tools materials, and labor incidental thereto, "Detectable Warning Strip" shall be paid for per each unit, complete and accepted in pace, Precast or Cast-in-Place Concrete curb shall be paid for as a separate item when installed adjacent to PCC sidewalk and not monolithically. Concrete curb shall be included in the unit price for PCC Pedestrian Ramp.

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ITEM NO	PAY ITEM	PAY UNIT
9.21R	Portland Cement Concrete (PCC) Sidewalk or Pedestrian Ramp– (5")	S.F.
9.21R-X	Portland Cement Concrete (PCC) Sidewalk or Driveway Ramp – (8")	S.F.
9.21R-X	Portland Cement Concrete (PCC) Sidewalk with Monolithic Curb	S.F.
9.21R-X	PCC Pedestrian Ramp	S.F.
9.21R-X	Detectable Warning Strip	EA.

END OF SECTION

TECHNICAL SPECIFICATION 9.50R
TOPSOIL AND TURF ESTABLISHMENT

9.50.01 DESCRIPTION

The work included in this item shall consist of providing an accepted uniform stand of established perennial turf grasses by furnishing and placing 4" of topsoil, fertilizer, seed, and mulch on all areas to be treated as shown on the plans or where designated by the Engineer. Sowing shall be by traditional installation or hydroseed methods.
The work shall also include the installation of erosion control matting, as shown on the plans or where designated by the Engineer, consisting of mulch and netting woven together as a unit.

9.50.02 MATERIALS

Seed shall meet the requirements of Section M.13.04 of the Form 818.
Fertilizer shall meet the requirements of Section M.13.03 of the Form 818.
Mulch shall be either wood fiber, hay or straw and shall meet the requirements of M.13.05 of the Form 818.
Topsoil shall conform to the requirements of M.13 of the Form 818. Material stripped and stockpiled may be reused in lieu of new material upon approval of the City.
Erosion control matting, if required, shall be from the Department's Qualified Products List and shall meet the requirements of M.13.09 of the Form 818.

9.50.03 CONSTRUCTION METHODS

Construction methods shall be those established as agronomically acceptable and feasible and which are approved by the Engineer.
Surface Preparation: Level areas, medians, interchanges and lawns: These areas shall be made friable and receptive for seeding by disking or by other approved methods to the satisfaction of the Engineer. All disturbed soil areas at final grade shall be seeded within 7 days, or as directed by the Engineer, in accordance with these specifications. In all cases, the final prepared and seeded soil surface shall meet the lines and grades for such surface as shown in the plans, or as directed by the Engineer.
Topsoil installed behind curbing or sidewalks shall be lightly compacted to be flush or slightly above top of curb or sidewalk.
Slope and embankment areas shall be made friable and receptive to seeding by disking or by other approved methods which will not disrupt the line and grade of the slope surface. In no event will seeding be permitted on hard or crusted soil surface. Seeding shall not be permitted until all weed growth is removed.
Seeding Season: The optimal calendar dates for seeding are:
Spring – March 15-June 30 Fall – August 15 – October 31
All disturbed soil areas at final grade shall be seeded within 7 days or as directed by the Engineer, in accordance with these specifications. Any seeding outside the optimal dates shall be performed in the same manner. Since acceptable turf establishment is less likely,

the Contractor shall be responsible for reseeding until the turf stand conforms to 9.50.03-5 of the Form 818.

Sowing Methods: The Contractor shall sow the grass seed mixture using traditional methods or by hydroseeding

Sowing by **Traditional Methods**: The rate of application shall be no less than 175 lb./acre. Fertilizer shall be initially applied at a rate of 320 lb./acre during or preceding seeding. When wood fiber mulch is used, it shall be applied in water slurry at a rate of 2,000 lb./acre with or immediately after the application of seed, fertilizer and limestone (if limestone is required). Tackifier may be used with straw mulch as proposed by the Contractor. When the grass seeding growth has attained a height of 6 inches, the specified grass areas (mowed and un-mowed) shall receive a uniform application of fertilizer hydraulically placed at the rate of 320 lb./acre.

Sowing by **Hydroseeding**: If hydroseeding is proposed to be used, the Contractor shall furnish a Hydroseeding Plan for the Engineer's acceptance two weeks prior to the start of this work. The Hydroseeding Plan shall include the following:

- Proposed Manufacturer and copy of the Manufacturer's recommended application rates for various grades and hose angles of application, for the Site's soil type(s) and expected weather conditions.
- Number of square feet (s.f.) of seeding that can be covered with the quantity of solution per hydro-seeder.
- Time between mixing of slurry and seed in hydroseeding tank and application.
- Type of hydroseed machine including nozzle type, including automation information if applicable.

If the Hydroseeding Plan is accepted for use, deviation from 9.50.03-1 (Surface Preparation) of the Form 818 will not be allowed. Hydroseeding shall not be used if the extended weather patterns are hot and dry and the soil surface is dry and dusty, unless the Contractor's submission addresses application of straw or hay mulch and addresses follow up maintenance 9i.e. additional watering) for "drought conditions".

The hydroseed tank and hose(s) shall be completely flushed and cleaned each day before seeding is to be started, and shall also be thoroughly flushed of all residue after application to every 10 acres.

Disturbance: The Contractor shall keep all equipment and vehicular and pedestrian traffic off areas that have been seeded to prevent excessive compaction and damage to young plants. Where any disturbance has occurred, the Contractor shall rework the soil to make a suitable seedbed, then re-seed and mulch such areas with the full amounts of the specified materials, at no additional cost to the City.

Stand of Perennial Turf Grasses: The Contractor shall provide and maintain a uniform stand of established turf grass species, having attained a height of 6 inches and consisting of no less than 60% coverage per square foot throughout the seeded areas until the entire Project has been accepted. Re-seeding required to achieve and maintain a uniform stand of established turf grass species shall be at no additional cost to the City.

Establishment: The Contractor shall keep all seeded areas free from weeds and debris, such as stones, cables, baling wire, and shall mow at its own expense all slopes 4:1 or less (flatter) and level turf established (seeded) areas to a height of 3 inches when the grass growth attains a height of 6 inches. Mowing shall be done at least once, but for multiple-year projects mowing shall be done at least twice per year.

Clean-up shall include, but not be limited to, the removal of all debris from the turf establishment operations on the shoulders, pavement, or elsewhere on adjacent properties publicly and privately owned.

Erosion Control Matting: Erosion control matting shall be installed following seeding where called for on the plans or as directed by the Engineer. Staples shall be installed as per manufacturer's recommendations. Where 2 lengths of matting are joined, the end of the up-grade strip shall overlap the down-grade strip per the manufacturer's recommendations.

The Contractor shall maintain and protect the areas with erosion control matting until such time as the turf grass is established. The Contractor shall replace or repair at its own expense any and all erosion control matting areas damaged by fire, water or other causes including the operation of construction equipment. No mowing will be required in the locations where erosion control matting is installed.

9.50.04 METHOD OF MEASUREMENT

This work will be measured for payment by the number of square yards of surface area of accepted, establish perennial turf grass and topsoil. E860-751-9795t as approved by the City, maximum pay limit for this item is two feet from back of curb or edge of pavement.

Erosion control matting will be measured by the number of square yards of surface area of erosion control matting installed and accepted.

9.50.05 BASIS OF PAYMENT

This work will be paid for at the Contract unit price per square yard for "Topsoil and Turf Establishment" which price shall include all materials, mowing, maintenance, equipment, tools, labor and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted.

Erosion control matting will be paid for at the contract unit price, per square yard for "Erosion Control Matting (Type)" complete in place and accepted, which price shall include the mulch, netting, staples, maintenance, equipment, tools labor, and work incidental thereto.

ITEM NO	PAY ITEM	PAY UNIT
9.50R-1	Topsoil and Turf Establishment	S.Y.
9.50R-2	Erosion Control Matting	S.Y.

END OF SECTION

TECHNICAL SPECIFICATION 9.70R-1
TRAFFICPERSON (MUNICIPAL POLICE OFFICER)

TECHNICAL SPECIFICATION 9.70R-2
TRAFFICPERSON (UNIFORMED FLAGGER)

9.70.01 DESCRIPTION

Work under this item shall consist of the provision of the services of Municipal Police Officers or uniformed flaggers at such locations and for such periods as may be necessary to provide for the safe flow of vehicular and pedestrian traffic. Trafficpersons will be required on this project. Trafficpersons shall consist of the following types:

a. Municipal Police Officers shall be uniformed off-duty Police Officers from the Waterbury Police Department.

b. Uniformed Flaggers shall be persons who have successfully completed flagger training by the American Traffic Safety Services Association (ATSSA), National Safety Council (NSC) or other programs approved by the Engineer. A copy of the Flagger's training certificate shall be provided to the Engineer before the Flagger performs any work on the project. Uniformed Flaggers shall conform to Chapter 6E, Flagger Control, in the Manual of Uniformed Traffic Control Devices (MUTCD) and shall wear high-visibility safety apparel, use a STOP/SLOW paddle that is at least 18 inches (450 millimeters) in width with letters at least 6 inches (150 millimeters) high. The paddle shall be mounted on a pole of sufficient length to be 6 feet (1.8 meters) above the ground as measured from the bottom of the sign.

The Contractor shall utilize uniformed Waterbury Police Officers as Trafficpersons at such locations and for such periods as may be necessary by the Engineer or by the Waterbury Police Department to provide for the safe flow of vehicular and pedestrian traffic. The City of Waterbury Police Department will make the determination whether or not municipal police officers are required for traffic control

The Contractor shall make all arrangements to obtain such services and shall pay all expenses related thereto. The Contractor shall contact the Waterbury Police Department Extra Duty Officer at (203) 574-6963 at least 48 hours in advance to schedule Police Officers for traffic control. The Contractor shall be solely responsible for any costs incurred as a result of failure to cancel scheduled Uniformed Police Officers per Waterbury Police Department requirements.

In the event that the Police Department cannot provide a Uniformed Police Officer, Certified Flaggers shall be used for directing traffic in lieu of a Uniformed Police Officer.

Trafficpersons are to direct vehicular and pedestrian traffic only and are not to serve as watchmen for the Contractor's tools, equipment or material. Whether or not Municipal Police Officers or uniformed flaggers are used by the Contractor, he shall not be relieved of his responsibility for the maintenance and protection of traffic as specified in other sections of this Contract. Traffic persons requested solely for the contractor's operational needs will not be approved for payment.

9.70.03 CONSTRUCTION METHODS

Prior to the start of operations on the project requiring the use of Trafficpersons, a meeting will be held with the Contractor, Trafficperson agency or firm, Engineer, and Municipal or State Police, if applicable, to review the Trafficperson operations, lines of responsibility, and operating guidelines which will be used on the project. A copy of the municipality's billing rates for Municipal Police Officers and vehicles, if applicable, will be provided to the Engineer prior to start of work.

On a weekly basis, the Contractor shall inform the Engineer of their scheduled operations for the following week and the number of Trafficpersons requested. The Engineer shall review this schedule and approve the type and number of Trafficpersons required. In the event of an unplanned, emergency, or short-term operation, the Engineer may approve the temporary use of properly clothed persons for traffic control until such time as an authorized Trafficperson may be obtained. In no case shall this temporary use exceed 8 hours for any particular operation.

If the Contractor changes or cancels any scheduled operations without prior notice of same as required by the agency providing the Trafficpersons, and such that Trafficperson services are no longer required, the Contractor will be responsible for payment at no cost to the Department of any show-up cost for any Trafficperson not used because of the change. Exceptions, as approved by the Engineer, may be granted for adverse weather conditions and unforeseeable causes beyond the control and without the fault or negligence of the Contractor.

Trafficpersons shall wear a high visibility safety garment that complies with OSHA, MUTCD, ASTM Standards and the safety garment shall have the words "Traffic Control" clearly visible on the front and rear panels (minimum letter size 2 inches (50 millimeters). Worn/faded safety garments that are no longer highly visible shall not be used. The Engineer shall direct the replacement of any worn/faded garment at no cost to the State.

A Trafficperson shall assist in implementing the traffic control specified in the Maintenance and Protection of Traffic contained elsewhere in these specifications or as directed by the Engineer. Any situation requiring a Trafficperson to operate in a manner contrary to the Maintenance and Protection of Traffic specification shall be authorized in writing by the Engineer.

9.70.04 METHOD OF MEASUREMENT

Services of Trafficpersons will not be measured for payment. These services shall be included in the overall cost of the Contract items.

Trafficpersons shall not work more than twelve hours in any one 24 hour period. In case such services are required for more than twelve hours, additional Trafficpersons shall be furnished.

Travel time will not be measured for payment for services provided by Uniformed Municipal Police Officers or Uniformed Flaggers.

Mileage fees associated with Trafficperson services will not be measured for payment.

Safety garments and STOP/SLOW paddles will not be measured for payment.

9.70.05 PAYMENT

There will be no direct payment for travel time, mileage, safety garments or STOP/SLOW paddles. All costs associated with furnishing safety garments and STOP/SLOW paddles shall be considered included in the overall cost of the Contract items.

No separate payment shall be made for work required under this Section of the Specifications and the cost thereof shall be deemed to be included in the various prices for other items of work that directly affect the work of this Section. The contractor shall be responsible for all costs associated with uniformed traffic persons, Municipal Police Officers and Uniformed Flaggers.

ITEM NO	PAY ITEM	PAY UNIT

END OF SECTION

TECHNICAL SPECIFICATION 9.71R
MAINTENANCE AND PROTECTION OF TRAFFIC

9.71.01 DESCRIPTION

Work under this section shall be in conformance with Section 9.71.01, 9.76.01, 9.77.01, 9.78.01 and 9.79.01 of Form 818, except as modified herein.

Work under this item shall consist of the provision of all items and personnel as may be necessary to provide for the safe flow of vehicular and pedestrian traffic at all times during the duration of the Contract. These services shall be such that a sufficient number of travel lanes and pedestrian walkways are provided to move that traffic ordinarily using the roadway. The travel lanes and pedestrian pass-ways shall be drained and kept reasonably smooth and in suitable condition at all times in order to provide minimum interference to traffic consistent with the proper prosecution of the work.

All work shall be conducted in such a manner as to provide minimal interference with existing business and commercial establishments. Such establishments shall be allowed to conduct business at all times during the construction activities. The Contractor shall at all times keep the street and sidewalks open for pedestrian and two-way vehicular traffic, except for those areas where he is actively working, with the approval of the Engineer.

The Contractor shall maintain and protect traffic as follows and as limited in Form 818 Section 1.08 “Prosecution and Progress”:

The Contractor shall maintain and protect one lane of through traffic in each direction, each lane on a paved travel path not less than 11 feet in width.

Where sidewalks are impeded, Contractor shall provide means to safely guide pedestrians around work zone and provide required signage.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor will be allowed to maintain and protect at least an alternating one-way traffic operation on a paved travel path not less than 12 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet.

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

9.71.02 MATERIALS

Work under this section shall be in conformance with Section 9.76.02, 9.77.02, 9.78.02, and 9.79.02 of Form 818 and the Federal Manual on Uniform Traffic Control Devices for Streets and Highways, except as modified herein.

9.71.03 CONSTRUCTION METHODS

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

The Contractor shall furnish a sufficient number of signs, barricades, drums, traffic cones, and delineators and steel plates to forewarn traffic of the construction as shown on the traffic control plan or as directed by the Engineer. Signs must be placed in such a position to allow motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. If so directed, the Contractor shall furnish and erect signs legally closing the roadway to traffic, as shown on the plans or as directed by the Engineer, prior to commencing any work.

Work Zone Safety Meetings

Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of the City of Waterbury Department of Engineering, Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the project. Other work zone safety meetings during the course of the project should be scheduled as needed.

A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. The Safety Meeting agenda shall follow this format:

1. Review Project scope of work and time.
2. Review Section 1.08, Prosecution and Progress of Form 818.
3. Review Section 9.70, Trafficperson of the Technical Specifications.
4. Review Contractor's schedule and method of operations.
5. Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
6. Open discussion of work zone questions and issues.
7. Discussion of review and approval process for changes in contract requirements as they relate to work zone areas.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

The Contractor shall also provide such safety measures, pavement markings, warning devices, incidental flagmen, and signs deemed necessary to safeguard and guide the traveling public through any detours ordered by the Engineer, included in the approved maintenance scheme, or as shown on the plan. The Contractor shall erect, maintain, move, adjust, clean, relocate, store all signs, barricades, drums, traffic cones, and delineators when, where, and as directed by the Engineer. The use of unauthorized or unapproved signs, barricades, drums, traffic cones, or delineators will not be permitted.

All signs in any one signing pattern shall be mounted at the same height above the pavement. The Contractor shall keep all signs in proper position, clean and legible at all times. The Contractor shall maintain the site so that no weeds, shrubbery, construction materials, equipment or soil will obscure any sign, light, or barricade. Signs that no longer pertain to the project conditions shall be removed or adjusted from the view of traffic.

Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 72-hour duration. Traffic drums shall be used to delineate raised catch basins and other hazards.

Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

Traffic Control Patterns

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic
- Duration of operation
- Exposure to hazards

Traffic control patterns shall be uniform, neat and orderly so as to command respect from the motorist.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist. Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials and parked vehicles.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate traffic person shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.

The traffic control plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions. Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

Table I – Minimum Taper Lengths

Posted Speed Limit Miles Per Hour	Minimum Taper Length In Feet For A Single Lane Closure
30 OR LESS	180
35	250
40	320
45	540
50	600
55	660
65	780

Installing and Removing Traffic Control Patterns

Lane closures shall be installed beginning with the advanced warning signs and proceeding forward toward the work area. Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advanced warning signs.

Stopping traffic may be allowed:

- As per the contract for such activities as blasting, steel erection, etc.
- During paving, milling operations, etc. where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway and traffic should not travel across the longitudinal joint or difference in roadway elevation.
- To move slow moving equipment across live traffic lanes into the work area.

The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.

If the required minimum number of signs and equipment are not available, the traffic control pattern shall not be installed.

The Contractor shall have back-up equipment (construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.

Failure of the Contractor to have the required minimum number of signs and equipment, which results in the traffic control pattern not being installed, shall not be a reason for a time extension.

Pavement Markings

During construction, the Contractor shall maintain all pavement markings on paved surfaces on all roadways throughout the limits of the project.

Contractor shall install permanent pavement markings on the final course of bituminous concrete pavement by the end of the work day. If the permanent pavement markings are not installed by the end of the work day, then Temporary Plastic Pavement Marking Tape shall be installed and the permanent pavement markings shall be installed by the end of the work day on Friday of that week.

If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the permanent pavement markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor’s expense.

NOTE: Painted pavement markings will not be allowed as a substitution for either the permanent pavement markings or the Temporary.

Dust Control

The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the street free of accumulations of sand or similar materials. No payment will be made for this work.

Snow and Ice Removal

When ordered by the Engineer, the Contractor shall remove snow and take care of ice on temporary, new and existing sidewalks within the limits of the project. No payment will be made for this work.

9.71.04 METHOD OF MEASUREMENT

Maintenance and Protection of Traffic will not be measured for payment but shall be paid as a lump sum item.

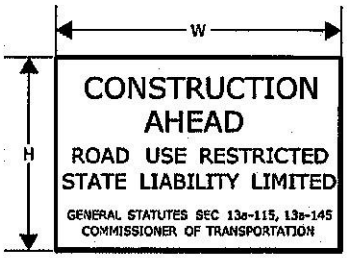
9.71.05 PAYMENT

Payment for the work under this item will be made at the contract lump sum price for MAINTENANCE AND PROTECTION OF TRAFFIC. This price shall be full compensation for all materials, equipment, tools, labor and work incidental to or necessary for the completion of the item.

ITEM NO	PAY ITEM	PAY UNIT
9.71R-1	Maintenance and Protection of Traffic	L.S.

END OF SECTION

SERIES 16 SIGNS



		W H
16-E	80-1605	84" x 60"
16-H	80-1608	60" x 42"
16-M	80-1613	30" x 24"



		W H
16-S	80-1619	48" x 30"

THE 16-S SIGN SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS, AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

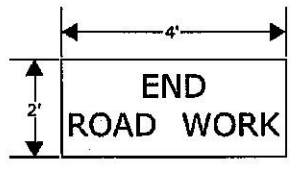
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

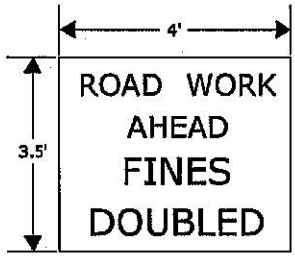
THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.



80-9612



31-1906

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

REQUIRED SIGNS

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED _____ Charles S. Harlow 2012.06.05 11:35:43-04'00'

PRINCIPAL ENGINEER

Rev. Date 4/16/2015

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.

2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.

3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.

4. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.

5. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.

6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.

7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).

8. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.

10 SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180' (55m)
35	250' (75m)
40	320' (100m)
45	540' (165m)
50	600' (180m)
55	660' (200m)
65	780' (240m)

METRIC CONVERSION CHART (1" = 25mm)

ENGLISH	METRIC	ENGLISH	METRIC	ENGLISH	METRIC
12"	300mm	42"	1050mm	72"	1800mm
18"	450mm	48"	1200mm	78"	1950mm
24"	600mm	54"	1350mm	84"	2100mm
30"	750mm	60"	1500mm	90"	2250mm
36"	900mm	66"	1650mm	96"	2400mm

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

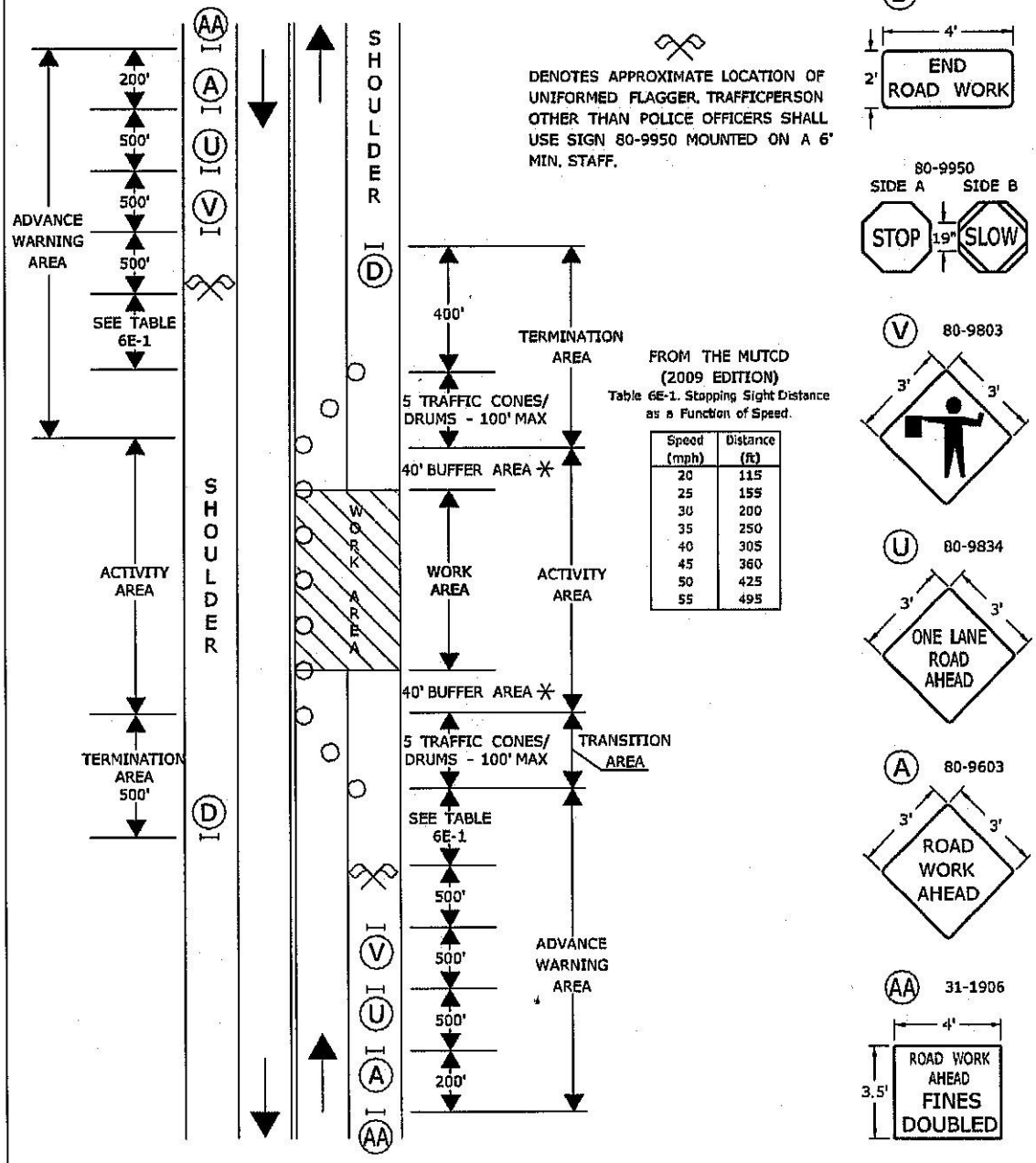
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.05.05 15:50:35-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)



FROM THE MUTCD (2009 EDITION)
Table 6E-1. Stopping Sight Distance as a Function of Speed.

Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495

○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⇐ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 13 - SHEET 1 OF 2

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:55:23-04'00'
PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6E.07, FLAGGER PROCEDURES, IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 80-9950) SHOWN ON THE TRAFFIC STANDARD SHEET TR-1220 01 ENTITLED, "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

A. TO STOP TRAFFIC

TO STOP ROAD USERS, THE FLAGGER SHALL FACE ROAD USERS AND AIM THE STOP PADDLE FACE TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FREE ARM SHALL BE HELD WITH THE PALM OF THE HAND ABOVE SHOULDER LEVEL TOWARD APPROACHING TRAFFIC.



B. TO DIRECT TRAFFIC TO PROCEED

TO DIRECT STOPPED ROAD USERS TO PROCEED, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FLAGGER SHALL MOTION WITH THE FREE HAND FOR ROAD USERS TO PROCEED.



C. TO ALERT OR SLOW TRAFFIC

TO ALERT OR SLOW TRAFFIC, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. TO FURTHER ALERT OR SLOW TRAFFIC, THE FLAGGER HOLDING THE SLOW PADDLE FACE TOWARD ROAD USERS MAY MOTION UP AND DOWN WITH THE FREE HAND, PALM DOWN.



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⇦ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

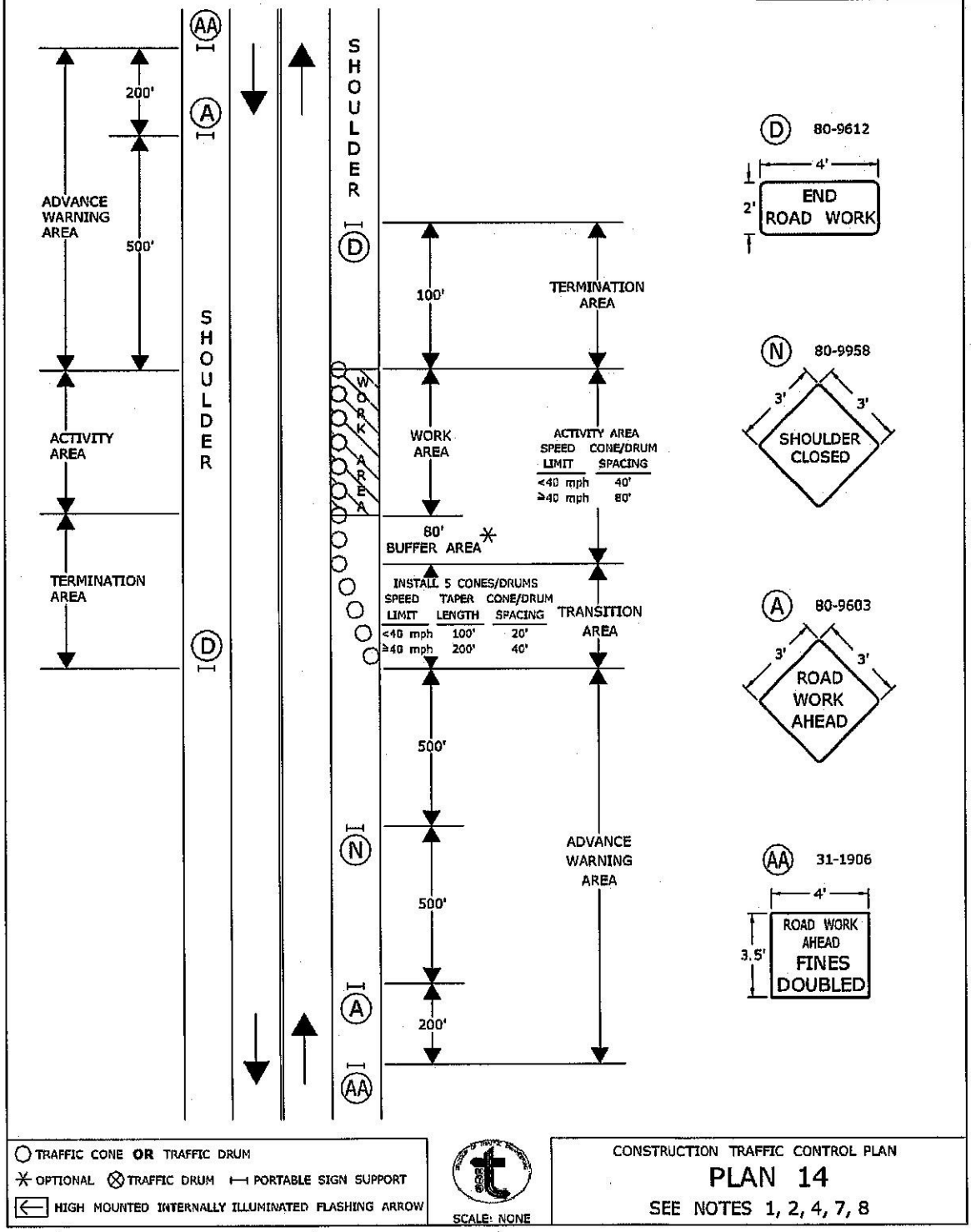
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:55:45-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 14

SEE NOTES 1, 2, 4, 7, 8

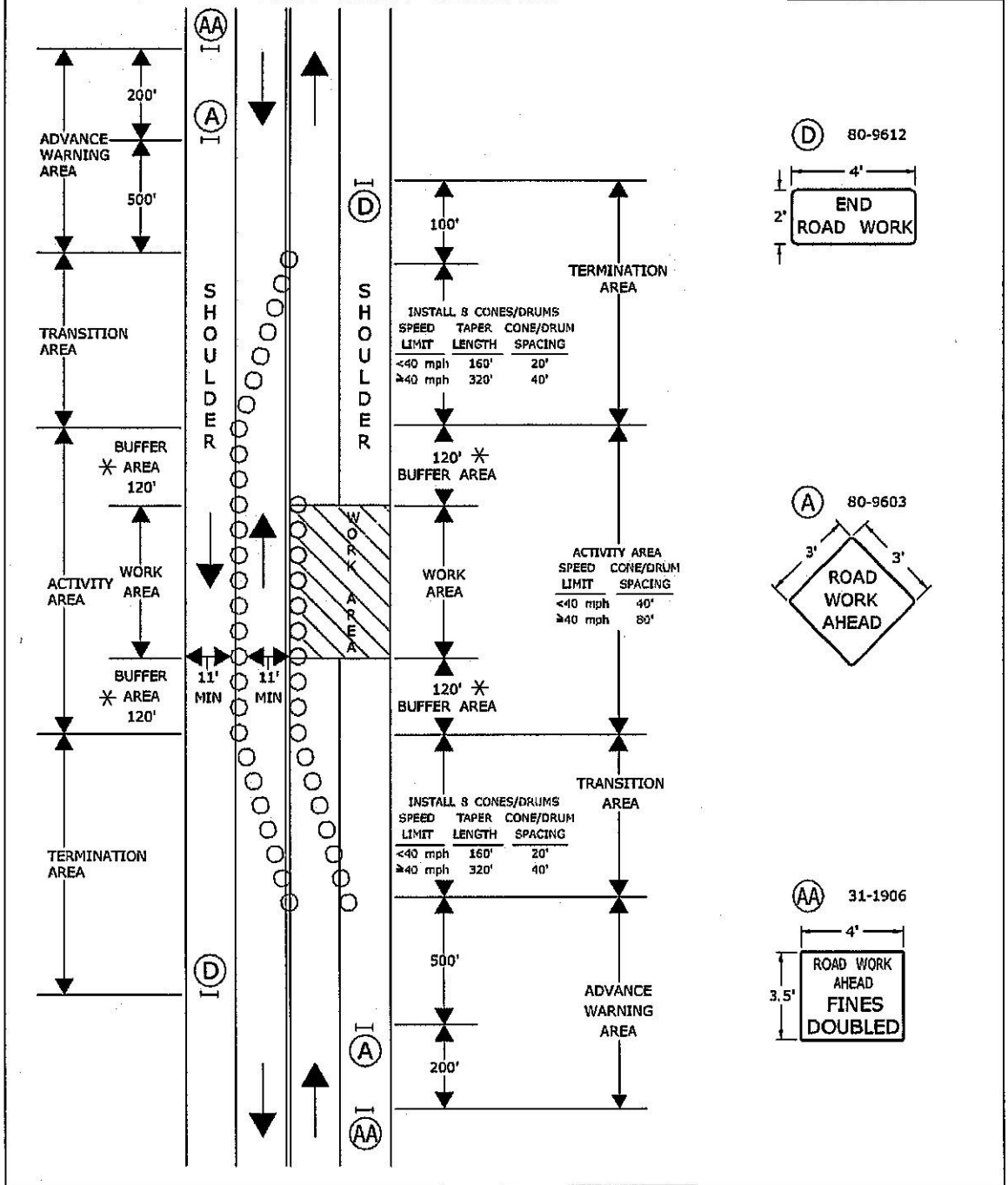
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:00-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢⊣ PORTABLE SIGN SUPPORT
← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8

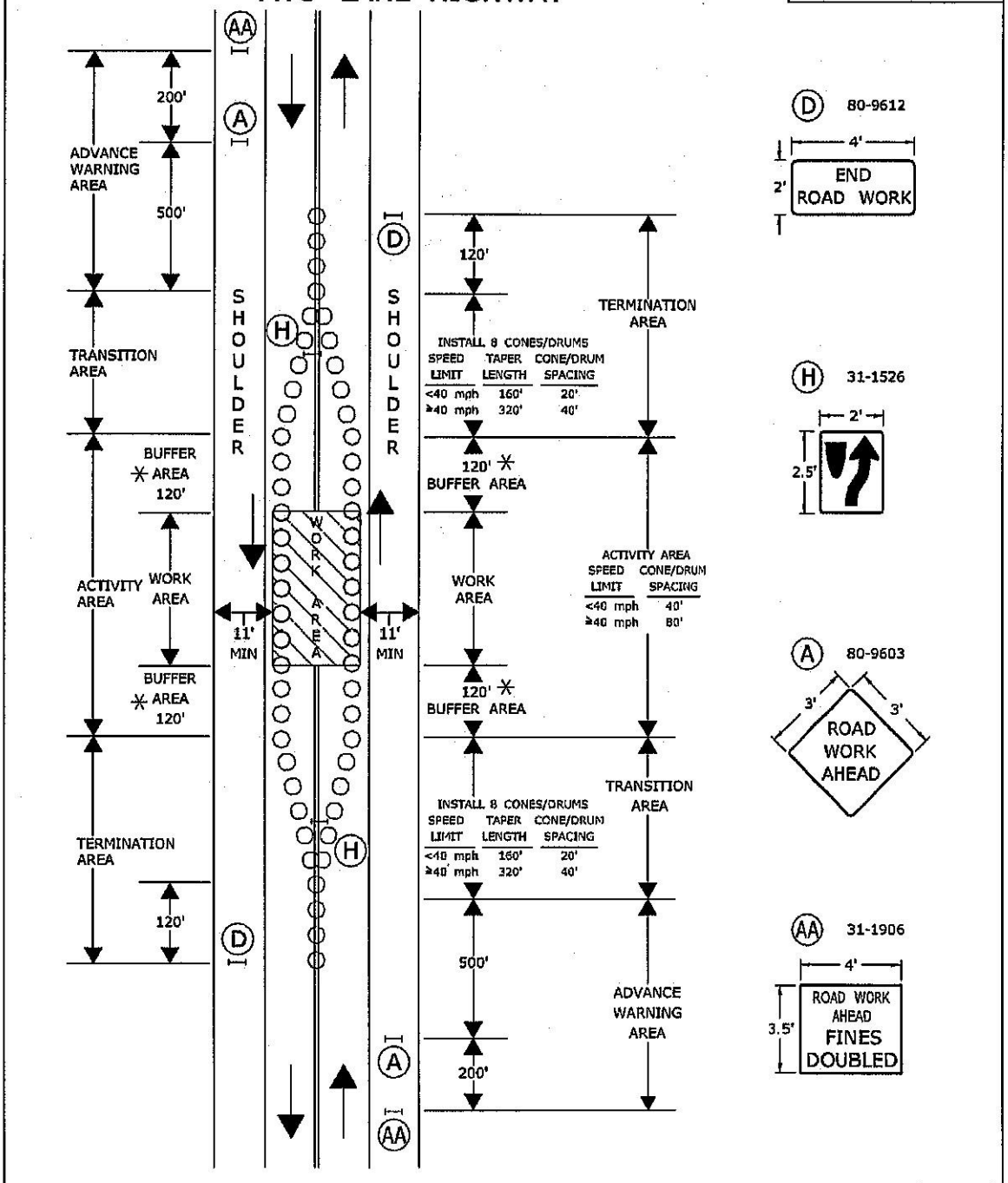
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:56:29-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN MIDDLE OF ROADWAY
TWO LANE HIGHWAY

SIGN FACE
72 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

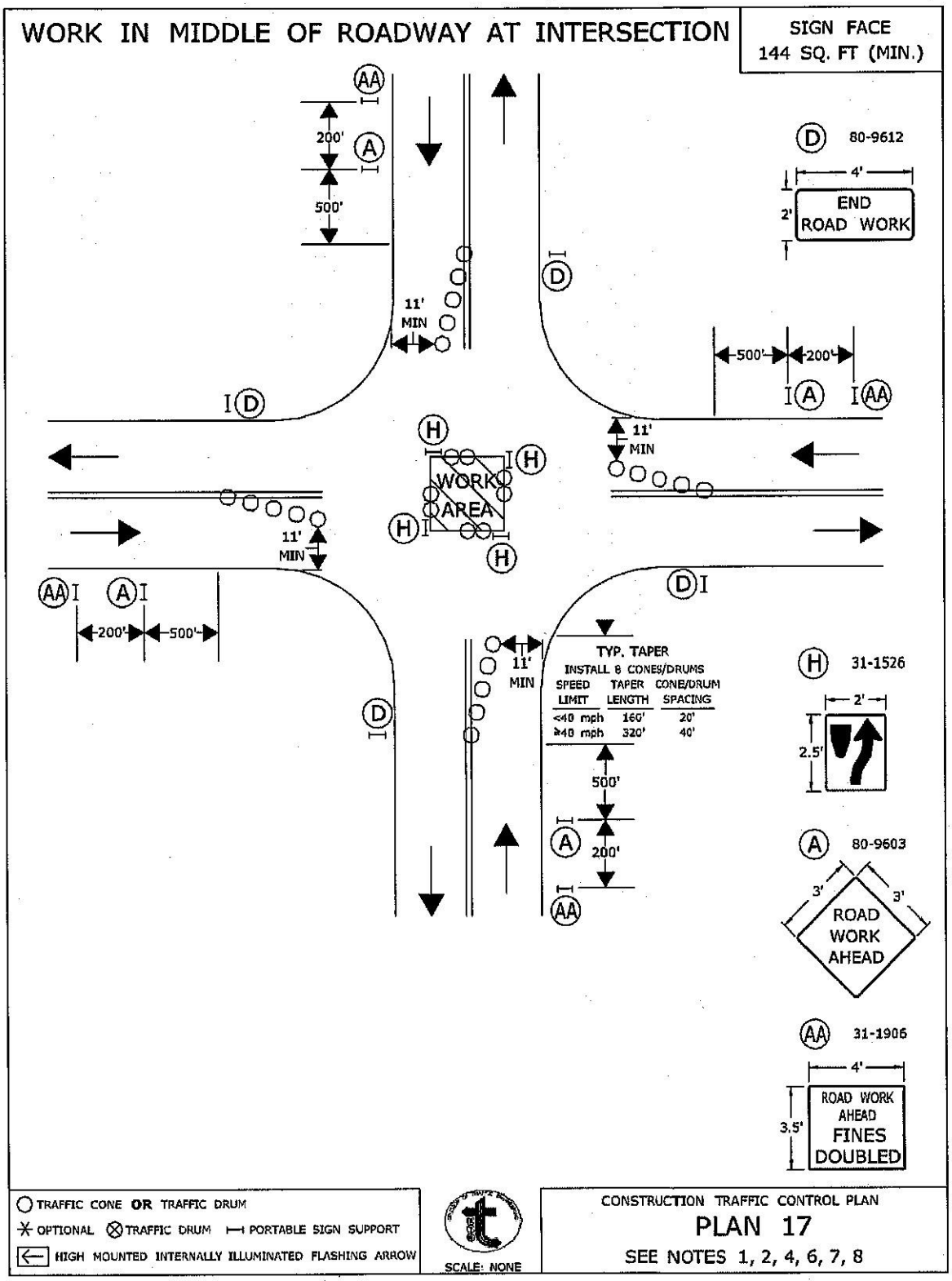
CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 16

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:56:51-04'00'
PRINCIPAL ENGINEER


WORK IN MIDDLE OF ROADWAY AT INTERSECTION
SIGN FACE
144 SQ. FT (MIN.)
AA
200'
A
500'
11'
MIN
D
80-9612
4'
2'
END
ROAD WORK
500'
200'
A
AA
H
WORK
AREA
TYP. TAPER
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
31-1526
2'
2.5'
80-9603
3'
3'
ROAD
WORK
AHEAD
31-1906
4'
3.5'
ROAD WORK
AHEAD
FINES
DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 17
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
Charles S. Harlow
2012.08.05 15:57:16-04'00'
PRINCIPAL ENGINEER

TECHNICAL SPECIFICATION 9.75-R
MOBILIZATION AND PROJECT CLOSEOUT

9.75.01 DESCRIPTION

Work under this section shall be in conformance with Section 9.75 of Form 818, except as modified herein.

9.75.04 METHOD OF MEASUREMENT

All mobilization, demobilization and/or project closeout costs will be measured for payment but shall be included in the work for which it is required. This cost shall include all labor, equipment and materials required for mobilization, demobilization and closeout per site.

1.) When the first Project payment is accepted by City, 25% of the lumps sum bid price for this item shall be certified for payment.
2.) When 15% of the total original Contract price is certified by the City, 70% of the lump sum price for this item, minus any previous payments made to the Contractor under this item, will be certified for payment.
3.) When 30% of the total original Contract price is certified by the City, 85% of the lump sum price for this item, minus any previous payments made to the Contractor under this item, will be certified for payment.
4.) When the project is accepted by the City, 100% of the lumps sum price of this item, minus any previous payments made to the Contractor for this item, will be certified for payment. When this payment is made, the Contractor should have received full Contract payment for this item.

9.75.05 BASIS OF PAYMENT

Payment for this item will be paid for at the Contract lump sum price for "Mobilization and Project Closeout," which price shall include materials, equipment, tools, transportation, labor and all work incidental thereto. Payment for this work shall only be made once and will include all locations and numerous trips to and from as needed.

ITEM NO	PAY ITEM	PAY UNIT
9.75R	Mobilization and Project Closeout	L.S.

END OF SECTION

TECHNICAL SPECIFICATION 14.10
REPLACE/RELOCATE SANITARY SEWER LATERAL

14.10.01 DESCRIPTION

Work under this item shall consist of the replacement or relocation of existing sanitary sewer house laterals that are in conflict with the installation of new utilities or as directed by the City Engineer or his designee.
All materials and installation procedures shall conform to the City of Waterbury Department of Engineering.

14.10.02 MATERIALS

Match the existing material and size of the lateral to be relocated.
Ductile Iron Pipe, Class 52
Couplings: Fernco Strong Back Stainless Shielded Extra Heavy Couplings with 4 clamps
Ductile Iron Fittings ASTM A-746
PVC SDR-35 Fittings ASTM F1336
3/4" trap rock, bedding and backfill see Technical Specification 6.86R and pipe detail on detail sheet.
All material shall conform to the City of Waterbury Department of Engineering and as specified in CT DOT Standard Form 818.
Straight runs to be ductile iron class 52
Bends may be PVC per ASTM F1336 with prior approval from the Engineer, otherwise they shall be ductile iron, per ASTM A-746
Pavement per Technical Specification 2.51 Bituminous Pavement Sawcut & Patch of this project.

14.10.03 CONSTRUCTION METHODS

Sanitary sewer laterals that are encountered during the installation of new utilities and that are found to be in conflict with the new pipe, will need to be relocated as required. All work shall take place within the City Right-of-Way, if possible. If this is not possible and work must be performed on private property, then prior approval must be obtained from the property owners before work takes place. The contractor is to notify the engineer/inspector prior to performing any work.
See Sanitary Sewer Lateral Relocation detail on detail sheet for specific requirements.

The engineer shall determine the extent of the relocation or adjustment of the sanitary sewer lateral. The contractor is responsible to notify the property owner a minimum of (7) days prior to commencement of work on the sewer lateral and shall not be out of service more then 4 hours.
Obtain necessary permits from the water department.

14.10.04 MEASUREMENT

The total length of pipe, including couplings and fittings shall be measured for payment by the actual linear feet of pipe of various sizes and types, completed and accepted and measured in place along the new section of new pipe.

14.10.05 PAYMENT

This work will be paid for at the contract unit price, for "Replace/Relocate Sanitary Sewer Lateral" when complete, which price shall include all materials, bedding and backfill, compaction, equipment, tools and labor, incidental thereto. No separate payment shall be made for excavation and backfilling, as they are included in the unit price. Pavement Restoration shall be paid for by the contract unit price for "Bituminous Pavement Sawcut & Patch", Technical Specification 2.51.

ITEM NO.	PAY ITEM	PAY UNIT
14.10	Replace/Relocate Sanitary Sewer Lateral	Lineal Feet (L.F.)

END OF SECTION

TECHNICAL SPECIFICATION 16.00R
REPLACE GALVANIZED/LEAD WATER SERVICE LINES
Offset Copper Water Service Line

16.00.01 DESCRIPTION

Work under this item shall consist of disconnecting and removing any galvanized or lead water service line which is encountered in the construction limits of storm drainage projects, including abandoning the corporation valve and curb stop and box, and installing a new water service including a new corporation stop valve, new 1" copper type "K" tubing and a new curb stop valve and box, and connecting to the existing water service line. All work and material shall conform to The City of Waterbury, Water Department standards and specifications. All work to be inspected and approved by the City of Waterbury, Water Department prior to backfilling. (See City of Waterbury, Water Department Details). Work shall also include offsetting or replacing a copper water service line when in conflict with new utility installations.
Contractor to notify City of Waterbury Water Department at least twenty-four (24) hours prior to installation to arrange for inspection. Location of curb stop and box shall be as directed by the City.

16.00.02 MATERIALS

All pipe, tubing, valves, fittings, couplings, adapters, and appurtenances are to conform to the City of Waterbury Water Department's specifications and are to be approved by the same, prior to installation. All material shall conform to all AWWA standards and shall be lead-free.

Submittals:

Shop drawings, catalog cuts or other submittals must be submitted by Contractor and approved by City prior to installation of any of these materials.

Corporation Stop Valves:
Corporation Stop Valves for new services shall be Ford FB 1000, as manufactured by FORD Meter Box Company, Inc., or City approved equal and shall be furnished and installed by the Contractor.

Curb Stop Valves:
Curb Stops shall be ball-type brass body, lead-free, as manufactured by Mueller Co., or Ford B44 as manufactured by Ford Meter Box Company, Inc., or City approved equal and will be furnished and installed by the Contractor.

Curb Boxes:
Curb boxes will be furnished and installed by the Contractor. Curb Boxes shall be cast iron, slide-type, 2 ½" Diameter, 24" Top, 39" Base with Covers attached and with Brass Bolt, buried 5 feet.

Water Service Pipe and Fittings:
Water Services 2-inch and smaller:

Pipe shall be seamless soft copper tubing conforming to the requirements of ASTM B88 for Type "K". Fittings shall be cast bronze of the compression type.

16.00.03 CONSTRUCTION METHODS

Galvanized or Lead service lines shall be removed and replaced with new copper lines where encountered and in conflict with any new storm drainage pipe and as directed by the engineer.
The contractor is to notify the City immediately upon encountering a galvanized or lead service line that is in conflict with a new storm sewer line. Upon approval from the City, the contractor shall notify the City of Waterbury Water Department and obtain a permit. The existing line shall be disconnected from the main. The contractor shall tap the main and install a new corporation valve, install new copper line, and install a new curb stop valve and box, and connect to the existing line.
When a copper water service line is in conflict with a new utility installation, the copper service line shall be replaced in its entirety or it shall be offset with compression couplings, as directed by the City Engineer or the City of Waterbury Water Department. All work shall be approved by the City of Waterbury, Water Department prior to any work being performed.
Obtain all necessary permits.

16.00.04 METHOD OF MEASUREMENT

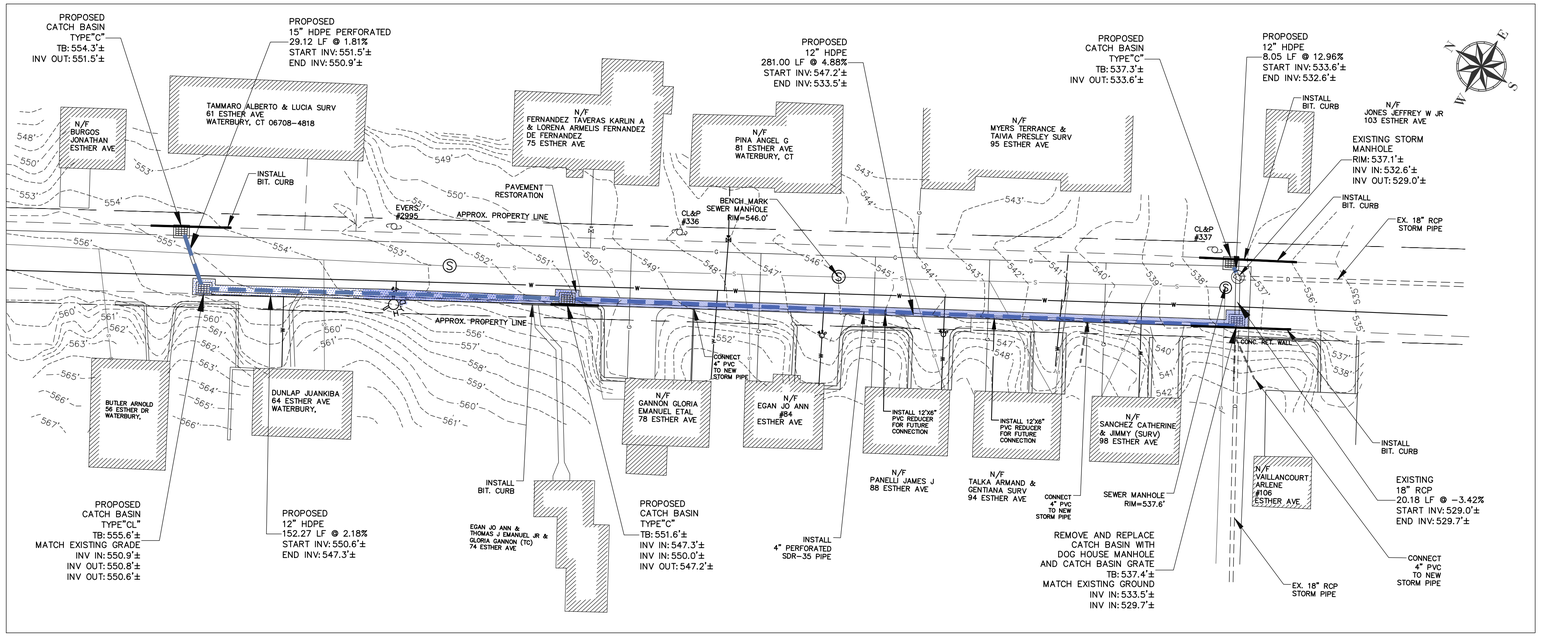
This work shall be measured by the actual number of corporation stop valves, curb stop valves and boxes installed and the actual lineal feet of 1" copper tubing installed. There is no pay item for the tapping the water main, this is included in supplying and installing the corporation stop valve. There is no pay item for abandoning the existing corporation stop valve and curb stop valve and box, this work is included in supplying and installing the new corporation stop valve and curb stop valve and box. There is no pay item for connecting to the existing water service, this work is included in supplying and installing the new curb stop valve and box. Pavement restoration and turf establishment shall be paid under the pay items "Pavement Restoration" and "Turf Establishment". There shall be no pay item for excavation, compaction and backfilling, fittings, and backfill and bedding material, this shall all be included in the pay item "1" K COPPER TUBING".

16.00.05 PAYMENT

This work will be paid for at the contract unit price, per each item.

ITEM NO.	PAY ITEM	PAY UNIT
16.00-1	1" K COPPER TUBING	L.F.
16.00-2	1" Corporation Stop Valve	EA
16.00-3	1" Curb Stop Valve	EA

END OF SECTION

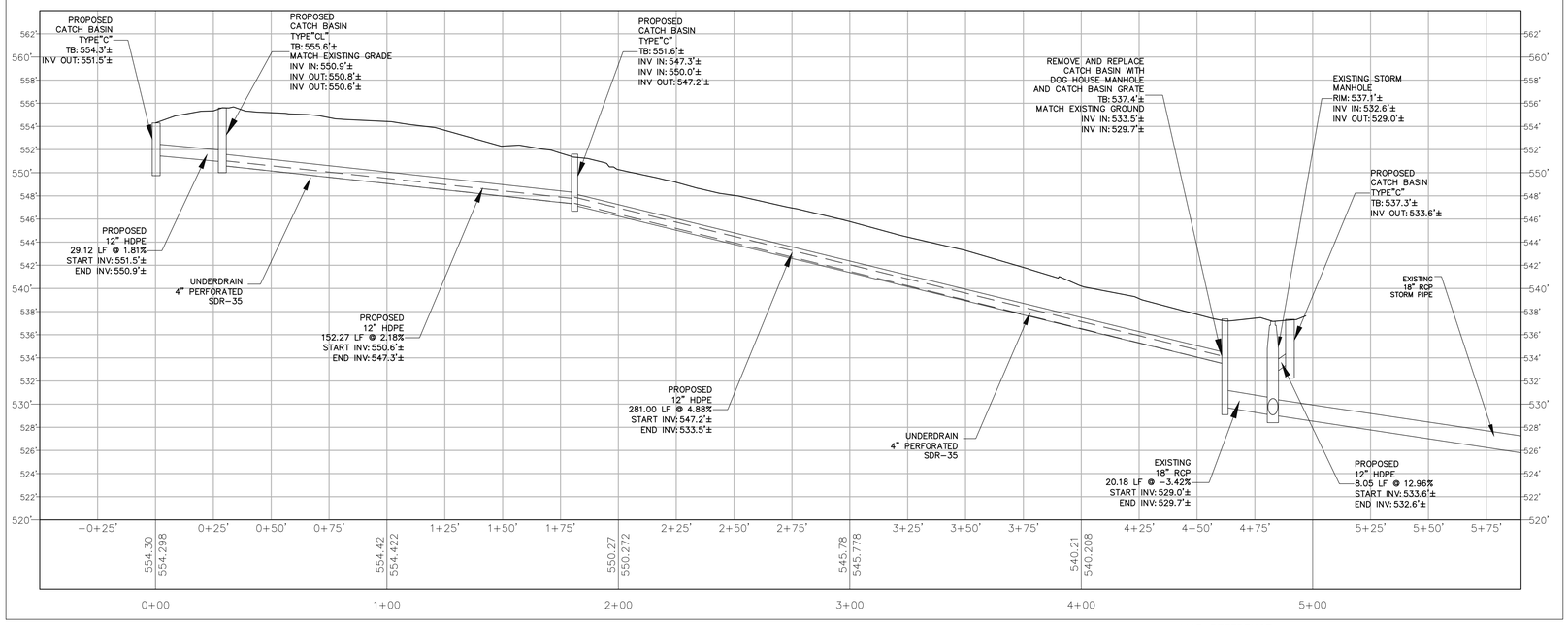


GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PROPOSED DRAINAGE PROFILE



VERTICAL GRAPHIC SCALE

6 0 3 6 12 24

(IN FEET)
1 inch = 6 ft.

HORIZONTAL GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

MAP REFERENCE

1. c13-d010-m022 a14850 Esther Ave Lucille St Bradley Ave Sewer
2. c07-d013-m004 a16481 Lucille St Esther Ave Rt. Of Way Storm water
3. c08-d018-m018 a10223 Esther Ave New Haven Ave Water
4. c25-d005-m028 a11306 E35-1 Esther Ave Bradley Ave to Signe St gas.
5. c25-d005-m028a a11306 E35-2 Esther Ave Bradley Ave to Signe St gas.

NOTICE :

1. THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES INDICATED HEREON ARE HAVE BEEN LOCATED BOTH FROM FIELD SURVEY INFORMATION (CBYD UTILITY LINES MARKED IN THE FIELD) AND FROM EXISTING DRAWINGS NOTED HEREON. THE LOCATIONS ARE APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" LOCATING SERVICE AT 1-800-922-4455 AT LEAST THREE FULL WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
2. COORDINATES AND ELEVATION OF EDGE OF PAVEMENT, MANHOLES, CATCH BASINS, GROUND SHOTS AND OTHER UTILITIES WERE DETERMINED FROM RTK GPS OBSERVATIONS MADE ON DECEMBER 26 ,2025, USING THE RTK DOT NETWORK KNOWN AS ACORN. BUILDING LOCATION ARE BASED OF CITY OF WATERBURY GIS DATA. CONTOURS INTERVAL IS TWO FOOT. HORIZONTAL DATA IS NAD 83, VERTICAL DATUM IS NAVD 88.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE PLANS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES OR CONFLICTS SHALL BE REPORTED TO THE ENGINEER WHO SHALL HAVE FINAL SAY AS TO ACTUAL DIMENSIONS AND ELEVATIONS TO BE USED.
4. CONNECT ALL NON SANITARY DRAIN LINES ENCOUNTERED TO NEW STORM PIPE.
5. ALL GALVANIZED WATER SERVICES ENCOUNTERED TO BE REPLACED FROM MAIN TO NEW CORPORATION STOP LOCATED SIX INCHES FROM PROPERTY LINE. (SEE WATER STANDARD DETAIL.)
6. UTILITY POLES:
   IT IS MANDATORY FOR THE CONTRACTOR TO COORDINATE WITH EVERSOURCE TO GUARANTEE THE SUPPORT OF ELECTRIC POLES DURING CONSTRUCTION.
7. ALL AREAS THAT ARE TO BE DISTURBED SHALL BE KEPT TO A MINIMUM. ALL DISTURBED GRASS AREAS SHALL BE LOAMED, LIMED, FERTILIZED, AND SEEDED AS SOON AS PRACTICAL. IF PERMANENT PLANTING IS NOT PRACTICAL AT THE TIME, THE AREA SHALL BE MULCH STABILIZED UNTIL SUCH SEEDING CAN BE DONE.

CONSTRUCTION SEQUENCE

1. CONTRACTOR TO DIG TEST PITS OVER ALL UTILITIES IN TRENCH AREA TO DETERMINE THE UTILITY DEPTH AND LOCATION. UPON COMPETITION OF TEST PITS A FINAL LOCATION OF THE PROPOSED DRAINAGE PIPE WILL BE DETERMINED BY THE ENGINEER. SOME UTILITIES (GAS SERVICE, WATER SERVICE OR SEWER LATERAL), MAY NEED TO BE RELOCATED.
2. GAS SERVICE : ESG COMPANY TO RELOCATE GAS LINE SERVICES IF REQUIRED.
   CONTRACTOR SHALL COORDINATE ANY GAS SERVICE RELOCATION WITH ESG.
3. WATER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
4. SEWER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
5. BENCH MARK TO BE SET

LEGEND

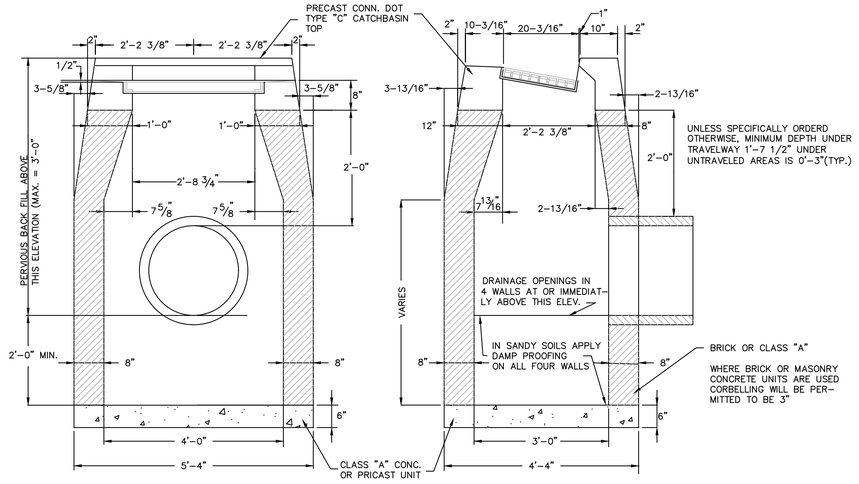
FIRE HYDRANT	
WATER VALVE	W
PHONE POLE	
CATCH BASIN	
SEWER MANHOLE	S
STORM MANHOLE	D
PROPERTY LINE	
SEWER MAIN	S S S
WATER MAIN	W W W
EXISTING STORM	D D D
FENCE	
PROPOSED STORM DRAIN PIPE	

STORM DRAINAGE PROFILE

ESTHER AVE
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

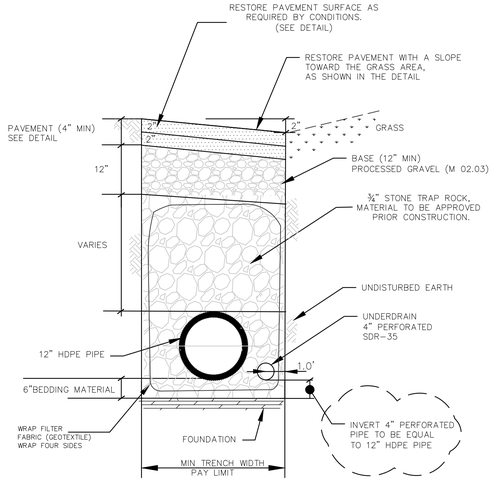
DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

No	REVISION DATE	Designed by: VT	Date:	APRIL 2026	1 OF 5
1	AUGUST 2026	Drawn by: VT	Scale:	AS NOTED	
		Checked by:VC	Issued for :	BIDDING	
		Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	



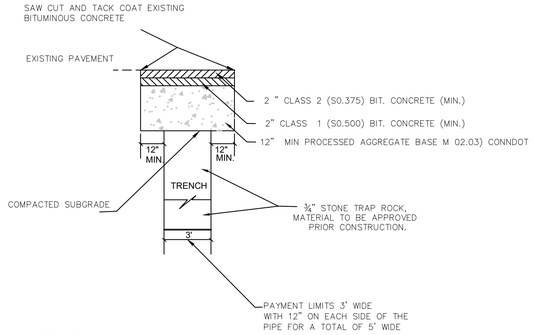
TYPE "C" CATCH BASIN

DOT TYPE "C" CATCH BASIN DETAIL (NTS)



STORM PIPE IN THE TRENCH CROSS-SECTION

(N.T.S.)



NOTES:

1. ALL MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE STATE OF CONNECTICUT STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION.
2. THE PERMITEE SHALL REPAIR ALL DEFICIENT PAVEMENT RESTORATIONS WITHIN 48 HOURS OF RECEIVING VERBAL NOTICE FROM THE CITY ENGINEER.
3. FAILURE OF THE PERMITEE TO RESPOND WITHIN 48 HOURS TO THE BUREAU OF ENGINEERING ORDERS WILL, AT THE DISCRETION OF THE CITY ENGINEER, RESULT IN THE CALLING OF THE PERMITEE'S BOND.
4. WHERE EXISTING PAVEMENT IS THICKER THEN DETAIL SHOWN, THE CONTRACTORS TO MATCH THE PAVEMENT THICKNESS.
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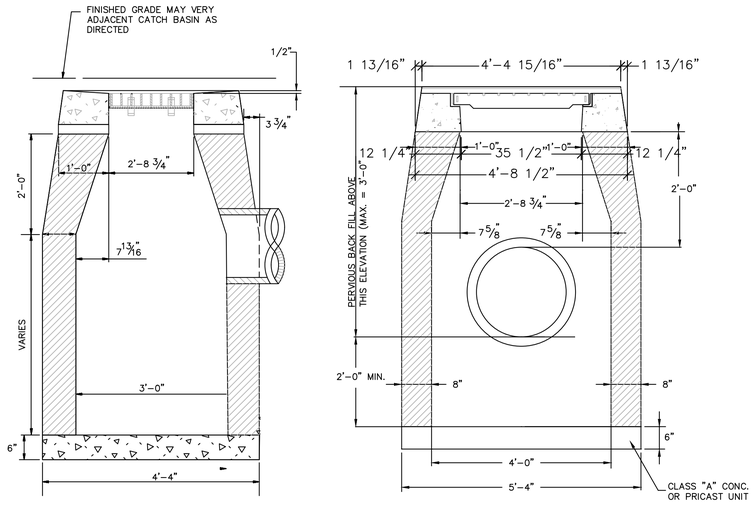
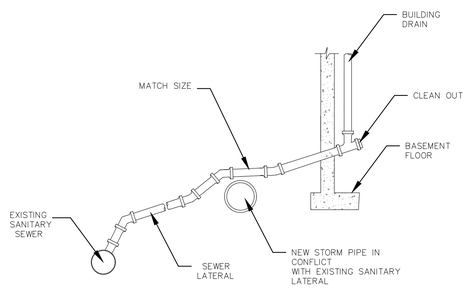
6. IN THE EVENT THAT PAVEMENT RESTORATION IS NOT REQUIRED, PROCESSED GRAVEL PER (M02.03), SHALL BE BROUGHT TO THE SURFACE AND COMPACTED TO ALLOW FOR SAFE PASSING.
7. AT THE END OF EACH DAY, THE WORK AREA SHALL BE SWEPT CLEAN AND KEPT IN A SAFE CONDITION.

LOCAL ROADS PAVEMENT RESTORATION DETAIL



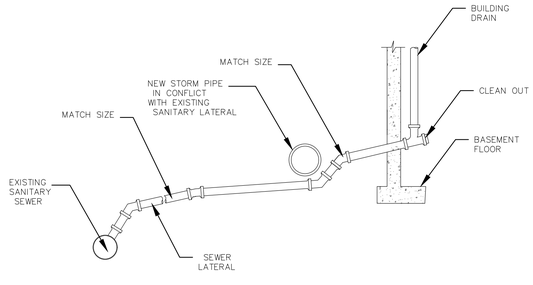
DOT TYPE "CL" CATCH BASIN DETAIL (NTS)



NOTES::
MINIMUM PITCH ¼" PER FOOT, 45° OR 22-½" BENDS DUCTILE IRON STAINLESS STEAL.
BANDS FITTINGS AS REQUIRED
PVC WITH PRIOR APPROVAL UNDER CERTAIN CONDITION.
FERNCO STRONG BACK STAINLESS STEAL EXTRA HAVING COUPLING WITH 4 CLAMPS

SANITARY SEWER OFFSET ABOVE NEW 15" HDPE DETAIL

NTS



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SANITARY SEWER OFFSET BELOW NEW 15" HDPE DETAIL

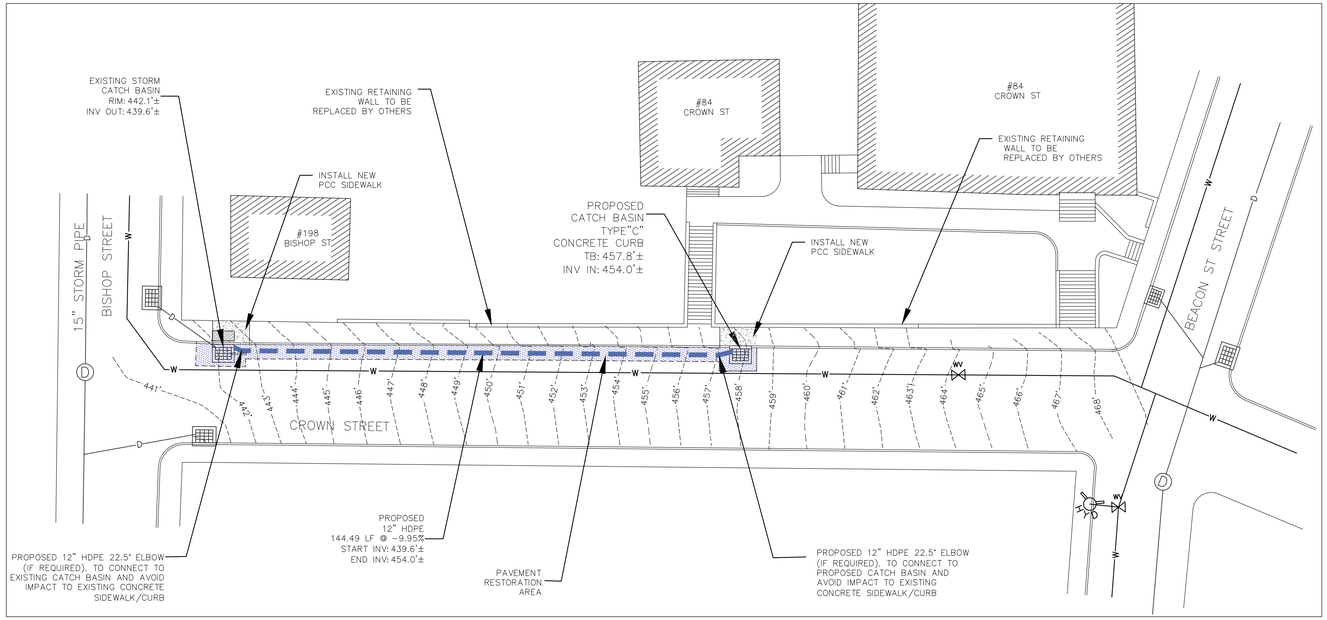
NTS

STANDARD DETAIL

ESTHER AVE
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

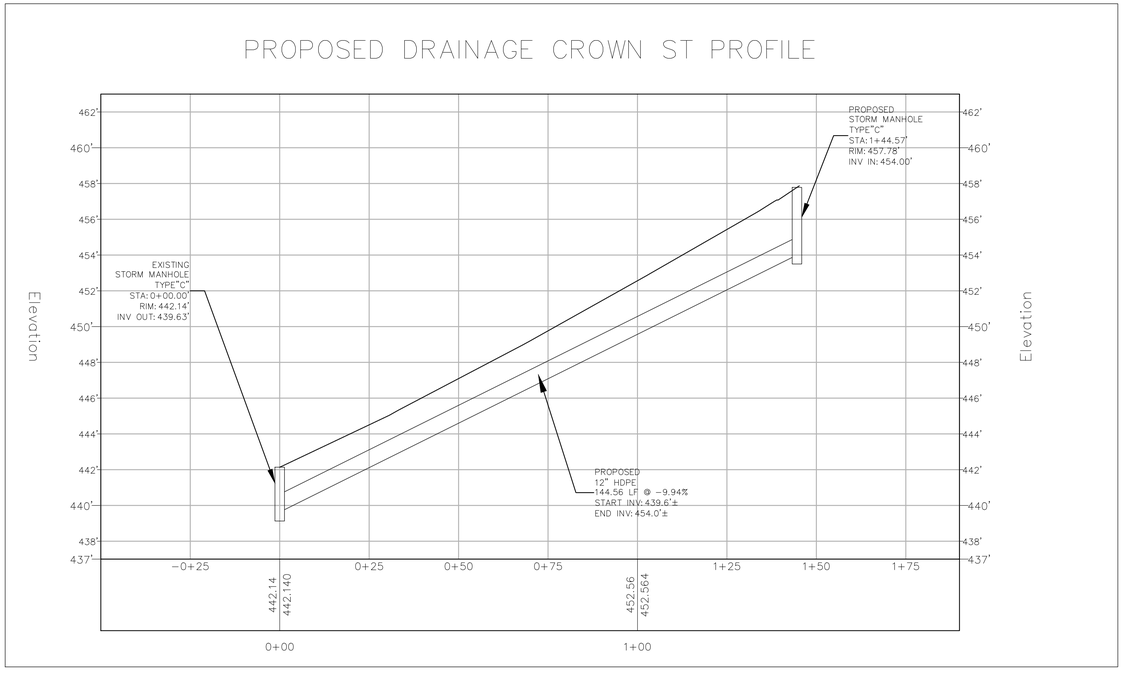
No	REVISION DATE	Designed by: VT	Date:	APRIL 2026	2 OF 5
1	AUGUST 2026	Drawn by: VT	Scale:	NTS	
		Checked by:VC	Issued for :	BIDDING	
		Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



VERTICAL GRAPHIC SCALE

4 0 2 4 8 16

(IN FEET)
1 inch = 4 ft.

HORIZONTAL GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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8. A 22.5° ELBOW SHALL BE USED ON BOTH SIDES TO CONNECT THE PROPOSED PIPE TO THE CATCH BASINS IN ORDER TO ACCOMMODATE THE EXISTING ALIGNMENT AND MINIMIZE DISTURBANCE TO THE EXISTING CONCRETE SIDEWALK AND CURB.

CONSTRUCTION SEQUENCE

8. CONTRACTOR TO DIG TEST PITS OVER ALL UTILITIES IN TRENCH AREA TO DETERMINE THE UTILITY DEPTH AND LOCATION. UPON COMPETITION OF TEST PITS A FINAL LOCATION OF THE PROPOSED DRAINAGE PIPE WILL BE DETERMINED BY THE ENGINEER. SOME UTILITIES (GAS SERVICE, WATER SERVICE OR SEWER LATERAL), MAY NEED TO BE RELOCATED.
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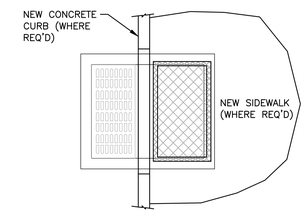
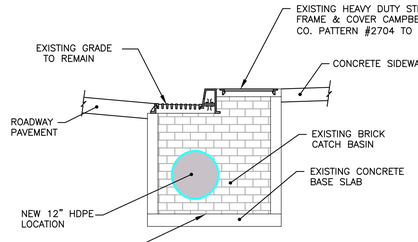
9. WATER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
10. SEWER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
11. BENCH MARK TO BE SET



PLAN



SECTION

EXISTING BRICK CATCH BASIN

MAP REFERENCE

1. c11-d028-m058 a7561 Crown St Water.
2. c07-d001-m009 a2688 Bishop St, Pine St, Hopkins St Storm.
3. c11-d028-m033 a7527 Bishop St Crown St Water.
4. c11-d028-m016 a7510 Beacon St Water.
5. c13-d002-m009 a1515 Beacon St Sewer.

LEGEND

GAS VALVE	GV
FIRE HYDRANT	
WATER VALVE	W
PHONE POLE	
CATCH BASIN	
SEWER MANHOLE	S
STORM MANHOLE	D
PROPERTY LINE	
SEWER MAIN	S S S
WATER MAIN	W W W
EXISTING STORM	D D D
GAS MAIN	G G G
FENCE	
PROPOSED STORM DRAIN PIPE	

STORM DRAINAGE PROFILE

CROWN ST SHOWING PROPOSED DRAINAGE IMPROVEMENTS

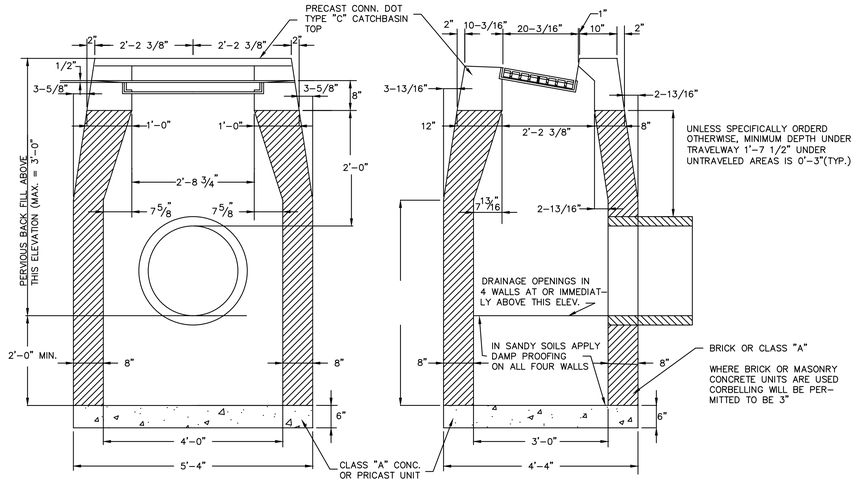
DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

No	REVISION DATE
1	AUGUST 2026

Designed by: VT	Date:	DECEMBER 2025	3 OF 5
Drawn by: VT	Scale:	AS NOTED	
Checked by:VC	Issued for :	BIDDING	
Approved by: RC	Cadd file	C308 CROWN ST DRAINAGE IMPROVEMENTS	

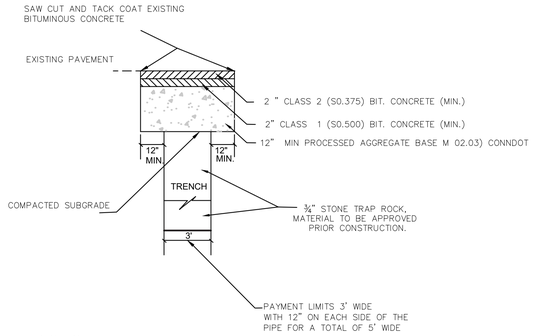
GENERAL NOTES:

1. MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST ASTM C478 SPECIFICATIONS FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS" AND NMDOT OR C.O.A.
2. CONCRETE COMPRESSIVE STRENGTH 4,000 PSI MINIMUM.
3. STEEL REINFORCING DESIGNED TO CONFORM TO THE REQUIREMENTS OF ASTM C478 OR PER C.O.E. CONFORMING TO THE REQUIREMENTS OF ASTM A615 OR WWF CONFORMING TO THE REQUIREMENTS OF ASTM A 185 OR DRAWN WIRE CONFORMING TO THE REQUIREMENTS OF ASTM A82 OR A COMBINATION THEREOF.
4. ADDITIONAL REINFORCING AT ALL OPENINGS.
5. STEPS SHALL BE STEEL REINFORCED COPOLYMER POLYPROPYLENE AND MEET THE REQUIREMENTS OF ASTM C478. SEE TYPICAL STEP DETAIL.
6. PIPE PENETRATION TO BE PER JOB REQUIREMENTS. PIPE TO BE INSTALLED BY CONTRACTOR.
7. JOINTS TO BE SEALED WITH PREFORMED BUTYL RUBBER JOINT SEALANT MEETING REQUIREMENTS OF ASTM C990. SEE TYPICAL MANHOLE SECTION JOINT DETAIL.



TYPE "C" CATCH BASIN

DOT TYPE "C" CATCH BASIN DETAIL (NTS)



NOTES:

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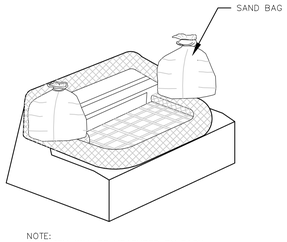
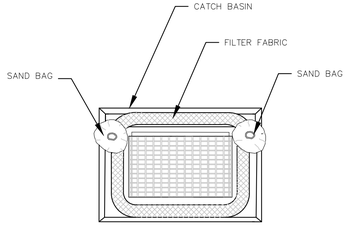
LOCAL ROADS PAVEMENT RESTORATION DETAIL

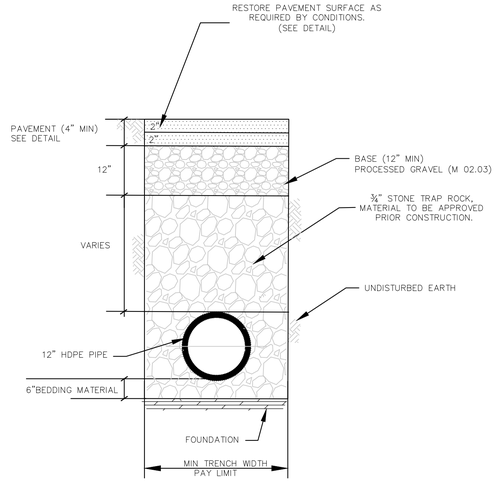


NOTE:
THIS ITEM WILL BE MEASURED BY EACH SEDIMENT CONTROL SYSTEM AT CATCH BASIN



PLAN

FILTER FABRIC AROUND CATCH BASIN TOP



STORM PIPE IN THE TRENCH CROSS-SECTION

(N.T.S.)

NOTES:
SUITABLE MATERIAL:
GENERALLY, MATERIAL THAT IS EXCAVATED FROM THE TRENCH OR EXCAVATION AND IS FREE FROM WET, MUDDY MATERIAL, LARGE ROCKS (ROCKS THAT CAN DAMAGE THE PIPE), ORGANIC MATERIAL, ASPHALT, AND OTHER DELETERIOUS MATERIAL AND DEEMED SUITABLE FOR BACKFILLING BY THE ENGINEER.

UNSUITABLE MATERIAL:
MATERIAL THAT IS MUDDY, WET, ROCKY, SILTY, CLAY, HAS ORGANIC MATTER, CONTAINS ASPHALT AND OTHER DELETERIOUS MATERIAL AND IS DEEMED UNSUITABLE FOR USE BY THE ENGINEER.

IF ALL SUITABLE MATERIAL HAS BEEN USED UP, THAN THE CONTRACTOR MAY USE "FREE-DRAINING" MATERIAL PER SPECIFICATIONS (2.08R), WITH PRIOR APPROVAL FROM THE ENGINEER.

GAS LINE CONFLICTS:
IF A GAS SERVICE LINE IS ENCOUNTERED AND FOUND TO BE IN CONFLICT WITH THE NEW STORM PIPE, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COORDINATION WITH GAS COMPANY AND THE PROPERTY OWNER TO HAVE THE PIPE RELOCATED TO ALLOW FOR THE INSTALLATION OF THE NEW PIPE.

THE CITY WILL NOT BE RESPONSIBLE FOR ANY DELAYS OR PAYMENTS ASSOCIATED WITH THIS WORK. ALL RESPONSIBILITY LIES WITH THE CONTRACTOR AND THE GAS COMPANY.

STANDARD DETAIL

CROWN STREET
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

No	REVISION DATE				
1	AUGUST 2026	Designed by: VT	Date:	DECEMBER 2025	4 OF 5
		Drawn by: VT	Scale:	NTS	
		Checked by:VC	Issued for :	BIDDING	
		Approved by: RC	Cadd file	C308 CROWN ST DRAINAGE IMPROVEMENTS	

WATERBURY

WATER DEPARTMENT

WATER SERVICE AND MAIN INSTALLATION DETAILS

The Water Department in the City of Waterbury developed this Water Service and Main Installation Details Manual to establish uniform concepts for water system design details for the various sized water services and their appurtenances and to provides guidelines and criteria for the design engineers and contractors to use in preparing portions of planning documents .
If deviations from the prescribed installation are necessary, approval must be obtained from the Water Department prior to the installation.

CITY OF WATERBURY

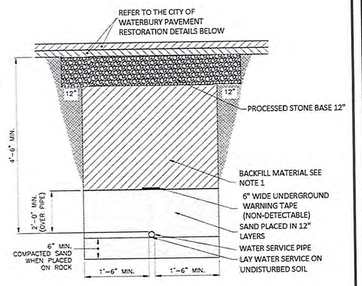
BUREAU OF WATER

WATER SERVICE INSTALLATION DETAILS

Waterbury Water Department
21 East Aurora Street
Waterbury CT, 06708

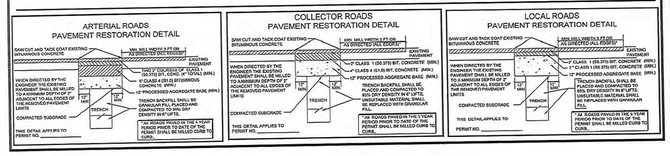
SERVICE LINE INSPECTION PROCEDURES

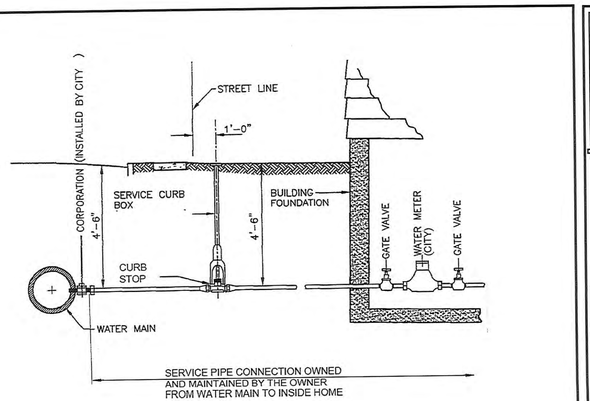
- The contractor shall contact the *Water Department Inspector* to request an inspection prior to backfill.
- The Contractor must be present at the site on the day of inspection.
- Water Service Trench shall be excavated and backfilled following trench detail requirements below.
- Leave the TRENCH OPEN. DO NOT backfill the trench until our inspector has approved the service line.



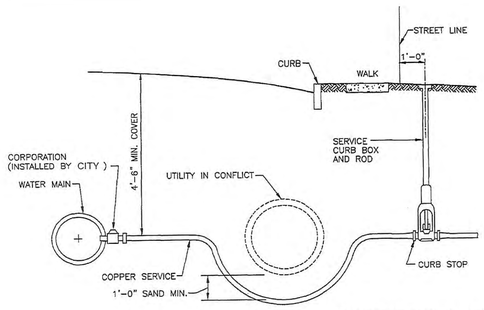
NOTE:
1. BACKFILL MATERIAL SHALL BE BANK-RUN GRAVEL IN PAVED AREAS (INCLUDING SIDEWALKS AND DRIVEWAYS) OR COMMON FILL IN NON-PAVED AREAS

WATER SERVICE TRENCH





TYPICAL Type K COPPER WATER SERVICE



* CLEARANCE WITH SANITARY SHALL FOLLOW BELOW REQ.

TYPICAL DETAIL
COPPER SERVICE OFFSET

Crossings: at sewer crossings, a minimum vertical clearance of 18 inches, measured from crown to invert, should be maintained between the water main and sewer with the preferred location of the water main above the sewer whenever possible. The water main should be centered at the sewer crossing such that the water main joints are spaced as far as possible from the sewer. If the water main will cross above the sewer and will be centered above the sewer such that the water main joints are spaced as far as possible from the sewer, the vertical separation distance may be reduced to 12 inches. There should be no reduction in the vertical separation distance of 18 inches for sanitary sewer force main crossings. If the water main will cross under a sewer, special consideration should be given to the structural support of the sewer to prevent settling or deflection of the sewer which may damage the water main.

WATER STANDARD DETAILS

ESTHER AVE AND CROWN ST
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

No	REVISION DATE	Designed by:	Date:	APRIL 2026	5 OF 5
1	AUGUST 2026	Drawn by:	Scale:	NTS	
		Checked by: VC	Issued for :	BIDDING	
		Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	

WATERBURY

Engineering Department

Crown Street and Esther Ave Storm Drain Improvements
Pre-Bid Meeting Sign-In Sheet

Date: Monday, August 10, 2026
Time: 10:00 AM
Location: On-Site

Name	Company	Telephone	E-mail Address
JASON GAGNON	COLONNA CONCRETE	860-940-5510	JASON@COLONNACONCRETE.COM
CHUCK STONE	H. E. STONE	203-509-5058	cstonejr@histoneson.com
Joe Mayo	S&O	2036951446	josepheric1959@gmail.com
Elinor Korcari	S&O	2036873992	elinor.korcari@yahoo.com
Devon DeBorst	J. Iapaluccio	203-546-0335	daniels@jiapaluccio.com
DAVID S. Cassetty	Birmingham Const.	2036279832	Birminghamconst.c@gmail.com & Cassetty60@outlook.com
Joseph Michelangelo	Grasso Companies	203-767-4876	Jm@grassoconstruction.com
Dave Marinaro	Stonybrook Construction	203-510-3524	StonybrookConst@aol.com

City of Waterbury – Engineering Department

Jermaine Malaykhan	~~Aztec~~ AztecLandscaping	860-467-4833	fmalaykhan@aztecLandscaping ct.com
Ryan Ackell	Priority Landscaping	203-546-8478	priority landscapingllc@gmail.com
Joe Pacta	Earthworks Excavating	203-888-7779	mike@ctearthworks.com

Original

RFP#8802

REQUEST FOR PROPOSAL
BY
THE CITY OF WATERBURY
FOR
ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS
ATTACHMENT E

Price Proposal- REVISED 08/14/2026

(Must be submitted as part of RFP # response in a separate sealed envelope, marked "Confidential Price")

Date: 8/26/26

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

Birmingham Construction Co. LLC
(Print or Type Company/Corporate Name)

454 Lopus Rd., Beacon Falls CT 06403
(Print or Type Business Address)

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

Continued on Page 2 of 5

BID ITEM #	SPEC ITEM #	UNIT	QTY	ITEMS OF WORK WITH UNIT PRICES WRITTEN IN WORDS	UNIT PRICES (In Figures)		TOTAL AMOUNT (In Figures)	
					DOLLARS	CENTS	DOLLARS	CENTS
1	2.03R	EA	12	TEST PIT FOR Five hundred DOLLARS Zero CENTS	500.	00	6,000.	00
2	2.19R	L.F.	10	SEDIMENTATION CONTROL SYSTEM FOR Twenty five DOLLARS Zero CENTS	25.	00	250.	00
3	2.86R	C.Y.	75	ROCK IN DRAINAGE TRENCH EXCAVATION FOR Seventy five DOLLARS Zero CENTS	75.	00	5,625.	00
4	4.06R-1	S.Y.	350	PAVEMENT RESTORATION-Local Road FOR Eighty DOLLARS Zero CENTS	80.	00	28,000.	00
5	5.86R-1	EA	4	CT DOT "Type C" Catch Basin FOR Four thousand DOLLARS Zero CENTS	4,000.	00	16,000.	00
6	5.86R-2	EA	1	CT DOT "Type CL" Catch Basin FOR Four thousand DOLLARS Zero CENTS	4,000.	00	4,000.	00
7	5.86R-3	EA	1	CT DOT "Type C Dog House" Catch Basin FOR Four thousand DOLLARS Zero CENTS	4,000.	00	4,000.	00
8	6.86R-1	L.F.	530	(12") Dia. HDPE Corrugated Pipe FOR One hundred twenty five DOLLARS Zero CENTS	125.	00	66,250.	00
9	6.86R-2	L.F.	30	(6") Dia. HDPE Corrugated Pipe FOR Eighty DOLLARS Zero CENTS	80.	00	2,400.	00
10	6.86R-3	L.F.	440	(4") Dia. PVC Perforated Pipe FOR Fifty DOLLARS Zero CENTS	50.	00	22,000.	00

Continued on Page 3 of 5

BID ITEM #	SPEC ITEM #	UNIT	QTY	ITEMS OF WORK WITH UNIT PRICES WRITTEN IN WORDS	UNIT PRICES (In Figures)		TOTAL AMOUNT (In Figures)	
					DOLLARS	CENTS	DOLLARS	CENTS
11	8.15R	L.F.	100	Bituminous Concrete Curbing FOR Twelve DOLLARS Zero CENTS	12.	00	1,200.	00
12	9.21R	S.F.	125	Portland Cement Concrete (PCC) Sidewalk 5" FOR Eighteen DOLLARS Zero CENTS	18.	00	2,250.	00
13	9.50R-1	S.Y.	150	Topsoil and Turf Establishment FOR Twenty six DOLLARS Zero CENT	26.	00	3,900.	00
14	9.71R-1	LS	1	Maintenance and Protection of Traffic FOR Five thousand DOLLARS Zero CENT	5,000.	00	5,000.	00
15	9.75R	LS	1	Mobilization and Project Closeout FOR Five thousand DOLLARS Zero CENT	5,000.	00	5,000.	00
16	14.10	L.F.	20	Replacement/Relocate Sanitary Sewer Lateral FOR One hundred DOLLARS Zero CENT	100.	00	2,000.	00
17	16.00-1	L.F.	40	1" K COPPER TUBING FOR One hundred DOLLARS Zero CENT	100.	00	4,000.	00
18	16.00-2	E.A.	2	1" Corporation Stop Valve FOR One thousand three hundred DOLLARS Zero CENT	1,300.	00	2,600.	00
19	16.00-3	E.A.	2	1" Curb Stop Valve FOR Six hundred DOLLARS Zero CENT	600.	00	1,200.	00

Continued on Page 4 of 5

TOTAL PRICE - (Sum of Total Amounts for Bid Items 1-19 set out above):

One Hundred Eighty One Thousand Six Hundred Seventy Five Dollars

and Zero Cents

(Amount in Words)

$ 181,675.00
(Amount in Figures)

Continued on Page 5 of 5

-l items in the Price Proposal shall include all applicable taxes, fees and other costs of any ..ture whatsoever related to, or in connection with, performing and completing the Work required by this RFP, including, but not limited to, profit and overhead, delivery charges and charges for standard warranties provided in the normal course of business for such items, etc., as well as all charges and fees for all benefits, insurances, taxes, transportation, vacation, sick leave, holidays, clothing, etc. or for any increase in wage scales, material prices, delivery delays, taxes, insurance, cost indexes or any other rates affecting the construction industry or this proj... that each and every such claim is hereby expressly waived by the Proposer.

In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount using any estimated quantities and/or unit prices shall govern in determining the pricing.

The undersigned also agrees that the quantities indicated are for price comparison purposes only and are not represented to be actual quantities for completion of the Work.

Respectfully submitted by:

06-1446781
Social Security Number or Federal Identification Number (Print or Type)

Birmingham Construction Company, LLC
Company/Corporate Name (Print or Type)

Signature of Authorized Official

Anthony Cassetti
Name of Authorized Official (Print or Type)

Owner/Manager
Title of Authorized Official (Print or Type)

Bidder shall provide Bidders Contact Information below:

454 Lopus Road
Business Address: (Print or Type)

Beacon Falls, CT 06403
City, State, Zip Code: (Print or Type)

(203) 586-1290
Business Telephone Number: (Print or Type)

N/a
Business Fax Number: (Print or Type)

(203) 627-9832
Business Mobile Number: (Print or Type)

Birminghamconst@gmail.com
Business Email Address: (Print or Type)

Note: If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF ATTACHMENT E

RFP# 7806

ATTACHMENT C

Non-collusion and Acknowledgement Affidavit of the Proposer

(Must be submitted as part of Proposal)

KEVIN MCCAFFERY
DIRECTOR OF PURCHASING
235 GRAND STREET
WATERBURY, CT 06702

The undersigned declares that the only persons or patties interested in this Proposal as principals are as stated; that the Proposal is made without any collusion with other persons, firms, or corporations; that Proposer has carefully examined the entire Request for Proposal ("RFP"); that Proposer has informed itself fully in regard to all conditions pertaining to the subject matter of this Request for Proposal; and that with this representation, the undersigned makes this Proposal.

If applicable to this RFP, the under signed: a) agrees and covenants that the Contract Time shall commence on delivery of the City of Waterbury's written notice to proceed, which shall occur after contract execution by both parties and b) any Work resulting from this RFP shall be performed at the Proposal Prices as described in the Proposal Documents and except where expressly provided for otherwise in the RFP, these prices shall cover all expenses incurred in connection with any obligations resulting for this RFP and/or in performing the Work required under any Award, Purchase Order and/or Contract resulting from this RFP, of which this Proposal and Form are a part.

The undersigned acknowledges receipt of addenda numbered: (insert date)

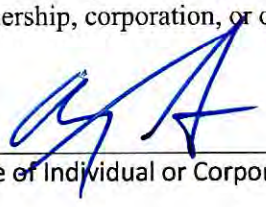
1 Addendum #1 8/3/26 4 _____

2 Addendum #2 8/14/26 5 _____

3 _____ 6 _____

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

06-1446781
Social Security Number
or Federal Identification Number


Signature of Individual or Corporate Name

Corporate Officer (if applicable)

(Continued on next page)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name: Anthony Cassetti

By: Owner/Manager
(Title)

Business Address: 454 Lopus Rd.
Beacon Falls, CT 06403
(City, State, Zip Code)

Phone: (203) 627-9832

Date: 8/26/26

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF ATTACHMENT C

COPY

Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

Bid Bond

CONTRACTOR:
(Name, legal status and address)

Birmingham Construction Co. LLC
454 Lopus Road
Beacon Falls, CT 06403

SURETY:
(Name, legal status and principal place of business)
The Ohio Casualty Insurance Company
175 Berkeley Street
Boston, MA 02116
Mailing Address for Notices

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)

City of Waterbury
235 Grand Street
Waterbury, CT 06702

BOND AMOUNT: 10% Ten Percent of Amount Bid

PROJECT:
(Name, location or address, and Project number, if any)

RFP 8802 Esther Ave. & Crown Street Drainage Improvements

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 26th day of August, 2026.

(Witness) Tara Cassella

(Witness) Elizabeth Watson

Birmingham Construction Co. LLC
(Principal) *(Seal)*

By:
(Title) Owner

The Ohio Casualty Insurance Company
(Surety) *(Seal)*

By:
(Title) Craig H. Meeker, Attorney-in-Fact

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

S-0054/AS 8/10

COPY

Liberty Mutual SURETY

POWER OF ATTORNEY

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint Craig H. Meeker all of the city of Shelton state of CT its true and lawful attorney-in-fact, with full power and authority hereby conferred to sign, execute and acknowledge the following surety bonds, undertakings, recognizances, contracts of indemnity, and all other surety obligations related thereto, the execution of which shall be binding upon the Companies as if it had been duly signed and executed by its own officers:

Principal Name: Birmingham Construction Co. LLC

Obligee Name: City of Waterbury

Surety Bond Number: Bid Bond **Bond Amount:** See Bond Form

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of August, 2026.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
Nathan J. Zangerle, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 26th day of August, 2026, before me personally appeared Nathan J. Zangerle, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2029
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Nathan J. Zangerle, Assistant Secretary to appoint such attorneys-infact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company do hereby certify that this power of attorney executed by said Companies is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 26th day of August, 2026.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

REQUEST FOR PROPOSAL
BY
THE CITY OF WATERBURY
FOR
ESTHER AVE. & CROWN STREET DRAINAGE IMPROVEMENTS
ATTACHMENT E

Price Proposal- REVISED 08/14/2026

(Must be submitted as part of RFP # response in a separate sealed envelope, marked "Confidential Price")

Date: 9/4/26

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

Birmingham Construction Co. LLC
(Print or Type Company/Corporate Name)

454 Lopus Rd., Beacon Falls CT 06403
(Print or Type Business Address)

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

Continued on Page 2 of 5

BID ITEM #	SPEC ITEM #	UNIT	QTY	ITEMS OF WORK WITH UNIT PRICES WRITTEN IN WORDS	UNIT PRICES (In Figures)		TOTAL AMOUNT (In Figures)	
					DOLLARS	CENTS	DOLLARS	CENTS
1	2.03R	EA	12	TEST PIT FOR Five hundred and Zero DOLLARS CENTS	500.	0	6,000.	00
2	2.19R	L.F.	10	SEDIMENTATION CONTROL SYSTEM FOR DOLLARS Twenty five and zero CENTS	25.	0	250	00
3	2.86R	C.Y.	75	ROCK IN DRAINAGE TRENCH EXCAVATION FOR Seventy five and zero DOLLARS CENTS	75.	00	5,625.	00
4	4.06R-1	S.Y.	350	PAVEMENT RESTORATION-Local Road FOR Eighty and zero DOLLARS CENTS	80.	00	28,000.	00
5	5.86R-1	EA	4	CT DOT "Type C" Catch Basin FOR Three thousand five hundred and zero DOLLARS CENTS	3,500.	00	14,000.	00
6	5.86R-2	EA	1	CT DOT "Type CL" Catch Basin FOR Three thousand five hundred and zero DOLLARS CENTS	3,500.	00	3,500.	00
7	5.86R-3	EA	1	CT DOT "Type C Dog House" Catch Basin FOR Three thousand five hundred and zero DOLLARS CENTS	3,500.	00	3,500.	00
8	6.86R-1	L.F.	530	(12") Dia. HDPE Corrugated Pipe FOR One hundred twenty five and zero DOLLARS CENTS	125.	00	66,250.	00
9	6.86R-2	L.F.	30	(6") Dia. HDPE Corrugated Pipe FOR Eighty and zero DOLLARS CENTS	80.	00	2,400.	00
10	6.86R-3	L.F.	440	(4") Dia. PVC Perforated Pipe FOR Fifty and zero DOLLARS CENTS	50.	00	22,000.	00

Continued on Page 3 of 5

BID ITEM #	SPEC ITEM #	UNIT	QTY	ITEMS OF WORK WITH UNIT PRICES WRITTEN IN WORDS	UNIT PRICES (In Figures)		TOTAL AMOUNT (In Figures)	
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12	9.21R	S.F.	125	Portland Cement Concrete (PCC) Sidewalk 5” FOR Eighteen and zero DOLLARS CENTS	18.	00	2,250	00
13	9.50R-1	S.Y.	150	Topsoil and Turf Establishment FOR Twenty six and zero DOLLARS CENT	26.	00	3,900	00
14	9.71R-1	LS	1	Maintenance and Protection of Traffic FOR Five thousand and zero DOLLARS CENT	5,000.	00	5,000.	00
15	9.75R	LS	1	Mobilization and Project Closeout FOR Five thousand and zero DOLLARS CENT	5,000.	00	5,000	00
16	14.10	L.F.	20	Replacement/Relocate Sanitary Sewer Lateral FOR One hundred and zero DOLLARS CENT	100.	00	2,000	00
17	16.00-1	L.F.	40	1” K COPPER TUBING FOR One hundred and zero DOLLARS CENT	100.	00	4,000	00
18	16.00-2	E.A.	2	1” Corporation Stop Valve FOR One thousand three hundred and zero DOLLARS CENT	1,300.	00	2,600	00
19	16.00-3	E.A.	2	1” Curb Stop Valve FOR Six hundred and zero DOLLARS CENT	600.	00	1,200	0

Continued on Page 4 of 5

TOTAL PRICE - (Sum of Total Amounts for Bid Items 1-19 set out above):

One Hundred Seventy Eight Thousand Six Hundred Seventy Five Dollars

and Zero Cents

(Amount in Words)

$ 178,675.00

(Amount in Figures)

Continued on Page 5 of 5

All items in the Price Proposal shall include all applicable taxes, fees and other costs of any nature whatsoever related to, or in connection with, performing and completing the Work required by this RFP, including, but not limited to, profit and overhead, delivery charges and charges for standard warranties provided in the normal course of business for such items, etc., as well as all charges and fees for all benefits, insurances, taxes, transportation, vacation, sick leave, holidays, clothing, etc. or for any increase in wage scales, material prices, delivery delays, taxes, insurance, cost indexes or any other rates affecting the construction industry or this project, and that each and every such claim is hereby expressly waived by the Proposer.

In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount using any estimated quantities and/or unit prices shall govern in determining the pricing.

The undersigned also agrees that the quantities indicated are for price comparison purposes only and are not represented to be actual quantities for completion of the Work.

Respectfully submitted by:

06-1446781
Social Security Number or Federal Identification Number (Print or Type)

Birmingham Construction Company, LLC
Company/Corporate Name (Print or Type)

Signature of Authorized Official

Anthony Cassetti
Name of Authorized Official (Print or Type)

Owner/Manager
Title of Authorized Official (Print or Type)

Bidder shall provide Bidders Contact Information below:

454 Lopus Road
Business Address: (Print or Type)

N/a
Business Fax Number: (Print or Type)

Beacon Falls, CT 06403
City, State, Zip Code: (Print or Type)

(203) 627-9831
Business Mobile Number: (Print or Type)

(203) 586-1290
Business Telephone Number: (Print or Type)

birminghamconst@gmail.com
Business Email Address: (Print or Type)

Note: If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF ATTACHMENT E

RFP # 8802

TECHNICAL SPECIFICATIONS

CITY OF WATERBURY ENGINEERING DEPARTMENT

TECHNICAL SPECIFICATIONS

CONSTRUCTION AND MATERIAL SPECIFICATIONS

The Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction Form 818 (2020), including supplements to date, (herein called "Form 818"), with the exception of certain sections of Division 1 "General Requirements and Covenants" as enumerated below, shall be the basic specification for the performance of the required work:

- Section 1.01 Definitions of Terms and Permissible Abbreviations
- Section 1.02 Proposal Requirements and Conditions
- Section 1.03 Award and Execution of Contract
- Section 1.04.01— Intent of Contract (last sentence only deleted "The Contract as it existed when first duly executed by the Engineer is sometimes referred to herein as "the original Contract.")
- Section 1.04.02—Changes in Quantities of Pay Items, Including Elimination of Such Items (Everything after 2nd paragraph):
- Section 1.04.03—Changes in Quantities and Significant Changes in the Character of Work Section 1.04.04—Differing Site Conditions
- Section 1.04.05—Extra Work
- Section 1.05.01—Authority of Engineer (delete only sentence in 3rd paragraph referring to CGS-4-61)
- Section 1.05.05—Cooperation by Contractor (delete all but 1st two paragraphs)
- Section 1.05.01—Authority of Engineer (delete only sentence in 3rd paragraph referring to CGS-4-61)
- Section 1.05.14 Termination for Convenience Clause
- Section 1.07 – Legal Relations and Responsibilities
- Section 1.08.06(2) Suspensions of Work Ordered by the Engineer
- Section 1.08.07 Determination of Contract Time
- Section 1.08.08 Extension of Time
- Section 1.08.09 Failure to Complete Work on Time
- Section 1.08.10 Termination of Contract for Cause
- Section 1.09 Measurement and Payment
- Section 1.10.02—Compliance with Laws and Regulations
- Section 1.10.06—Protection of Archaeological and Paleontological Remains and Materials (delete last paragraph)
- Section 1.11 Claims
- Section 1.20 General Clauses for Facilities Construction

All references in Form 819 to Division 1 Sections listed above are not applicable to this Project. Further, all remaining Sections of Form 818 shall be interpreted so as to be in conformance with the Contract, General Conditions and Special Conditions and the City's Project Technical Specifications, as set forth herein.

Please refer to the following webpage for the appropriate link to the Form 819:
https://portal.ct.gov/DOT/IT/ConnDOT-Publications-Manuals

Unless expressly provided for otherwise, any references to the State of Connecticut, the Department, the Commissioner, Engineer, or other terms indicating the State of Connecticut and/or its agents as party to the contract shall for this Project mean the City and its designated agents or employees.

Except as may be set forth herein and/or expressly added by addendum, there are no Connecticut Department of Transportation "Special Provisions" applicable to this Project.

The term "Engineer" in this section shall mean "City Engineer".

CITY PROJECT TECHNICAL SPECIFICATIONS

City Project Technical Specifications are provided herein for special work or where more detail and/or control is required by the City. These City Project Technical Specifications supplement and/or amend the associated Sections of Form 818. The method of measurement and basis for payment may also deviate from that of Form 818.

TECHNICAL SPECIFICATIONS INDEX

The following listing of all Contract Pay Items, cross referenced to applicable Sections of Form 819 and/or to applicable City Project Technical Specifications, is provided for the purpose of clarification.

Any Pay Item that has an associated City Project Technical Specification is indicated below by a "YES".

For all Pay Items that reference Form 819 and have an associated City Project Technical Specification (and thus have requirements/provisions that are different than Form 819), the requirements/provisions contained in Form 818 are supplemented and/or amended as provided for by the associated City Technical Specification.

Bid Item No.	**Spec. Item No.**	**Form 819 Section Reference**	**Item Description**	**City Project Technical Specification**
1	2.03R	2.03	Test Pit	Yes
2	2.19R	2.19	Sedimentation Control System	Yes
3	2.86R	2.86	Rock in Drainage Trench Excavation	Yes
4	4.06R-1	4.06	Pavement Restoration-Local Road	Yes
5	5.86R-1	5.86	CT DOT "Type C" Catch Basin	Yes
6	6.86R-1	6.86	(12") Dia. HDPE Corrugated Pipe	Yes
7	6.86R-2	6.86	(6") Dia. HDPE Corrugated Pipe	Yes
8	6.86R-3	6.86	(4") Dia. PVC Perorated Pipe	Yes
9	8.15R	8.15	Bituminous Concrete Curbing	Yes
10	9.21R	9.21	Portland Cement Concrete (PCC) Sidewalk 5"	Yes
11	9.50R-1	9.50	Topsoil and Turf Establishment	Yes
	9.70R	9.70	Uniformed Traffic Persons	Yes
12	9.71R-1	9.71	Maintenance and Protection of Traffic	Yes
13	9.75R	9.75	Mobilization and Project Closeout	Yes
14	14.10		Replacement/Relocate Sanitary Sewer Lateral	Yes
15	16.00-1		1" K COPPER TUBING	Yes
16	16.00-2		1" Corporation Stop Valve	Yes
17	16.00-3		1" Curb Stop Valve	Yes

The applicable sections of Form 819, together with the City Project Technical Specifications provided herein, shall constitute the "Technical Specifications" for this Project.

NOTE: Any provision of Form 819 - State of Connecticut Department of Transportation "Standard Specifications for Road, Bridges, and Incidental Construction," including the latest supplements thereto, that conflicts with these "Special Provisions" or with any other provision the Contract Documents shall be of no effect relative to this Project.

Reference is made to Section 1.2 of the City of Waterbury Contract for controlling hierarchy of the Contract Documents.

END OF TECHNICAL SPECIFICATION INTRODUCTION

TECHNICAL SPECIFICATION 2.03R
TEST PIT

2.03.01 DESCRIPTION

This work shall consist of excavating a shallow test pit to the depths, dimensions, and at the locations established by the Engineer. The test pit shall be excavated in a manner to allow an effective and safe visual examination of the subsurface conditions exposed. Disturbed area is then to be raked to remove stones, seeded and hayed, in paved areas, the area is to be paved, or, with prior approval from the Engineer, processed gravel can be used to bring the surface up to grade. Care is to be taken so as not to damage or destroy adjacent sidewalks, curbing, driveways or roadway.

2.03.02 MATERIALS

Hot asphalt or cold patch, or processed gravel to be approved by engineer prior to placement, topsoil, seed and hay as required.

2.03.03 CONSTRUCTION METHODS

The contractor shall excavate a shallow test pit, to the satisfaction of the City, to allow safe and effective visual examination of subsurface conditions. The methods and equipment used shall be approved by the City. Upon completion, the test pit will be backfilled, compacted, and the site returned to a condition acceptable to the Engineer.

2.03.04 METHOD OF MEASUREMENT

This work will be measured for payment by the number of each test pits, complete and accepted in place as shown on the plans or as directed by the City. This specification shall not be used to cover excavations required for the contractor's basic operations.

2.03.05 BASIS OF PAYMENT

This work will be paid for at the Contract unit price per each "Test Pit". This price shall include all equipment, tools, labor, and materials, etc. incidental thereto necessary to excavate and backfill the test pit.

No additional or separate payments will be made for traffic control, backfill, compaction, sawcutting, topsoil or seeding, haying or turf establishment.

ITEM NO	PAY ITEM	PAY UNIT
2.03R	Test Pit	EA

END OF SECTION

TECHNICAL SPECIFICATION 2.08R
FREE-DRAINING MATERIAL

2.08.01 DESCRIPTION

Free-draining material shall consist of material meeting the requirements stated elsewhere herein. This material shall be furnished and placed in accordance with these specifications and as indicated on the plans, special provisions, or as ordered by the Engineer for the stabilization of embankments, or for fill in free water areas, or wherever specified, or as replacement of excavated unsuitable material after all suitable excavated material has been used to backfill.

2.08.02 MATERIALS

Material for this work shall meet the requirements of M.02.03 of the Form 818.

2.08.03 CONSTRUCTION METHODS

The Contractor shall notify the Engineer at least 3 days prior to obtaining free-draining material from any source so that an examination may be made of the material and the necessary measurements may be taken.

The limits of the proposed source shall be shown to the Engineer; and prior to the taking of measurements, the Contractor shall be required to clear the area of all unsuitable material. No payment will be made for any material removed outside of the area measured or which was not used in the Contract work. No excavation shall be made within the confines of a source after the Engineer has taken the original measurements, except for material to be used for the purposes hereinbefore indicated, except with the permission of the Engineer.

The Contractor may, with the approval of the Engineer, obtain free-draining material, if available, from within the roadway excavation limits subject to the provisions of 1.04.07.

If the Contractor elects to obtain free-draining material from a commercial pit, it will be necessary to have a section of the pit set off for its use solely, so that the amount of material removed may be accurately determined. During the period between the original and the final release by the Engineer, no material shall be taken from a measured pit except by the Contractor and for use only in the work under the Contract.

If the Contractor elects to use stone from a quarry or reclaimed miscellaneous aggregate, the Contractor shall use only the materials from stockpiles which have been approved for use.

Free-draining material will be permitted only to the extent necessary to construct embankments to 3 feet above free water, or to promote free drainage in areas specified on the plans, in the special provisions, or as directed by the Engineer.

Free-draining material shall be placed in accordance with the provisions for the formation of embankment of 2.02 of the Form 818.

2.08.04 METHOD OF MEASUREMENT

The amount of free-draining material to be paid per cubic yard (C.Y.) which will be determined by using the results of cross-sectional elevations taken before and after the free-draining material has been excavated in the average end area method, or by a method approved by the Engineer. When material is drawn from a quarry stockpile or stockpile formed from reclaimed miscellaneous aggregate, the material shall be weighed on scales furnished by and at the expense of the Contractor. The scales shall be of a type satisfactory to the Engineer and shall be sealed at the expense of the Contractor as often as the Engineer may require. All weighing shall be done in the presence of a representative of the City. From the weight so obtained, the volume shall be computed based on a specific gravity of 2.92 for the aggregate and smaller particles. For material having a different specific gravity, an appropriate correction shall be made.

2.08.05 BASIS OF PAYMENT

Payment will be made at the Contract unit price per cubic yard for "Free-Draining Material," complete in place, which price shall include furnishing and placing the material and all equipment, tools and labor necessary thereto.

ITEM NO	PAY ITEM	PAY UNIT
2.08R	Free-Draining Material	C.Y.

END OF SECTION

TECHNICAL SPECIFICATION 2.19R
SEDIMENTATION CONTROL SYSTEM

2.19.01 DESCRIPTION

This work shall consist of furnishing, placing, maintaining and removing sedimentation control systems as shown on the plans or as directed by the Engineer. Maintaining shall include the clean out and disposal of accumulated sediment.

2.19.02 MATERIALS

The sedimentation control system materials for this work shall meet the following requirements:
Hay bales shall be made of hay with 40 lb. minimum weight and 120 lb. maximum weight held together by twine or wire.
Geotextile shall meet the requirements of 7.55 and M.08.

2.19.03 CONSTRUCTION METHODS

Sedimentation Control Systems shall be installed by the Contractor in locations shown on the plans or as directed by the Engineer.
Hay Bale systems shall be installed lengthwise along the contour with ends of adjacent bales tightly abutting each other. All hay bales shall be installed so that bindings are oriented around the sides, rather than along the tops and bottoms. Each hay bale shall be entrenched 4 inches deep and backfilled, with the backfilled soil placed toward the potential silt source. They shall be held in place by 2 wooden stakes in each hay bale and each wooden stake shall be driven 18 inches deep into the ground. Gaps shall be filled
with hay or straw to prevent water or debris escaping between bales.
Geotextile systems shall be installed along the contour so that the bottom 6 inches of the fabric is buried by either trenching or by laying the 6 inches section horizontally on the ground and burying by ramping the soil up to the control fence. All geotextile fences shall be exposed at least 30 inches high as installed. Spacing between posts shall not exceed 10 feet and all wooden posts shall be driven a minimum of 12 inches deep into the ground. When joints between sections of geotextile sedimentation control systems are necessary, geotextile shall be spliced together only at a support post, with a minimum 6 inch overlap, and securely sealed.
When trench excavation of a hay bale or geotextile fence is obstructed by an occasional stone or tree root, provide a smooth transition between the trench bottom and the obstruction. Clean out of accumulated sediment shall be accomplished when 1/2 of the original height of the sedimentation control system, as installed, becomes filled with sediment or as directed by the Engineer. The sedimentation control systems shall be maintained or replaced until they are no longer necessary for the purpose intended or are ordered removed from the Site at the completion of the Project when full stabilization has occurred, unless specifically authorized by the Engineer to be left in place.

2.19.04 METHOD OF MEASUREMENT

This work will be measured for payment by the actual number of linear feet of "Sedimentation Control System" or "Sedimentation Control (Type) System" installed and accepted. Measurement shall be made along the top center-line of the system. Replacement systems will not be measured for payment.

2.19.05 BASIS OF PAYMENT

Payment for this work will be made at the Contract unit price per linear foot for "Sedimentation Control System" or "Sedimentation Control (Type) System" complete in place, which price shall include all materials, equipment, tools and labor incidental to the installation, maintenance, replacement, removal and disposal of the system and surplus material. No additional payment will be made for the clean out of accumulated sediment.

ITEM NO	PAY ITEM	PAY UNIT
2.19R	Sedimentation Control System	L.F.

END OF SECTION

TECHNICAL SPECIFICATION 2.86R
DRAINAGE TRENCH EXCAVATION,
ROCK IN DRAINAGE TRENCH EXCAVATION

2.86.01 DESCRIPTION

Drainage trench excavation consists of the excavation necessary for the proper installation of drainage structures, pipes, pipe ends and any other incidental drainage items. It shall include earth and rock excavation, removal of existing pipes, dewatering, backfill, and disposal of materials; to the trench limits described herein, to the dimensions shown on the plans, or as directed by the Engineer.

Classifications:
(1) Drainage Trench Excavation will include only the excavation necessary for the construction of the drainage items and the removals specified above.
(2) Rock in Drainage Trench Excavation, insofar as it applies to drainage trench excavation, shall be defined as **1/2 cubic yard or more** in volume of the following obstructions removed from the limits of the drainage trench:
(a) rock in definite ledge formation
(b) boulders, or portions of boulders
(c) cement masonry structures
(d) concrete or reinforced concrete structures
(e) reinforced concrete pipe
(f) subsurface concrete pavement or concrete base
The removal shall be as indicated or directed from within the limits defined in 2.86.03 for drainage trench excavation.

2.86.02 MATERIALS

Not Applicable

2.86.03 CONSTRUCTION METHODS

(1) Drainage Trench Excavation Limits:
Horizontal Limits: Trench widths for pipes, pipe ends, pipe arches, and drainage structures shall be as follows:
(a) 2 feet greater than the nominal inside diameter of circular pipe or nominal inside span of elliptical pipe or pipe arch for such diameters or spans of less than 30 inches
(b) 3 feet greater than the nominal inside diameter of circular pipe or the nominal inside span of elliptical pipe or pipe arch for such diameters or spans that are 30 inches or greater
(c) 4 feet greater than the nominal inside diameter or nominal horizontal inside span for pipe arches fabricated from structural plates
(d) 2 feet beyond the neat lines of all exterior or foundation walls of drainage structures
Vertical Limits: Trench depths shall extend vertically as follows:
(a) From the bottom of the trench to the bottom of the roadway excavation, or in areas away from roadway excavation, to the top of existing ground surface.
(b) Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Drainage Trench Excavation: Drainage trench excavation shall be made in conformity with the requirements of the plans, or as directed by the Engineer. The Contractor shall furnish and employ such shores, braces, pumps, or ancillary equipment as needed for the proper protection of property, proper completion of the work, as well as safety of the public and employees of both the Contractor and the Department. All bracing and shoring shall be removed when no longer required for the construction or safety of the work. When required, the Contractor shall provide or have on the Site at all times any OSHA certification for equipment to be used, per 1.07.07. For support of trenches greater than 10 feet in depth, working drawings shall be submitted, in accordance with 1.05.02. The Contractor shall control erosion and sedimentation at trench locations and ensure that pumped water from the drainage excavation is discharged in accordance with the requirements of 1.10.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved backfill, thoroughly compacted in lifts not to exceed 6 inches, for the full trench width. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

After the excavation is complete, the Contractor shall notify the Engineer and no drainage structure or material shall be placed in the excavated area until the Engineer has approved the depth of excavation and the character of the foundation material.

(3) Rock in Drainage Trench Excavation:

(a) Rock in Drainage Trench Excavation - Ledge: When rock in definite ledge form is encountered, the Contractor shall excavate a minimum of 12 inches below the bottom of the proposed pipe or drainage structure; and this depth shall be filled with bedding material (as specified in M.08.03-1) below the proposed pipe; or granular fill (as specified in M.02.01) below the proposed drainage structure, which shall be thoroughly compacted in lifts not to exceed 6 inches.

(b) Rock in Drainage Trench Excavation - Boulders: When boulders are encountered, the Contractor shall remove them from the trench and if backfill is required, the void shall be filled with bedding material, surplus excavated material (as specified in 2.02.03-8) or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(c) Rock in Drainage Trench Excavation –Structures: When cement masonry, concrete or reinforced concrete structures are encountered within the drainage trench limits, the Contractor shall remove the structure in its entirety or as directed by the Engineer, and if backfill is required, the void shall be filled with bedding material, surplus excavated material or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(4) Backfill: Suitable material excavated from the drainage trench shall be used as backfill material prior to consideration of using any other source of backfill. Backfill material used shall be of a quality satisfactory to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. Rock fill or stones larger than 5 inches shall not be placed within 1 foot of the drainage structure or pipe. The grading shall be completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material, placed in layers not to exceed 6 inches in depth after compaction, which shall be thoroughly compacted with equipment approved by the Engineer.

All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it may be obtained from the Project surplus excavation in accordance with 2.02.03-8 or from borrow pits, gravel pits, or elsewhere as directed by the Engineer.

2.86.04 METHOD OF MEASUREMENT

Drainage Trench Excavation: Drainage trench excavation will not be measured for payment. If granular fill or borrow is required to replace unsuitable material it will be measured for payment as directed by the Engineer.

Rock in Drainage Trench Excavation: If any material meeting the definition of Rock in Drainage Trench Excavation is encountered, the Contractor shall strip it of sufficient overlying material to allow for proper measurement and shall then notify the Engineer that the rock surface is ready for measurement. If the Contractor fails to give such notice, the Engineer will presume that the measurements taken at the time the Engineer first saw the material in question will give the true quantity of excavation.

Rock in Drainage Trench Excavation will be measured according to the classification provided in 2.86.01 and within the drainage trench excavation limits provided in 2.86.03.

For the removal of underground obstructions, as classified in 2.86.01-2, the measurement shall be the actual volume of rock removed (1/2 cubic yard or more) as approved by the Engineer.

Rock in Drainage Trench Excavation will not be measured for payment in fills.

Bedding Material or other suitable fill, as specified in 2.86.03(3), used to fill voids after rock is excavated will not be measured for payment.

2.86.05 BASIS OF PAYMENT

Drainage Trench Excavation: There will be no direct payment for drainage trench excavation required for the installation of drainage pipes, pipe ends, catch basins, drop inlets, manholes, and other drainage structures, or any other incidental drainage work including materials, tools, equipment and labor necessary to complete the drainage trench excavation in conformity with the plans or as directed by the Engineer.

There will be no direct payment for backfill or disposal of surplus material necessary for the satisfactory completion of this work. There will be no direct payment made for shoring, bracing, dewatering, or for material or equipment necessary for the satisfactory completion of the work.

Where called for on the plans to install temporary earth retaining systems for the support of existing facilities, pavement, utilities, or for other constraints, payment will be made in accordance with such items in the Contract.

If granular fill or borrow is used to replace unsuitable material, payment will be made at the respective Contract unit prices, or in the absence of such items in the Contract, as Extra Work in accordance with 1.04.05.

Rock in Drainage Trench Excavation: When rock, conforming to the description in 2.86.01 is encountered within the limits of drainage trench excavation, its removal will be classified and paid for at the Contract unit price per cubic yard for "Rock in Drainage Trench Excavation 0' – 10' Deep," or "Rock in Drainage Trench Excavation 0' – 20' Deep," as the case may be.

Those portions of drainage trench excavation classified and paid for as "Rock in Drainage Trench Excavation" of the various depths will be the actual volumes of rock excavated within the limits for drainage trench excavation, at the applicable bottom depth price.

Where no item or items for "Rock in Drainage Trench Excavation" at the applicable depth appear in the proposal and rock is encountered in drainage trench excavation, its removal will be paid for as Extra Work in accordance with 1.04.05.

When excavation is necessary in fill, no such excavation will be paid for as "Rock in Drainage Trench Excavation."

When excavation is necessary for any purpose other than drainage-related items, no such excavation will be paid under this item.

Bedding material or any other suitable material used to fill voids vacated by excavated rock will not be paid for but shall be included in the unit price per cubic yard for "Rock in Drainage Trench Excavation."

ITEM NO	PAY ITEM	PAY UNIT
2.86R	Rock in Drainage Trench Excavation 0’-10’Deep	C.Y.

END OF SECTION

TECHNICAL SPECIFICATION 4.06R
PAVEMENT RESTORATION

4.06.01 DESCRIPTION

Work under this item shall consist of removal of existing roadway pavement of all types, excavation to the proper depth, formation of subgrade, saw cutting, placement and compaction of processed gravel base material (if required), applying tack and placement of bituminous concrete pavement to the lines and grades as shown on the plans and/or as directed by the Engineer. For drainage pipe and catch basin installations, the 12" processed gravel base shall be included and paid for as part of sections 6.86R and 5.86R.

Work under this item shall conform to the applicable requirements of Sections 2.02, 2.09, 3.04, 3.05R and 4.06 of Form 819, amended as follows:

4.06.02 MATERIALS

Base material shall be processed aggregate conforming to the requirements of Article M.02.03. Bituminous concrete and tack coat shall conform to the requirements of Article M.04.

4.06.03 CONSTRUCTION METHODS

Construction methods used shall conform to the requirements of Articles 2.02.03, 2.09.03, 3.04.03 and 4.06.03, respectively.

Equipment used for sawing bituminous concrete pavement shall be gasoline powered wet blade concrete saw. Cutting roller blades will not be allowed. Existing bituminous concrete shall be carefully removed so as not to disturb the existing pavement to remain.

The existing pavement structure shall be removed to subgrade within the neat lines of the pavement sawcut and the existing curbing to the depth shown on the detail for the class of road being worked on. Subgrade shall be compacted by approved means. Processed gravel conforming to Section M.02.06 Grading B of the Form 819 shall be placed and compacted in six-inch (6") maximum lifts to the depths shown on detail or as directed by City. All excavated materials shall be properly disposed of off-site at a location approved by the City. No permanent pavement shall be placed over backfill until compaction has been completed. Material removed during this operation shall be properly disposed of off-site.

Contractor will be required to hose clean or sweep all road surfaces after backfilling and before any surfacing is done.

Pavement restoration cross-section shall be as specified on the Contract Plans for Roadway Class indicated or as directed by City:

Crown Street and Esther Avenue are classified as Local roads. The trench restoration is to follow the detail on the plans.

The pavement shall be sawcut at least 1' from the edge of the trench on each side to provide a neat, straight line.
Existing roadway pavement shall be sawcut two (2') feet from the face of curb at the location of each pedestrian ramp or concrete curb and 2'from the face of each structure to be installed. Tack coat shall be applied to all vertical sawcut faces prior to placing bituminous concrete pavement repair at a rate of 0.05 to 0.15 gallons per square yard. Once structure, pedestrian ramp, curb or sidewalk has been installed, area between face of curb or structure and pavement sawcut shall be backfilled with compacted processed aggregate material to a minimum depth of twelve (12") inches.

Local Roads, base course shall be (2) two, 2" courses (compacted) of bituminous concrete. Base course shall be Class I (S0.50) and finish course shall be Class II (S0.375) bituminous concrete. Collector Road base course shall be a minimum of four inches (4") of Class 4 bituminous concrete under a 2" lift of Class 1.

Seam between new and existing bituminous concrete shall then be sealed hot crack sealer.

Bituminous pavement courses shall be rolled thoroughly using rollers weighing approximately ten (10) tons, but not heavy enough to damage existing pavement to remain. Begin compaction as soon as placed hot mix paving will bear roller weight without excessive displacement. Compact hot mix paving with hot, hand tampers or with vibratory plate compactors in areas inaccessible to rollers.

For new drainage pipe and drainage structures installations, remove any temporary gravel material, compact, sawcut the edges of the trench at least 1' on each side, to provide a neat straight line, tack the edges and apply the bituminous concrete per the appropriate detail.

4.06.04 MEASUREMENT

This work shall be measured for payment as the actual area, in square yards to the pay limits specified or indicated, of pavement removed and replaced on a reconstructed base course, or as directed by the City Engineer. Pay limit is two feet (2') beyond face of curb or structure and one foot on each side of trench limit which is the inside diameter of the pipe plus two feet (2').

Sawcutting of bituminous concrete pavement will not be measured separately but will be included in the overall cost of the project.
The 12" Processed Gravel base shall not be measured for payment under this section but will be included in the work required under sections 5.86R Catch Basin, Manholes…. and 6.86R Drainage Pipes, …
Tack coat will not be measured or paid for separately but shall be included in the work for which it is required.

4.06.05 PAYMENT

This work will be paid for at the contract unit price, per square yard, for "Pavement Restoration", complete and in place, which price shall include earth and roadway material excavation; removal and disposal of existing materials; placement and compacting of base materials and bituminous concrete, saw cutting, tack; and all equipment, tools and labor incidental thereto.

ITEM NO	PAY ITEM	PAY UNIT
4.06R - 1	Pavement Restoration – Local Road	S.Y.

END OF SECTION

TECHNICAL SPECFICATION 5.86R
CATCH BASINS, MANHOLES AND DROP INLETS

5.86.01 DESCRIPTION

The work under this Section shall consist of furnishing, preparing, and installing catch basins, manholes, custom manholes and drop inlets (and also the removal, abandonment, alteration, reconstruction, or conversion of such existing structures) in conformity with the lines, grades, dimensions and details shown on the plans. Backfill shall include providing, installing and compaction of a 12" processed gravel base around the structure.
This Section shall also include resetting or replacing catch basin tops as well as manhole frames and covers.

A. Submittals

Contractor shall submit catalog cuts or shop drawings of proposed materials for review and approval by the City prior to installation of any work.

5.86.02 MATERIAL

The materials for this work shall meet the following requirements:
CT DOT Form 819
CT DOT Structures
Drainage structures shall meet the requirements of M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.
Processed Gravel per section 3.05R
Galvanizing shall meet the requirements of M.06.03.
Mortar shall meet the requirements of M.11.04.
Butyl rubber joint seal shall meet the requirements of ASTM C990.
Granular fill, if necessary, shall meet the requirements of M.02.01.
Protective compound material shall be a type appearing on the Department of Transportation's Qualified Products List and be acceptable to the Engineer, as specified in M.03.09.

All new catch basin tops, frames or grates shall have the words "Dump No Waste – Drains to Waterways" or equal either cast into material or have a sticker permanent affixed to top.

5.86.03 CONSTRUCTION METHODS

Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.
Where a drainage structure is to be installed below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the proposed drainage structure or to ensure a uniform foundation for the structure.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

When a drainage structure outside of proposed drainage trench limits is to be removed, it shall be completely removed and all pipes shall be removed or plugged with cement masonry.

When a drainage structure is to be abandoned, the structure shall be removed to a depth 2 feet below the subgrade or as directed by the Engineer. The floor of the structure shall be broken and all pipes shall be plugged with cement masonry.

Drainage structures shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved. The provisions of 6.02.03 pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval unless called for in the plans, Contract or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

When it becomes necessary to increase the horizontal dimensions of manholes, catch basins and drop inlets to sizes greater than those shown on the plans in order to provide for multiple pipe installations, large pipes or for other reasons, the Contractor shall construct such manholes, catch basins and drop inlets to modified dimensions as directed by the Engineer.

The surfaces of the tops of all catch basins, and drop inlets shall be given a coat of protective compound material, at the manufacturer's recommended application rate, immediately upon completion of the concrete curing period.

All masonry units shall be laid in full mortar beds.

Metal fittings for catch basins, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

All inlet and outlet pipes shall be set flush with the inside face of the wall of the drainage structure as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections, and the concrete or masonry shall be constructed around them neatly to prevent leakage along their outer surfaces.

When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size extending from the drainage structure to the nearest joint of the existing pipe in accordance with 6.86.03 or as directed by the Engineer. Connection shall be secure and water-tight using methods approved by City.

Backfilling shall be performed in accordance with 2.86.03.

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the frames, covers and tops shall be reset as shown on the plans or as directed by the Engineer.

5.86.04 METHOD OF MEASUREMENT

Drainage Trench Excavation: In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for the type of structure being installed.
Rock in Drainage Trench Excavation: The volume in cubic yards of Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.
Manholes, Catch Basins and Drop Inlets will be measured as separate units.
Resetting of Manholes, Catch Basins and Drop Inlets will be measured as separate units.
Replacement of frames, covers, and tops will be measured as a unit for catch basin top or manhole frame and cover.
Conversion of drainage structures as specified on the plans, or as directed by the Engineer, including structure reconstruction will be measured for payment as a unit.
Removal or abandonment of drainage structures outside of drainage trench excavation limits, as defined in 2.86.03, will be measured as separate units.
There will be no measurement or direct payment for the application of the protective compound material, the cost of this work shall be considered as included in the general cost of the work.
Measurement for payment for work and materials involved with installing pipes to connect new drainage structures into a run of existing pipe will be as provided for under the applicable Contract items in accordance with 6.86.04.
There will be no measurement or direct payment for plugging existing pipes with cement masonry, connecting drainage pipes to structure, stone bedding, dewatering, saw-cutting, dust control, the cost of this work will be considered as included in the general cost of the work.

5.86.05 BASIS OF PAYMENT

Drainage Trench Excavation: No Pay Item.
Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05, per cubic yard.
Manholes and Catch Basins will be paid for at the Contract unit price for each "Manhole," or "Catch Basin," of the type specified, at "0' to 10' Deep" or "0' to 20' Deep," complete in place, which price shall include all excavation, backfill, 12” processed gravel base, saw cutting, materials, equipment, tools and labor incidental thereto.
Drop Inlets will be paid for at the Contract unit price for each "Drop Inlet," of the type specified, complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.
Reset Units will be paid for at the Contract unit price each for "Reset Manhole," "Reset Catch Basin," or "Reset Drop Inlet," of the type specified, respectively, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto, except when the work requires reconstruction greater than 3 feet, measured vertically, then the entire cost of resetting the unit will be paid for as Extra Work in accordance with the provisions of 1.04.05.
Frames, Covers, and Tops when required in connection with reset units, will be paid for at the Contract unit price each for such "Manhole Frame and Cover" or "(Type) Catch Basin Top," complete in place, including all incidental expense; or when no price exists, the furnishing and

placing of such material will be paid for as Extra Work in accordance with the provisions of 1.04.05.
When the catch basin top has a stone or granite curb in its design, the curb or inlet shall be included in the cost of the "(Type) Catch Basin Top."
Conversion of drainage structures will be paid for at the Contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to (Type) Manhole," or "Convert Manhole to (Type) Catch Basin," complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, all alterations to existing structure, all materials including catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

The maximum change in elevation of frame under these items shall not exceed 3 feet. Greater depth changes, if required, shall be paid for as Extra Work, in accordance with 1.04.05.
Removal or abandonment of drainage structures outside of drainage trench or structure excavation limits as defined in 2.86.03 will be paid for at the Contract unit price each for "Remove Drainage Structure – 0' to 10' Deep," "Remove Drainage Structure – 0' to 20' Deep," or "Abandon Drainage Structure," which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, and all equipment, tools and labor incidental thereto.

ITEM NO	PAY ITEM	PAY UNIT
5.86R-1	CT DOT Type "C" Catch Basin	EA

TECHNICAL SPECIFICATION 6.86R
DRAINAGE PIPES, DRAINAGE PIPE ENDS

6.86.01 DESCRIPTION

Work under this item shall consist of the installation of the size and type of pipe specified or as shown on the plans, or as directed by the Engineer. Work shall also include the placement of stone around the pipe, filter fabric, excavation, backfill, placement of processed gravel as road base, compaction, sheeting, shoring, bracing, dewatering, saw cutting and dust control. All work under this item shall conform to the applicable requirements of Sections 2.02, 2.86 and 6.86 of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 819, as supplemented herein.
In accordance with Section 2.01 of the Form 819, clearing and grubbing will not be measured or paid for separately but the cost of the work shall be included in the cost of the items and no direct payment will be made.
All road signs, mailboxes, etc. shall be removed and reset as directed.

A. Submittals

Contractor shall submit catalog cuts of proposed materials for review and approval by the City prior to installation of any work. The following shall be submitted: pipe, filter fabric, drainage structures.

6.86.02 MATERIALS

All materials shall be as specified in CT DOT Standard Form 818, Section 6.86.02 and M 02.01. and M02.03. It should be noted that either Reinforced concrete pipe, (RCP), Ductile Iron Pipe (class 52 unlined), or HighDensity Polyethylene pipe (HDPE, smooth wall) are acceptable.
HDPE pipe shall be corrugated double wall, smooth interior, N-12 Soil Tight (ST), IB HDPE
4" PVC drain pipe shall be Hancor 10' lengths
Filter fabric Nonwoven Geotextile US 80N or equal.

6.86.03 CONSTRUCTION METHODS

Construction methods used shall conform to Sections 2.02, 2.86 and 6.86.03 of Form 818 and shall be in accordance with Manufacturer's recommendations. Pipes into new structures or pipe connections to existing structures shall be flush with inner walls, sealed to be waterproof and required invert shaped as required. All edges of excavation shall be neatly sawcut to provide a clean, vertical edge for placing bituminous concrete.

Suitable material, as determined by the Engineer, removed in making the excavation shall be used for backfill. No stones or coarse material shall be placed adjacent to the conduit, cable or pipe. All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it shall be obtained from sources approved by the Engineer and paid for as the contract item 2.08R Free -Draining Material or 3.05R Processed Gravel.

All backfill shall be placed in layers of not more than 6 inches deep after compaction and shall be thoroughly compacted by means of vibrators or by pneumatic tampers. Hand tampers shall be used only with permission of the Engineer. The backfill material shall be brought to the elevation just below the Processed Gravel Base Material, in paved areas and approximately 6” below the topsoil layer in grass areas.
Unsuitable material includes but not limited to the following: wet muddy material, silty, clay, large rocks, cluster of rocks, frozen material, organic matter, debris or other deleterious material or other material as determined by the Engineer.

6.86.04 METHOD OF MEASUREMENT

New and re-laid pipe and pipe arches will be measured for payment by the actual number of linear feet of pipe of the various sizes and types, completed and accepted and measured in place along the invert to inside of structure or pipe end. Couplings and fittings will not be measured for payment, they shall be included in the cost of installing the pipe.
Pipe ends and connections to existing structures will be measured per each, complete and accepted in place.

Excavation, backfill, 12” processed gravel base, saw cutting, compaction, bedding, dewatering, installation of filter fabric and dust control for pipe will not be measured separately for payment but shall be included in the work for which it is required.
Rock in trench excavation will be measured in accordance with Section 2.86R as part of these specs.
Material required to replace or supplement backfill as determined by the Engineer will be paid for by the Contract unit price for the material being used.
Connecting pipe to existing structures shall not be measured for payment.

The cost of installing the 4" perforated pipe shall include supplying and installing the filter fabric around the stone trench as shown on the detail sheet. The cost of the 3/4" stone will be included in the cost of installing the HDPE pipe.

6.86.05 BASIS OF PAYMENT

All pipe will be paid for at the contract unit price per linear foot for pipe of the type and size specified, directed by the City or shown on the plans, complete in place, including all materials, gravel fill, fittings, couplings, equipment, tools and labor incidental thereto**.**

Trench excavation, bedding, backfill, 12" processed gravel base, dewatering, dust control, pavement saw-cutting, tack coating, clearing and grubbing, construction staking and incidental work thereto shall not be measured or paid for separately but shall be included in the work for which it is required.
Pipe will be paid for at the contract unit price per each of the type and size specified, complete in place, including all materials, gravel fill, fittings, couplings, equipment, tools and labor incidental thereto.
There shall be no payment for connecting to existing structures.

ITEM NO	PAY ITEM	PAY UNIT
6.86R-1	(12") Dia. HDPE Corrugated Pipe	L.F.
6.86 R-2	(6") Dia. HDPE Corrugated Pipe	L.F.
6.86R-3	4" PVC Perforated Pipe	L.F.

END OF SECTION

TECHNICAL SPECIFICATION 8.15R
BITUMINOUS CONCRETE CURBING

8.15.01 DESCRIPTION

Bituminous concrete curbing shall consist of machine laid bituminous concrete, constructed on the pavement to the dimensions and details shown on the plans, or as ordered, and in accordance with the specifications.

8.15.02 MATERIALS

Materials, including tack coat, for this work shall meet the requirements of M.04, curb mix.

A. Submittals

Contractor shall submit catalog cuts or shop drawings of proposed materials for review and approval by the City prior to installation of any work.

8.15.03 CONSTRUCTION METHODS

The provisions of 4.06 shall govern except that the requirements pertaining to density will not apply. In addition, the curbing shall be constructed in accordance with the following requirements:

Prior to the arrival of the mixture on the Project Site, the surface of the pavement where the curbing is to be constructed shall be cleaned of all loose and foreign material. The surface, which shall be perfectly dry and clean at the time the mix is placed, shall be coated with an approved tack coat just prior to placing the mixture.

On arrival at the Site, the mixture shall be transferred from the truck to the hopper of the curbing machine; and the mixture shall be kept clean and free from dirt and foreign materials at all times.

The surface of the curbing shall be tested with a 10 foot straightedge, and any variation from a true line exceeding 1/4 inch shall be satisfactorily corrected. The only compaction required shall be that obtained by the approved mechanical curbing machine.

Where machine work is impractical, the Engineer may permit hand-laid curbing to be constructed.

If the design of the curbing machine is such that the outside wheels operate outside of the curb, the Contractor will be required to obtain a smooth surface by grading and consolidating the area on which the outside wheel of the machine rides, and this work shall be done at the Contractor's expense.

After the completion of curbing, traffic shall be kept at a safe distance for a period of not less than 24 hours and until the curbing has set sufficiently to prevent injury or damage to the work.

8.15.04 METHOD OF MEASUREMENT

This work will be measured for payment along the top of the curb and will be the actual number of linear feet of bituminous concrete curbing completed and accepted.

8.15.05 BASIS OF PAYMENT

This work will be paid for at the Contract unit price per linear foot of "Bituminous Concrete Curbing " of the type specified, complete in place, which price shall include all materials,

ITEM NO	PAY ITEM	PAY UNIT
8.15R	Bituminous Concrete Curbing	L.F.

END OF SECTION

TECHNICAL SPECIFICATION 9.21R
CONCRETE SIDEWALKS AND PEDESTRIAN RAMPS

9.21.01 DESCRIPTION

Work under this section shall consist of the construction of Portland Cement Concrete (PCC) sidewalks and pedestrian ramps (PCC Pedestrian Ramps) in conformance with Section 9.21 of the Conn DOT Form 816.

The work of the PCC Pedestrian Ramp shall include furnishing and installing an ADA compliant tactile tile warning surface in the location and to the dimensions and details shown in the plans, or as directed by the Engineer.

9.21.02 MATERIALS

Materials used for concrete sidewalks and concrete pedestrian ramps shall conform to Article 9.21.02 of Form 816 with the following addition:

Detectable/Tactile Warning Surface shall be Armor-Tile ADA-C2436-YW tile or approved equal. Color as directed by City.

Liquid membrane-forming curing compound shall be as specified in M.03.04-3 of Form 818 and shall be used on all sidewalks and ramps except as directed otherwise.

Welded wire fabric of the size and type indicated on plans must be used on driveway aprons. Upon approval of City, fiber mesh reinforcement may be used in lieu of welded wire fabric on sidewalks and ramps.

Submittals:

The following shop drawings or submittals must be reviewed and approved by City prior to work:

a. Source of concrete and concrete design mix
b. Detectable /Tactile Warning Surface
c. Fiber mesh
d. Welded wire fabric
e. Preformed expansion joint material

9.21.03 CONSTRUCTION METHODS

Work shall be performed in conformance with the requirements of Articles 9.21.03 of Form 816 with these additions:

Excavation, including removal of any existing sidewalk, ramp or curb must be made to the required depths below the finished grade, as shown on the plans or details. All soft and yielding material must be removed and replaced with granular fill.
Where new concrete curbing is called for adjacent to the proposed sidewalk curbing **shall** be poured monolithic with adjacent PCC Sidewalk or Pedestrian Ramps.

The ADA compliant tactile tile, for the PCC Pedestrian Ramps, shall be set directly in poured concrete in accordance with the Manufacturer's recommendations at the locations shown on the plans or as directed by the Engineer. The contractor shall place two 25-pound concrete blocks or sandbags on each tile to prevent the tile from floating after installation in wet concrete.

When removing granite stone, bluestone or concrete curbing adjacent to the roadway for the installation of the sidewalk or ramp, saw cut two feet (2'0 / twenty-four inches (24") into the roadway. After ramp, curb or sidewalk has been completed, place bituminous concrete repair as described below. .

All existing gas and water service curb boxes and sewer vent covers within the limits of sidewalk construction shall be reset flush to the finished grade of the sidewalk prior to the placement of concrete. All utilities penetrating vertically through the sidewalk shall be separated from the concrete by the installation of expansion joint filler around their perimeter. PVC sleeves for sign and fence posts shall be cast-in-place within the sidewalk at the same locations as the existing sign and fence posts, and at other locations as directed by the Engineer. All other work within the sidewalk/curb limits shall be completed prior to placement of the concrete, including but not limited to, adjustment of frames, grates, covers, vents and utility boxes.

Tree roots 1 inch in diameter and greater shall be carefully cut at the limit of excavation and temporarily covered with wet burlap. Exposed roots shall be permanently covered with earth as soon as possible. If work is not completed in the area of exposed roots by the end of the day, the exposed root shall be temporarily covered with earth overnight. The cost of root protection and pruning shall be included in the unit price bid.

Existing roadway pavement shall be sawcut two (2') feet from the face of curb at the location of each pedestrian ramp to be installed. Tack coat shall be applied to all vertical sawcut faces prior to placing bituminous concrete pavement repair. Once pedestrian ramp, curb or sidewalk has been installed, area between face of curb and pavement sawcut shall be backfilled with compacted processed aggregate material to a minimum depth of twelve (12") inches.
Local Roads shall then be paved with a two- inch (2") thickness of bituminous concrete Class 1 (HMA S0.375) base course.
Arterial Road base course shall be six inches (6") minimum of bituminous concrete Class 4 (S1.0) and then two inches of Class 1.
Collector Road bas course shall be a minimum of four inches (4") of Class 4 bituminous concrete under a tow inch lift of Class 1.
All areas shall then be paved with a two (2") inch thickness of bituminous concrete Class 1 (HMA S0.375) top course. Seam between pavement repair and existing bituminous concrete shall then be sealed.

When connecting a new concrete sidewalk, ramp or curb to a section of existing material, the connection point must be at the nearest joint not to exceed fifteen feet (15') unless otherwise directed by the City.

The City reserves the right to perform on-site concrete testing, air tests, slump tests and constructing concrete cylinders for break test. Contractor shall assist as required and provide concrete materials for such tests as required or as directed.

It should be noted that the thicknesses and depths shown on the project plans and details are the MINIMUM acceptable thickness and depths. Installed materials that do not meet these minimums shall be removed and replaced at Contractor's expense.

Backfilling and Removal of Surplus Material:

The sides of the sidewalk or ramp must be backfilled with suitable material thoroughly compacted flush with the surface of the sidewalk or ramp including turf establishment. All surplus material must be removed and the site left in a clean, neat and presentable condition to the sole satisfaction of the City.

9.21.04 METHOD OF MEASUREMENT:

Portland Cement Concrete Sidewalk and Ramp: This work will be measured for payment by the actual number of square feet completed. Width shall be measured horizontally from the back of the curb to the back of the sidewalk. Concrete curb poured monolithically with the sidewalk will be measured for payment under a separate item. Concrete thickness shall be a minimum of five inches (5") for pedestrian sidewalks and eight inches (8") for Driveway Ramps or Aprons.

Portland Cement Concrete Sidewalk with Monolithic Curb: This work will be measured for payment by the actual number of square feet completed. Width shall be measured horizontally from the front of the curb to the back of the sidewalk.

PCC Pedestrian Ramp: This work will be measured for payment by the actual number of square feet completed. Width shall be measured horizontally from the front of the curb to the back of the sidewalk. Concrete curb poured monolithically with the ramp is included under this item and will **not** be measured for payment.

Removal of Existing Sidewalk and Driveway Aprons: Removal of existing bituminous concrete and portland cement concrete sidewalks and driveway aprons shall be included under this item. No separate payment shall be made for this work. Saw cutting associated with excavation for new concrete sidewalk, curb or ramps shall be measured and paid for separately but shall be included in the item of work for which it is required.

Excavation, Backfill, Disposal of Surplus Material and Granular Fill: This work will not be measured for payment, but the cost shall be considered as included in the Contract unit price for the sidewalks, curbs, ramps and driveway aprons.

Reinforcement: This work will not be measured for payment, but the cost shall be considered as included in the Contract unit price for the sidewalks, ramps and driveway aprons.

Detectable/Tactile Warning Surface: For new construction (cast in place)**, t**his work will be measured for payment by the actual number of each ramp where detectable warning trip has been installed and accepted, regardless of number of tiles installed.

9.21.05 BASIS OF PAYMENT

This work will be paid for at the Contract Unit Price per square foot for "Portland Cement Concrete (PCC) Sidewalk (Thickness")", "Portland Cement Concrete (PCC) with Monolithic Curb" or "PCC Pedestrian Ramp", complete and in place, which price shall include excavation, backfill, disposal of surplus material, granular base, reinforcement, equipment, tools materials, and labor incidental thereto, "Detectable Warning Strip" shall be paid for per each unit, complete and accepted in pace, Precast or Cast-in-Place Concrete curb shall be paid for as a separate item when installed adjacent to PCC sidewalk and not monolithically. Concrete curb shall be included in the unit price for PCC Pedestrian Ramp.

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ITEM NO	PAY ITEM	PAY UNIT
9.21R	Portland Cement Concrete (PCC) Sidewalk or Pedestrian Ramp– (5")	S.F.
9.21R-X	Portland Cement Concrete (PCC) Sidewalk or Driveway Ramp – (8")	S.F.
9.21R-X	Portland Cement Concrete (PCC) Sidewalk with Monolithic Curb	S.F.
9.21R-X	PCC Pedestrian Ramp	S.F.
9.21R-X	Detectable Warning Strip	EA.

END OF SECTION

TECHNICAL SPECIFICATION 9.50R
TOPSOIL AND TURF ESTABLISHMENT

9.50.01 DESCRIPTION

The work included in this item shall consist of providing an accepted uniform stand of established perennial turf grasses by furnishing and placing 4" of topsoil, fertilizer, seed, and mulch on all areas to be treated as shown on the plans or where designated by the Engineer. Sowing shall be by traditional installation or hydroseed methods.
The work shall also include the installation of erosion control matting, as shown on the plans or where designated by the Engineer, consisting of mulch and netting woven together as a unit.

9.50.02 MATERIALS

Seed shall meet the requirements of Section M.13.04 of the Form 818.
Fertilizer shall meet the requirements of Section M.13.03 of the Form 818.
Mulch shall be either wood fiber, hay or straw and shall meet the requirements of M.13.05 of the Form 818.
Topsoil shall conform to the requirements of M.13 of the Form 818. Material stripped and stockpiled may be reused in lieu of new material upon approval of the City.
Erosion control matting, if required, shall be from the Department's Qualified Products List and shall meet the requirements of M.13.09 of the Form 818.

9.50.03 CONSTRUCTION METHODS

Construction methods shall be those established as agronomically acceptable and feasible and which are approved by the Engineer.
Surface Preparation: Level areas, medians, interchanges and lawns: These areas shall be made friable and receptive for seeding by disking or by other approved methods to the satisfaction of the Engineer. All disturbed soil areas at final grade shall be seeded within 7 days, or as directed by the Engineer, in accordance with these specifications. In all cases, the final prepared and seeded soil surface shall meet the lines and grades for such surface as shown in the plans, or as directed by the Engineer.
Topsoil installed behind curbing or sidewalks shall be lightly compacted to be flush or slightly above top of curb or sidewalk.
Slope and embankment areas shall be made friable and receptive to seeding by disking or by other approved methods which will not disrupt the line and grade of the slope surface. In no event will seeding be permitted on hard or crusted soil surface. Seeding shall not be permitted until all weed growth is removed.
Seeding Season: The optimal calendar dates for seeding are:
Spring – March 15-June 30 Fall – August 15 – October 31
All disturbed soil areas at final grade shall be seeded within 7 days or as directed by the Engineer, in accordance with these specifications. Any seeding outside the optimal dates shall be performed in the same manner. Since acceptable turf establishment is less likely,

the Contractor shall be responsible for reseeding until the turf stand conforms to 9.50.03-5 of the Form 818.

Sowing Methods: The Contractor shall sow the grass seed mixture using traditional methods or by hydroseeding

Sowing by **Traditional Methods**: The rate of application shall be no less than 175 lb./acre. Fertilizer shall be initially applied at a rate of 320 lb./acre during or preceding seeding. When wood fiber mulch is used, it shall be applied in water slurry at a rate of 2,000 lb./acre with or immediately after the application of seed, fertilizer and limestone (if limestone is required). Tackifier may be used with straw mulch as proposed by the Contractor. When the grass seeding growth has attained a height of 6 inches, the specified grass areas (mowed and un-mowed) shall receive a uniform application of fertilizer hydraulically placed at the rate of 320 lb./acre.

Sowing by **Hydroseeding**: If hydroseeding is proposed to be used, the Contractor shall furnish a Hydroseeding Plan for the Engineer's acceptance two weeks prior to the start of this work. The Hydroseeding Plan shall include the following:

- Proposed Manufacturer and copy of the Manufacturer's recommended application rates for various grades and hose angles of application, for the Site's soil type(s) and expected weather conditions.
- Number of square feet (s.f.) of seeding that can be covered with the quantity of solution per hydro-seeder.
- Time between mixing of slurry and seed in hydroseeding tank and application.
- Type of hydroseed machine including nozzle type, including automation information if applicable.

If the Hydroseeding Plan is accepted for use, deviation from 9.50.03-1 (Surface Preparation) of the Form 818 will not be allowed. Hydroseeding shall not be used if the extended weather patterns are hot and dry and the soil surface is dry and dusty, unless the Contractor's submission addresses application of straw or hay mulch and addresses follow up maintenance 9i.e. additional watering) for "drought conditions".

The hydroseed tank and hose(s) shall be completely flushed and cleaned each day before seeding is to be started, and shall also be thoroughly flushed of all residue after application to every 10 acres.

Disturbance: The Contractor shall keep all equipment and vehicular and pedestrian traffic off areas that have been seeded to prevent excessive compaction and damage to young plants. Where any disturbance has occurred, the Contractor shall rework the soil to make a suitable seedbed, then re-seed and mulch such areas with the full amounts of the specified materials, at no additional cost to the City.

Stand of Perennial Turf Grasses: The Contractor shall provide and maintain a uniform stand of established turf grass species, having attained a height of 6 inches and consisting of no less than 60% coverage per square foot throughout the seeded areas until the entire Project has been accepted. Re-seeding required to achieve and maintain a uniform stand of established turf grass species shall be at no additional cost to the City.

Establishment: The Contractor shall keep all seeded areas free from weeds and debris, such as stones, cables, baling wire, and shall mow at its own expense all slopes 4:1 or less (flatter) and level turf established (seeded) areas to a height of 3 inches when the grass growth attains a height of 6 inches. Mowing shall be done at least once, but for multiple-year projects mowing shall be done at least twice per year.

Clean-up shall include, but not be limited to, the removal of all debris from the turf establishment operations on the shoulders, pavement, or elsewhere on adjacent properties publicly and privately owned.

Erosion Control Matting: Erosion control matting shall be installed following seeding where called for on the plans or as directed by the Engineer. Staples shall be installed as per manufacturer's recommendations. Where 2 lengths of matting are joined, the end of the up-grade strip shall overlap the down-grade strip per the manufacturer's recommendations.

The Contractor shall maintain and protect the areas with erosion control matting until such time as the turf grass is established. The Contractor shall replace or repair at its own expense any and all erosion control matting areas damaged by fire, water or other causes including the operation of construction equipment. No mowing will be required in the locations where erosion control matting is installed.

9.50.04 METHOD OF MEASUREMENT

This work will be measured for payment by the number of square yards of surface area of accepted, establish perennial turf grass and topsoil. E860-751-9795t as approved by the City, maximum pay limit for this item is two feet from back of curb or edge of pavement.

Erosion control matting will be measured by the number of square yards of surface area of erosion control matting installed and accepted.

9.50.05 BASIS OF PAYMENT

This work will be paid for at the Contract unit price per square yard for "Topsoil and Turf Establishment" which price shall include all materials, mowing, maintenance, equipment, tools, labor and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted.

Erosion control matting will be paid for at the contract unit price, per square yard for "Erosion Control Matting (Type)" complete in place and accepted, which price shall include the mulch, netting, staples, maintenance, equipment, tools labor, and work incidental thereto.

ITEM NO	PAY ITEM	PAY UNIT
9.50R-1	Topsoil and Turf Establishment	S.Y.
9.50R-2	Erosion Control Matting	S.Y.

END OF SECTION

TECHNICAL SPECIFICATION 9.70R-1
TRAFFICPERSON (MUNICIPAL POLICE OFFICER)

TECHNICAL SPECIFICATION 9.70R-2
TRAFFICPERSON (UNIFORMED FLAGGER)

9.70.01 DESCRIPTION

Work under this item shall consist of the provision of the services of Municipal Police Officers or uniformed flaggers at such locations and for such periods as may be necessary to provide for the safe flow of vehicular and pedestrian traffic. Trafficpersons will be required on this project. Trafficpersons shall consist of the following types:

a. Municipal Police Officers shall be uniformed off-duty Police Officers from the Waterbury Police Department.

b. Uniformed Flaggers shall be persons who have successfully completed flagger training by the American Traffic Safety Services Association (ATSSA), National Safety Council (NSC) or other programs approved by the Engineer. A copy of the Flagger's training certificate shall be provided to the Engineer before the Flagger performs any work on the project. Uniformed Flaggers shall conform to Chapter 6E, Flagger Control, in the Manual of Uniformed Traffic Control Devices (MUTCD) and shall wear high-visibility safety apparel, use a STOP/SLOW paddle that is at least 18 inches (450 millimeters) in width with letters at least 6 inches (150 millimeters) high. The paddle shall be mounted on a pole of sufficient length to be 6 feet (1.8 meters) above the ground as measured from the bottom of the sign.

The Contractor shall utilize uniformed Waterbury Police Officers as Trafficpersons at such locations and for such periods as may be necessary by the Engineer or by the Waterbury Police Department to provide for the safe flow of vehicular and pedestrian traffic. The City of Waterbury Police Department will make the determination whether or not municipal police officers are required for traffic control

The Contractor shall make all arrangements to obtain such services and shall pay all expenses related thereto. The Contractor shall contact the Waterbury Police Department Extra Duty Officer at (203) 574-6963 at least 48 hours in advance to schedule Police Officers for traffic control. The Contractor shall be solely responsible for any costs incurred as a result of failure to cancel scheduled Uniformed Police Officers per Waterbury Police Department requirements.

In the event that the Police Department cannot provide a Uniformed Police Officer, Certified Flaggers shall be used for directing traffic in lieu of a Uniformed Police Officer.

Trafficpersons are to direct vehicular and pedestrian traffic only and are not to serve as watchmen for the Contractor's tools, equipment or material. Whether or not Municipal Police Officers or uniformed flaggers are used by the Contractor, he shall not be relieved of his responsibility for the maintenance and protection of traffic as specified in other sections of this Contract. Traffic persons requested solely for the contractor's operational needs will not be approved for payment.

9.70.03 CONSTRUCTION METHODS

Prior to the start of operations on the project requiring the use of Trafficpersons, a meeting will be held with the Contractor, Trafficperson agency or firm, Engineer, and Municipal or State Police, if applicable, to review the Trafficperson operations, lines of responsibility, and operating guidelines which will be used on the project. A copy of the municipality's billing rates for Municipal Police Officers and vehicles, if applicable, will be provided to the Engineer prior to start of work.

On a weekly basis, the Contractor shall inform the Engineer of their scheduled operations for the following week and the number of Trafficpersons requested. The Engineer shall review this schedule and approve the type and number of Trafficpersons required. In the event of an unplanned, emergency, or short-term operation, the Engineer may approve the temporary use of properly clothed persons for traffic control until such time as an authorized Trafficperson may be obtained. In no case shall this temporary use exceed 8 hours for any particular operation.

If the Contractor changes or cancels any scheduled operations without prior notice of same as required by the agency providing the Trafficpersons, and such that Trafficperson services are no longer required, the Contractor will be responsible for payment at no cost to the Department of any show-up cost for any Trafficperson not used because of the change. Exceptions, as approved by the Engineer, may be granted for adverse weather conditions and unforeseeable causes beyond the control and without the fault or negligence of the Contractor.

Trafficpersons shall wear a high visibility safety garment that complies with OSHA, MUTCD, ASTM Standards and the safety garment shall have the words "Traffic Control" clearly visible on the front and rear panels (minimum letter size 2 inches (50 millimeters). Worn/faded safety garments that are no longer highly visible shall not be used. The Engineer shall direct the replacement of any worn/faded garment at no cost to the State.

A Trafficperson shall assist in implementing the traffic control specified in the Maintenance and Protection of Traffic contained elsewhere in these specifications or as directed by the Engineer. Any situation requiring a Trafficperson to operate in a manner contrary to the Maintenance and Protection of Traffic specification shall be authorized in writing by the Engineer.

9.70.04 METHOD OF MEASUREMENT

Services of Trafficpersons will not be measured for payment. These services shall be included in the overall cost of the Contract items.

Trafficpersons shall not work more than twelve hours in any one 24 hour period. In case such services are required for more than twelve hours, additional Trafficpersons shall be furnished.

Travel time will not be measured for payment for services provided by Uniformed Municipal Police Officers or Uniformed Flaggers.

Mileage fees associated with Trafficperson services will not be measured for payment.

Safety garments and STOP/SLOW paddles will not be measured for payment.

9.70.05 PAYMENT

There will be no direct payment for travel time, mileage, safety garments or STOP/SLOW paddles. All costs associated with furnishing safety garments and STOP/SLOW paddles shall be considered included in the overall cost of the Contract items.

No separate payment shall be made for work required under this Section of the Specifications and the cost thereof shall be deemed to be included in the various prices for other items of work that directly affect the work of this Section. The contractor shall be responsible for all costs associated with uniformed traffic persons, Municipal Police Officers and Uniformed Flaggers.

ITEM NO	PAY ITEM	PAY UNIT

END OF SECTION

TECHNICAL SPECIFICATION 9.71R
MAINTENANCE AND PROTECTION OF TRAFFIC

9.71.01 DESCRIPTION

Work under this section shall be in conformance with Section 9.71.01, 9.76.01, 9.77.01, 9.78.01 and 9.79.01 of Form 818, except as modified herein.

Work under this item shall consist of the provision of all items and personnel as may be necessary to provide for the safe flow of vehicular and pedestrian traffic at all times during the duration of the Contract. These services shall be such that a sufficient number of travel lanes and pedestrian walkways are provided to move that traffic ordinarily using the roadway. The travel lanes and pedestrian pass-ways shall be drained and kept reasonably smooth and in suitable condition at all times in order to provide minimum interference to traffic consistent with the proper prosecution of the work.

All work shall be conducted in such a manner as to provide minimal interference with existing business and commercial establishments. Such establishments shall be allowed to conduct business at all times during the construction activities. The Contractor shall at all times keep the street and sidewalks open for pedestrian and two-way vehicular traffic, except for those areas where he is actively working, with the approval of the Engineer.

The Contractor shall maintain and protect traffic as follows and as limited in Form 818 Section 1.08 “Prosecution and Progress”:

The Contractor shall maintain and protect one lane of through traffic in each direction, each lane on a paved travel path not less than 11 feet in width.

Where sidewalks are impeded, Contractor shall provide means to safely guide pedestrians around work zone and provide required signage.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor will be allowed to maintain and protect at least an alternating one-way traffic operation on a paved travel path not less than 12 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet.

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

9.71.02 MATERIALS

Work under this section shall be in conformance with Section 9.76.02, 9.77.02, 9.78.02, and 9.79.02 of Form 818 and the Federal Manual on Uniform Traffic Control Devices for Streets and Highways, except as modified herein.

9.71.03 CONSTRUCTION METHODS

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

The Contractor shall furnish a sufficient number of signs, barricades, drums, traffic cones, and delineators and steel plates to forewarn traffic of the construction as shown on the traffic control plan or as directed by the Engineer. Signs must be placed in such a position to allow motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. If so directed, the Contractor shall furnish and erect signs legally closing the roadway to traffic, as shown on the plans or as directed by the Engineer, prior to commencing any work.

Work Zone Safety Meetings

Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of the City of Waterbury Department of Engineering, Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the project. Other work zone safety meetings during the course of the project should be scheduled as needed.

A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. The Safety Meeting agenda shall follow this format:

1. Review Project scope of work and time.
2. Review Section 1.08, Prosecution and Progress of Form 818.
3. Review Section 9.70, Trafficperson of the Technical Specifications.
4. Review Contractor's schedule and method of operations.
5. Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
6. Open discussion of work zone questions and issues.
7. Discussion of review and approval process for changes in contract requirements as they relate to work zone areas.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

The Contractor shall also provide such safety measures, pavement markings, warning devices, incidental flagmen, and signs deemed necessary to safeguard and guide the traveling public through any detours ordered by the Engineer, included in the approved maintenance scheme, or as shown on the plan. The Contractor shall erect, maintain, move, adjust, clean, relocate, store all signs, barricades, drums, traffic cones, and delineators when, where, and as directed by the Engineer. The use of unauthorized or unapproved signs, barricades, drums, traffic cones, or delineators will not be permitted.

All signs in any one signing pattern shall be mounted at the same height above the pavement. The Contractor shall keep all signs in proper position, clean and legible at all times. The Contractor shall maintain the site so that no weeds, shrubbery, construction materials, equipment or soil will obscure any sign, light, or barricade. Signs that no longer pertain to the project conditions shall be removed or adjusted from the view of traffic.

Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 72-hour duration. Traffic drums shall be used to delineate raised catch basins and other hazards.

Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

Traffic Control Patterns

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic
- Duration of operation
- Exposure to hazards

Traffic control patterns shall be uniform, neat and orderly so as to command respect from the motorist.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist. Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials and parked vehicles.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate traffic person shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.

The traffic control plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions. Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

Table I – Minimum Taper Lengths

Posted Speed Limit Miles Per Hour	Minimum Taper Length In Feet For A Single Lane Closure
30 OR LESS	180
35	250
40	320
45	540
50	600
55	660
65	780

Installing and Removing Traffic Control Patterns

Lane closures shall be installed beginning with the advanced warning signs and proceeding forward toward the work area. Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advanced warning signs.

Stopping traffic may be allowed:

- As per the contract for such activities as blasting, steel erection, etc.
- During paving, milling operations, etc. where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway and traffic should not travel across the longitudinal joint or difference in roadway elevation.
- To move slow moving equipment across live traffic lanes into the work area.

The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.

If the required minimum number of signs and equipment are not available, the traffic control pattern shall not be installed.

The Contractor shall have back-up equipment (construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.

Failure of the Contractor to have the required minimum number of signs and equipment, which results in the traffic control pattern not being installed, shall not be a reason for a time extension.

Pavement Markings

During construction, the Contractor shall maintain all pavement markings on paved surfaces on all roadways throughout the limits of the project.

Contractor shall install permanent pavement markings on the final course of bituminous concrete pavement by the end of the work day. If the permanent pavement markings are not installed by the end of the work day, then Temporary Plastic Pavement Marking Tape shall be installed and the permanent pavement markings shall be installed by the end of the work day on Friday of that week.

If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the permanent pavement markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor’s expense.

NOTE: Painted pavement markings will not be allowed as a substitution for either the permanent pavement markings or the Temporary.

Dust Control

The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the street free of accumulations of sand or similar materials. No payment will be made for this work.

Snow and Ice Removal

When ordered by the Engineer, the Contractor shall remove snow and take care of ice on temporary, new and existing sidewalks within the limits of the project. No payment will be made for this work.

9.71.04 METHOD OF MEASUREMENT

Maintenance and Protection of Traffic will not be measured for payment but shall be paid as a lump sum item.

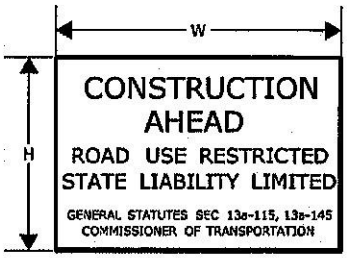
9.71.05 PAYMENT

Payment for the work under this item will be made at the contract lump sum price for MAINTENANCE AND PROTECTION OF TRAFFIC. This price shall be full compensation for all materials, equipment, tools, labor and work incidental to or necessary for the completion of the item.

ITEM NO	PAY ITEM	PAY UNIT
9.71R-1	Maintenance and Protection of Traffic	L.S.

END OF SECTION

SERIES 16 SIGNS



		W H
16-E	80-1605	84" x 60"
16-H	80-1608	60" x 42"
16-M	80-1613	30" x 24"



		W H
16-S	80-1619	48" x 30"

THE 16-S SIGN SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS, AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

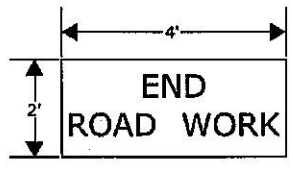
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

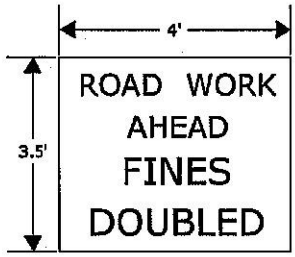
THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.



80-9612



31-1906

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

REQUIRED SIGNS

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED _____ Charles S. Harlow 2012.06.05 11:35:43-04'00'

PRINCIPAL ENGINEER

Rev. Date 4/16/2015

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.

2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.

3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.

4. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.

5. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.

6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.

7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).

8. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.

10 SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180' (55m)
35	250' (75m)
40	320' (100m)
45	540' (165m)
50	600' (180m)
55	660' (200m)
65	780' (240m)

METRIC CONVERSION CHART (1" = 25mm)

ENGLISH	METRIC	ENGLISH	METRIC	ENGLISH	METRIC
12"	300mm	42"	1050mm	72"	1800mm
18"	450mm	48"	1200mm	78"	1950mm
24"	600mm	54"	1350mm	84"	2100mm
30"	750mm	60"	1500mm	90"	2250mm
36"	900mm	66"	1650mm	96"	2400mm

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

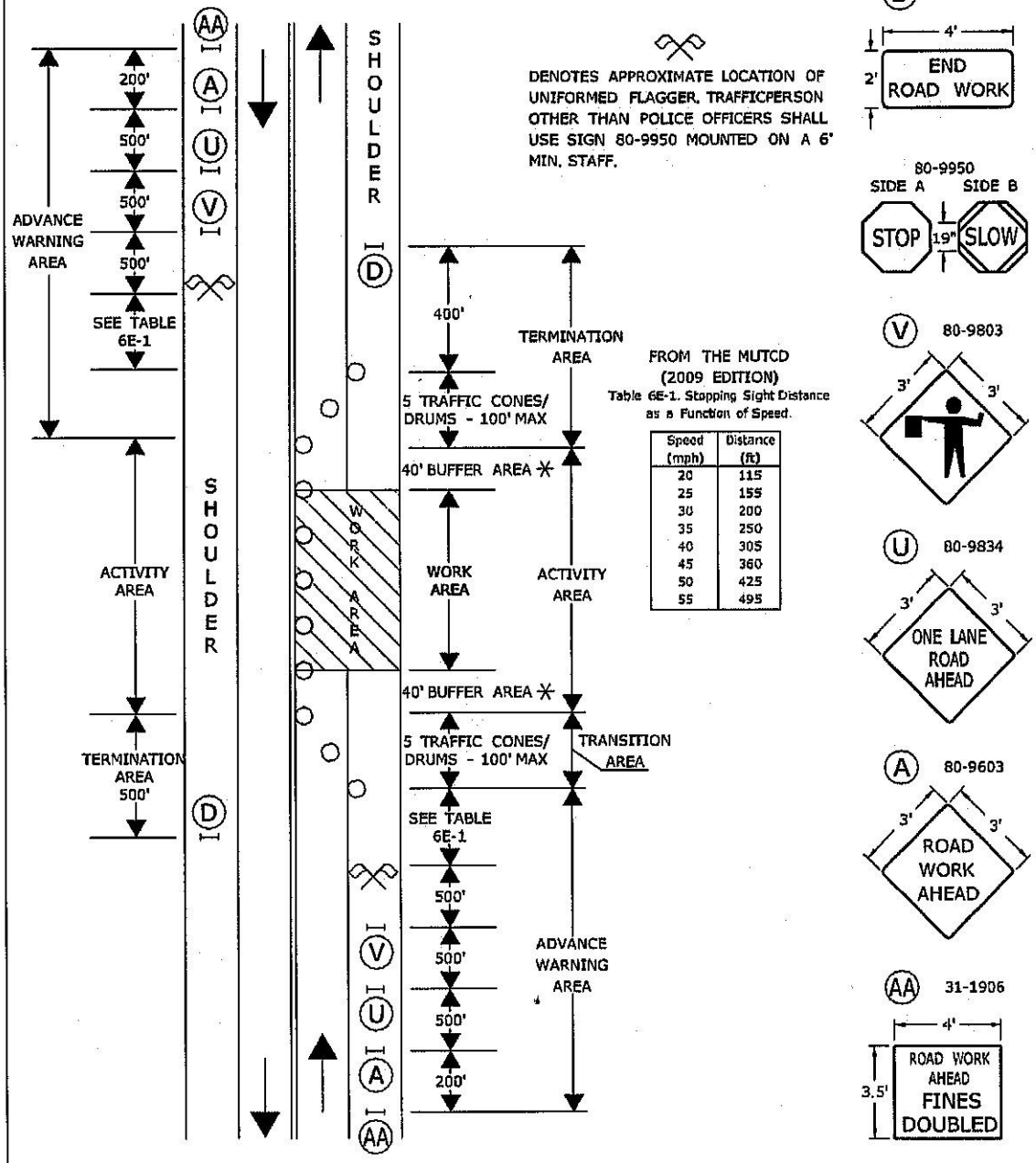
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.05.05 15:50:35-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)



FROM THE MUTCD (2009 EDITION)
Table 6E-1. Stopping Sight Distance as a Function of Speed.

Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495

○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⇐ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 13 - SHEET 1 OF 2

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:55:23-04'00'
PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6E.07, FLAGGER PROCEDURES, IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 80-9950) SHOWN ON THE TRAFFIC STANDARD SHEET TR-1220 01 ENTITLED, "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

A. TO STOP TRAFFIC

TO STOP ROAD USERS, THE FLAGGER SHALL FACE ROAD USERS AND AIM THE STOP PADDLE FACE TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FREE ARM SHALL BE HELD WITH THE PALM OF THE HAND ABOVE SHOULDER LEVEL TOWARD APPROACHING TRAFFIC.



B. TO DIRECT TRAFFIC TO PROCEED

TO DIRECT STOPPED ROAD USERS TO PROCEED, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FLAGGER SHALL MOTION WITH THE FREE HAND FOR ROAD USERS TO PROCEED.



C. TO ALERT OR SLOW TRAFFIC

TO ALERT OR SLOW TRAFFIC, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. TO FURTHER ALERT OR SLOW TRAFFIC, THE FLAGGER HOLDING THE SLOW PADDLE FACE TOWARD ROAD USERS MAY MOTION UP AND DOWN WITH THE FREE HAND, PALM DOWN.



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⇦ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

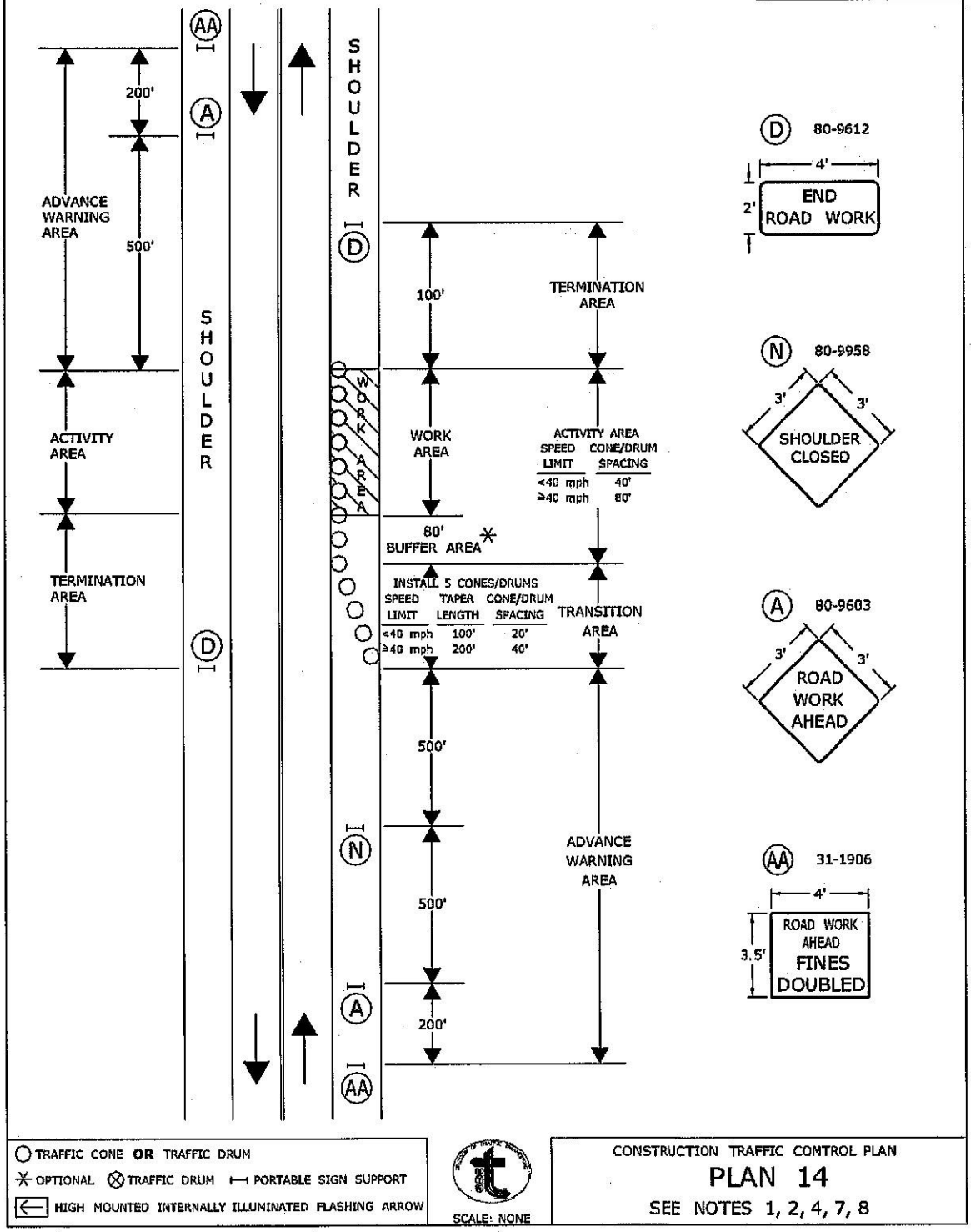
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:55:45-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 14

SEE NOTES 1, 2, 4, 7, 8

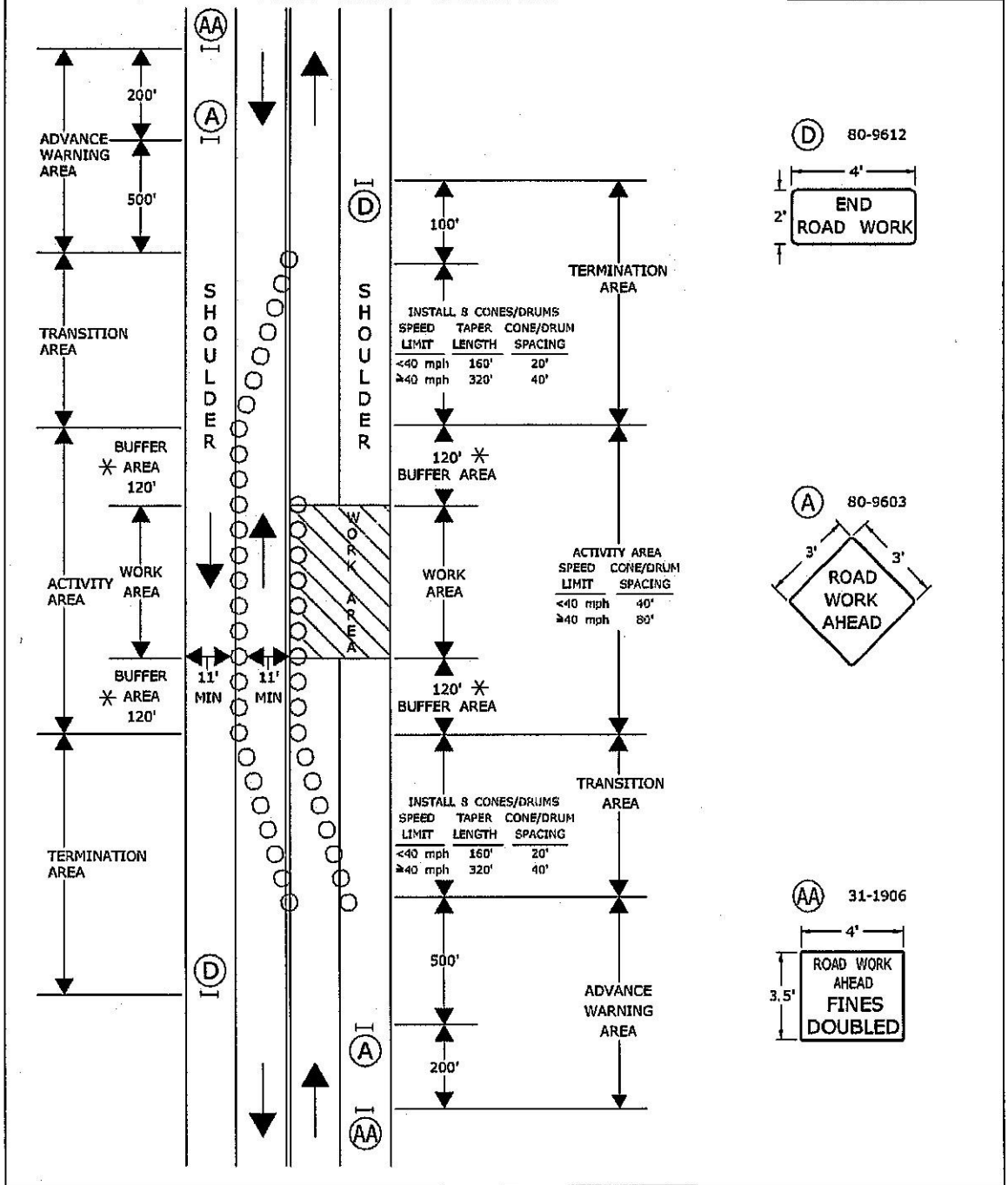
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:00-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢⊣ PORTABLE SIGN SUPPORT
← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8

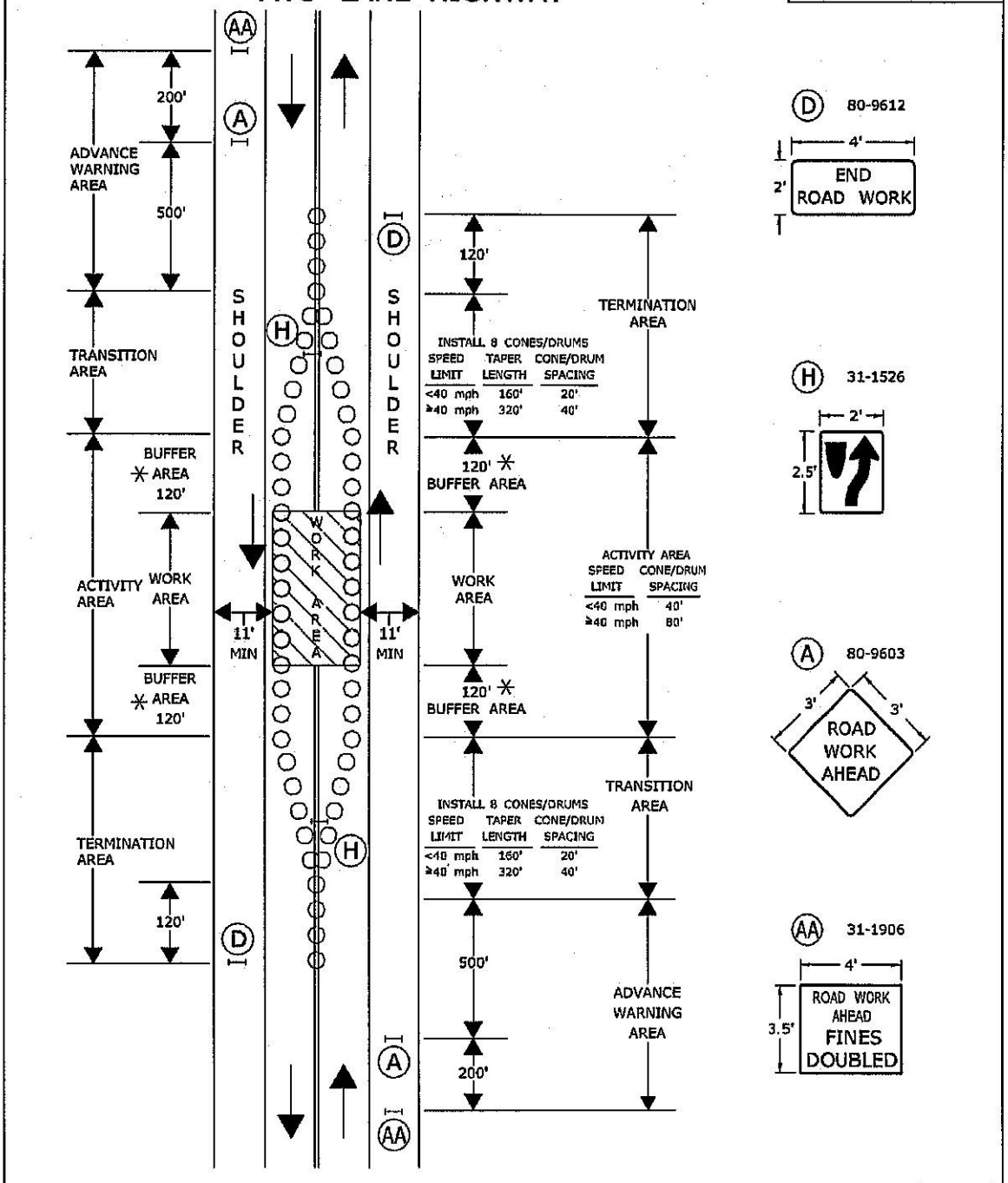
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:56:29-04'00'
PRINCIPAL ENGINEER

Rev. Date 4/16/2015

WORK IN MIDDLE OF ROADWAY
TWO LANE HIGHWAY

SIGN FACE
72 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

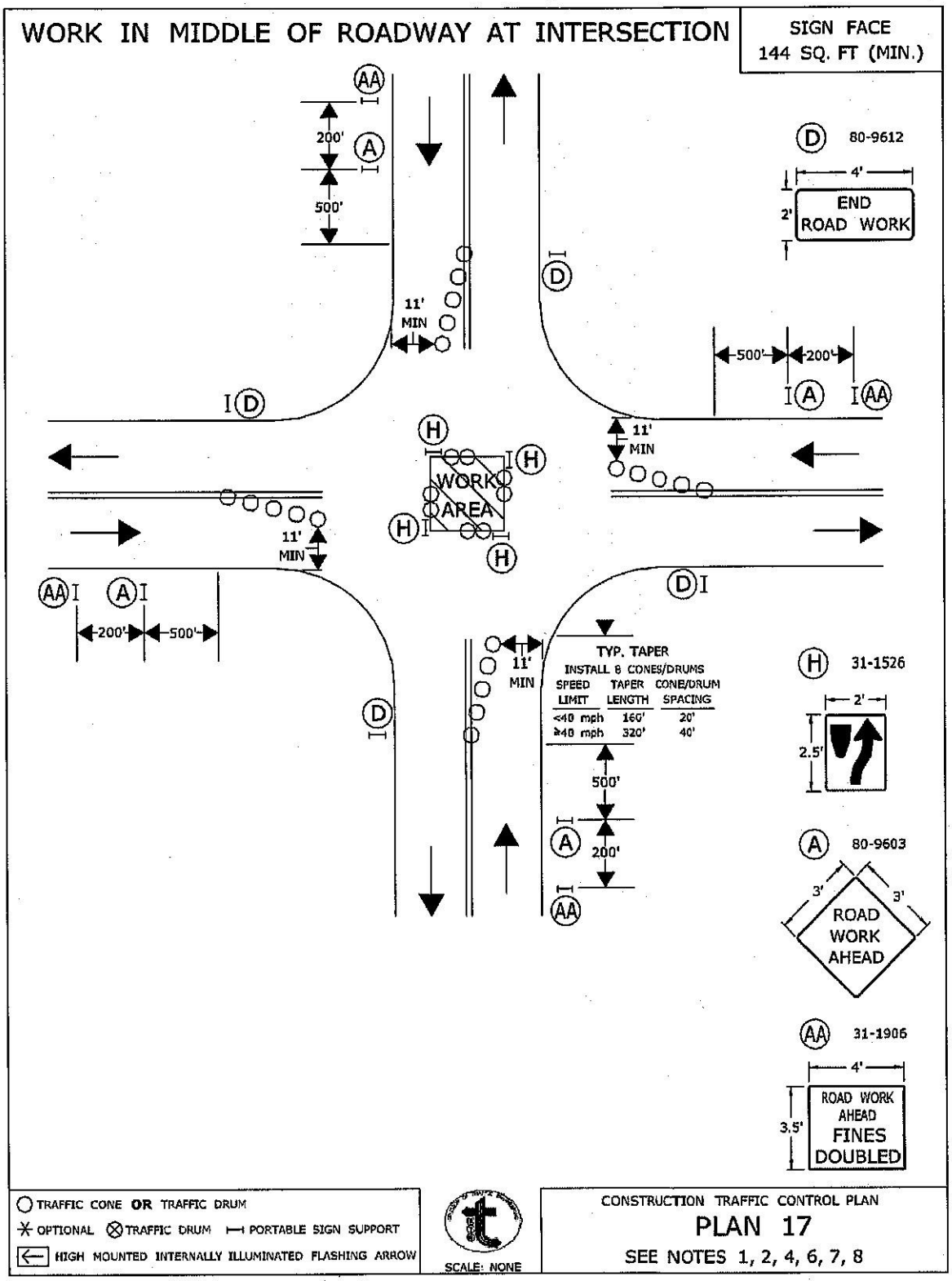
CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 16

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:56:51-04'00'
PRINCIPAL ENGINEER


WORK IN MIDDLE OF ROADWAY AT INTERSECTION
SIGN FACE
144 SQ. FT (MIN.)
AA
200'
A
500'
11'
MIN
D
80-9612
4'
2'
END
ROAD WORK
500'
200'
A
AA
H
WORK
AREA
TYP. TAPER
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
31-1526
2'
2.5'
80-9603
3'
3'
ROAD
WORK
AHEAD
31-1906
4'
3.5'
ROAD WORK
AHEAD
FINES
DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 17
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
Charles S. Harlow
2012.08.05 15:57:16-04'00'
PRINCIPAL ENGINEER

TECHNICAL SPECIFICATION 9.75-R
MOBILIZATION AND PROJECT CLOSEOUT

9.75.01 DESCRIPTION

Work under this section shall be in conformance with Section 9.75 of Form 818, except as modified herein.

9.75.04 METHOD OF MEASUREMENT

All mobilization, demobilization and/or project closeout costs will be measured for payment but shall be included in the work for which it is required. This cost shall include all labor, equipment and materials required for mobilization, demobilization and closeout per site.

1.) When the first Project payment is accepted by City, 25% of the lumps sum bid price for this item shall be certified for payment.
2.) When 15% of the total original Contract price is certified by the City, 70% of the lump sum price for this item, minus any previous payments made to the Contractor under this item, will be certified for payment.
3.) When 30% of the total original Contract price is certified by the City, 85% of the lump sum price for this item, minus any previous payments made to the Contractor under this item, will be certified for payment.
4.) When the project is accepted by the City, 100% of the lumps sum price of this item, minus any previous payments made to the Contractor for this item, will be certified for payment. When this payment is made, the Contractor should have received full Contract payment for this item.

9.75.05 BASIS OF PAYMENT

Payment for this item will be paid for at the Contract lump sum price for "Mobilization and Project Closeout," which price shall include materials, equipment, tools, transportation, labor and all work incidental thereto. Payment for this work shall only be made once and will include all locations.

ITEM NO	PAY ITEM	PAY UNIT
9.75R	Mobilization and Project Closeout	L.S.

END OF SECTION

TECHNICAL SPECIFICATION 14.10
REPLACE/RELOCATE SANITARY SEWER LATERAL

14.10.01 DESCRIPTION

Work under this item shall consist of the replacement or relocation of existing sanitary sewer house laterals that are in conflict with the installation of new utilities or as directed by the City Engineer or his designee.
All materials and installation procedures shall conform to the City of Waterbury Department of Engineering.

14.10.02 MATERIALS

Match the existing material and size of the lateral to be relocated.
Ductile Iron Pipe, Class 52
Couplings: Fernco Strong Back Stainless Shielded Extra Heavy Couplings with 4 clamps
Ductile Iron Fittings ASTM A-746
PVC SDR-35 Fittings ASTM F1336
3/4" trap rock, bedding and backfill see Technical Specification 6.86R and pipe detail on detail sheet.
All material shall conform to the City of Waterbury Department of Engineering and as specified in CT DOT Standard Form 818.
Straight runs to be ductile iron class 52
Bends may be PVC per ASTM F1336 with prior approval from the Engineer, otherwise they shall be ductile iron, per ASTM A-746
Pavement per Technical Specification 2.51 Bituminous Pavement Sawcut & Patch of this project.

14.10.03 CONSTRUCTION METHODS

Sanitary sewer laterals that are encountered during the installation of new utilities and that are found to be in conflict with the new pipe, will need to be relocated as required. All work shall take place within the City Right-of-Way, if possible. If this is not possible and work must be performed on private property, then prior approval must be obtained from the property owners before work takes place. The contractor is to notify the engineer/inspector prior to performing any work.
See Sanitary Sewer Lateral Relocation detail on detail sheet for specific requirements.

The engineer shall determine the extent of the relocation or adjustment of the sanitary sewer lateral. The contractor is responsible to notify the property owner a minimum of (7) days prior to commencement of work on the sewer lateral and shall not be out of service more then 4 hours.
Obtain necessary permits from the water department.

14.10.04 MEASUREMENT

The total length of pipe, including couplings and fittings shall be measured for payment by the actual linear feet of pipe of various sizes and types, completed and accepted and measured in place along the new section of new pipe.

14.10.05 PAYMENT

This work will be paid for at the contract unit price, for "Replace/Relocate Sanitary Sewer Lateral" when complete, which price shall include all materials, bedding and backfill, compaction, equipment, tools and labor, incidental thereto. No separate payment shall be made for excavation and backfilling, as they are included in the unit price. Pavement Restoration shall be paid for by the contract unit price for "Bituminous Pavement Sawcut & Patch", Technical Specification 2.51.

ITEM NO.	PAY ITEM	PAY UNIT
14.10	Replace/Relocate Sanitary Sewer Lateral	Lineal Feet (L.F.)

END OF SECTION

TECHNICAL SPECIFICATION 16.00R
REPLACE GALVANIZED/LEAD WATER SERVICE LINES
Offset Copper Water Service Line

16.00.01 DESCRIPTION

Work under this item shall consist of disconnecting and removing any galvanized or lead water service line which is encountered in the construction limits of storm drainage projects, including abandoning the corporation valve and curb stop and box, and installing a new water service including a new corporation stop valve, new 1" copper type "K" tubing and a new curb stop valve and box, and connecting to the existing water service line. All work and material shall conform to The City of Waterbury, Water Department standards and specifications. All work to be inspected and approved by the City of Waterbury, Water Department prior to backfilling. (See City of Waterbury, Water Department Details). Work shall also include offsetting or replacing a copper water service line when in conflict with new utility installations.
Contractor to notify City of Waterbury Water Department at least twenty-four (24) hours prior to installation to arrange for inspection. Location of curb stop and box shall be as directed by the City.

16.00.02 MATERIALS

All pipe, tubing, valves, fittings, couplings, adapters, and appurtenances are to conform to the City of Waterbury Water Department's specifications and are to be approved by the same, prior to installation. All material shall conform to all AWWA standards and shall be lead-free.

Submittals:

Shop drawings, catalog cuts or other submittals must be submitted by Contractor and approved by City prior to installation of any of these materials.

Corporation Stop Valves:
Corporation Stop Valves for new services shall be Ford FB 1000, as manufactured by FORD Meter Box Company, Inc., or City approved equal and shall be furnished and installed by the Contractor.

Curb Stop Valves:
Curb Stops shall be ball-type brass body, lead-free, as manufactured by Mueller Co., or Ford B44 as manufactured by Ford Meter Box Company, Inc., or City approved equal and will be furnished and installed by the Contractor.

Curb Boxes:
Curb boxes will be furnished and installed by the Contractor. Curb Boxes shall be cast iron, slide-type, 2 ½" Diameter, 24" Top, 39" Base with Covers attached and with Brass Bolt, buried 5 feet.

Water Service Pipe and Fittings:
Water Services 2-inch and smaller:

Pipe shall be seamless soft copper tubing conforming to the requirements of ASTM B88 for Type "K". Fittings shall be cast bronze of the compression type.

16.00.03 CONSTRUCTION METHODS

Galvanized or Lead service lines shall be removed and replaced with new copper lines where encountered and in conflict with any new storm drainage pipe and as directed by the engineer.
The contractor is to notify the City immediately upon encountering a galvanized or lead service line that is in conflict with a new storm sewer line. Upon approval from the City, the contractor shall notify the City of Waterbury Water Department and obtain a permit. The existing line shall be disconnected from the main. The contractor shall tap the main and install a new corporation valve, install new copper line, and install a new curb stop valve and box, and connect to the existing line.
When a copper water service line is in conflict with a new utility installation, the copper service line shall be replaced in its entirety or it shall be offset with compression couplings, as directed by the City Engineer or the City of Waterbury Water Department. All work shall be approved by the City of Waterbury, Water Department prior to any work being performed.
Obtain all necessary permits.

16.00.04 METHOD OF MEASUREMENT

This work shall be measured by the actual number of corporation stop valves, curb stop valves and boxes installed and the actual lineal feet of 1" copper tubing installed. There is no pay item for the tapping the water main, this is included in supplying and installing the corporation stop valve. There is no pay item for abandoning the existing corporation stop valve and curb stop valve and box, this work is included in supplying and installing the new corporation stop valve and curb stop valve and box. There is no pay item for connecting to the existing water service, this work is included in supplying and installing the new curb stop valve and box. Pavement restoration and turf establishment shall be paid under the pay items "Pavement Restoration" and "Turf Establishment". There shall be no pay item for excavation, compaction and backfilling, fittings, and backfill and bedding material, this shall all be included in the pay item "1" K COPPER TUBING".

16.00.05 PAYMENT

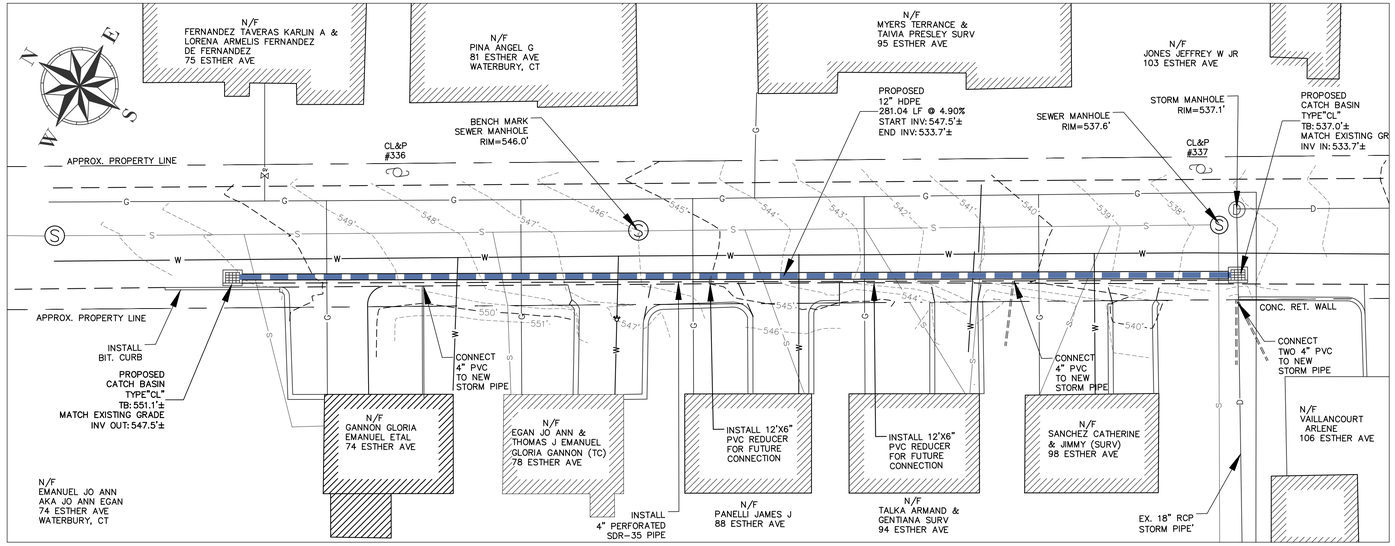
This work will be paid for at the contract unit price, per each item.

ITEM NO.	PAY ITEM	PAY UNIT
16.00-1	1" K COPPER TUBING	L.F.
16.00-2	1" Corporation Stop Valve	EA
16.00-3	1" Curb Stop Valve	EA

END OF SECTION

RFP # 8802

DESIGN PLANS AND DETAILS

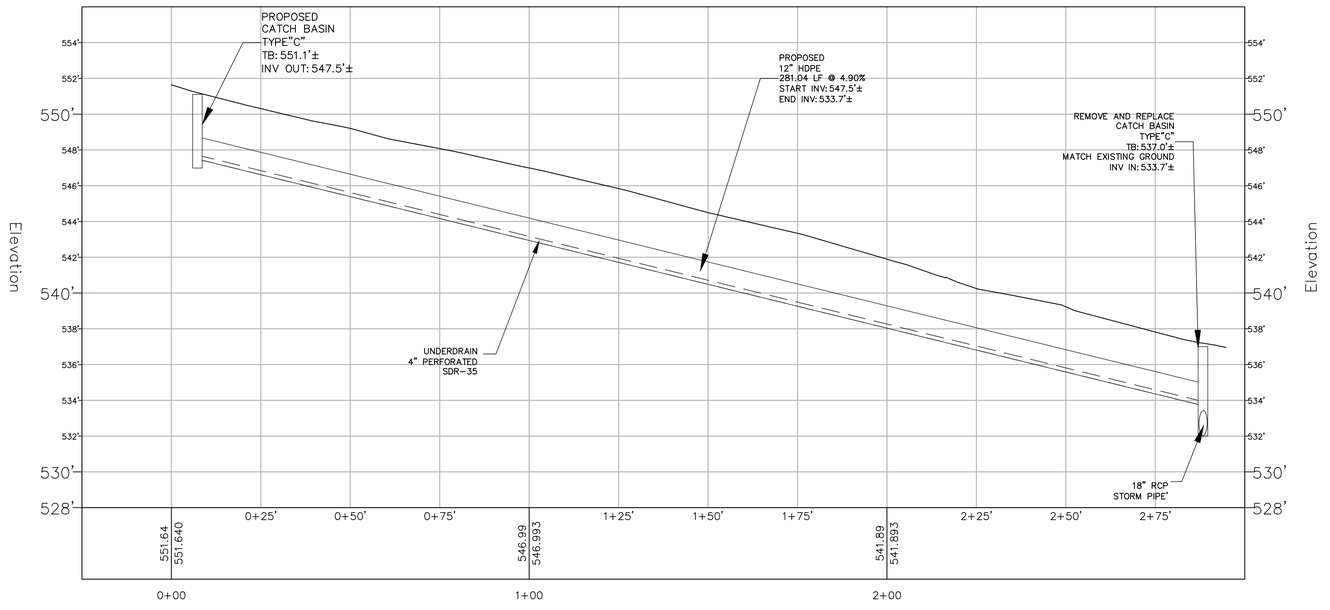


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROPOSED DRAINAGE PROFILE



VERTICAL GRAPHIC SCALE

4 0 2 4 8 16

(IN FEET)
1 inch = 4 ft.

HORIZONTAL GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTICE :

1. THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES INDICATED HEREON ARE HAVE BEEN LOCATED BOTH FROM FIELD SURVEY INFORMATION (CBYD UTILITY LINES MARKED IN THE FIELD) AND FROM EXISTING DRAWINGS NOTED HEREON. THE LOCATIONS ARE APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" LOCATING SERVICE AT 1-800-922-4455 AT LEAST THREE FULL WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
2. COORDINATES AND ELEVATION OF EDGE OF PAVEMENT, MANHOLES, CATCH BASINS, GROUND SHOTS AND OTHER UTILITIES WERE DETERMINED FROM RTK GPS OBSERVATIONS MADE ON DECEMBER 26 ,2025, USING THE RTK DOT NETWORK KNOWN AS ACORN. BUILDING LOCATION ARE BASED OF CITY OF WATERBURY GIS DATA. CONTOURS INTERVAL IS TWO FOOT. HORIZONTAL DATA IS NAD 83, VERTICAL DATUM IS NAVD 88.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE PLANS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES OR CONFLICTS SHALL BE REPORTED TO THE ENGINEER WHO SHALL HAVE FINAL SAY AS TO ACTUAL DIMENSIONS AND ELEVATIONS TO BE USED.
4. CONNECT ALL NON SANITARY DRAIN LINES ENCOUNTERED TO NEW STORM PIPE.
5. ALL GALVANIZED WATER SERVICES ENCOUNTERED TO BE REPLACED FROM MAIN TO NEW CORPORATION STOP LOCATED SIX INCHES FROM PROPERTY LINE. (SEE WATER STANDARD DETAIL.)
6. UTILITY POLES:
   IT IS MANDATORY FOR THE CONTRACTOR TO COORDINATE WITH EVERSOURCE TO GUARANTEE THE SUPPORT OF ELECTRIC POLES DURING CONSTRUCTION.
7. ALL AREAS THAT ARE TO BE DISTURBED SHALL BE KEPT TO A MINIMUM. ALL DISTURBED GRASS AREAS SHALL BE LOAMED, LIMED, FERTILIZED, AND SEEDED AS SOON AS PRACTICAL. IF PERMANENT PLANTING IS NOT PRACTICAL AT THE TIME, THE AREA SHALL BE MULCH STABILIZED UNTIL SUCH SEEDING CAN BE DONE.

CONSTRUCTION SEQUENCE

1. CONTRACTOR TO DIG TEST PITS OVER ALL UTILITIES IN TRENCH AREA TO DETERMINE THE UTILITY DEPTH AND LOCATION. UPON COMPETITION OF TEST PITS A FINAL LOCATION OF THE PROPOSED DRAINAGE PIPE WILL BE DETERMINED BY THE ENGINEER. SOME UTILITIES (GAS SERVICE, WATER SERVICE OR SEWER LATERAL), MAY NEED TO BE RELOCATED.
2. GAS SERVICE : ESG COMPANY TO RELOCATE , CONTRACTOR TO EXCAVATE AS REQUIRED FOR RELOCATION AND BACKFILL.
3. Contractor is to coordinate the relocation of gas services, if required, with Eversource Gas Company. Contractor will not be responsible for the cost of the relocation of gas services.
4. WATER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
5. SEWER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
6. BENCH MARK TO BE SET

MAP REFERENCE

1. c13-d010-m022 a14850 Esther Ave Lucille St Bradley Ave Sewer
2. c07-d013-m004 a16481 Lucille St Esther Ave Rt. Of Way Storm water
3. c08-d018-m018 a10223 Esther Ave New Haven Ave Water
4. c25-d005-m028 a11306 E35-1 Esther Ave Bradley Ave to Signe St gas.
5. c25-d005-m028a a11306 E35-2 Esther Ave Bradley Ave to Signe St gas.

LEGEND

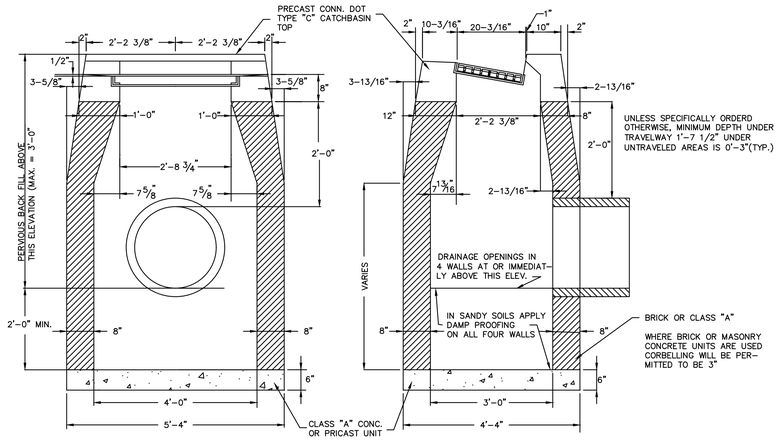
FIRE HYDRANT	
WATER VALVE	
PHONE POLE	
CATCH BASIN	
SEWER MANHOLE	S
STORM MANHOLE	D
PROPERTY LINE	
SEWER MAIN	S S S
WATER MAIN	W W W
EXISTING STORM	D D D
FENCE	
PROPOSED STORM DRAIN PIPE	

STORM DRAINAGE PROFILE

ESTHER AVE
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

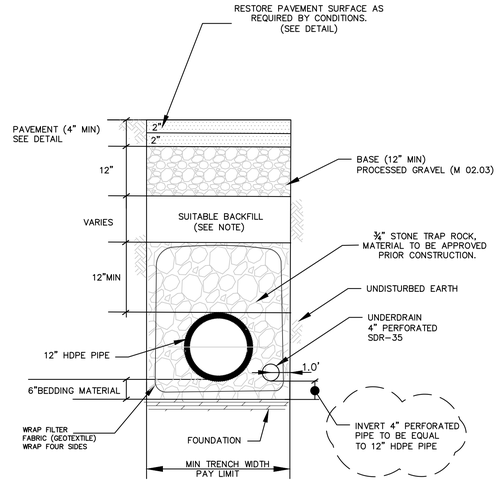
DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

Designed by: VT	Date:	APRIL 2026	1 OF 5
Drawn by: VT	Scale:	AS NOTED	
Checked by:VC	Issued for :	BIDDING	
Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	



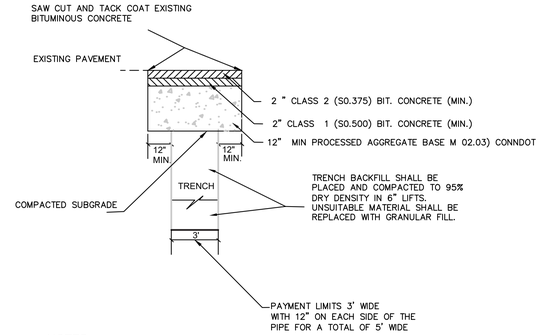
TYPE "C" CATCH BASIN

DOT TYPE "C" CATCH BASIN DETAIL (NTS)



STORM PIPE IN THE TRENCH CROSS-SECTION

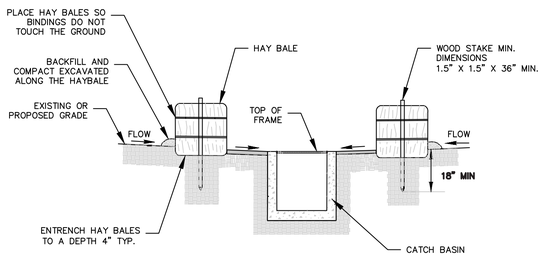
(N.T.S.)



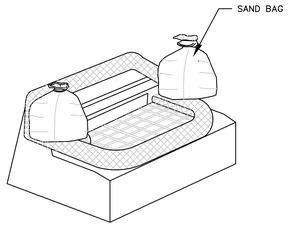
NOTES:

1. ALL MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE STATE OF CONNECTICUT STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION.
2. THE PERMITEE SHALL REPAIR ALL DEFICIENT PAVEMENT RESTORATIONS WITHIN 48 HOURS OF RECEIVING VERBAL NOTICE FROM THE CITY ENGINEER.
3. FAILURE OF THE PERMITEE TO RESPOND WITHIN 48 HOURS TO THE BUREAU OF ENGINEERING ORDERS WILL, AT THE DISCRETION OF THE CITY ENGINEER, RESULT IN THE CALLING OF THE PERMITEE'S BOND.
4. WHERE EXISTING PAVEMENT IS THICKER THEN DETAIL SHOWN, THE CONTRACTORS TO MATCH THE PAVEMENT THICKNESS.
5. DAILY PAVEMENT RESTORATION–PAVEMENT RESTORATION SHALL BE COMPLETED AT THE END OF EACH DAY UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. IN THE EVENT THAT PAVEMENT RESTORATION IS NOT REQUIRED, PROCESSED GRAVEL PER (M02.03), SHALL BE BROUGHT TO THE SURFACE AND COMPACTED TO ALLOW FOR SAFE PASSING.
7. AT THE END OF EACH DAY, THE WORK AREA SHALL BE SWEPT CLEAN AND KEPT IN A SAFE CONDITION.

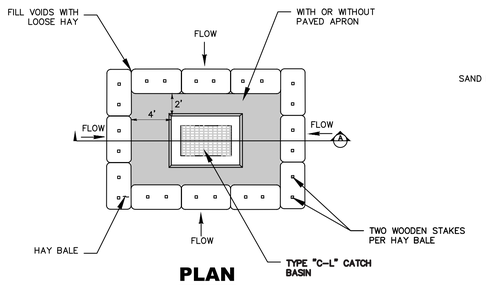
LOCAL ROADS PAVEMENT RESTORATION DETAIL



SECTION A-A

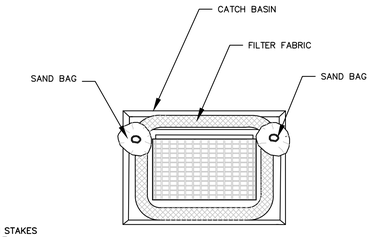


NOTE:
THIS ITEM WILL BE MEASURED BY EACH SEDIMENT CONTROL SYSTEM AT CATCH BASIN



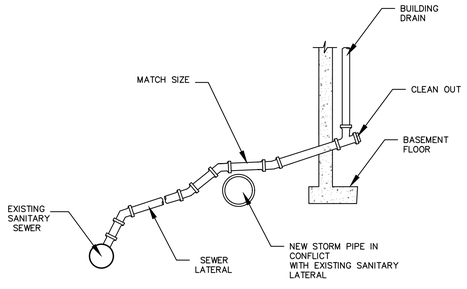
PLAN

HAY BALE AROUND CATCH BASIN WITH FILTER FABRIC



PLAN

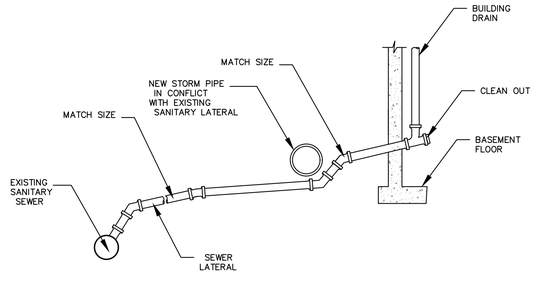
FILTER FABRIC AROUND CATCH BASIN TOP



NOTES::
MINIMUM PITCH ¼" PER FOOT, 45° OR 22–½" BENDS DUCTILE IRON STAINLESS STEAL.
BANDS FITTINGS AS REQUIRED
PVC WITH PRIOR APPROVAL UNDER CERTAIN CONDITION.
FERNCO STRONG BACK STAINLESS STEAL EXTRA HAVING COUPLING WITH 4 CLAMPS

SANITARY SEWER OFFSET ABOVE NEW 15" HDPE DETAIL

NTS



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BANDS FITTINGS AS REQUIRED
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FERNCO STRONG BACK STAINLESS STEAL EXTRA HAVING COUPLING WITH 4 CLAMPS

SANITARY SEWER OFFSET BELOW NEW 15" HDPE DETAIL

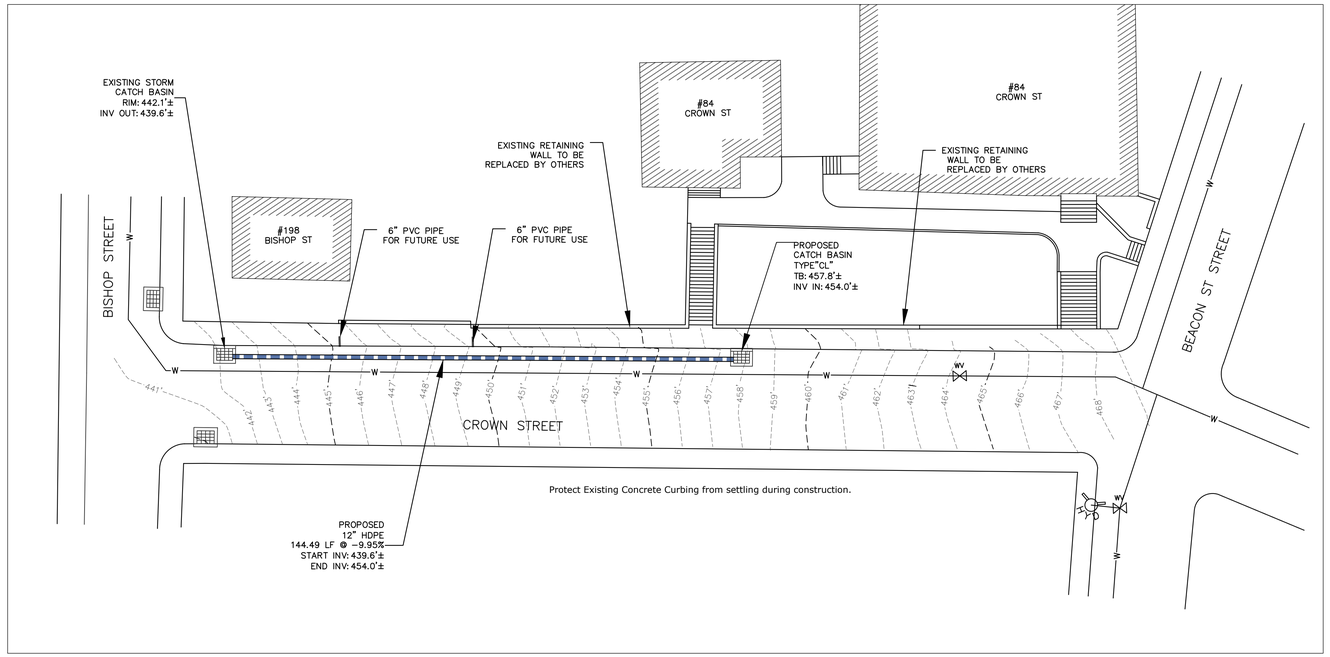
NTS

STANDARD DETAIL

ESTHER AVE
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

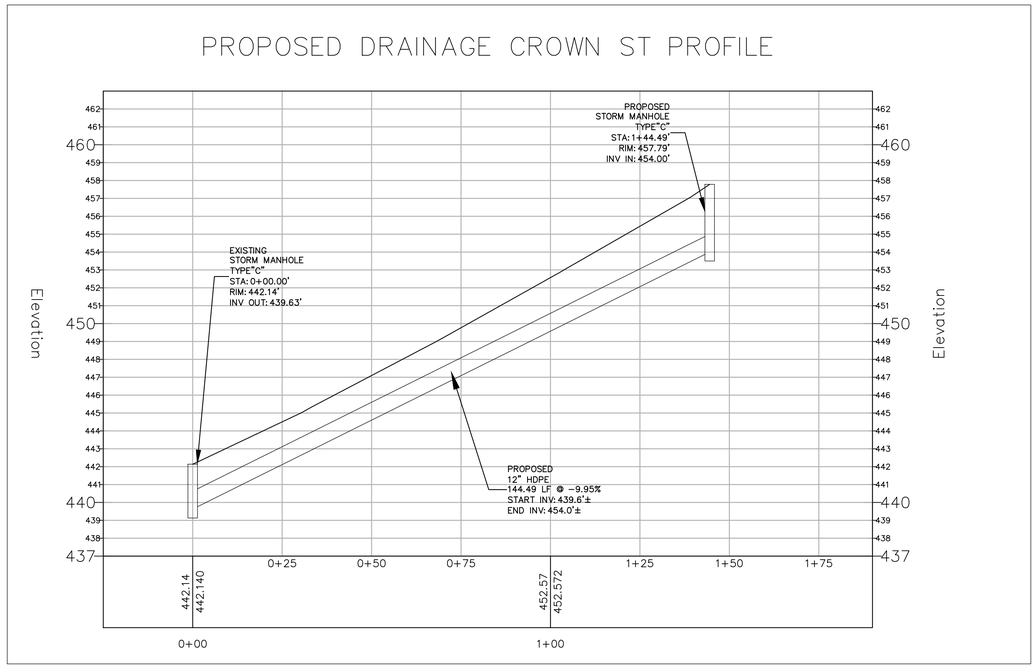
Designed by: VT	Date:	APRIL 2026	2 OF 5
Drawn by: VT	Scale:	NTS	
Checked by:VC	Issued for :	BIDDING	
Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



VERTICAL GRAPHIC SCALE

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HORIZONTAL GRAPHIC SCALE

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4. CONNECT ALL NON SANITARY DRAIN LINES ENCOUNTERED TO NEW STORM PIPE.
5. ALL GALVANIZED WATER SERVICES ENCOUNTERED TO BE REPLACED FROM MAIN TO NEW CORPORATION STOP LOCATED SIX INCHES FROM PROPERTY LINE. (SEE WATER STANDARD DETAIL.)
6. UTILITY POLES:
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CONSTRUCTION SEQUENCE

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2. GAS SERVICE: ESG COMPANY TO RELOCATE , CONTRACTOR TO EXCAVATE AS REQUIRED FOR RELOCATION AND BACKFILL.
3. WATER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
4. SEWER SERVICE: CONTRACTOR TO RELOCATE AT THE DIRECTION OF THE ENGINEER.
5. BENCH MARK TO BE SET

MAP REFERENCE

1. c11-d028-m058 a7561 Crown St Water.
2. c07-d001-m009 a2688 Bishop St, Pine St, Hopkins St Storm.
3. c11-d028-m033 a7527 Bishop St Crown St Water.
4. c11-d028-m016 a7510 Beacon St Water.
5. c13-d002-m009 a1515 Beacon St Sewer.

LEGEND

GAS VALVE	GV
FIRE HYDRANT	
WATER VALVE	WV
PHONE POLE	
CATCH BASIN	
SEWER MANHOLE	S
STORM MANHOLE	D
PROPERTY LINE	
SEWER MAIN	S S S
WATER MAIN	W W W
EXISTING STORM	D D D
GAS MAIN	G G G
FENCE	
PROPOSED STORM DRAIN PIPE	

STORM DRAINAGE PROFILE

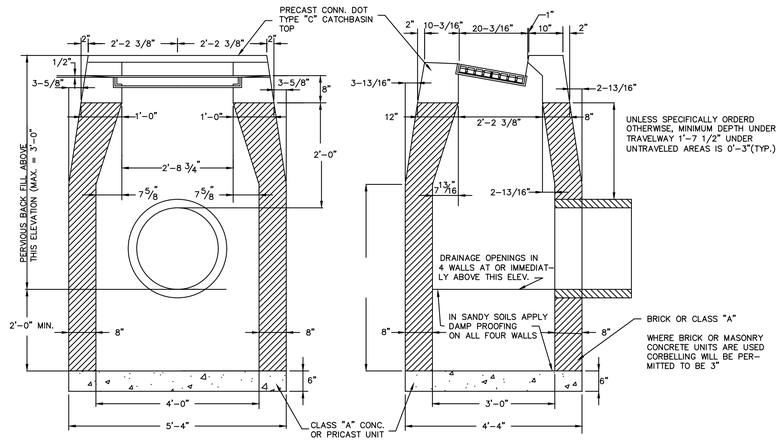
CROWN ST
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

Designed by: VT	Date:	DECEMBER 2025	3 OF 5
Drawn by: VT	Scale:	AS NOTED	
Checked by:TC	Issued for :	BIDDING	
Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	

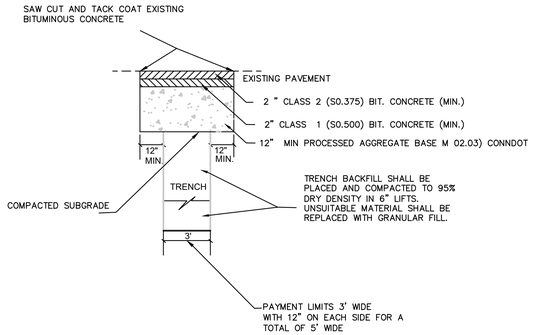
GENERAL NOTES:

1. MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST ASTM C478 SPECIFICATIONS FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS" AND NMDOT OR C.O.A.
2. CONCRETE COMPRESSIVE STRENGTH 4,000 PSI MINIMUM.
3. STEEL REINFORCING DESIGNED TO CONFORM TO THE REQUIREMENTS OF ASTM C478 OR PER C.O.E. CONFORMING TO THE REQUIREMENTS OF ASTM A615 OR WWF CONFORMING TO THE REQUIREMENTS OF ASTM A 185 OR DRAWN WIRE CONFORMING TO THE REQUIREMENTS OF ASTM A82 OR A COMBINATION THEREOF.
4. ADDITIONAL REINFORCING AT ALL OPENINGS.
5. STEPS SHALL BE STEEL REINFORCED COPOLYMER POLYPROPYLENE AND MEET THE REQUIREMENTS OF ASTM C478. SEE TYPICAL STEP DETAIL.
6. PIPE PENETRATION TO BE PER JOB REQUIREMENTS. PIPE TO BE INSTALLED BY CONTRACTOR.
7. JOINTS TO BE SEALED WITH PREFORMED BUTYL RUBBER JOINT SEALANT MEETING REQUIREMENTS OF ASTM C990. SEE TYPICAL MANHOLE SECTION JOINT DETAIL.



TYPE "C" CATCH BASIN

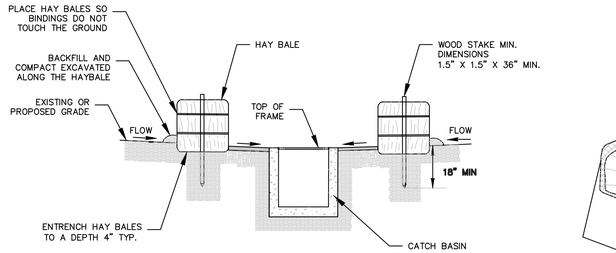
DOT TYPE "C" CATCH BASIN DETAIL (NTS)



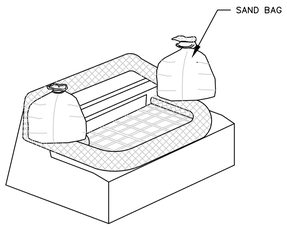
NOTES:

1. ALL MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE STATE OF CONNECTICUT STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION.
2. THE PERMITEE SHALL REPAIR ALL DEFICIENT PAVEMENT RESTORATIONS WITHIN 48 HOURS OF RECEIVING VERBAL NOTICE FROM THE CITY ENGINEER.
3. FAILURE OF THE PERMITEE TO RESPOND WITHIN 48 HOURS TO THE BUREAU OF ENGINEERING ORDERS WILL, AT THE DISCRETION OF THE CITY ENGINEER, RESULT IN THE CALLING OF THE PERMITEE'S BOND.
4. WHERE EXISTING PAVEMENT IS THICKER THEN DETAIL SHOWN, THE CONTRACTORS TO MATCH THE PAVEMENT THICKNESS.
5. DAILY PAVEMENT RESTORATION–PAVEMENT RESTORATION SHALL BE COMPLETED AT THE END OF EACH DAY UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. IN THE EVENT THAT PAVEMENT RESTORATION IS NOT REQUIRED, PROCESSED GRAVEL PER (M02.03), SHALL BE BROUGHT TO THE SURFACE AND COMPACTED TO ALLOW FOR SAFE PASSING.
7. AT THE END OF EACH DAY, THE WORK AREA SHALL BE SWEPT CLEAN AND KEPT IN A SAFE CONDITION.

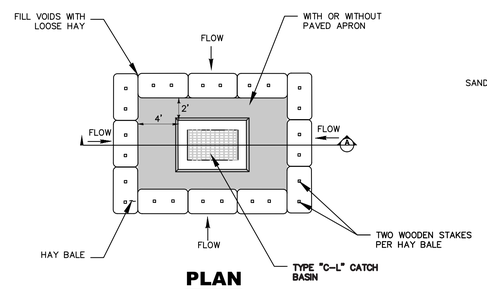
LOCAL ROADS PAVEMENT RESTORATION DETAIL



SECTION A-A

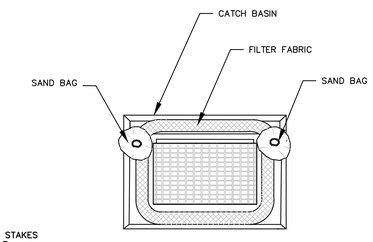


NOTE:
THIS ITEM WILL BE MEASURED BY EACH SEDIMENT CONTROL SYSTEM AT CATCH BASIN



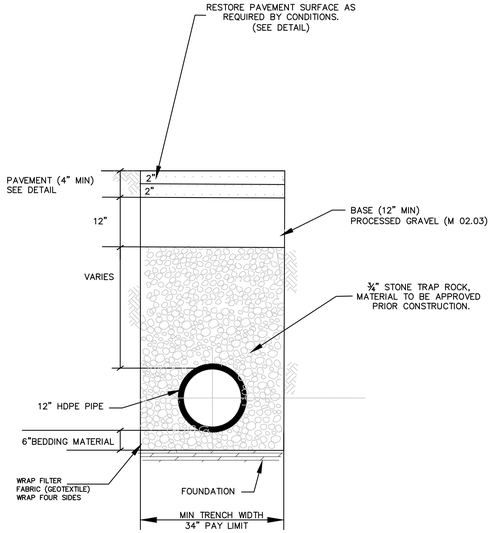
PLAN

HAY BALE AROUND CATCH BASIN WITH FILTER FABRIC



PLAN

FILTER FABRIC AROUND CATCH BASIN TOP



STORM PIPE IN THE TRENCH CROSS-SECTION

(N.T.S.)

NOTES:
SUITABLE MATERIAL:
GENERALLY, MATERIAL THAT IS EXCAVATED FROM THE TRENCH OR EXCAVATION AND IS FREE FROM WET, MUDDY MATERIAL, LARGE ROCKS (ROCKS THAT CAN DAMAGE THE PIPE), ORGANIC MATERIAL, ASPHALT, AND OTHER DELETERIOUS MATERIAL AND DEEMED SUITABLE FOR BACKFILLING BY THE ENGINEER.

UNSUITABLE MATERIAL:
MATERIAL THAT IS MUDDY, WET, ROCKY, SILTY, CLAY, HAS ORGANIC MATTER, CONTAINS ASPHALT AND OTHER DELETERIOUS MATERIAL AND IS DEEMED UNSUITABLE FOR USE BY THE ENGINEER.

IF ALL SUITABLE MATERIAL HAS BEEN USED UP, THAN THE CONTRACTOR MAY USE "FREE–DRAINING" MATERIAL PER SPECIFICATIONS (2.08R), WITH PRIOR APPROVAL FROM THE ENGINEER.

GAS LINE CONFLICTS:
IF A GAS SERVICE LINE IS ENCOUNTERED AND FOUND TO BE IN CONFLICT WITH THE NEW STORM PIPE, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COORDINATION WITH GAS COMPANY AND THE PROPERTY OWNER TO HAVE THE PIPE RELOCATED TO ALLOW FOR THE INSTALLATION OF THE NEW PIPE.

THE CITY WILL NOT BE RESPONSIBLE FOR ANY DELAYS OR PAYMENTS ASSOCIATED WITH THIS WORK. ALL RESPONSIBILITY LIES WITH THE CONTRACTOR AND THE GAS COMPANY.

STANDARD DETAIL

CROWN STREET
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

DEPARTMENT OF ENGINEERING
CITY OF WATERBURY, CT.

Designed by: VT	Date:	DECEMBER 2025	4 OF 5
Drawn by: VT	Scale:	NTS	
Checked by:VC	Issued for :	BIDDING	
Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	

WATERBURY

WATER DEPARTMENT

WATER SERVICE AND MAIN INSTALLATION DETAILS

The Water Department in the City of Waterbury developed this Water Service and Main Installation Details Manual to establish uniform concepts for water system design details for the various sized water services and their appurtenances and to provides guidelines and criteria for the design engineers and contractors to use in preparing portions of planning documents .
If deviations from the prescribed installation are necessary, approval must be obtained from the Water Department prior to the installation.

CITY OF WATERBURY

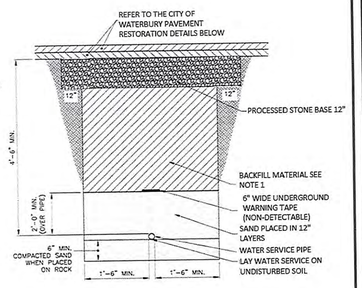
BUREAU OF WATER

WATER SERVICE INSTALLATION DETAILS

Waterbury Water Department
21 East Aurora Street
Waterbury CT, 06708

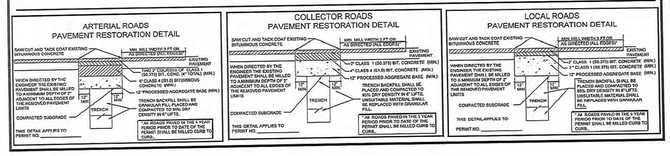
SERVICE LINE INSPECTION PROCEDURES

- The contractor shall contact the *Water Department Inspector* to request an inspection prior to backfill.
- The Contractor must be present at the site on the day of inspection.
- Water Service Trench shall be excavated and backfilled following trench detail requirements below.
- Leave the TRENCH OPEN. DO NOT backfill the trench until our inspector has approved the service line.



NOTE:
1. BACKFILL MATERIAL SHALL BE BANK-RUN GRAVEL IN PAVED AREAS (INCLUDING SIDEWALKS AND DRIVEWAYS) OR COMMON FILL IN NON-PAVED AREAS

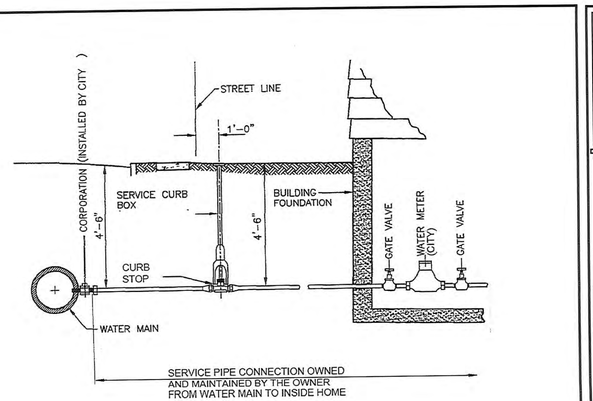
WATER SERVICE TRENCH



CITY OF WATERBURY

BUREAU OF WATER

WATER SERVICE INSTALLATION DETAILS

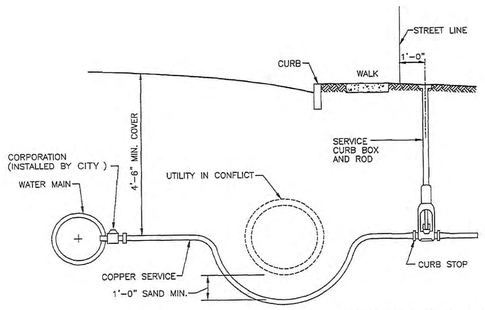


TYPICAL Type K COPPER WATER SERVICE

CITY OF WATERBURY

BUREAU OF WATER

WATER SERVICE INSTALLATION DETAILS



TYPICAL DETAIL
COPPER SERVICE OFFSET

Crossings: at sewer crossings, a minimum vertical clearance of 18 inches, measured from crown to invert, should be maintained between the water main and sewer with the preferred location of the water main above the sewer whenever possible. The water main should be centered at the sewer crossing such that the water main joints are spaced as far as possible from the sewer. If the water main will cross above the sewer and will be centered above the sewer such that the water main joints are spaced as far as possible from the sewer, the vertical separation distance may be reduced to 12 inches. There should be no reduction in the vertical separation distance of 18 inches for sanitary sewer force main crossings. If the water main will cross under a sewer, special consideration should be given to the structural support of the sewer to prevent settling or deflection of the sewer which may damage the water main.

CITY OF WATERBURY

BUREAU OF WATER

WATER SERVICE INSTALLATION DETAILS

WATER STANDARD DETAILS

ESTHER AVE AND CROWN ST
SHOWING
PROPOSED DRAINAGE IMPROVEMENTS

Designed by:	Date:	APRIL 2026	5 OF 5
Drawn by:	Scale:	NTS	
Checked by:	Issued for :	BIDDING	
Approved by: RC	Cadd file	C308 Esther Ave & Crown St Drainage Improvements	

RFP #8802

SPECIAL CONDITIONS

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SPECIAL CONDITIONS

ARTICLE 1. SPECIAL NOTE

These Special Conditions shall be subject to all requirements of the Contract, amend or supplement the General Conditions, and modify all Contract Documents which follow them numerically, as set forth in Section 1.2 of the Contract. The terms used in these Special Conditions which are defined in the Contract or General Conditions have the meanings assigned to them in said documents. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project; and to all of the Contract Documents. All Contract Documents apply to this Section. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise, and regardless if not expressly stated in each Article herein, the costs associated with all work and/or services required under the Special Conditions shall be considered as included in the overall cost of the Contract items. No separate or additional payment will be made for this work and/or services.

ARTICLE 2. PERMITS

The Contractor shall obtain all applicable Federal, State and local permits and registrations necessary to complete the project at no additional cost to the City. The cost of obtaining and maintaining the permits shall be included in the Contract Amount.

Exception: Local Permit Fess: **Local permit fees will be waived by the City**. Pursuant to City Code Section 110.12, the City portion of all local permit fees will be waived. However, the Contractor will be responsible for the applicable State and Federal portions of all local permit fees. All applicable Federal and State fees associated with local permits shall be paid for by the Contractor to the City, who will submit the fee(s) to the appropriate governmental entity.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

Connecticut Department of Transportation CT DOT) Encroachment Permits are required for all work on state roads. A copy of the permit shall be maintained on site at all times and Contractor shall comply with all permit requirements. Contractor is responsible for notifying CT DOT of work schedule and arranging required inspections.

ARTICLE 3. CONSTRUCTION STAKE OUT

The City will provide construction stakeout for the pedestrian ramps, if any. Contractor is responsible for all other construction stake out.

ARTICLE 4. SITE RESTORATION

The Contractor will blend the new work into the existing ground surface and replace any adjacent disturbed materials that may have been damaged or irregular do to construction and/or new installations.

ARTICLE 5. CITY NOTIFICATION - BACKFILLING

Before backfilling any excavated area and after an improvement has been installed the contractor shall notify the City when a backfill operation is to occur. A City representative will make one observation for each excavated area.

ARTICLE 6. FORM 819 - CONFLICTS

Any provision of Form 819 - State of Connecticut Department of Transportation "Standard Specifications for Road, Bridges, and Incidental Construction, "including the latest supplements thereto that conflict with the Contract Documents shall be of no effect relative to this Project.

ARTICLE 7. PUBLIC USE OF EXISTING PUBLIC FACILITIES

The Contractor shall limit his work area to the site of the construction and its immediate vicinity. No equipment or construction activities are allowed on the existing public facilities, such as athletic fields without prior written approval by the City. No equipment or storage is allowed outside of the designated construction area without prior written approval by the City. The number and location(s) of storage containers shall be approved by the City.

ARTICLE 8. ACCESS TO PRIVATE & PUBLIC PROPERTY

Throughout the duration of Construction, the Contractor shall maintain access to all businesses, places of worship, schools and private residences, etc. in the project area. Particular attention is noted for funeral processions, wedding processions, and other similar activities.

Where required by the City, Contractor shall also conduct regular coordination meetings with Residents, Owners and Operators of businesses and other operations to coordinate active work periods.

Contractor shall also provide and place temporary ramps at driveways or other locations where, in the opinion of the City, there is a need to provide safe access until the permanent handwork is completed.

ARTICLE 9. WINTER SHUTDOWN

No 'winter shutdown' will be permitted for this Project.

ARTICLE 10. ADJUSTMENT OF EXISTING UTILITIES

The contactor shall raise or lower as necessary the top of all utility valve boxes, gas service curb boxes, handholds, parking meter kiosks, cleanouts, traffic boxes, and any other utility access structures within the work area to match the finished grade. No extra compensation will be allowed for adjustment of existing utilities except as noted on plans or Technical Specifications.

ARTICLE 11. CHANGES TO THE WORK

The cost and/or payment calculations for changes to the work shall be either on a firm proposal agreed to by the City or based on the provisions set forth herein.

Any changes in the work agreed to by the parties, or as directed by the Project Engineer, shall be evidenced by a Change Order authorized in accordance with Section 27 of the Contract and this Article. In no instance shall payments made pursuant to this Article result in an increase in the Contract Total Compensation or extension of Contract Time. Any increase above the Contract Total Compensation or Contract Time resulting from utilization of this Article must be by a duly authorized and executed Contract amendment in accordance with Section 27 of the Contract.

A. Differing Site Conditions

(1) During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and the Contractor shall thereafter wait for written instructions from the Project Engineer before proceeding with regard to such conditions.

(2) Upon written notification from the Contractor, the Project Engineer will investigate the conditions to determine if differing conditions exist. The Project Engineer will notify the Contractor of his/her determination whether or not differing conditions exist. If it is determined

that the conditions materially differ and cause an increase in the Total Compensation or Contract Time required for performance of any work under the Contract, the City, with the Project Engineer's recommendation, will make an adjustment (excluding anticipated profits) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether or not an adjustment of the Contract is warranted.

(3) No use of this Article or of any Contingency Allowance that results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice.

(4) No use of this Article or of any Contingency Allowance will be allowed under this clause for any effects caused on unchanged work.

B. Suspensions of Work Ordered by the Project Engineer.

(1) If the performance of all or any portion of the work is suspended or delayed by the Project Engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the Contractor believes that additional compensation and/or Contract Time is due as a result of such suspension or delay, the Contractor shall submit to the Project Engineer in writing a request for adjustment within seven (7) calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

(2) Upon receipt, the Project Engineer will evaluate the Contractor's request. If the Project Engineer agrees that the cost and/or Contract Time required for the performance of the Contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the City, with the Project Engineer's recommendation, will make an adjustment (excluding profit) and modify the Contract in writing accordingly. The Contractor will be notified of the Project Engineer's determination whether or not an adjustment of the Contract is warranted.

(3) No Contract adjustment will be allowed unless the Contractor has submitted the request for adjustment within the time prescribed.

(4) No Contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this Contract.

C. Significant Change in the Character of Work

(1) The Project Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the Project. Such changes in quantities and alterations shall not invalidate the Contract nor release the surety, and the Contractor agrees to perform the work as altered.

(1) If the alterations or changes in quantities significantly change the character of the work under the Contract, whether or not changed by any such different quantities or alterations, the cost for changes to the work shall be either on a firm proposal agreed to by the City or as calculated herein, and such costs shall not include loss of anticipated profits. If a cost cannot be agreed upon, then the cost calculation shall be in such amount as the Project Engineer may determine to be fair and equitable.

(2) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the cost calculations for the altered work will be at the prices bid.

(3) The term "significant change" shall be construed to apply

when the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction.

when an item of work, as defined elsewhere in the Contract, is increased in excess of 125% or decreased below 75% of the original Contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125% of original Contract item quantity, or in case of a decrease below 75%, to the actual amount of work performed.

D. Extra Work

Unforeseen work made necessary by the Project Engineer's changes as previously described, or work that is necessary for completion of the Project, but for which no price is provided in the Contract, shall be done in accordance with the requirements of the specifications and as directed by the Project Engineer. The Project Engineer shall notify the Contractor of the necessity for such extra work, stipulating its character and extent, and shall notify the Contractor as to whether the Project Engineer wants the Contractor to propose a unit price or, instead, a lump sum, for the extra work. Within 5 calendar days of receipt of such notification, the Contractor shall advise the Project Engineer, in writing, of the proposed compensation (as a unit price or lump sum, whichever has been requested by the Project Engineer) that the Contractor requests as compensation for the required extra work. The Contractor's request shall be itemized and reasonably detailed, and shall include all known or anticipated direct and indirect costs of the work, including but not limited to, the costs of all safety and other equipment, small tools, labor, subcontractor quotes, consumables, field office overhead, home office overhead, insurance, bonding, and profit. The character and extent of the extra work, together with the basis of compensation, shall be communicated in a letter to the Contractor by the Project Engineer. If the Contractor objects to any portion of the defined extra work and/or basis of compensation, and if the Contractor is not willing to agree to the extra work, the Contractor must, within 15 calendar days of its receipt of said letter, respond in writing describing specifically what portions of the extra work the Contractor finds objectionable, the nature of its objections, and the basis for its objections. If the Contractor does not do so, it shall be deemed to have accepted the terms of the extra work as set forth in the Project Engineer's letter.

E. Cost Plus Work

The Contractor's compensation for all work done on a cost-plus basis shall be determined in accordance with the following:

(a) Labor:

(1) For all labor, payment calculations shall be based on the wage rate actually paid by Contractor as shown by its certified payroll, which shall be at least the minimum rate established for the Project by the State Labor Department or the U.S. Department of Labor. For all foremen in direct charge of Project work, payment calculations shall be based the actual wage paid by Contractor to the foremen as shown on the Contractor's certified payroll.

(2) The payment calculations shall the actual costs paid to, or on behalf of, workers by reason of allowances, health and welfare benefits, pension fund benefits and other such benefits, when such amounts are required by a collective bargaining agreement or another employment contract generally applicable to the classes of labor employed on the Project. The Contractor shall certify all such costs.

(3) For property damage, bonding, liability and workmen's compensation insurance premiums, unemployment insurance contributions and social security taxes on Project cost-plus work, the payment calculations shall include Contractor's actual Project costs. The Contractor shall provide to the Project Engineer documentation, satisfactory to the Project Engineer in form and substance, of all such costs.

(4) The payment calculations shall also include an amount equal to 20% (15% for overhead, 5% for profit) of the total sums described in (a) (1) through (3) above.

No part of the salary or expenses of anyone connected with the Contractor's forces above the grade of foreman, who provides general supervision of Project work, will be included in the above cost calculations, except when the Contractor's organization is entirely occupied with cost-plus work, in which case the salary of a superintendent may be included in said labor item when the nature of the pertinent Project work is such that, in the opinion of the Project Engineer, a superintendent is required for that work. The allowable rate of pay for such superintendent shall be agreed upon before the Contractor begins the pertinent work. If no agreement on the rate can be reached, the City will make a determination based on such rate as he deems reasonable.

The City reserves the right to determine the number and type of personnel to be employed for the cost-plus Project work.

(5) Specialized Work: When the Project Engineer directs the Contractor to perform specialized work requiring skills, tools and equipment substantially unlike those ordinarily used by the Contractor or its authorized Project subcontractors, the payment calculations for such work shall include the cost for the use of a specialist to perform the specialized work. For such specialized services, including materials incorporated into the Project, the payment calculations for such work shall include Contractor's actual costs, plus additional compensation in accordance with

subparagraph (e) below. Prior to performing such specialized work, the Contractor shall obtain

and submit to the Project Engineer a minimum of three price quotes for the work, if requested by the Project Engineer.

(b) Materials: For all materials necessary for cost-plus Project work, the payment calculations shall include Contractor's actual cost for such materials as delivered to the Project site, including delivery charges as shown by original receipted bills, plus 15% of the sum of said cost and charges.

In lieu of receipted bills for materials used which were not specifically purchased for the Project, but were taken from the Contractor's stock, the Contractor shall provide to the Project Engineer an affidavit certifying that such materials were not purchased for the Project, that the materials were taken from the Contractor's stock, that the quantity claimed to have been used on the Project was actually so used, and that the price claimed for the materials is currently their fair market value. The payment calculations shall include Contractor's costs of transporting the materials to the Project site, in accordance with subparagraphs (a) and (d) hereof.

The payment calculations shall not include any penalty or charge incurred due to the Contractor's late or delayed payment for the pertinent materials.

(c) Equipment: All equipment used for cost-plus Project work must, in the judgment of the Project Engineer, be in good working condition and suitable for the purpose intended; and the Project Engineer reserves the right to determine the size and number of units of equipment to be used for such work. The manufacturer's ratings shall be the basis for all Rental Rate Blue Book classifications used for payment purposes. ("Rental Rate Blue Book" as used in these specifications refers to the current edition of the Rental Rate Blue Book, taking into account all current Rate Adjustment Tables, and amendments thereof, which is published by K III Directory Corporation of San Jose, California, including all current Rate Adjustment Tables and amendments thereof.) Trucks will be classified by cubic-yard capacity.

Amounts claimed by the Contractor based on equipment rental rates shall not include any percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be added for payment purposes to amounts charged by the Contractor based on equipment rental rates.

No percentage mark-up will be included in the payment calculation in connection with amounts claimed by the Contractor based on equipment rental rates.

The payment calculations shall not include rental rates for small tools needed to complete the cost-plus Project work.

For payment calculations purposes, estimated operating costs per hour from the Rental Rate Blue Book will apply only to the actual time during which the equipment is actively being used to

perform cost-plus Project work.

For equipment that is also being used for non-cost-plus Project work, the payment calculations shall include the applicable hourly rate only for the actual time that the equipment is assigned to cost-plus Project work. The applicable period of assignment for each piece of equipment shall start when the equipment commences to be used for cost-plus Project work ordered by the Project Engineer, and shall end at the time designated by the Project Engineer.

For equipment which has to be brought to the Project site exclusively for cost-plus work, the payment calculations shall include Contractor's loading and unloading costs and costs of transporting such equipment to and from the Project site; provided, however, that cost claimed for return transportation from the Project site shall not exceed the cost of moving the equipment to

that site. If such a piece of equipment is self-propelled, and is driven to the Project site under its

own power, then the payment calculation shall include only operating costs and labor costs for its transport to and from the Project site. The payment calculations will not, however, include any loading, unloading and transportation costs if the equipment is used for any Project work on the site other than cost-plus work.

1) Owned Equipment: The payment calculation shall include the applicable rental rate set forth in the Rental Rate Blue Book for any equipment (1) which the Contractor uses, with the Project Engineer's authorization, to perform cost-plus Project work, and (2) which is owned by the Contractor or a subsidiary, affiliate, or parent company of the Contractor (no matter how far up or down the chain of ownership from the Contractor).

The maximum hourly rate to be used in payment calculations for Contractor-owned equipment assigned to cost-plus work shall be the applicable monthly rate in the Rental Rate Blue Book, divided by 176 (176 working hours per month).

Should the proper completion of the cost-plus Project work require equipment of a type not covered by the Rental Rate Blue Book, the Project Engineer will determine, and the payment calculation shall include a reasonable rental rate based on rates prevailing in the area of the Project. If practicable, such rates shall be determined by the Project Engineer before the affected work is begun. If the Contractor proposes that the Project Engineer use a particular rate in such an instance, the Contractor must disclose to the Project Engineer the specific sources of, or support for, said rate.

If a piece of equipment owned by the Contractor is assigned to cost-plus Project work, but remains idle for some portion of the period of the cost-plus work, the payment calculation, shall include for that idle time 50% of the applicable rental rate (exclusive of operating costs) in the Rental Rate Blue Book.

For payment calculation purposes, the period of equipment usage shall be deemed to start when the Contractor begins to use the equipment for cost-plus Project work and shall be deemed to end when the equipment is released by the Project Engineer from use for such work. Any hours during

which the equipment is used for work other than cost-plus Project work will be deducted from the payment calculation. For any piece of Contractor-owned equipment assigned to cost-plus Project work, the payment calculation shall include aggregate minimum of 8 hours (of use time, idle time, or a combination thereof) in each 24-hour day (measured from one midnight to the following midnight) during the assignment period. The payment calculation shall not include Saturdays, Sundays and legal holidays during which the Contractor does no Project work, or for any other day on which the Project Engineer orders the Contractor to do no Project work. If the equipment is used to perform cost-plus Project work for more than 8 hours in a day, the payment calculation shall include the applicable hourly rate computed on a monthly basis for the actual time of use; however, the payment calculation shall not include any claim for more than 8 hours of idle time for a piece of equipment during a given day.

The City shall have the right to limit its aggregate payment calculations for idle time for a given piece of equipment to the replacement value of that equipment.

(2) Rented Equipment: If the Project Engineer determines that in order to perform the cost-plus Project work the Contractor must rent certain machinery, trucks or other equipment not owned by the Contractor or a subsidiary, affiliate, or parent company of the Contractor (no matter how far up or down the chain of ownership from the Contractor), the Contractor shall inform the Project Engineer, in advance of such rental, (a) of the specific nature of the rental(s), (b) the reasons for its need for such rental(s), (c) the anticipated or proposed rental rate(s), and (d) the estimated duration for the use of the equipment. Rates for such rented equipment must be provided based on the following:

—A daily rate per hour when the equipment is to be specifically assigned to Project work by the Project Engineer for a period of 7 consecutive calendar days or less.

—A weekly rate per hour when such assigned time exceeds 7 consecutive calendar days, but does not exceed 21 consecutive calendar days.

—A monthly rate per hour when such assigned time exceeds 21 consecutive calendar days.

The applicable daily, weekly, or monthly rate will be determined at the expiration of 21 calendar days or upon release of the equipment by the Project Engineer, whichever occurs first. Interruptions of the rental period, when equipment is used on other than assigned cost-plus work, will not entitle the Contractor to payment at a rental rate that would be applicable to the shorter periods arguably occasioned by such interruptions.

Prior to renting such equipment, the Contractor shall obtain and submit to the Project Engineer a minimum of three quotes, if requested by the Project Engineer.

The payment calculation shall include such rental rates actually paid by the Contractor, provided that the given use and rental rate are acceptable to the Project Engineer. In order for any such costs to be considered, the Contractor must provide the Project Engineer with a copy of the original receipted bill for the rental expenses incurred. SC-9

(e) Administrative Expense: When extra work on a cost-plus basis is performed by an authorized subcontractor, the payment calculation shall include an additional 7.5% for that work; and such amount will be in addition to the percentage payments described in (a), (b), (c) and (d) above, as a reimbursement for the Contractor's administrative expense in connection with such work. Approval of such additional amounts will be given only after the Contractor provides to the Project Engineer receipted invoices for all relevant costs.

(f) Bonding Costs: For bonding on the total cost of the cost-plus work including administrative expenses as outlined in (e) above, the payment calculation shall include Contractor‘s actual cost. The Contractor shall provide to the Project Engineer documentation, satisfactory to the Project Engineer in form and substance, of all such costs.

(g) Miscellaneous: Any compensation associated with (a), (b), (c), (d) and (e) above shall be deemed to be payment in full for the extra work and shall be deemed as full compensation for same, including costs of superintendence, use of small tools, equipment for which no rental is allowed, safety equipment, consumables, field office overhead, home office overhead, bonding, other insurance, and profit. The Contractor's representative and the Project Engineer shall compare their respective records of the extra work done on a cost-plus basis at the end of each day. Copies of these records shall be signed by both the Project Engineer and the Contractor's representative. The Project Engineer will then forward a copy of same to the Contractor and to any affected subcontractor in accordance with City procedures. Upon payment of such costs by the Contractor, the Contractor shall immediately furnish the Project Engineer with original receipted bills covering the costs, including transportation charges, for all materials used for such work.

ARTICLE 12. LAYDOWN AREAS / MATERIAL STORAGE

A Laydown Area shall not impede traffic flow within the City streets. The Contractor may use these areas during construction and shall be required to restore any disturbed areas to a condition as good as or better than existing conditions.

Contractor shall also be required to clean up, restore, and make safe and usable all Laydown Areas as directed by the Engineer. This may include removing equipment, materials, tools, etc., from the any Laydown Area for a period to be determined by the City of Waterbury.

The City will not provide any staging area for Construction and/or Contractor operations. The Contractor shall provide its own staging/storage area. Lay down areas within the project’s limits are allowed but require pre-approval from the City. In all cases, the Contractor shall be responsible for the protection of all materials, tools, etc. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public, adjacent property owners and tenants or the City.

The Contractor shall provide its own storage facilities and in all cases be responsible for the protection of all materials, tools, etc. The number and location(s) of storage containers shall be

approved by the City. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public or the City or City's employees or tenants. All deliveries of material, equipment, etc., shall be made to the Contractor and accepted only by him/her and only during working hours. City personnel will not receive or accept any materials or equipment, etc. at any time.

ARTICLE 13. ADDENDUM TO GENERAL CONDITIONS 11 and 95

Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities needed to maintain utility service to all adjacent property owners/tenants.

ARTICLE 14. ADDENDUM TO GENERAL CONDITION 1

Reference is made to General Condition Article 1 – Plans and Specifications at the Site; Record Documents. Marked up drawings and/or As-Built drawings will not be required for this Project.

ARTICLE 15. CITY DESIGN STANDARDS, SPECIFICATIONS AND DETAILS

The Contractor shall comply with all City design standards, specifications and details. To the extent that Technical Specification or Drawings conflict with City design standards, specifications, or details, City design standards, specifications and details shall control.

ARTICLE 16. ADDENDUM TO GENERAL CONDITIONS 2

Reference is made to General Condition Article 2 – Construction Progress Schedule. Reference is made to General Condition Article 2 – Construction Progress Schedule. For this project, Contractor shall not be required to provide a Sedimentation and Erosion Control Plan, a Water Control Plan and/or Environmental Protection Plan as may be outlined or referenced in the various Articles of these General Conditions.

ARTICLE 17. ADDENDUM TO GENERAL CONDITIONS 8, 9 and 10

Reference is made to General Condition Article 8 – Sedimentation and Erosion Control, Article 9 – Protection of Environmental Resources and Article 10 - Environmental Protection Plan. The requirements of Articles 8, 9 and 10 shall not apply to this project; however, the Contractor shall responsible for any such requirements to the extent set forth in the Technical Specifications or elsewhere in the Contract Documents.

ARTICLE 18. CHRO AND CONTRACT REQUIREMENTS

Bidder's attention is drawn to the fact that should the value of the assigned work equal or exceed $50,000 a contract with the City of Waterbury will be required and the State of Connecticut Commission on Human Rights and Opportunities (CHRO) contract provisions will apply for all projects where the state funded portion of the project equals or exceeds $150,000.

ARTICLE 19. CALL BEFORE YOU DIG (CBYD)

Before any excavation work is performed, the Contractor must contact Call Before You Dig (CBYD) at 811 or 1-800-922-4455 or by email to obtain and maintain a request number and the names of the utility companies that are being notified. The Contractor, (upon request) must supply the City with the request number(s) and update the City as needed. Upon request, the Contractor must supply the City a complete list of utilities that CBYD will contact for each request. Any subsurface excavations or explorations must be cleared with CBYD at least two (2) days prior to performing work. Any utility conflict must be approved by the City in writing. Information on CBYD is found at the following link, as modified from time to time (www.cbyd.com).

ARTICLE 20. OWNER CONTROLLED ALLOWANCE

If an Owner Controlled Contingency Allowance ("OCCA") has been provided in the Contract, it is to provide an account for certain expenditures found necessary by and ordered done by the City. This item shall include any unforeseen work made necessary by changes in the plans or necessitated by site conditions. Work for which payment is included under other items shall not be considered for inclusion under this item.

Use of the OCCA requires the City's advance written authorization. Determination of amounts to be paid for work under this item shall be in accordance with Article 11 of the Special Conditions and at the sole discretion of the City.

Determination of amounts to be paid for work under this Article shall be agreed to in advance by the Contractor and City and shall not exceed amounts established in the OCCA. At project closeout, unused amounts remaining in the allowance shall be credited to the City by Final Change Order (as part of and so documented in
Contractor's final payment request).

In no instance shall payments made pursuant to this Article result in an increase in the amount of the Contract Total Compensation or extension of Contract Time. Any increase above the Contract Total Compensation or Contract Time resulting from utilization of this Article must be by a duly authorized and executed Contract
amendment in accordance with Section 27 of the Contract.

ARTICLE 21. MONUMENTS OR PROPERTY MARKERS

City must be notified immediately if any monuments or property markers are damaged or

destroyed. Contractor is responsible for repairing or restoring any broke, damaged or removed monuments or property markers to City standards and Connecticut state law, standards and regulations.

Article 22. OSHA-10 CARDS

The Contractor is required to provide proof of OSHA-10 course completion for all contractor and subcontractor employees working on-site prior to said employees performing any work on site.

END OF SECTION

RFP # 8802

GENERAL CONDITIONS

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GENERAL CONDITIONS

INTRODUCTORY NOTE:

These General Conditions supplement the provisions and requirements of Contract and modify all Contract Documents which follow it numerically, as set forth in Section 1.2 of the Contract. The General Conditions may be amended, revised or supplemented by the Special Conditions which are project specific. The Contractor's attention is directed to the attached Special Conditions for any amendments, revisions or supplements to the General Conditions for this project. The terms used in these General Conditions which are defined in the Contract have the meanings assigned to them in said Contract.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project and all drawings, specifications and general provisions of the Contract apply to these General Conditions. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise in the Contract Documents, all costs associated with any work/services required or necessary under the General Conditions shall be considered as included in the Contract Amount (also referred to as Total Compensation). No separate or additional payment will be made for this work and/or services.

ARTICLE 1. PLANS AND SPECIFICATIONS AT THE SITE / AS-BUILT DRAWINGS

1.01 The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications, Schedules and Instructions, in good order. One copy is to be marked to record all changes made during construction. These shall be available at all times to the Project Engineer and the City or their authorized representatives. At the conclusion of construction, the Contractor is to turn one (1) corrected set of all documents over to the Project Engineer.

ARTICLE 2. CONSTRUCTION PROGRESS SCHEDULE

2.01 Within seven (7) consecutive calendar days of the written Notice to Proceed, and prior to commencement of any work on site, the Contractor shall prepare and submit for the approval of the City three (3) copies of a complete Construction Progress Schedule which shall be comprised of a critical path method network. (At the same time, the Contractor shall submit the Schedule of Values, Sedimentation and Erosion Control Measures, Water Control Plan and Environmental Protection Plan, as outlined in the various Articles of these General Conditions).

2.02 The critical path of the Project must be identified on the Construction Progress Schedule which shall provide a workable plan for monitoring the progress of all the elements of the Project, establish and clearly display the critical elements of the Work, on which each part or division of the Work is expected to be started and completed, forecast completion of the elements of the Project, and match the Contract duration in time. The Construction Progress Schedule shall also indicate the logic of the work for the major elements and components of work under the Contract, such as the planned mobilization of plant and equipment, sequences of operations, procurement of materials and equipment, duration of activities, type of relationship, lag time (if any), and such other information as it is necessary to present a clear statement of the intended activities.

2.03 The schedule shall indicate all subcontractors to be utilized on the Contract and the portions of the Contract that they will be performing. The Contractor shall evaluate the status of the Project at least monthly, comparing it to the original schedule, which shall be revised as required. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the current schedule.

2.04 The Contractor shall perform the work of this Contract to satisfy the Construction Progress Schedule as approved by the Project Engineer. However, the Project Engineer and City reserve the right to amend and alter the Construction Progress Schedule, as approved, at any time and in a manner which the Engineer deems to be in the best interests of the City.

2.05 The Contractor shall be required to execute his work in accordance with the Construction Progress Schedule as prepared and in accordance with any additional requirements specified herein and approved by the Project Engineer. The Construction Progress Schedule shall forecast the times for doing each portion of the work. The Contractor shall

arrange the work under this Contract to conform with the Construction Progress Schedule, as it may be revised by the Engineer from time to time, at no additional expense to the City.

2.06 The revised Construction Project Schedule shall take some or all of the following actions to demonstrate the manner in which an acceptable rate of progress will be regained, by the following methods:

i. Increase construction manpower in such quantities and crafts as shall substantially eliminate the backlog of work and meet the current Contract completion date.
ii. Increase the number of working hours per shift, the number of shifts per day, the number of work days per week, or the amount of construction equipment, or any combination of the foregoing
iii. Reschedule work items to achieve concurrent accomplishment of work activities.

2.07 Under no circumstances will the adding of equipment or construction forces, increasing the working hours, or employing any other method, manner, or procedure to return to the contractually required completion dates be a justification for additional compensation to the Contractor.

ARTICLE 3. ESTIMATED QUANTITIES

3.01 Any Estimated Quantities for the Project furnished by the City, including those provided on the Bid Form, are approximate only and are: a) for procurement related comparison purposes only, ~~and~~ b) given as a basis for the pricing and c) are not represented to be actual quantities for completion of the Work. Within the limits of available funds, the Contractor will be required to complete the Work at the unit prices provided in the Bid Form/or Price Proposal whether it involves quantities greater or lesser than the estimate. The Contractor will be compensated only for the actual quantity of authorized, and actually performed, and/or materials furnished.

ARTICLE 4. SCHEDULE OF VALUES; APPLICATION FOR PAYMENT

4.01 Within seven (7) consecutive calendar days after the Notice to Proceed, as a basis for estimating partial payments, the Contractor shall submit for the approval of the City a certified Schedule of Values, broken down into quantities and unit costs for the various parts of the work, divided as may be directed and aggregating the total sum of the Contract; and if required, he shall submit evidence supporting this schedule.

4.02 The Contractor's requisition for payment shall be submitted on forms supplied by the Contractor and approved by the City and shall be in such numbers of copies as may be designated by the City. Sample forms are included in the Bid Documents. Alternate payment application forms may be utilized provided they are approved by the City, in writing, prior to submission by the Contractor.

4.03 If the Project is funded by multiple funding sources, the Contractor may be required to submit separate requisitions for payment to each source, on the forms provided by each source and in accord with all requirements of each individual funding source.

4.04 For Lump Sum projects, the requirements for the Schedule of Values are further defined as follows: a) the Schedule of Values shall delineate the various tasks that comprise the lump sum items. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, when accepted by Project Engineer, shall only be used as a basis for Contractor’s periodic payment applications. No payment will be made to Contractor until such Schedule has been submitted and accepted by Project Engineer, and b) the lump sum item shall be broken down sufficiently to provide a convenient and realistic means for determining the amount of work done during various stages of progress.

ARTICLE 5. PARTIAL PAYMENTS

5.01 The City will review the Contractor's monthly requisitions for Partial Payments to arrive at what is, in its opinion, a fair and just estimate of the materials suitably stored on the site and the amount of work performed on the Contract. At its discretion, the City may allow to be included in the monthly requisitions materials stored off the site. In the event the City allows the Contractor to include in its requisitions payments for materials stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored material, and follow such other procedures as may be required by the City.

5.02 In making such Partial Payments for the Project, retainage shall be held in the amount of 5% of the value of work completed to date. The Retainage does not include additional sums that the City may withhold due to the Contractors failure to comply with construction plans, specifications etc. deemed provisions of this contract.

5.03 Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Project Engineer will estimate the value of work completed and will deduct some amount so as to arrive at a conservative value which will allow City to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Project Engineer's determinations.

ARTICLE 6. INSPECTION AND TESTS

6.01 All material and workmanship shall be subject to inspection, examination and testing by the City and/or Project Engineer (in addition to that required by the Specifications) any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction is carried on. Notice of the time of all tests to be made at the site shall be given to all interested parties.

6.02 Contractor must obtain the Engineer's approval of any sources of materials to be incorporated into the Project before beginning to use them for the Project.

6.03 If, at any time before final acceptance of the Project, the City and/or Project Engineer considers it necessary or advisable to examine any portion of the Project already completed by removing or testing out the same, the Contractor shall upon request furnish promptly all necessary facilities, labor and materials. If such work is found to be defective in any material respect because of a fault of the Contractor or any of its subcontractors, or if any work shall have been covered over without the approval or consent of the City (whether or not it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including labor, material, services of required consultants, additional supervision and administrative costs.

6.04 Unless expressly provided for otherwise, for Projects that include material testing to ensure compliance with the Technical Specifications, the Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

6.05 Without additional charge, the Contractor shall promptly furnish all reasonable facilities, labor and materials necessary to make tests safe and convenient. Special, full size and performance tests shall be as described in the Specifications.

ARTICLE 7. UTILITIES

7.01 The accuracy and completeness of the utility information shown on the Plans and/or otherwise provided by the City is not guaranteed. The Contractor shall make its own investigation of the extent and location of utilities and of the possibility of relocation work by the utility companies, and shall plan its operations accordingly. No claim for any delays, damage or extra work occasioned thereby will be allowed.

7.02 The Contractor shall allow others access to the Project for the purpose of placing, relocating or maintaining utilities, and he shall cooperate in every way in the performance of this Project.

7.03 The Contractor shall notify the utility owners well in advance of the time the Contractor proposes to perform any work which would endanger utility installations, and the Contractor shall cooperate with the utility owners in relocating and/or protecting such installations during construction operations.

7.04 No payment will be made to the Contractor for locating, protecting and making arrangements for relocating public utilities or for any delays caused thereby. The Contractor shall include all costs of this Project in other scheduled items of the Contract.

ARTICLE 8. SEDIMENTATION AND EROSION CONTROL

8.01 All watercourses shall be protected from sedimentation, both during and after construction. The Contractor shall

control erosion and sedimentation problems in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control prepared by the Connecticut Council on Soil and Water Conservation, dated 2002, as amended.

8.02 The Contractor shall submit the Sedimentation and Erosion Control Plan for the approval of the Project Engineer within seven (7) consecutive calendar days after the Notice to Proceed.

8.03 The Contractor shall be responsible for providing silt fences, staked haybales and other temporary erosion control measures which may be required to properly complete this Project. No extra compensation will be allowed, due to water or precipitation levels fluctuation.

ARTICLE 9. PROTECTION OF ENVIRONMENTAL RESOURCES

9.01 The environmental resources within the Project boundaries and those affected outside the limits of permanent work under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine its activities to areas defined by the Plans and Specifications. Environmental protection shall be as stated in the following subparagraphs:

A. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure or destroy land resources including trees, shrubs, vines, grasses, top soil and land forms without special written permission from the property owner. No ropes, cables or guys shall be fastened or attached to any trees for anchorage unless specifically authorized in writing by the Project Engineer. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

B. Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under the Contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to its personnel the purpose of marking and/or protection of all necessary objects.

C. Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the Plans to be preserved shall be clearly identified by marking, fencing or wrapping with boards, or any other approved techniques.

D. Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earth work shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the City and/or Project Engineer.

E. Runoff from the construction site shall be controlled by the construction of diversion ditches, benches and berms to retard and divert runoff to protected drainage courses, and any measures required by area wide plans approved under Paragraph 208 of the Clean Water Act, as amended.

F. The Contractor shall construct or install all temporary erosion control features as indicated in the submitted Sedimentation and Erosion Control Plans, or directed by the City and/or Project Engineer. Temporary erosion control measures such as berms, dikes, drains, grassing and mulching shall be maintained until construction of the Project is completed.

G. The Contractor's field offices, staging areas, stockpile storage and temporary buildings shall be placed in areas designated on the submitted Plan. Temporary movement or relocation of the Contractor's facilities shall be made only on approval by the City and/or Project Engineer.

H. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby watercourses.

I. Spoil areas shall be managed and controlled to limit spoil areas and to prevent erosion of soil or sediment from entering nearby watercourses. Spoil areas shall be developed in accordance with the grading plan indicated on the Plans.

ARTICLE 10. ENVIRONMENTAL PROTECTION PLAN

10.01 Within seven (7) consecutive calendar days after the Notice to Proceed, and prior to commencement of any work on site, the Contractor shall submit an Environmental Protection Plan for the approval of the City in accordance with the provisions herein specified. The plan shall include but not be limited to the following:

A. A list of Federal, State and Local laws and regulations concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws and regulations.

B. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and groundcover, landscape features, air and water quality, fish and wildlife, soil, historical, archeological and cultural resources.

C. Procedures to be implemented by the Contractor to provide the required environmental protection and to comply with applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the Environmental Protection Plan.

D. The location of the nearest suitable solid waste disposal area and a permit allowing the Contractor to use those facilities.

E. Drawing showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess' or spoil materials.

F. Environmental monitoring plans for the job site, including land, water, air and noise monitoring as necessary, and as required by the Project Engineer.

G. Environmental monitoring and management plans for the any endangered wildlife or plant species as determined by CT DEEP, City or Project Engineer.

H. Traffic control plan when necessary.

I. Methods of protecting surface and ground water during construction activities.

J. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan should include measures for marking the limits of use areas.

ARTICLE 11. TEMPORARY UTILITIES

11.01 Unless expressly otherwise provided for in the Contract Documents the Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities of any nature whatsoever needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 12. ABBREVIATIONS

12.01 Where one of the following abbreviations are used in the Contract Documents, it shall have the meaning set forth opposite each below:

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AGA	American Gas Association
AIEE	American Institute of Electrical Project Engineers
AISC	American Institute of Steel Construction
API	American Petroleum Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWG	American (or Brown and Sharpe) Wire Gauge
AWWA	American Water Works Association
CONNDOT	Connecticut Department of Transportation
DEP	Department of Environmental Protection
EDR	Equivalent Direct Radiation
EPA	Environmental Protection Agency
FWQA	Federal Water Quality Administration
IBR	Institute of Radiator and Boiler Manufacturers
MCB	Master Car Builders
NBS	National Bureau of Standards
NEC	National Electrical Code (latest edition)
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NFPA	National Fire Protection Agency
NPT	National Pipe Thread
SMACNA	Sheet Metal and Air Conditioning Association
OS&Y	Outside Screw and Yoke
STL.WG	United States Steel Wire, Washburn and Moen, American Steel And Wire Companies and Roebling Gauge
USS GAUGE	United States Standard Gauge
WOG	Water, Oil, Gas
WSP	Water Steam Pressure

"Federal Specification" A Federal specification issued by the Federal Supply Services Administration, Washington, D.C.

ARTICLE 13. SUBSURFACE EXPLORATION

13.01 Where applicable, and if provided by the City, boring logs, probes and related information contain data regarding subsurface conditions at the dates and location indicated. This information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true or approximately true picture of the actual subsurface conditions to be encountered.

ARTICLE 14. CONTRACT AND CONTRACT DOCUMENTS

14.01 Deleted.

14.02 The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the priority of the documents shall be in accordance with Section 1.2 of the Contract.

ARTICLE 15. SHOP DRAWINGS, CATALOG CUTS AND SAMPLES

15.01 The Contractor shall promptly submit to the Project Engineer five copies of each submittal prepared in accordance with the approved schedule. After examination of such submittal by the Project Engineer and the return thereof, the Contractor shall make such corrections to the submittal as have been indicated and shall furnish the Project Engineer with five corrected copies. If requested by the Project Engineer, the Contractor must furnish additional copies. Regardless of corrections made on, or approvals given to, such submittal by the Project Engineer, the Contractor shall nevertheless be responsible for the accuracy of such submittal. The Contractor shall also be responsible for the submittal's conformity to the Submittal and Specifications, unless the Contractor notifies the Project Engineer in writing of any deviations at the time of submission of the submittal.

15.02 Submittal of all fabricated work shall be submitted to the Project Engineer and no work shall be fabricated unless it is done at the Contractor's own risk until approval has been given by the Project Engineer and City.

15.03 The Contractor shall submit all submittals on dates sufficiently in advance of requirements in order to enable the Project Engineer and City to properly review them. This period shall include time to correct, resubmit and recheck, if necessary, and no claim for delay will be granted to the Contractor because of the Contractor's failure in this respect. The Project Engineer and City will be given a minimum of fourteen (14) consecutive calendar days for the initial review of each submitted submittal.

15.04 All submitted submittals must bear the approval stamp of the Contractor and reference conformance to the applicable provisions of the Specifications as evidence that the Contractor has checked the drawings. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for resubmission. If the submittals show variations from the requirements of the Contract Documents because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in the letter of submission to the Project Engineer. If the variation is acceptable to the Project Engineer and City, suitable action may be taken for proper adjustment. If not acceptable, the Contractor shall not be relieved from the responsibility for executing the work in accordance with the Contract Documents, although such submittals had been approved.

15.05 Where submittals are submitted by the Contractor that indicate a departure from the Contract Drawings which the Project Engineer deems to be a minor adjustment and in the City's interest and not involving a change in the Contract price or an extension in time, then the Project Engineer may approve the drawings. Such approval will contain, in substance the following:

> The modification shown on the attached drawings is approved in The interest of the City to effect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time. The modification is generally subject to all Contract stipulations and covenants and it is without prejudice to any

and all rights of the City under the Contract.

The approval of submittals will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract nor of the responsibility for any errors that may exist.

15.06 The Contractor agrees to hold the Project Engineer and the City harmless and to defend them against damage or claims for damages arising out of injury to others or to property of third parties which result from errors on shop or working drawings, whether or not they have been approved by the Project Engineer and/or the City.

15.07 Working Drawings. When required by the Contract or when ordered to do so by the City Representative, the Contractor shall prepare and submit 4 copies of the working drawings to the City Representative for review. These drawings shall be submitted sufficiently (at least 15 consecutive calendar days) in advance of the proposed use, to allow for their review, and any necessary revisions, without delay of the Project. No work covered by these working drawings shall be done until the drawings have been submitted to the City Representative for review and the City Representative's comments have been appropriately taken into account and implemented. The furnishing of the working drawings shall not serve to relieve the Contractor of any part of its responsibilities under the Contract.

ARTICLE 16. CONTRACTOR'S TITLE TO MATERIALS

16.01 No material, supplies or equipment for the work shall be purchased by the Contractor, or by any Subcontractor, subject to any chattel mortgage or under any conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work. The Contractor further warrants that, upon completion of all work, he will deliver the premises, together with all improvements and appurtenances constructed thereon, to the City free of any claims, liens, charges or encumbrances. The Contractor further warrants that neither the Contractor nor any person, firm or corporation furnishing any material, labor or equipment for any work covered by this Contract shall have a right to lien upon the premises or any improvement or appurtenance thereon.

ARTICLE 17. "OR EQUAL" CLAUSES

17.01 Unless otherwise provided for in the Bid Documents, the Contract will be on the basis of material and equipment described on the Bid Documents without consideration of possible substitute or "equal" items. However, subsequent to award of the Work, whenever a material or article required is specified or shown on the plans by using the name of a proprietary product or of a particular vendor or manufacturer, any materials or article which, in the sole discretion of the Project Engineer, is equal or superior to the specified item to material, may be considered an "equal." Requests for substitutions must be supported by evidence such as technical data, test results, or other pertinent information that demonstrate that the substitute offered is equal or better than the specification's requirements. Such items shall not be purchased or installed without the written approval of the Project Engineer. In all cases, only new materials shall be used for the work.

ARTICLE 18. REPRESENTATIONS OF THE CONTRACTOR

18.01 The Contractor represents and warrants:

(a) That he is financially solvent and that he is experienced and competent to perform the type of work or to furnish the plant, material or equipment to be performed or furnished by him; and

(b) That he is familiar with all Federal, State and municipal laws, ordinances, orders and regulations which may in any way affect the work of those employed therein, including but not limited to any special acts relating to the work or to the project of which it is a part; and

(c) That such permanent and temporary work required by the Contract Documents to be done can be satisfactorily constructed and be used for the purpose for which it is intended, and that such construction will not injure any person nor damage any property; and

(d) That he has carefully examined the drawings, specifications and addendum (or addenda) if any, and the site of the work, and that, from his own investigations, he has satisfied himself as to the nature, quality

and quantity of surface and subsurface materials likely to be encountered; of the character of equipment required for the work; of other facilities needed for the performance of the work; of the general and local conditions and of all other materials which in any way may affect the work and its performance; and

(e) That he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without injury to persons or property; and that he can provide the necessary equipment, labor and materials to complete the contract work within the specified contract duration.

ARTICLE 19. PROTECTION OF WORK AND PROPERTY (EMERGENCY)

19.01 The Contractor shall at all times safely guard and protect the City's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in the Contract or by the City or his duly authorized representatives.

19.02 In case of an emergency that threatens loss or injury of property and/or safety of life, the Contractor will be allowed to act in a diligent manner without previous instructions from the City. He shall notify the City immediately thereafter.

19.03 Where the Contractor has not taken action but has notified the City of an emergency threatening injury to persons or damage to the work or to any adjoining property, he shall act as instructed or as authorized by the City.

19.04 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided elsewhere in the Contract Documents.

ARTICLE 20. WEATHER CONDITIONS

20.01 In case of temporary suspension of the work, or during inclement weather, or whenever the City shall direct, the Contractor shall carefully protect his work and materials against damage or injury from the weather. The Contractor shall cause all his subcontractors to provide the same protection for their portion of the work. If, in the opinion of the City, any work or material was damaged or injured by reason of failure on the part of the Contractor, or any of his subcontractors, so to protect his work, or otherwise damaged by the negligence of the Contractor or any of his subcontractors or their agents or servants, or is otherwise defective, such materials shall be removed and replaced at the expense of the Contractor.

20.02 For projects involving asphalt paving, all work shall be temporarily suspended, upon direction of the City, when the Contractor can no longer properly pave exposed areas in accordance with the plans and specifications during inclement weather or during winter months.

ARTICLE 21. SUBLETTING

21.01 The Contractor is not to assign, transfer or sublet the Contract in whole or in part to any other person or persons without written permission from the City. The Contractor cannot abridge the terms of the Contract in any way without written permission of the City. The Contractor must keep the Contract in his name and control until all work is completed and finally accepted by the City. The Contractor shall likewise not assign any of the money payable under this Contract. Approval by the City of the subletting of any part of the work shall not, under any circumstances, relieve the Contractor or his Surety of any liabilities or obligations under the terms of the Contract Documents.

21.02 The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of the persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Should any subcontractor violate any of the terms of these specifications, the City may, at its option, require the Contractor to end and terminate such subcontract.

21.03 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind

subcontractors to the Contractor by the terms of the Contract and the General Conditions and other provisions of the Contract Documents. This language is to be applicable insofar as necessary to the work and is to give the Contractor the same power over as regards terminating any subcontract as the City may exercise over the Contractor under any provisions of the Contract Documents.

21.05 Nothing contained in this Contract shall create any contractual relation between the City and any subcontractor.

ARTICLE 22. SUBSTITUTE BOND

22.01 If, at any time, the Contractor's Surety or Sureties, or the carriers of other insurance herein specified to be written, become insolvent or, in a reasonable judgment of the City, become unsafe or unsound then, upon five days written notice from the City to the Contractor, the Contractor shall substitute such Performance and Labor and Material Bond or insurance with such other Surety or carrier in such form as shall be acceptable to the City. Any additional premium caused by such substitution shall be paid for by the Contractor. No further payments will be deemed due nor will be made until the new Surety or Sureties have furnished such an acceptable bond to the City.

ARTICLE 23. RIGHT TO WITHHOLD PAYMENTS

23.01 The City may withhold from the Contractor so much of any approved payments due as may in the judgment of the City be necessary to:

1. Assure the payment of any lien, stop notice or claim, filed with the City for work, labor, or materials done, performed or delivered and used in the prosecution of the work herein provided for (whether in strictly legal form or otherwise)
2. Protect the City from loss due to defective work not remedied or through any improper or defective machinery, implements or appliances used by the Contractor or for failure of the Contractor to fully comply with any requirements of the Contract
3. Protect the City from loss due to injury to persons or damage to work or property of other contractors, subcontractors or others caused by the act' or neglect of the Contactor or any subcontractors.

23.02 The City shall have the right, as agent for the Contractor, to apply any amounts so withheld in such manner as the City may deem proper to satisfy such claims or to secure such protection. Such applications of such money shall be deemed payments to the account of the Contractor.

23.02 Notwithstanding the above, the Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials furnished.

ARTICLE 24. PAYMENTS BY CONTRACTOR

24.01 The Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials.

ARTICLE 25. NOTICE OF WARNING

25.01 If the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work; or refuse or fail to supply enough properly skilled workmen or proper materials; or refuse or fail to prosecute the work or any part thereof in accordance with the Contract Documents or with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof); or fail to complete the work within said period; or refuse to regard laws ordinances, codes or instructions of the City then the City shall forward A Notice of Warning to the Contractor by registered mail at the address given in the Contract. In the event the Contractor fails to comply with said Notice of Warning within five (5) consecutive calendar days from receipt thereof, the City shall have the right to terminate the Contract.

ARTICLE 26. PROGRESS MEETINGS

26.01 Progress meetings will be held weekly at locations, dates and times selected by the City for the purpose of reviewing, scheduling and coordinating the Project's progress as well as other matters.

ARTICLE 27. PERMITS

27.01 The Contractor shall keep himself fully informed of all existing and current Municipal, State or Federal ordinances, regulations or laws in any way limiting or controlling the operations or actions of those engaged in the work or affecting the materials supplied to or by them. The Contractor shall at all times observe and comply with all such valid and binding ordinances, laws or regulations. The Contractor shall protect and indemnify the City and its representatives against any claims arising from, or based upon, any violation of the same.

ARTICLE 28. RIGHT TO USE THE WORK

28.01 The City may enter upon the use of the whole or of any portion of the work, which may be in condition to use, at any time before its final acceptance of the Project. Such use shall not constitute, or be evidence of, acceptance by the City or by the Project Engineer of the whole or any part of the material furnished or work performed under the Contract.

ARTICLE 29. PROVISIONS REQUIRED BY LAW

29.01 Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If, through mistake or otherwise, any such provision is not inserted, then, upon application of either party, the Contract shall forthwith be physically amended to make such insertion.

29.02 If this Contract contains any unlawful provisions not an essential part of the general structure of the Contract, and which shall not appear to have been a controlling or material inducement in the making thereof, the same shall be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 30. WAIVER

30.01 Neither the inspection by the City or Project Engineer or by any of their employees; nor any order, measurement or certificate by the Project Engineer; nor any order by the City for the payment of any money; nor any payment for or acceptance of the whole or any of the work by the Project Engineer for the City; nor any extension of time; nor any possession taken by the City or its employees shall operate as a waiver of any provision of this Contract or of any power herein reserved to the City. Nor shall such action waive any right to damages herein provided. Nor shall any waiver of any breach of the Contract constitute a waiver of any other or subsequent breach. Any remedy provided in this Contract shall be construed as cumulative - i.e. in addition to each and every other remedy herein provided.

ARTICLE 31. USE OF PREMISES AND REMOVAL OF DEBRIS

31.01 The Contractor expressly undertakes at his/her own expense:

1. To take every precaution against injuries to persons or damage to property.
2. To store apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of the work or the work of any other contractor.
3. To place upon the work or any portion thereof only such loads as are consistent with the safety of that portion of the work.
4. To frequently clean up all refuse, rubbish, scrap materials and debris caused by the Contractor's operations to the end that at all times the site of the work shall present a neat, orderly and work manlike appearance.
5. To remove all surplus material; falsework; temporary structures including foundations thereof; plant of any description and debris of any nature resulting from the Contractor's operations before final payment is made.
6. To put the site in a neat orderly condition, to remove all clean-up materials, to remove such materials from the construction site, and to deposit them in a refuse disposal site at his/her expense.

7. To effect all cutting, fitting or patching of work required to make the same conform to the Drawings and Specifications and, except with the consent of the City, not to cut or other wise alter the work of any other contractor.

ARTICLE 32. RIGHT-OF-WAY AND SUSPENSION OF WORK

32.01 Land and rights-of-way for the purposes of this Contract will be furnished by the City to the extent shown on the Drawings. The City will use diligence in acquiring said land and rights-of-way as speedily as possible. However, it is possible that not all land and rights-of-way will be obtained as herein contemplated before construction commences. In such case the Contractor shall begin the work upon such land and rights of-way as the City may have previously acquired. No claim for damages whatsoever will be allowed by reasons of the delay in obtaining the remaining lands and/or rights-of-way. Should the City be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of litigation or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to withdraw from the Contract because of these occurrences. In the event of any of the above occurrences, the time for completion of the work may be extended in the manner provided elsewhere in the Contract Documents.

ARTICLE 33. CONSTRUCTION EQUIPMENT AND MACHINERY

33.01 The Contractor shall furnish and maintain, at its own cost and risk, all tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and all other similar work or material necessary to insure speed, convenience and safety in the execution of its Contract. All such items shall be subject to approval of the City, upon the Project Engineer's recommendation, as to general stability, type and location, but the responsibility for proper design, strength and safety shall remain with the Contractor. All such items shall comply with OSHA regulations and all other applicable codes, statutes, rules and regulations.

33.02 The Contractor shall provide all drains, drainage, ditches and pumping apparatus (including power and attendance for same) that may be necessary to keep all excavations and sub-grade work free from water.

33.03 All machines, equipment, trucks and vehicles used in the prosecution of the work, or in connection therewith, shall be in proper working condition at all times. Only gasoline, electric or diesel engines shall be used for the power in operating equipment.

33.04 The Contractor shall be responsible for curtailing noise, smoke, fumes or other nuisances resulting from the operations. The. Contractor shall, upon written notification from the City or Project Engineer, make any repairs, replacements, adjustments or additions and furnish mufflers when necessary to' fulfill requirements. No oil tanks for fueling equipment shall be stored less than one hundred (100) feet from any watercourse.

33.05 All costs involved in complying with the stipulations outlined shall be included in the various prices bid in the proposal.

ARTICLE 34. CONTRACTOR'S GENERAL WARRANTY PERIOD

34.01 The Contractor's General Warranty Period shall commence on the date of the written notice of final acceptance of the Project by the City and during such time Contractor shall guarantee his work is free from faulty materials and workmanship.

34.02 Within the Contractor's General Warranty Period, any portion of the Work shall, in the opinion of the City, require repairing, replacing or rebuilding, the Contractor shall start such repairs within five (5) consecutive calendar days after receipt of notice from the City. If the Contractor shall fail to or neglect to start the repairs within five (5) consecutive calendar days, the City may employ such other person or persons as it may deem proper to make such repairs. The City will charge the Contractor the cost thereby incurred. Nothing herein provided shall limit the liability of the Contractor or Surety to the City for non-performance of the Contractor's obligations at any time.

34.03 The Payment and Performance Bonds, and Material Bond, if required, shall remain in full force and effect through the Contractor's General Warranty Period.

34.04 Deficiencies in the Work discovered after the date of the written notice of final acceptance of the Project by the City shall be deemed General Warranty Work. Such deficiencies shall be corrected by Contractor under this Article.

34.05 The Contractor shall remedy any defects due to faulty materials or workmanship within thirty (30) consecutive calendar days of receiving notice thereof by the City. Should the Contractor fail to correct the deficiency within thirty (30) consecutive calendar days, the City may perform the corrective work and Contractor shall be responsible for all reasonable costs incurred by City in performing such correction.

ARTICLE 35. PROCEDURE IN CONSTRUCTION

35.01 The Contractor shall start work and carry it on at such point or points and in such order of precedence and at times and seasons as may be determined by the City. The Contractor shall complete the various portions of the work in accordance with the schedule approved by the City.

35.02 A complete organization, complement of equipment and ample materials shall be on hand before actual work commences. The Contractor shall so arrange his/her organization, plant, equipment and materials so that construction operations will be carried on continuously. The Contractor will not be permitted to reduce the force of workers or remove any equipment from the work if such reduction or removal impairs the progress of the work.

35.03 In the event that the City awards more than one contract to the Contractor, the Contractor shall be required to prosecute the work on each contract simultaneously. The Contractor will be required to maintain a separate and independent organization and staff, labor forces and machinery on each contract in order to complete the work within the time set forth for the respective contracts.

ARTICLE 36. APPRENTICES

36.01 Apprentices shall be permitted to work only under a bonafide apprenticeship program registered either with the State Apprenticeship Council or with the Bureau of Apprenticeship, United States Department of Labor.

ARTICLE 37. CONTROL OF WORK

37.01 The Contractor shall abide by all orders, directions and requirements of the Project Engineer in the performance of the work.

37.02 In the event the Contractor is not personally present at the project site, he/she shall have a superintendent present at the site that possesses more than adequate communication skills. The superintendent must have proper knowledge of all applicable project requirements and conditions and must have authority to fully represent the Contractor with power to act and to be the recipient of orders and to obey all the instructions of the Project Engineer and/or the City. If proper provision for the carrying out of this stipulation is not made, then the Contractor shall be held responsible for the execution of such orders and instructions which the Project Engineer and/or City may deem necessary to issue to any employee regarding the work. The City or Project Engineer may order the work stopped until a duly authorized representative of the Contractor appears and receives instructions. No claims for damages or for an extension time in which to complete the work because of such delay will be allowed the Contractor.

37.03 In all cases, the Project Engineer shall determine classifications, quantities, quality, acceptability and fitness of the several kinds of work that are to be paid for under the Contract. The Project Engineer and/or City shall interpret the Plans and Specifications and any extra work orders and shall determine all questions in relation to said work and to the construction thereof.

37.04 The Contractor shall not employ any plant, equipment, material, methods or workers to which the City objects. The Contractor shall not remove any plant, materials, equipment or other facilities from the site of the work without the City's permission.

ARTICLE 38. CITY'S CONTROL NOT LIMITED

38.01 The enumeration in this Contract of particular instances in which the opinion, judgment, discretion or

determination of the City shall control, and in which work shall be performed to the City's satisfaction and approval or inspection, shall not imply that only matters similar to those enumerated shall be so governed. Without exception all the work shall be so governed and performed.

ARTICLE 39. AUTHORITY AND DUTIES OF INSPECTORS

39.01 Inspectors shall be authorized to inspect all work done and all materials furnished. Such inspection may extend to all parts of the work and to the preparation or manufacture of the materials to be used. In the case of any dispute arising between the Contractor and an Inspector as to materials furnished, or as to the manner of performing the work, the Inspector shall have the authority to reject material or to suspend the work until the question at issue can be referred to, and decided by, the City.

39.02 The Inspector shall not be authorized to revoke, enlarge, relax or release any requirements of these Specifications nor to approve or accept any of the provisions of the Contract Documents. The Inspector shall in no case act as a foreman or perform other duties for the Contractor. The Inspector shall not interfere with the management of the work by the Contractor. Any advice, which the Inspector may give the Contractor, shall not be construed as binding the City or the Project Engineer in any way. Such advice will not release the Contractor from the fulfillment of the terms of the Contract.

ARTICLE 40. INSPECTION AND CORRECTION OF WORK

40.01 All material furnished and work done will be inspected by the Project Engineer. The Project Engineer shall condemn any work or materials not in accordance with the Contract Documents. All condemned work and materials shall be removed and other work and materials furnished in accordance therewith. All materials rejected by the Project Engineer as being unfit for the particular clause in the Specifications to which they refer shall be removed from the site. Removal shall be within twenty-four (24) hours or shorter if the Project Engineer so directs. Should the Contractor refuse to remove the work and materials as ordered, then the Project Engineer may stop the Contractor from proceeding with the work. The City may supply workers and materials to remove the condemned work and materials at the expense of the Contractor.

40.02 Failure on the part of the Project Engineer, or any authorized Inspectors, to detect inferior work or materials, and to condemn the same, shall not be construed to imply an acceptance of such work or materials. Such failure shall not be construed as barring the City, at any subsequent time, from the recovery of such sum of money from the Contractor which may be required to construct or to build anew all portions of the work in which fraud was practiced, improper work executed or improper material furnished and built into the work. The Contractor shall furnish all necessary facilities should it be desirable at any time to make an examination of the work already completed.

40.03 If any work is found defective in any respect, the expense of the examination must be borne by the Contractor. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided for elsewhere in the Contract Documents. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided elsewhere in the Contract Documents.

40.04 If, in the opinion of the City, it is undesirable to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the Contractor's compensation hereunder shall be reduced by such amount as may be equitable under all circumstances.

ARTICLE 41. CONTRACTOR'S OBLIGATIONS

41.01 The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and material, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by this Contract. All to be accomplished within the time specified; in accordance with the provisions of this Contract and Specifications; in accordance with the Plans and Drawings pertaining to this Contract; in accordance with any and all supplemental Plans and Specifications and in accordance with the directions of the City as given from time to time during the progress of the work. The Contractor shall furnish, erect, maintain and remove such construction plant and such temporary work as may be required. The Contractor alone shall be responsible for the safety, efficiency and adequacy of the plant, appliances and methods. The Contractor shall be responsible for any damage, which may result from their failure or from their improper construction, maintenance or operation. The Contractor shall

observe, comply with and be subject to all terms, conditions, requirements and limitations of the Contract and the Specifications. The Contractor shall do, carry on and complete the entire work to the satisfaction of the City.

41.02 The Contractor shall be solely responsible for all the work and shall provide all precautionary measures necessary for preventing injury to persons or damage to property. All injury or damage, of whatever nature, resulting from the work, or resulting to persons, from whatever cause, shall be the responsibility of, and shall be borne and sustained by, the Contractor. The Contractor shall hold the City and Project Engineer, or their agents, harmless and shall defend and indemnify the City and Project Engineer, or their agents, against damages, or claims for damages, due to injury to .persons or to property arising out of the execution of work and for damages to material furnished for the work; for infringement of inventions, patents and patent rights used in doing the work; for damages arising out of the use of any improper material, equipment or labor used in the work and for any act of omission by any subcontractors therein. The Contractor shall bear all losses including, but not limited to, losses sustained on account of the character, quality or quantity of any part or all of the work, or because the nature of the land in or on which the work is done being different from what may have been estimated or indicated, or on account of the weather, elements or other causes, except for acts beyond the reasonable control of the Contractor.

ARTICLE 42. TOILET ACCOMMODATIONS AND DRINKING WATER

42.01 The Contractor shall provide necessary sanitary toilet accommodations and drinking water for the workers. Separate facilities shall be provided for female workers.

ARTICLE 43. SAFETY AND HEALTH REGULATIONS

43.01 These documents, and the joint and several phase of construction hereby contemplated are to be governed at all times by applicable provisions of the Federal law(s), including, but not limited to, the latest amendments of the following:

1. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956.
2. Part 1910 - Occupational Safety and Health Standards; Chapter XVII of Title 29, Code of Federal Regulations.
3. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

43.02 This project is subject to all of the Safety and Health Regulations (see 29 CFR 1926m as amended) as promulgated by the U. S. Department of Labor on June 24, 1974. The Contractor shall thoroughly familiarize him/herself with the requirements of these regulations.

ARTICLE 44. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

44.01 Subsequent to award of the contract, with the exception of the Contractor's executed set, all drawings and specifications are the property of the City. The City shall furnish one (1) paper and one electronic set, in PDF Format, of the construction drawings and specifications to the Contractor without charge. No additional sets will be furnished ~~ined~~ by the City. Such drawings and specifications are not to be used in other work.

ARTICLE 45. RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

45.01 Except to the extent prohibited by Federal or State statute, the Contractor shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

> Section 2(b) each contract for any such project covered by this section under the supervision of the State or any of its agents shall contain the following provision:
>
> > "In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the State who are and, continuously for at least six months prior to the date hereof, have been residents of the State, and if no such person is available, then to residents of other states."

ARTICLE 46. LISTING OF EMPLOYMENT OPENING

46.01 This Contract is executed subject to the Governor's Executive Orders No. 3 and No. 17, which are hereby made a part of this agreement. The Governor's Executive Order No, 17 requires, inter alia, that all contractors and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area in which the work is to be performed or where the services are to be rendered. Failure of the Contractor to conform to the requirements of the Governor's Executive Orders No. 3 and No. 17, and any orders, rules, or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the City.

ARTICLE 47. SERVICE OF PROCESS

47.01 The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoint(s) the Secretary of State of the State of Connecticut, and successors in office, agent for service of process. Such service, as arising out of, or because of, this Contract. Such appointment shall in effect throughout the life of this Contract and for a period of six (6) years thereafter.

ARTICLE 48. CITY OF WATERBURY ORDINANCE CHAPTER 34

48.01 For projects subject to the City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34), the provisions thereof are in addition to any requirements of these General Conditions, and to any requirements of all funding sources for the Project, but only to the extent permitted by federal and state law.

ARTICLE 49. WAGE RATES

49.01 The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein, contracted to be done shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. The amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund (as defined in Section 31-53 of the Connecticut General Statutes) shall also be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. If the Contractor is not obligated by agreement to make such payment or contribution on behalf of such employees to any such welfare fund, the Contractor shall pay to each employee the amount of payment of contribution for his classification on each payday as part of his wages.

49.02 For Prevailing Wage Rate projects, the Contractor shall furnish to the Project Engineer certified copies of payrolls showing the names of its employees working on the Project, the specific days and hours and number of hours that each of them has spent in doing so, and the amount paid to each person for said work.

ARTICLE 50. SCHEDULE AND POSTING OF MINIMUM WAGE RATES

50.01 Where applicable, the Contractor, and every subcontractor, shall post a legible copy of the Minimum Wage Rates and Classifications included in the Contract Documents. This posting shall be in a prominent and accessible place at the site of the work (See ARTICLE 49). The schedule shall show all determined minimum wage rates for the various classes of laborers and mechanics to be engaged to work on the project. The schedule shall also show all deductions, if any, required by law to be made from wages actually earned by the laborers and mechanics so engaged.

50.02 The rates established by each schedule are the minimum and all employees shall be paid no less than the established rate for each trade or occupation. In the case of a conflict between schedules in anyone trade or occupation, the higher rate listed shall control and such higher rate shall be considered to be the minimum.

50.03 State: Where applicable, the minimum rates of wages and schedule of supplements to be provided for the various trades shall be in accordance with the Prevailing Wage rate Schedule included herein. The rate of wages and schedule of supplements for any trade not appearing or mentioned in this schedule shall be in accordance with the prevailing rates established for that particular trade by the Connecticut Department of Labor or by the Comptroller or other analogous officer of the City of Waterbury. Minimum wages required to be paid shall include supplements for hospital, surgical, medical or other benefits as determined by all applicable section of the General Statutes of the State of Connecticut. The Contractor shall file a Wage Certification Form with the Labor Department of the State of Connecticut prior to beginning work on the site.

50.04 If for any reason and at any time, the Federal Government, the State of Connecticut, or the City of Waterbury, shall in any way supplement, change or amend the Prevailing Wage Rates Schedule, then the Contractor or subcontractor shall follow such Schedule as supplemented, changed or amended. In no case shall the Contractor or subcontractor be entitled to any additions, compensations or extras because of any supplement, change, amendment or predetermination of the Prevailing Wage Rate Schedule.

50.05 Federal Wage Rates, where applicable, shall be applied in any case where they exceed the State of Connecticut Minimum Wage rates or in any case where a rate has not been established by the State.

ARTICLE 51. COMPUTATION OF WAGES AND OVERTIME COMPENSATION

51.01 The Contractor and each subcontractor shall comply with all applicable Federal, State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project. The Contractor and all subcontractors shall also comply with all applicable Federal, State and local ordinances with respect to compensation for overtime hours worked by laborers and mechanics engaged in work on the project.

ARTICLE 52. WAGE UNDERPAYMENTS AND ADJUSTMENTS

52.01 In addition to any applicable Federal or State regulations, the City may, in the case of underpayment of wages to any worker on the project under this Contract by the Contractor or by any subcontractor, withhold an amount from payments due the Contractor. Said amount to be sufficient to pay such worker the difference between the wages required to be paid the worker under this Contract and the amount actually paid the worker for the total number of hours worked. The City will disburse such amount so withheld by it for, and on behalf of, the Contractor to the employee to whom the amount is due. Such monies withheld pursuant to this article will be in addition to percentages to be retained pursuant to other provisions of the Contract.

ARTICLE 53. CONFORMANCE OF WORK

53.01 The work, during its progress and at its completion, shall conform to the work as shown on the drawings and to the directions given by the Project Engineer from time to time. The work shall be subject to such modifications or additions as the Project Engineer may deem necessary during the execution of the work. In no case will any work be paid for which is performed in excess of such requirements. The work shall also be accomplished in accordance with the Specifications.

ARTICLE 54. DIMENSIONS AND SCHEDULES

54.01 The Contractor will be required to check all dimensions and quantities shown on the drawings or schedules given to him by the Project Engineer. The Contractor shall notify the Project Engineer of all errors therein which he may discover by examining and checking the same. The Contractor shall not take advantage of any error or omission in these specifications, drawings and schedules. The Project Engineer will furnish all instructions should such error or omission be discovered and the Contractor shall carry out such instructions as if originally specified.

ARTICLE 55. PROTECTION FROM STORM

55.01 Should storm warnings be issued, the Contractor shall take every practicable precaution to minimize danger to persons, to the work and to adjacent property. These precautions shall include closing all openings; removing all loose materials, tools and/or equipment from exposed locations; and removing or securing scaffolding and other temporary work.

55.02 The Contractor shall provide measures to prevent stormwater runoff from entering excavation areas.

ARTICLE 56. PROTECTION OF WORK AND MATERIALS

56.01 The Contractor shall assume full responsibility for the protection of the work and materials during the progress of construction, and until final acceptance of the Project by the City, against loss or damage by any cause or agency. The Contractor shall, at his own expense, provide efficient means for such protection.

ARTICLE 57. FURTHER SAFEGUARDS

57.01 In case the City or the Project Engineer shall at any time be dissatisfied with the means provided by the Contractor for any aforesaid protection of the work or of any other properties, the City or the Project Engineer may order additional measures and precautions for that purpose. The Contractor, at his own expense, shall immediately comply with such orders and carry them out.

ARTICLE 58. FIRST AID TO INJURED

58.01 The Contractor shall keep on site, ready for immediate use, all articles necessary for giving first aid to injured employees. He shall also provide arrangements for the immediate removal and hospital treatment of any injured employee who may require such treatment.

ARTICLE 59. CONFORMANCE WITH DIRECTIONS

59.01 The Project Engineer may make alterations in the lines, grades, forms, dimensions or materials to be used in the project, or any part thereof, either before or after the commencement of construction. If such alterations diminish the quantity included in any item of work to be done and paid for at a unit price, the Contractor shall have no claim for damages or for anticipated profits on the work thus dispensed with. If the changes increase the quantity included in any such item, such increase shall be paid for at the stipulated unit price.

ARTICLE 60. COMPETENT HELP TO BE EMPLOYED

60.1 The Contractor shall employ an experienced foreman, craftsmen and other workmen competent in the work in which they are to be engaged. All work shall be accomplished by able, skilled and competent personnel. If any person employed on the work by the Contractor shall appear to be incompetent or unreliable in any way, he shall be discharged immediately upon the request of the Project Engineer and shall not be again employed upon the work.

ARTICLE 61. STREETS AND SIDEWALKS TO BE KEPT OPEN

61.01 The Contractor shall keep the street and sidewalks in which he may be working open at all times to pedestrian and vehicular traffic. If, in the opinion of the City or the Project Engineer, the interest of abutters and the public requires it, the Contractor shall bridge or construct plank crossings over trenches at street crossings, roads or private ways. The Contractor shall conduct his work for this project in such manner as the City or the Project Engineer may direct from time to time. No sidewalk shall be obstructed where it is possible to avoid it. No additional payment shall be made to the Contractor for such work.

61.02 The Contractor shall provide all necessary fire crossings at principal intersections or ways usually traveled by fire apparatus. The Contractor shall make provision for the passage of fire apparatus to the work area, including along the line of pipeline installations.

61.03 All work shall be conducted in such a manner as to create minimum interference with existing businesses and commercial establishments. Such establishments shall be allowed to conduct business at all times during the construction.

61.04 The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the streets free of the accumulation of sand and other similar materials.

ARTICLE 62. LIGHTS, BARRIERS, FENCES, WATCHMEN AND INDEMNITY

62.01 The Contractor shall put up and maintain such barriers, fences, lighting, and warning lights, danger warning signals and signs as will prevent accidents during the construction. The Contractor will protect the work and will insure the safety of the personnel and of the public at all times and places. The Contractor shall defend, indemnify and save harmless the City its agents in every respect from any injury or damage whatsoever caused by any act, omission or neglect of the Contractor or his subcontractors, or their servants or agents. Such indemnification shall also include any claims arising out of failure to erect and maintain sufficient railing or fencing as required by Section 13a-111 of the Connecticut General Statutes. The fact that the City may retain

control of the premises, or that the City, or its agents, may take action to erect or maintain railings or fencing shall not relieve the Contractor's obligations hereunder.

62.02 The Contractor shall furnish, maintain and use all necessary safety devices; follow all such safety practices in the prosecution of the work and shall adopt, follow and maintain such additional safety measures as, in the opinion of the Project Engineer, are conducive to safe operation by the Contractor. The Contractor shall cause his subcontractor(s) to also adopt, follow and maintain these measures. All of this shall be done at the Contractor's or subcontractor's own expense. The City shall have the right to order any or all work suspended where, in the opinion of the City, such work is not being carried on in a safe and proper manner or where persons or property are not being properly protected or safeguarded. Such work shall not be resumed until the City's requirements have been met and the City or Project Engineer has directed that work be resumed. Any work so suspended shall be at the Contractor's expense.

62.03 In addition to the above, when as is necessary or when required by the City and/or the Project Engineer, the Contractor shall post signs and shall employ watchmen or flagmen for the direction of the traffic at the site and for excluding unauthorized persons from the site at all times. The Contractor will not be paid additional compensation for this work.

62.04 At all times the Contractor shall be responsible for excluding all persons from land within easement areas and all persons not directly connected with the work or authorized by the City and/or the Project Engineer to be within the project limits.

ARTICLE 63. WORK OUTSIDE REGULAR HOURS

63.01 Night work or work on Saturdays, Sundays or legal holidays requiring the presence of the City, Project Engineer or an Inspector will not be permissible except in the case of emergency and then only upon approval of the Project Engineer. Should it be desired or required for by the City or Project Engineer to operate an organization for continuous night work, the lighting, safety and other facilities that are deemed necessary for performing such night work shall be provided by the Contractor. For night work on Saturdays, Sundays or legal holidays, if any be performed, the Contractor will receive no extra payment. Compensation for such work shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.

ARTICLE 64. BUS LINE INTERFERENCE

64.01 Whenever it may be necessary to interfere with any bus lines, notice shall be given to the corporation or agency owning the same. A reasonable amount of time shall be given to said organization in order to rearrange their schedule(s) as may be necessary.

ARTICLE 65. COLD WEATHER WORK

65.01 The Project Engineer will determine when low temperature conditions are unfavorable for work and may order the work, or any portions of it, suspended whenever, in his opinion, the conditions are not such as will insure first class work.

65.02 All methods and materials used in the performance and for the protection of the work in cold weather shall be subject to the approval of the Project Engineer. The Contractor shall take the necessary precautions to protect the work from damage and to remove ice and frost from materials. The removal shall include all necessary heating and the additional removal of any resultant water. The Contractor shall also supply any required sand and/or coarse aggregate required to prevent slipping on ice.

65.03 Except for specific work for which the City has issued a Certificate of Partial Acceptance, the Contractor shall be responsible for maintaining the project roadways, sidewalks, ramps, driveway aprons and asphalt pathways from the time of contract signing until final acceptance of the Project by the City. This responsibility will include snow and ice removal, sanding and mechanical sweeping, and patching with materials approved by the Project Engineer for all roadways, sidewalks, ramps, driveway aprons and asphalt pathways, etc. within the project limits.

65.04 The Contractor shall not continue road excavation after bituminous concrete plants have shut down for the

winter. At that time, the Contractor shall request a "winter shutdown". The Contractor shall receive no extra payment for any labor, apparatus, tools or materials necessary to comply with the above requirements, but compensation shall be construed items of work as listed in the bid proposal/form.

ARTICLE 66. BLASTING AND EXPLOSIVES

66.01 No blasting shall be allowed without the Contractor's securing of a permit and permission from the office of the Waterbury Fire Marshall. The Marshall's office is located at 185 South Main Street, Garden Level, (1 Jefferson Square), Waterbury, CT 06702 Phone: (203) 597-3452. The Marshall's office must be advised between 7:00 AM and 10:30 AM of each day's blasting schedule.

66.02 Explosives for blasting shall be stored, handled and used in accordance with the laws, ordinances and regulations of the State of Connecticut; with all local regulations and with such other additional regulations as the City Representative may require. Blasting shall be conducted so as not to endanger persons or property. The Contractor shall be responsible for, and shall make good any damages of whatever nature caused by blasting or accidental explosions.

66.03 The Contractor shall also adhere to any additional conditions imposed by the Fire Marshall's office. Additionally, the Contractor shall have a pre-blast survey conducted of the adjacent area(s) at no cost to the City.

66.04 Steel or rubber matting shall be used at all blast sites where required by the Bureau of Fire Prevention. Any blast or shot involving more than 99 pounds of explosives must be monitored by the use of seismographs. All seismographs are at the expense of the Contractor. Wire and debris must be cleared from all areas.

66.05 The Contractor shall notify each utility with facilities in proximity to the site of such blasting operations, and any other individuals and entities that may be affected thereby of the Contractor's intention to use explosives; and such notice shall be given sufficiently in advance of any blasting to enable such affected parties to take steps to prevent such blasting from injuring persons or property. Such notice shall not relieve the Contractor of responsibility for damage resulting from its blasting operations.

66.06 Where blasting is required subsequent to commencement of construction, insurance, as required by the City's Risk Manager shall be obtained by the Contractor, and approved by the City's Risk Manager.

ARTICLE 67. TUNNELING

67.01 Tunneling will not be permitted without the express written consent of the City.

ARTICLE 68. RESERVED MATERIALS/EXCAVATED MATERIALS

68.01 Materials excavated from trenches and excavations and those used in the construction of the work shall be deposited in such a manner so that they not endanger persons or the work. Materials shall also be deposited in such a manner that free access may be had at any time to all hydrants and gates near the work. The materials shall be kept trimmed-up so to be of as little inconvenience as possible to public travel or to adjoining tenants. All excavated materials not approved for backfill and/or fill; all surplus material; all rock and all boulders resulting from excavations shall be removed and satisfactorily disposed of off the site by the Contractor at no additional cost to the City.

68.02 Any excavated material not used in the installation of contracted items shall be removed from the site and legally disposed of by the contractor.

ARTICLE 69. OBSTRUCTIONS AND CROSSOVERS

69.01 Whenever any trench or other excavation obstructs pedestrian and/or vehicular traffic in or to any public street, private driveway or property entrance or to private property, the Contractor shall employ such means as may be necessary to maintain pedestrian and vehicular traffic and access. The Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway or property in question as specified or as directed. These crossings shall be maintained for as long as it is not expedient to backfill the excavation or until such time as sufficient, supportive backfill may be placed. No additional payment will be

made for this work.

69.02 Movement of construction equipment and all other vehicles and loads over and adjacent to any slotted drain pipe shall be done at the Contractor's risk. Any pipe or backfill which becomes damaged or disturbed through any cause shall be replaced or repaired as directed by the City at the expense of the Contractor and at no cost to the State. Suitable temporary crossovers consisting of steel plate or other materials approved by the City shall be employed for a minimum of 7 consecutive calendar days following concrete backfill operations in all areas where vehicular traffic must be maintained or until such time as the pipe installation will withstand loading without damage. All concrete surfaces shall receive a protective coating. End cap installation shall be as recommended by the manufacturer.

ARTICLE 70. DIRECTIONAL SIGNS AND LIGHTS

70.01 Suitable signs, lights and such required items to direct traffic shall be furnished and maintained by the Contractor. No additional payment shall be made for this work.

ARTICLE 71. MAINTENANCE OF WORKPLACE

71.01 The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials. The City or Project Engineer may, at any time, order all equipment, materials and surplus from excavations to be removed from the work area. Debris and all other materials lying outside of the working area shall be promptly removed. Should the Contractor fail to remove such material within 24 hours of notice to remove, the City or Project Engineer may cause any or all of said materials to be removed by others. The cost of this removal shall be deducted from any monies, which may be, or may become, due the Contractor under the Contract. In special cases, the City or Project Engineer may cause such materials to be removed without prior notice.

ARTICLE 72. OPERATIONS AT SEVERAL POINTS

72.01 The Contractor may carry on the work simultaneously at more than on point only if, in the opinion of the City or Project Engineer, such action is acceptable and is necessary to insure completion of the work within the specified time.

72.02 The Contractor‘s Construction Progress Schedule shall be adjusted to provide for work being simultaneously conducted at more than one point (location) at the site or sites.

ARTICLE 73. INTERFERENCE WITH EXISTING STRUCTURES

73.01 Whenever it may be necessary to cross or to interfere with existing culverts, drains, sewers, water pipes or fixtures, guard rails, fences, gas pipes or fixtures or other structures needing special care, due notice shall be given to the City or Project Engineer. Work involving these items shall be done according to the City’s or Project Engineer’s directions. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it. Any damages that may occur shall be thoroughly repaired. If so directed by the City or Project Engineer, the location of any existing work shall be changed to meet the requirements of the proposed work, if necessary, to leave all in good working order. The entire work shall be the responsibility of the Contractor and the work shall be done at no additional expense to the City.

73.02 The Contractor shall be responsible for repairing all broken or damaged mains or utilities, property markers, monitoring wells, and other existing structures to remain, or outside the Limit of Work, during the progress of the Work. The Contractor shall repair and shall be responsible for all damages to existing utilities and structures with no additional expense to the City. The Contractor shall contact the proper utility or authority to correct or make any changes due to utility or other obstructions during the prosecution of the work, but the entire responsibility and expense shall be with the Contractor.

73.03 All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the City and/or utility at no additional expense to the City.

ARTICLE 74. TURF, TOPSOIL AND OTHER REPLACEMENT ITEMS

74.01 Where the construction runs through cultivated or sodded lands, the Contractor shall stockpile the turf and topsoil separately and replace the same after the excavation is filled. The Contractor shall leave the land as nearly as possible in its original condition. Trees, fences, walls, walks and other items must not be damaged.

ARTICLE 75. MATERIALS

75.01 All materials furnished and used in the completed work shall be new, of best quality, workmanship, and design and shall be recognized as standard in good construction practices. Whenever a specification number or reference is given, the subsequent amendments (if any) shall be included. The standards set forth in the selection of materials and supplies are intended to conform to those standards adopted by the City. Preference in manufacture shall be given to familiarize the Contractor with the requirements of the Project Engineer when the occasion or choice of materials or supplies so demands.

ARTICLE 76. DEFECTIVE MATERIALS

76.01 No materials shall be laid, installed or used which are known to be, or which may be found to be, in any way defective. Notice shall be given to the Project Engineer of any defective or imperfect material. Defective or unfit material found to have been laid, installed or used shall be removed and replaced by the Contractor with unobjectionable material. This removal and replacement shall be made without additional expense to the City.

ARTICLE 77. INSPECTION AND TESTING OF FURNISHED MATERIALS

77.01 Unless herein provided otherwise, all materials furnished by the Contractor are subject to thorough inspections and tests by the Project Engineer. Any materials condemned or rejected by the Project Engineer as not conforming to the specifications may be branded or otherwise marked. Branded or marked material shall be, on demand, at once removed by the Contractor to a satisfactory distance from the site. Removed materials shall not again be brought upon or near to the work.

ARTICLE 78. SAMPLES AND ORDERING LISTS

78.01 Unless herein provided otherwise, the Contractor shall submit samples of the various materials used on the contract as required by the specifications for testing purposes. All ordering lists shall be submitted by the Contractor to the Project Engineer for approval and must be approved before the ordering of the materials.

ARTICLE 79. SANITARY CONVENIENCES

79.01 Adequate sanitary conveniences, properly secluded from public observation, for the use of workmen on the premises shall be provided and maintained by the Contractor in accordance with the requirements of local and State health authorities. These conveniences shall be maintained in such manner and at such points as shall be approved and their use shall be strictly enforced. Sanitary waste shall be treated and disposed of in a manner satisfactory to, and as directed by, the City and/or the local and State health authorities. Under no circumstances shall sanitary waste be allowed to flow on the surface of the ground or in the work area.

79.02 The cost of sanitary conveniences and the maintenance of same will not be paid for separately, but compensation will be considered to be included in the prices stipulated for the items of work as listed in the bid form.

ARTICLE 80. FINISHING AND CLEANING UP

80.01 In completing any backfilling operation, the Contractor shall replace all surface material to the satisfaction of the City. The Contractor shall then immediately remove all surplus material, all tools, and other property belonging to him. The Contractor shall leave the entire street or surrounding area free and clean, in good order and at no additional expense to the City. Backfilling and removal of surplus materials shall follow closely upon the completion of the work. The Contractor shall exercise special care in keeping rights-of-way and private and

public lands, upon which work is being performed, clean and free of debris at all times. The Contractor will remove tools and other property belonging to him when they are not being used.

80.02 In case the Contractor shall fail or neglect to promptly remove all surplus materials, tools and other incidentals after backfilling, or shall neglect to do required paving promptly, the City or Project Engineer may, after 24 hours notice, cause the work to be done and the cost thereof shall be deducted form any monies then or thereafter due the Contractor.

ARTICLE 81. RIGHTS OF ACCESS

81.01 Nothing herein contained or shown on the drawings shall be construed as giving the Contractor exclusive occupancy of the work area involved. The City or any other Contractor employed by the City, the various utility companies, contractors or sub-contractors employed by Federal, state or local government agencies involved in the general project or upon public rights-of-way, may enter upon or cross the area of work or occupy portions of it as directed or permitted. When the territory of one contract is the convenient means of access to the other, each contractor shall arrange his work in such manner as to permit such access and to prevent unnecessary delay in the work as a whole. Said access rights shall also include all Federal and state agencies and their representatives that have an interest in said project.

ARTICLE 82. WORK BY OTHERS

82.01 The City reserves the right to do any other work which may connect with, or become a part of, or be adjacent to the work embraced by this Contract, at any time, by contract work or otherwise. The Contractor shall not interfere with, nor obstruct in any way, the work of such other persons as the City may employ. The Contractor shall execute his own work in such a manner as to aid in the execution of work by others as may be required. No excavations or backfilling will be permitted if other work by the City will be affected.

ARTICLE 83. WORK WITHIN THE LIMITS OF PRIVATE PROPERTY

83.01 Particular attention is hereby directed to the fact that some of the work included under this Contract may have to be done within the limits of properties that are publicly or privately owned. The City, where necessary has, or will have, secured the necessary easements to these properties for construction purposes. The Contractor will be permitted to utilize the areas of the City’s easements, subject to all of the conditions and requirements as they may affect the Contractor's operations. The Contractor shall conduct his operations and activities in the performance of the work with all such conditions and requirements as may be imposed by the City or Project Engineer.

83.02 All means and rights of ingress and egress to the work areas and all other areas required for work space, in addition to the City's easements, shall be the entire responsibility of the Contractor, All costs in connection therewith shall be considered to be included in the prices stipulated for the appropriate items of work as listed in the bid form.

83.03 The Contractor shall neither use nor occupy public or private lands outside the limits of the City's easements and rights-of-way unless written permission from the owner of the public or private lands have first been obtained. Copies of the written agreements shall be submitted to the Project Engineer prior to entering upon such lands. The Contractor shall be responsible for cooperating with, and for coordinating the prosecution of, the work of this Contract with the public and private property owner. Any abuse to the lands of the public and private property owner shall be immediately corrected by the Contractor, at the Contractor's expense, to the complete satisfaction of the property owner. The Contractor shall take such precautionary measure, as required by the City, to prevent further nuisances, interference or inconvenience to abutting property owners.

83.04 It shall be the Contractor's full responsibility to be familiar with the limitations imposed upon the work of construction within the various properties of public or private ownership and rights-of-way by existing occupancy or use. The Contractor will be required to make every effort to fully and satisfactorily protect trees, shrubs, lawns, gardens, fences, walks, driveways, structures and all and any other appurtenances of the property owners.

83.05 The Contractor shall provide adequate access to all walks, driveways, yards or structures: shall protect all work by the erection or placement of safety guards or barriers, lights and such other incidentals; and where required, shall construct temporary plank crossings or timbers to permit full use of private facilities at all times. All of these actions are to be performed at no additional expense to the City. All other applicable provisions for control of work within the areas of public travel set forth elsewhere herein shall also apply to work within the limits of private ownership.

83.06 The Contractor shall cooperate with the public and private property owners and shall also contact the City and Project Engineer for additional information regarding the requested (or required) length of time needed as a notice to be given to the public or private property owner before the Contractor enters their property to start the construction. In some cases, a certain time to start the work and a certain limited length of time may be required to complete the work on public and private property owners. Furthermore the contactor may be required to shutdown construction operations as necessary to prevent undo interference with the operation of private and public business within the project area.

83.07 Before proceeding with construction operations, the Contractor shall provide suitable and substantial gates or other approved forms of closing gap devices in every fence within the limits of the owner's easements through which the Contractor intends to move or pass equipment and materials. It is the responsibility of the Contractor to negotiate with the owner of each fence all of that owner's requirements, in addition to those specified above. It shall also be the responsibility of the Contractor to comply with all requirements as specified herein and as agreed to with the owner's in a manner satisfactory to the owner.

83.08 No separate payment will be made for the requirements specified under "WORK WITHIN THE LIMITS OF PRIVATE PROPERTY" and all cost in conjunction therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 84. LOADING

84.01 No part of the structures involved in this Contract shall be loaded during construction with a load greater than that calculated for the safety of the structure. Should any accidents or damage occur through any violation of this requirement, the Contractor will be held responsible. If necessary, the Contractor shall request, in writing, the allowable loading from the Project Engineer.

ARTICLE 85. COMPLETION OF WORK

85.01 In addition to the specified or described portions, all other work and all materials, equipment and labor of whatever description which are necessary or required to complete the work, or for carrying out the full intent of the drawings and specifications, as interpreted by the Project Engineer, shall be provided by the Contractor. Payment therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 86. DUST AND SPILLAGE CONTROL

86.01 The Contractor shall exercise every precaution to prevent and to control dust arising out of all construction operations from becoming a nuisance. Water shall be provided and applied as required or as ordered by the Project Engineer for allaying dust conditions. Pavements adjoining excavations shall be kept swept and/or washed clean of excess excavated material wherever and whenever directed. Earth piles adjacent to excavations, earth stockpiles and surfaces of refilled excavations shall be kept moist at all times as directed. No extra payment will be made for providing the dust control measures and for conforming to the requirements specified above. Compensation therefor shall be considered included in the prices stipulated for the appropriate items of work as listed in the bid form.

86.02 The Contractor shall take appropriate measures to control the generation of dust from its activities. Water shall be provided and applied as required or as ordered by the Project Engineer for allaying dust conditions.

86.03 All vehicles utilized by the Contractor for delivery or removal of materials shall have appropriate covers to prevent spillage of material during transit.

ARTICLE 87. CARE OF THE WORK

87.01 The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence concerning the prosecution of the work. The Contractor shall also be responsible for the proper care and protection of all material delivered and of all work performed until completion and final acceptance of the Project by the City, whether or not the same has been covered by partial payments authorized by the Project Engineer.

ARTICLE 88. EMERGENCY WORK

88.01 The Contractor shall file, with the City Engineer and the Project Engineer, if any, the name and telephone number of a person authorized by him who may be contacted regarding emergency work at the job site that may be required during non-working hours for reasons of public safety. This person shall be readily available and shall have full Authority to deal with any emergency that may occur.

ARTICLE 89. FIRE PREVENTION AND PROTECTION

89.01. All Federal laws (Occupational Safety and Health Act) and all state and municipal rules and regulations with respect to fire prevention, fire-resistant construction and fire protection shall be strictly adhered to by the Contractor. All work and facilities necessary therefore shall be provided and maintained by the Contractor in an approved manner.

89.02. All fire protection equipment (as per 89.01 above) shall be provided by the Contractor for the protection of the contract work including temporary work and adjacent property. Personnel experienced in the operation of the fire protection equipment and apparatus shall be available whenever work is in progress and at such other times as may be necessary for the safety of the public and of the work.

89.03. Open fires will not be permitted.

ARTICLE 90. PLANIMETER

90.01 For estimating quantities, where the computations of areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas, as utilized by an engineer.

ARTICLE 91. SUPERINTENDENCE

91.01 During the entire duration of the project, the Contractor shall employ a competent superintendent in personal charge of the work. The superintendent shall be present during all phases of construction and shall have full authority to act for the Contractor. The superintendent shall be continued in this capaCity full time for this project unless (1) the person ceases to be on the Contractor's payroll or (2) the person proves to be unacceptable to the City or Project Engineer. Instructions given to the superintendent and/or supervisory subordinates shall be considered as given to the Contractor. A chain-of-command listing shall be submitted by the Contractor to the City and Project Engineer and shall be adhered to in the temporary absence of the superintendent.

ARTICLE 92. CONTRACT ADMINISTRATION COSTS - OUTSIDE REGULAR HOURS

92.01 The working schedule shall be confined to a five (5) day week ending on Friday. The working day shall be any eight-hour period beginning no earlier than 7:00 AM and ending no later than 7:00 PM. Whenever the Contractor elects to perform work on Saturdays, Sundays or legal holidays observed by the City or to work in excess of the normal working hours stated above, the Contractor shall pay to the City the extra cost incurred by the City due to the increased cost of contract administration. Payment shall include all cost of inspection and administration for such Saturday, Sunday or legal holiday work or for work in excess of the normal working day, which the City is obligated to incur and for the extra expense involved in overtime work resulting from the performance of work on these days.

92.02 No work outside regular hours or overtime work shall be planned or executed without the approval of the City.

ARTICLE 93. DAILY REPORTS

93.01 The Contractor shall submit daily activity reports on an approved form for the duration of the project. The report shall indicate all personnel currently employed on the work, including each trade and every sub-contractor; all equipment and whether that equipment was idle for the particular day; a general description of all work accomplished and any authorized extra work (time and material reports shall be submitted on separate forms).

ARTICLE 94. MATERIAL AND WORKMANSHIP

94.01 All materials and workmanship incorporated in the work covered by this Contract are to be of the highest grade of their respective kinds for the purpose intended. The Contractor shall furnish to the Project Engineer for approval the name of the manufacturer of machinery and mechanical or other equipment that the Contractor contemplates incorporating in the project together with their respective performance capacities and other pertinent information.

94.02 When required by the Specifications, or when called for by the City or Project Engineer, the Contractor shall furnish the required information for approval of all material that the Contractor contemplates incorporating in the work. Samples of material shall be submitted for approval to the Project Engineer when and as directed. Machinery, equipment and material installed or used without approval shall be at the risk of subsequent rejection.

ARTICLE 95. TEMPORARY WATER SUPPLY

95.01 In the event temporary water supply work is required, it shall be provided in accordance with the requirements of the Waterbury Water Bureau and all local and state health authorities. The Contractor shall provide and maintain facilities for an adequate supply of water suitable for use for construction purposes and for domestic use as required for the work of this Contract. The cost of all work, materials, equipment, appurtenances and accessories necessary for providing supplies of water at the site, including the cost of all water consumed, shall be borne by the Contractor.

95.02 Upon completion to the work of this Contract, and before final acceptance of the Project, the Contractor shall remove all temporary piping and appurtenant work used for the temporary water supply.

ARTICLE 96. FITTING AND COORDINATION OF WORK

96.01 The Contractor shall be responsible for the proper fitting of all work and for the coordination of operations of all trades, subcontractors or material suppliers engaged in the work. The Contractor shall be prepared to guarantee to each of his subcontractors the dimensions for which they may require for the fitting of their work to all surrounding work. The Contractor shall do, or shall cause his agents to do, all cutting, fitting, adjusting and patching necessary to make the several parts of the work come together satisfactorily and properly and to fit the work to receive, or to be received by, the work of other contractors.

ARTICLE 97. ARCHEOLOGICAL FINDS

97.01 During the life of this Contract, in the event that any articles such as "charcoal", "bone", "shell", "cultural objects", "fire-cracked stones", "stone flaking material." or any other such related items of historical significance are discovered on the project, the Contractor is required to notify:

(1) The City
(2) Project Engineer or Inspector

ARTICLE 98. EXCAVATIONS NEAR UNDERGROUND UTILITIES

98.01 In conformance with Section 16-345 of the Regulations of the Department of Public Utility Control, the Contractor shall not start any excavation and/or blasting of rock activity without first having ascertained the location of all such utilities in the area. The Contractor shall notify the Public Utilities Regulatory Authority (PURA) "CALL BEFORE YOU DIG" (Toll Free 1- 800-922-4455) at least two (2) full days in advance (excluding Saturday, Sunday and legal holidays), but no more than thirty (30) days before starting any such work. Such notice shall include the name, address and telephone number of the persons/agency performing the work, the date, location and type of excavation.

98.02 The PURA should immediately transmit such information to the utility companies whose facilities may be affected. Utility companies receiving notice should mark-up the locations of their facilities on the work site. If they have no facilities in the area, they shall so inform the Contractor. If the Contractor does not receive any information or marked-up locations on the work sites, the Contractor shall contact PURA again to verify that the utility companies have responded to the initial call. Under no circumstances will the Contractor be allowed to start any excavation and/or blasting work prior to obtaining all necessary information regarding the location of underground utilities at the site. It is the Contractor's responsibility to have all utilities marked on the work sites prior to starting the work.

ARTICLE 99. WATER QUALITY OF WELLS

99.01 The Contractor shall perform all tests required by the State Health Department on all water supply wells and reservoirs where directed by the City or Project Engineer before and after construction. All labor, materials and testing shall be paid by the Contractor at no cost to the City.

ARTICLE 100. WORK IN STATE HIGHWAYS

100.01 If any of the work under this Contract is in a state highway the Contractor shall obtain all required permits at his own expense. The Contractor shall perform the work in accordance with the terms and conditions stipulated by the Connecticut Department of Transportation (ConnDOT) and/or as required by ConnDOT inspectors. The Contractor must provide such bonds, security and insurance as may be required to obtain such permits.

100.02 In the event the City, or the City and the Contractor jointly, are required to obtain any permits, including detour permits, the Contractor shall be familiar with the conditions of the permits and shall be held responsible for compliance with all the requirements of the permits and all specifications attached thereto, as if the permits were held solely by the Contractor.

100.03 Whenever State inspectors, flagmen or other costs are incurred as a condition to obtaining permits, the Contractor shall be responsible for payment of these costs with no reimbursement from the City.

100.04 The Contractor shall conform to all ConnDOT requirements for materials and construction methods for all work within state highways. Sheeting or an adequate trench box may be required in all trenching operations to confine trench widths and to protect State facilities. Additional pavement replacement may be required to properly restore the roadway surface.

100.05 The cost of all labor, materials and equipment necessary to conform to CONNDOT requirements for work in, or adjacent to, state highways, including work not specifically stated in the Contract Plans and Specifications, shall be the sole responsibility of the Contractor and shall not be reimbursed by the City. Therefore, the Contractor is informed to evaluate all CONNDOT requirements for the project prior to submitting the Bid for the project and to include these costs in his bid prices.

ARTICLE 101. EXISTING INSPECTION REPORTS

101.01 Any existing inspection reports concerning the project which have been prepared by or for the City or Project Engineer will be made available for the Contractor's information.

ARTICLE 102. TEST REPORTS; CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS

102.01 Except where expressly provided otherwise in the Contract Documents, the Contractor shall furnish to the Project Engineer the material manufacturer's notarized test reports and methods of testing by an approved independent laboratory in order to show compliance of all materials furnished with all specification requirements, the reports shall also contain manufacturer's notarized certificates of conformance stating that all materials furnished under these Specifications conform with all specification requirements; that each shipment of materials shall be accompanied by the manufacturer's notarized certificate of conformance and that a shipping list itemizing the amounts of each shipment shall accompany each shipment.

ARTICLE 103. CLEANING FINISHED WORK

103.01 After the work is completed, the sewers, manholes and structures shall be carefully cleaned free of dirt, broken masonry, mortar, construction and other debris and shall be left in first class condition, ready for use. All temporary or excess material shall be disposed of and the work left broom-clean to the satisfaction of the Project Engineer.

ARTICLE 104. COMPLIANCE TO ACTS AND EXECUTIVE ORDERS

104.01 If this Contract is federally assisted and the Contractor must comply with all applicable statutes, acts, executive orders and regulations, including without limitation:

(a) **TITLE VI, CIVIL RIGHTS ACT OF 1964** Provides that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity, receiving Federal financial assistance.

(b) **SECTION 3, HUD ACT OF 1968** Provides that, to the greatest extent feasible, opportunities for training and employment shall be given to lower income residents of HUD-assisted project areas, and that contracts for work in connection with such projects be awarded to business concerns which are located in, or are owned in substantial part by persons residing in the area of the project.

(c) **LABOR STANDARDS** Compliance with Davis Bacon Act, as amended (40 U.S.C. 267a-5) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) 13.0.

ARTICLE 105 SEMI-FINAL INSPECTION / SUBSTANTIAL COMPLETION

105.1 Contractor shall notify the Project Engineer when it believes the work (or a portion thereof) is Substantially Complete and shall file with the City a written, notarized “Contractor’s Affidavit of Substantial Completion” and request a Semi-Final Inspection of the work.

105.2 Contractor, prior to requesting Semi-Final Inspection, shall complete and submit the following, listing known exceptions in its Affidavit of Substantial Completion:

i. Include supporting documentation for Substantial Completion as indicated in these Contract Documents.
ii. Advise City of outstanding permit closure requirements. Submit certificates of inspections conducted, reports, and other documentation required by local or state authorities.
iii. Where required, submit photographs, specific warranties, final certifications, and similar documents.
iv. Provide Partial Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers may be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

105.3 Subsequent to City’s receipt of Contractor’s Affidavit of Substantial Completion, Project Engineer will either proceed with Semi-Final Inspection or advise Contractor of prerequisites not fulfilled.

105.4 Following Semi-Final Inspection, Project Engineer will either inform the City to prepare a Certificate of Substantial Completion, or advise Contractor of work that must be performed prior to issuance of said certificate, and repeat the inspection when requested and assured that the work has been substantially completed in accordance with the Contract

Documents.

105.5 Contractor's payment requisition coincident with, or first following the date claimed as Substantially Complete, shall be processed in the same manner as a partial payment requisition and shall show either 100% completion for the work claimed as Substantially Complete, and/or list incomplete items, value of incompletion, and reasons for being incomplete.

ARTICLE 106. CITY'S CERTIFICATE OF SUBSTANTIAL COMPLETION

106.1 For the portion of the work determined to be Substantially Complete, the City shall issue "City's Certificate of Substantial Completion" which shall establish the date of Substantial Completion by the Contractor.

106.2 Concurrently, the Project Engineer shall prepare a list (the "punchlist") of remaining items of work to be completed and/or deficiencies to be addressed.

106.3 Prior to Final Inspection, the Contractor shall address and complete all "punch list" items.

106.4 The City reserve the right to modify, amend and/or update the "punchlist," as it deems necessary.

ARTICLE 107. FINAL INSPECTION

107.1 Contractor shall notify the Project Engineer when it believes the Project is Finally Complete and shall file with the City a written, notarized "Contractor's Affidavit of Final Completion" and request a Final Inspection of the work by the Project Engineer.

107.2 Subsequent to receipt of Contractor's Affidavit of Final Completion, Project Engineer will either proceed with Final Inspection and/or advise Contractor of prerequisites not fulfilled.

107.3 At the time of submission of its Affidavit of Final Completion, Contractor, as required by the Contract Documents and/or required for completion of the Project as determined by the City, shall also provide and/or submit the following, listing known exceptions (if any), in its Affidavit of Final Completion:

i. Supporting documentation required by the Contract Documents not previously submitted and accepted.
ii. Discontinue and remove, as appropriate, temporary facilities and services, along with construction tools and facilities, and similar elements.
iii. Evidence of final, continuing insurance coverage complying with insurance requirements, including certificates of insurance for products and completed operations where required.
iv. Reports and forms required by Federal and/or State funding sources, as required thereby.
v. A copy of City's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the Project Engineer.
vi. Any final documents requested by Project Engineer.
vii. If applicable, submit final liquidated damages settlement statement, acceptable to City.
viii. Photographs, specific warranties, final certifications, and similar documents.
ix. All required As-Builts, Record Drawings and Documents and Surveys, in number and formats specified.
x. Provide Final Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers shall be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.
xi.

ARTICLE 108. FINAL ESTIMATE

108.01 If the Work is determined Finally Complete, a Final Estimate shall be prepared showing the total due Contractor under the Contract less the retainage held by the City. This Final Estimate shall show the final estimate of quantities. Should this estimate of quantities show a decrease from the approximate estimate of quantities, then such variations will be computed at the unit prices bid and reflected in the Final Estimate by adding or deducting said amounts from the from the gross sum bid.

108.02 The Final Estimate shall reflect the final Contract Amount, all prior City payments to the Contractor, all adjusts to the Contract Amount, all retainage held by the City, any liquidated damage amounts, all unused amounts of any Owner Controlled Allowances and of all Cash Allowances, all adjustments for Alternates accepted/declined by the City and

final amount of any holdback(s) by the City.

108.03 All certificates of payments and estimates, upon which partial payments may have been made being merely estimates, shall be subject to correction in this Final Estimate.

ARTICLE 109. SEMI-FINAL PAYMENT

109.01 Based upon the amounts and qualities set forth in the Final Estimate, the Contractor shall submit its Semi-Final Payment Application requesting the total due under the Contract, less all retainage held by the City.

109.02 This Semi-Final Payment Application shall be certified as to its correctness by the Project Engineer and will be processed in the same manner as the partial payment requests.

ARTICLE 110. LIMITED ACCEPTANCE OF WORK

110.01 Limited Acceptance of Portion(s) of the Work shall be at City's sole discretion and shall be subsequent to issuance of City's Certificate of Substantial Completion for such work and shall relieve Contractor of responsibility for the physical aspects of said portion of the work; however such termination of responsibility for the physical aspects of the work in no way affects or diminishes any other contractual requirements governing the work so accepted, or the acceptance of the Project as whole.

ARTICLE 111. FINAL COMPLETION / CITY'S CERTIFICATE OF FINAL COMPLETION

111.01 Final Completion of the Project by the City shall occur when:

a. All deficiencies identified in its Affidavit of Final Completion have been corrected/addressed.
b. All Project work and services have been completed to the satisfaction of the City; and Semi-Final Payment has been made to the Contractor.
c. Contractor has submitted its Final Payment Application and Project Engineer has certified it as to correctness. Contractor's Final Payment Application shall be solely for release of all retainage held by the City.
d. Upon issuance to Contractor by City of City's Certificate of Final Completion**.**

111.02 Issuance of City's Certificate of Final Completion shall establish the date of Final Completion by the Contractor and shall be a prerequisite to Project Acceptance and Final Payment by the City.

ARTICLE 112 FINAL PAYMENT / PROJECT ACCEPTANCE

112.01 Subsequent to issuance of the City's Certificate of Final Completion, the City shall process Contractor's Final Payment Application, which shall be solely for release of all retainage held by the City.

112.02 Contractor's Final Payment Application shall be certified as to its correctness by the Project Engineer and shall be based on City's Certification of Contractor's Final Payment Application.

112.03 If a Certificate of Compliance is required by the Contract Documents, Final Payment shall not be released until such certificate has been issued and delivered to the City.

112.04 Subsequent to issuance of Final Payment to the Contractor, the City shall issue its written notice of its Acceptance of the Project to the Contractor.

ARTICLE 113. ACCEPTANCE OF FINAL PAYMENT

113.01 The acceptance by the Contractor, or by anyone claiming by or through the Contractor, of Final Payment shall constitute and operate as a release for the City from any and all claims of any liability to the Contractor for anything, theretofore done or furnished for or relating to or arising out of the work done thereunder, and for any prior act of neglect, default on the part of the City or any of its officers, agents, or employees unless the Contactor serves a detailed and verified statement of claim upon the City not later than forty (40) consecutive calendar days after mailing of such Final Payment. Such statement shall specify the items claimed. Should the

Contractor refuse to accept the Final Payment as tendered, it shall constitute a waiver of any right of interest thereon.

ARTICLE 114. 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

114.01 The Contractor, or any subcontractors working on the project, shall provide written proof that any and all employees working on the project jobsite have successfully completed the 10-Hour OSHA Construction Safety and Health Course.

END OF SECTION

RFP # 8802

ATTACHMENT M

Wage Rate Documentation

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 26-7839

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:
Project Town: Waterbury
State#:
FAP#:
Project: Crown Street and Esther Avenue Drainage

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	50.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	46.09	36.29
2) Carpenters, Piledrivermen	44.48	29.74
2a) Diver Tenders	44.48	29.74
2b) Divers Effluent	67.52	29.74
3) Divers	52.94	29.74
03a) Millwrights	45.14	30.24
03b) Carpenter-Welder	44.98	29.74
03c) Carpenter: Working with creosote lumber or acid	45.48	29.74

As of: July 27, 2026

4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	61.85	27.65
4a) Painters: Brush and Roller	41.17	27.65
4b) Painters: Spray	44.17	27.65
4bc) Painters: Spray Helper	42.17	27.65
4c) Painters: Steel Only	43.17	27.65
4d) Painters: Blast	46.17	27.65
4de) Painter: Blast Helper	42.17	27.65
4e) Painters: Tanks, Tower and Swingstage etc.	43.17	27.65
4f) Elevated Tanks (60 feet and above)	50.17	27.65
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	50.0	36.97+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	46.62 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	52.08	36.80
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	37.0	30.47

As of: July 27, 2026

8) Group 1a: Acetylene Burners (Hours worked with a torch)	38.0	30.47
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	37.25	30.47
10) Group 3: Pipelayers	37.5	30.47
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	37.5	30.47
12) Group 5: Toxic waste removal (non-mechanical systems)	39.0	30.47
13) Group 6: Blasters	38.75	30.47
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	40.0	30.47
Group 8: Traffic control signalmen	22.2	30.47
Group 9: Hydraulic Drills	37.75	30.47
Group 10: Toxic Waste Removers A or B With PPE	40.0	30.47
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	39.23	30.47 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	38.26	30.47 + a

As of: July 27, 2026

----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	38.26	30.47 + a
15) Form Erectors	38.59	30.47 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	38.26	30.47 + a
17) Laborers Topside, Cage Tenders, Bellman	38.15	30.47 + a
18) Miners	39.23	30.47 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	45.72	30.47 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	45.52	30.47 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	43.54	30.47 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	46.31	30.47 + a
----TRUCK DRIVERS----(*see note below)		
Block Truck	39.98	33.00 + a

2 Axle	38.66	33.00 + a
Helpers	36.16	33.00 + a
Three Axle Trucks; Two Axle Mixer	38.77	33.00 + a
Three Axle Mixer	38.83	33.00 + a
Four Axle	38.89	33.00 + a
Four Axle Mixer	40.69	33.00 + a
5 Axle	38.89	33.00 + a
5 Axle Mixer	40.69	33.00 + a
Heavy Duty Trailer (40 tons and over)	41.16	33.00 + a
Heavy Duty Trailer (up to 40 tons)	39.89	33.00 + a
Snorkle Truck	39.04	33.00 + a
Swivel Dump and Tack Truck	38.89	33.00 + a
Euclids and Semi Trailer	38.94	33.00 + a

----POWER EQUIPMENT OPERATORS----

Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over), Caisson Drilled Shaft over 14". (Trade License Required)	60.66	30.95 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	55.6	30.95 + a
Group 2: Cranes (100 ton rate capacity and over). (Trade License Required)	60.24	30.95 + a
Group 2a: Cranes (under 100 ton rated capacity), Magni Type-360 Rotating Forklift.	59.2	30.95 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer), HF-1 Forklift, Drills with self contained power units, Micropile up to 14 inches helical pile.	55.17	30.95 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	54.13	30.95 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper), Goldhofer.	53.61	30.95 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)	52.78	30.95 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller, Geothermal Drill.	52.78	30.95 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	52.35	30.95 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	51.89	30.95 + a

As of: July 27, 2026

Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine, Rigger Foreman.	51.34	30.95 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	50.74	30.95 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	47.91	30.95 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	47.91	30.95 + a
Group 12: Wellpoint Operator.	47.82	30.95 + a
Group 13: Compressor Battery Operator.	47.04	30.95 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	45.45	30.95 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	44.89	30.95 + a
Group 16: Maintenance Engineer and Articulating End Dump.	43.99	30.95 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	49.95	30.95 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license), Rigger, Signalman.	46.6	30.95 + a
Surveyor: Chief of Party	50.21	30.95 + a

As of: July 27, 2026

Surveyor: Assistant Chief of Party	46.3	30.95 + a
Surveyor: Instrument Man	44.55	30.95 + a
Surveyor: Rodman or Chairman	38.34	30.95 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	59.91	34.00
21) Heavy Equipment Operator	53.92	31.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	50.92	30.84
23) Driver Groundmen	44.93	28.47
23a) Groundman Experienced	32.95	13.99

----OUTSIDE LINE CONSTRUCTION----

24) Driver Groundmen	43.78	28.42
25) Groundmen	32.1	13.95
26) Heavy Equipment Operators	52.53	31.83

27) Linemen, Cable Splicers, Dynamite Men	58.37	33.94
28) Material Men, Tractor Trailer Drivers, Equipment Operators	49.61	30.79
29) Technician	56.12	32.85
----COMMUNICATION----		
Sales & Service Technician: To include but not limited to: Installation, Repair, Splicing and Maintenance	52.07	20.62
----DREDGING----		
Class A1: Mechanical Dredge Operator	48.48	17.32+a+b
Class B1: Maintenance Engineer	41.93	16.87+a+b
Class C1: Mate/Welder	38.38	16.62+a+b
Class D: Deckhand	30.86	16.09+a+b

Welders: Rate for craft to which welding is incidental.
Surveyors: Hazardous material removal: $3.00 per hour premium.
*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.
**Note: Hazardous waste premium $3.00 per hour over classified rate.
Truck Drivers: Trainers Premium: $3.00 over wage rate.
Truck Drivers: Night Premium - Mixer Drivers: $2.00 over wage rate.

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

As of: July 27, 2026

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.
The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
All subsequent annual adjustments will be posted on our Web Site for contractor access.
Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: July 27, 2026



Opportunity ⋆ Guidance ⋆ Support

CONNECTICUT DEPARTMENT OF LABOR

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Worker training requirements for public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (h) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 46 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268, and, on or after July 1, 2012, that any plumber or electrician subject to the continuing education requirements of section 20-334d, who has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration five or more years prior to the date such electrician or plumber begins work on such public works project, has completed a supplemental refresher training course of at least four hours in duration in construction safety and health taught by a federal Occupational Safety and Health Administration authorized trainer.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2012, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or, in the case of a supplemental refresher training course, shall include, but not be limited to, an update of revised Occupational Safety and Health Administration standards and a review of required construction hazards training, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety

and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project or, in the case of supplemental refresher training, a student course completion card issued by said Occupational Safety and Health Administration authorized trainer dated not earlier than five years prior to the date such electrician or plumber begins work on such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1; P.A. 10-47, S. 2; P.A. 11-63, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009; P.A. 10-47 made a technical change in Subsec. (a); P.A. 11-63 amended Subsec. (a) by adding provision re supplemental refresher training course for plumbers and electricians subject to Sec. 20-334d, amended Subsec. (c) by adding provisions re regulations and subject matter of refresher training course and refresher training course student completion cards, and made technical changes, effective July 1, 2011.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Sec. 31-55a. Annual adjustments to wage rates by contractors doing state work. Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

(P.A. 02-69, S. 1.)

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

I,_____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____,_____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER | Week-Ending Date | PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE HOURS WORKED EACH DAY S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							

12/9/2013
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____.

I, _____of _____. (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such person is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

_____	_____	_____
(Signature)	(Title)	Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Week-Ending Date:
Contractor or Subcontractor Business Name:

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S HOURS WORKED EACH DAY	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ****License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate
1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate
1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ****License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

RFP # 8802

ATTACHMENT J

CHRO Contract Compliance Monitoring Report

Company Name: _____

Company Address: _____

Telephone No.: _____

Email Address (Plan Preparer): _____

Email Address (Head of Company): _____

Email Address (other company contacts): _____

Date Submitted: **Click or tap to enter a date.**

☐ Original Plan ☐ Revised Plan

GFE Plan Prepared by: _____

Name and Title of Head of Company: _____

Project Name: _____

State Contract/Project No.: _____

Project Owner: _____

Construction Manager (If applicable) _____

Total Project Contract Value: _____

State Funded Portion of the Contract Value: _____

Assigned MBE Value: _____ % $ _____

Assigned SBE Value: _____ % $ _____

Table of Contents

Note: A Good Faith Efforts Plan (GFEP) meeting all the requirements of the following sections must be filed for *each* state-funded project.

Note: A submission that does not adhere to this formatting may be rejected before it is reviewed. Any section that does not include a response to said section and/or its subsections herein will not be in compliance.

Section Number and Title	Page Number
Section 1: Project Description, Timeline, and Trades Involved	3
Section 2: Subcontractor/Supplier/Vendor Availability Analysis	6
Section 3: Minority Business Enterprise Goals and Timetables	12
Attachment III	13
Section 4: Documentation Checklist	15
Section 5: Prompt Payment Policy	16
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Section 1: Project Description, Timeline, and Trades Involved

INSTRUCTIONS:

This section of the GFEP must detail the scope of the project, start/end dates and trades, materials and services provided by your company for this project. If a question does not apply to this project, please indicate as such by writing, "N/A", to acknowledge the question.

1. In 1–3 sentences, briefly describe the project and the work involved.

2. Project Start Date: Click or tap to enter a date.

   ☐ Actual ☐ Estimated

   Project End Date: Click or tap to enter a date.

   ☐ Actual ☐ Estimated

3. List all trades-related work that will be self-performed by your company's employees. "N/A" is an acceptable response if your company will not self-perform trades-related work. **Attach a copy of the applicable section of the agency bid document (for example: project manual, ITB, etc.), that specifies all the trades-related work required for your company's work on this project. Only include the portions necessary to verify your company's responses**.

   **Please list one trade on each line. Please add additional lines if necessary.*

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4. List all supplies that will be manufactured or self-provided by your company for use on this project (please do not list materials your company will be purchasing specifically for this project or will be furnished by a subcontractor). "N/A" is an acceptable response if your company will not manufacture or self-provide supplies. **Attach a copy of the applicable section of the agency bid document (for example: project manual, ITB, etc.), that specifies all the materials required for your company's work on this project.**

   **Please list one material on each line. Please add additional lines if necessary.*

***If your company is providing materials from its inventory, please provide documentation to verify the source (i.e. purchase orders with dates).**

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5. List all non-trades related services that will be provided by your company.
   "N/A" is an acceptable response if your company will not provide non-trades related services.

   **Please list one service on each line. Please add additional lines if necessary.*

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*****Please do not list, in this section, the trades, materials and services that your company will be awarding to subcontractors, suppliers and vendors. That information will be provided in the next section.**

☐ Please check this box to certify that your company has provided documentation from the awarding agency to support all trades and materials listed above. This includes any trades or materials with manufacturers, suppliers or subcontractors specified by the awarding agency.

Section 2: Subcontractor/Supplier/Vendor Availability Analysis

INSTRUCTIONS:

Before filling out the rest of this section, please check the DAS Supplier Diversity Program Database to confirm that every Small Business Enterprise (SBE), Minority-Business Enterprise (MBE), Women-Owned Business Enterprise (WBE), and Disabled Person-Owned Business Enterprise (DisBE) has an active certificate.

Follow this link to access the DAS Supplier Diversity Program Database.

Column A: Please list the trades-related work, materials, and non-trades related services for which your company will be bidding for in order to award a subcontractor, supplier or vendor to provide.
*Please indicate the specific trade, material or service and do not use general terms (wire, cable vs. Electrical Supplies).

* Please attach a copy of the contract's bid document (project manual, ITB, etc.) that specifies all the trades-related work, non-trades related work, and all materials required for the work on this project. **Only include the portions necessary to verify your company's responses. *Please do not provide the full document.***

Column B: Please list the legal names of all companies solicited for trades, materials and services, listed in Column A.

Column C: Please indicate the DAS Certification Type for the company listed. Please use "WBE" status for women owned businesses, "MBE" status for ethnic minority owned businesses, "DisBE" status for businesses owned by persons with a disability, and "SBE" status for small businesses that are not one of the aforementioned. If the company is not DAS Certified, please use "non-DAS Certified".

Column D: Please indicate the date a bid was initially solicited from each company.

Column E: Please indicate the date(s) of any additional solicitations to each company.

Column F: Please indicate the bid due date set in the solicitation.

Column G: Please indicate the date that your company received a bid from each company.

Column H: Please indicate result of the bid solicitation. Your company must be able to explain and to document to the CHRO the reason(s) why your company did not award a subcontract to each of the companies solicited. An overly vague response, such as "Bid Received," "Called/Left Message," "Said Will Bid" etc., is insufficient. For those companies that you will utilize for this project, use "Awarded" as the bid result.

Column I: Please indicate the amount of the bid.

How this section will be reviewed:

A contractor's good faith efforts shall be determined using the following factors: The contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

Examples* include, but are not limited to:

- Consulting the State of Connecticut Department of Administrative Services (DAS) Supplier Diversity Program.
    - When utilizing the DAS Supplier Diversity Program Website, please use simple and varied terms in the keyword search.
    - (i.e. "precast" instead of "precast concrete products" or "building material" instead of "gypsum board")
    - **If your company failed to find DAS Certified companies due to searching keywords that were too specific or singular and did not show due diligence in utilizing the DAS Supplier Diversity Program website, that may be a factor in a determination that good faith efforts were not demonstrated.**
- Using concise responses for bid results (avoid vague responses such as "did not bid" or "no response"; use responses to show follow-up).
- Soliciting bids only from those subcontractors and/or vendors who can provide the trade, material, or service.
- Including all trades, materials, and services within the company's bidding process or providing an explanation with reference as to why the trade, material, or service was not solicited (best practice is to solicit at least three SBE/MBE/WBE/DisBEs). In addition, your company should provide documentation to support its explanation as to why a trade, material or service was not solicited to S/M/W/DisBE's (i.e. page from project documents showing specific manufacturer, etc.)

**This is not an exhaustive list.*

Please note CHRO's Record Retention Policy:

1) The CHRO is authorized to audit your company records regarding contract compliance at any time during or after the performance of this project. You must develop and maintain detailed records of your solicitation of and responses from each company in the event that the CHRO requests documentation. If you solicit in writing, you must keep those written documents (e.g., letters, facsimiles, emails). If you solicit by phone, you must keep written notes about those solicitations. The CHRO may seek phone or any manner of other records. Records are subject to the CHRO's verification with any or all contractors, subcontractors, and/or suppliers of materials solicited. Records must be retained for at least two years after the CHRO issues, to your company, a Notice of File Closure letter. **Please provide the required information for all trades related work your company will award to a subcontractor.**

** Please add additional lines if necessary.*

Example

A	B	C	D	E	F	G	H	I
Type of Trade	**Company Legal Name**	**DAS Certification**	**Date Solicitation Sent**	**Date(s) of Additional Solicitations**	**Date Bids Due**	**Date Bid Received**	**Outcome**	**Bid Amount**
Rough Carpentry	ABC Construction	SBE	02/02/2026	02/15/2026 02/22/2026	02/28/2026	02/12/2026	Bid Incomplete	$5,000.00
Rough Carpentry	Carpenter's LLC	DisBE	02/02/2026	N/A	02/28/2026	02/05/2026	Awarded	$23,456.00
Rough Carpentry	Hard Knocks Woodwork	Non-DAS Certified	02/02/2026	02/15/2026	02/28/2026	02/16/2026	Bid Too High	$25,000.00
Electrical	Boltz Electric, LLC	non-DAS Certified	02/02/2026	N/A	02/28/2026	02/12/2026	Awarded	$19,222.33
Electrical	XYZ Electrical Co, Inc.	SBE	02/02/2026	02/15/2026 02/22/2026	02/28/2026	N/A	No response to 3 solicitations	N/A

A	B	C	D	E	F	G	H	I
Type of Trade	**Company Legal Name**	**DAS Certification**	**Date Solicitation Sent**	**Date(s) of Additional Solicitations**	**Date Bids Due**	**Date Bid Received**	**Outcome**	**Bid Amount**

2) <u>Please provide the required information for all materials your company will award to a supplier or vendor.</u>

** Please add additional lines if necessary.*

<u>Example</u>

A	B	C	D	E	F	G	H	I
Type of Material	**Company Legal Name**	**DAS Certification**	**Date Solicitation Sent**	**Date(s) of Additional Solicitations**	**Date Bids Due**	**Date Bid Received**	**Outcome**	**Bid Amount**
Hardwood Supplier	XYZ Material Suppliers	WBE	02/04/2026	02/15/2026 02/22/2026	02/28/2026	02/27/2026	Bid Too High	$6,789.00
Hardwood Supplier	Best Floor Co.	DisBE	02/04/2026	N/A	02/28/2026	N/A	Declined To Bid	N/A
Hardwood Supplier	ABC Construction Supply	Non-DAS Certified	02/04/2026	02/15/2026	02/28/2026	02/16/2026	Awarded	$5,999.99
Cable, Conduit, Fixtures, Boxes	Wires and Things, LLC	WBE	02/04/2026	N/A	02/28/2026	02/10/2026	Awarded	$15,432.00
Cable, Conduit, Fixtures, Boxes	Shockingly Good Electrical Supply, Inc.	SBE	02/04/2026	02/15/2026 02/22/2026	02/28/2026	N/A	No response to 3 solicitations	N/A

A	B	C	D	E	F	G	H	I

Type of Material	Company Legal Name	DAS Certification	Date Solicitation Sent	Date(s) of Additional Solicitations	Date Bids Due	Date Bid Received	Outcome	Bid Amount

3) <u>Please provide the required information for all non-trades related services your company will award.</u>

** Please add additional lines if necessary.*

<u>Example</u>

A	B	C	D	E	F	G	H	I
Type of Service	Company Legal Name	DAS Certification	Date Solicitation Sent	Date(s) of Additional Solicitations	Date Bids Due	Date Bid Received	Outcome	Bid Amount
Portable toilets	Number 1	MBE	02/04/2026	02/10/2026	02/18/2026	02/10/2026	Bid Too High	$999.99
Portable toilets	When Nature Call	SBE	02/04/2026	N/A	02/18/2026	N/A	Scheduling Conflict	N/A
Portable toilets	Pristine Port-a-lets	non-DAS Certified	02/04/2026	02/10/2026	02/18/2026	02/14/2026	Awarded	$876,54
Dumpsters	Waste Not, Inc.	non-DAS Certified	02/04/2026	02/10/2026 02/16/2026	02/18/2026	02/17/2026	Bid Too High	$519.00
Dumpsters	Dumpsters LLC.	WBE	02/04/2026	02/10/2026	02/18/2026	02/14/2026	Awarded	$419.00

A	B	C	D	E	F	G	H	I

Type of Service	Company Legal Name	DAS Certification	Date Solicitation Sent	Date(s) of Additional Solicitations	Date Bids Due	Date Bid Received	Outcome	Bid Amount

☐ Please check this box to certify that your company has provided documentation from the awarding agency to support all trades and materials listed above. This includes any trades or materials with manufacturers, suppliers or subcontractors specified by the awarding agency.

***If your company did not award the lowest bidder, please provide an explanation and attach supporting documentation.**

In reference to the solicitations listed above, please provide responses to the following two questions.

1. Did your company provide written notice to a reasonable number (given availability of DAS Certified S/M/W/DisBE companies for each Trade, Material or Service) of specific S/M/W/DisBE companies that their interest in the contract is being solicited, at least 10 days before bids are due to allow S/M/W/DisBE companies time to participate? If you could not solicit S/M/W/DisBE companies for any trade, material or service, please provide a justifiable reason as to why not.

☐ Yes ☐ No

<u>* Your response should be supported by information provided earlier in this section.</u>

2. Did your company follow up initial solicitation of interest by contacting S/M/W/DisBE companies to determine whether the S/M/W/DisBE companies are interested?

☐ Yes ☐ No

Section 3: Minority Business Enterprise Goals and Timetables

INSTRUCTIONS:

Provide all the information requested in the Attachment III.

- List all companies who were designated as "***Awarded***" in Section 2, Column G.
  - List all awarded MBEs, WBEs, and DisBEs in the top table ("Part A").
  - List all awarded SBEs in the middle table ("Part B").
  - List all awarded non-DAS Certified Companies in the bottom table ("Part C").
  - The contract values listed should correspond to the bid amounts in Section 2, Column H.
- List your company in the appliable table (Part A, B or C) with its contract value.
  - To calculate your company's contract value, start with the total project contract value and deduct the dollar values of the contracts awarded to all subcontractors, suppliers and vendors.
- Input all percentages requested in the Attachment III. (Please use the State Funded Portion of the contract value to calculate percentages).
- Attach a ***current copy*** of the DAS Supplier Diversity Certificate for each company listed in Part A and Part B. Companies must be DAS Certified during their participation in the project for their contracts to count toward goal achievement.

Once your company's Plan is approved, your company may not add or delete any of the companies nor alter any of the contract values as listed on the Attachment III of your company's approved Plan, except as follows. After your company's Plan is approved, Attachment III may be altered only if your company submits the following items:

I) A cover letter that
   A) Requests acknowledgement of the change and
   B) Details the reason(s) why the CHRO should grant the change.

II) Documentation that verifies the reason(s) for removal or addition
   A) For removal: confirmation that the business is closed, a change order from the owner that eliminates a subcontractor's portion of the project, etc.
   B) For addition: a copy of the company's current DAS S/M/W/DisBE certification;

II) A Revised Attachment III listing the date of the revision (in mm/dd/yyyy format) and incorporating the requested change.

NOTE: Upon a project's completion, only those companies that are listed on the latest approved Attachment III, and who have maintained a current DAS Supplier Diversity certification throughout the duration of the project, will be utilized in the CHRO's final calculations of actual goal achievement upon the project's completion.

The CHRO encourages your company to not just meet its spending allocation goals, but to surpass them in order to ensure project circumstances (e.g., delays, change orders, decrease between estimate amount and contract amount) do not cause your company to fall below the spending allocation goals as projected in its approved Good Faith Efforts Plan.

Attachment III

Total Contract Value:	$	
State Funding Portion of the Contract Value:	$	
M/W/DisBE Value as Assigned by the Awarding Authority:	%	$
SBE Value as Assigned by the Awarding Authority:	%	$

A. Please identify MBE/WBE/DisBE subcontractors/vendors who will participate on the project.

Company Name	**DAS Certification Type (MBE/WBE/DisBE)**	**DAS Certification Expiration Date**	**Date Contract Executed**	**Contract Value**
			Total amount of MBE, WBE, & DisBE contract values: $	(Total amount of MBE, WBE, & DisBE contract values ÷ project value **x** 100) %

B. Please identify SBE contractors/vendors who will participate on the project.

Company Name	DAS Certification Type (SBE)	DAS Certification Expiration Date	Date Contract Executed	Contract Value
			Total amount of SBE contract values:	Total amount of SBE contract values ÷ project value **x** 100= %
Total amount of all contract values listed in A & B =			$	Total amount of all contract values listed in A & B ÷ project value **x** 100 = %

C. Please identify all non-DAS certified contractors/vendors who will participate on the project.

Company Name	Date Contract Executed	Contract Value
		Total amount of non-certified companies contract values**.** $

Please use additional sheets if necessary

Section 4: Documentation Checklist

The following documentation is required to accompany all plan submissions. Additional documentation requests may be made during the course of the review process in order to determine whether good faith efforts were made to comply with the statutory requirements. ***Please check the box next to each document to acknowledge and confirm the document has been attached behind the applicable section of your company's plan.***

Section 1: Project Description, Timeline, and Trades Involved

☐ A copy of the applicable section of the agency bid document (for example: project manual, ITB, etc.), that specifies all the trades-related work and materials required for your company's work this project. **Only include the portions necessary to verify your company's responses. *Please do not provide the full document.***

☐ Documentation of the source of materials, if your company is providing materials from its inventory (i.e. purchase orders with dates).

Section 2: Subcontractor/Supplier/Vendor Availability Analysis

☐ A copy of the applicable section of the agency bid document (project manual, ITB, etc.) that specifies all the trades-related work, non-trades related work, and all materials required to be provided by subcontractors, suppliers and vendors on this project. **Only include the portions necessary to verify your company's responses. *Please do not provide the full document.***

☐ Documentation to support your company's explanation as to why a trade, material or service was not solicited to S/M/W/DisBE's (i.e. page from project documents showing specific manufacturer, etc.)

☐ Documentation to support why your company did not award the lowest bidder for any trade, material or service.

Section 3: Minority Business Enterprise Goals and Timetables

☐ A copy of the Dept. of Administrative Services (DAS) Supplier Diversity Certificate for any subcontractor, supplier or vendor hired by your company to work on this project.

Section 5: Prompt Payment Policy

Contractors are required to abide by the Prompt Payment Policy, as is their obligation under state statute.

General Contractors/Prime Contractors must pay all subcontractors, suppliers and vendors within fifteen (15) days past the contractual due date unless there is a bona fide dispute.

Failure to abide by the Prompt Payment Policy may result in enforcement action being taken.

If you have any questions, please contact the Contract Compliance unit at (860)541-3434 for assistance.

☐ **I understand my company's obligation to abide by the Prompt Payment Policy.**

Section 6: Close Out Documentation Notice

Contractors are required to provide the following documentation within forty-five (45) days from the date of substantial completion. Failure to submit this documentation may result in an enforcement action being brought.

Within 45 days of substantial completion, please provide:

- Cover Letter.
  - For the cover letter format, go to our website.
- A copy of the Final Change Order
- Notice of Substantial Completion from the project owner.
- A full and complete list of all subcontractors/vendors/service providers awarded for the project (Final Attachment III).
- Lien waivers for all of the awarded subcontractors/vendors/service providers awarded for the project.

If you have any questions, please contact the Contract Compliance unit at (860)541-3434 for assistance.

☐ **I understand my obligations to provide the above documentation within forty-five (45) days of my company's substantial completion date.**

Section 7: Concluding Statement

I have read and pledge my full support to all sections of this Good Faith Efforts Plan, and that the commitments therein, are true and correct to the best of my knowledge. I pledge my "best good faith efforts" to achieve the objectives of the Plan within the established time frames.

This company will comply with the state statutes regulating prompt payment of subcontractors, suppliers and vendors.

Furthermore, this company will comply with any request by the Commission for records and documents. It understands that failure to do so may subject this company to enforcement action by the Commission.

Click or tap to enter a date.

Date

Head of Company's Signature

Printed Name and Title

Company Name

City of Waterbury

Engineering Department

OFFICE: (203) 574-6851
FAX: (203) 574-8277

Memorandum

To: Board of Aldermen

From: Salvatore D. Porzio, Project Manager, Engineering Department

Date: September 22 , 2026

Re: **Approval Request / Executive Summary** – Professional Services Agreement [RFQ No. 8132] for Engineering On-Call Services 2025 Through 2027 between The City of Waterbury, Connecticut and Weston & Sampson Engineers, Inc .

The Engineering Department, in conjunction with the Public Works Department and Education Department, respectfully request your approval of the above-referenced agreement for On-Call Professional Services between the City of Waterbury and Weston& Sampson Engineers, Inc. (the "Consultant").

As you may be aware, under RFQ No. 8132, the City solicited for various Engineering On-Call Services and the Section Committee, consisting of me, as Chairmen; Roy E. Cavanaugh, City Engineer; Denis Cuevas, Jacobs Business Manager, and Maureen McCauley, Assistant Director of Purchasing, selected the Consultant to provided various services, by discipline, to the City. (FYI: Please see Section 1.3 of the attached agreement for the specific services the Consultant has been deemed qualified to perform.)

And please be advised that this agreement is for services such as construction administration and resident engineer inspection services, rather than for engineering/design services (which, generally, are the services to be provided under the initial round of on-call agreements approved by your Board earlier this year).

All services requested under this agreement will be authorized through Task Orders and Purchase Orders following the rates and fees set forth in the Consultant's Cost Information Schedule Packet, which has been incorporated into the agreement as part of Attachment A (see attached agreement). Each Task Order will set out, on a project by process basis, the desired scope of work, monetary terms and time of performance for such work, plus all other pertinent project specific information.

The term of the agreement will run from the date of execution by the Mayor through December 31, 2027, and as an On-Call Agreement, there is no cost to the City associated with entering into

the agreement. Costs will be as identified in any issued Task Orders and Purchase Orders in accordance with the On-Call Agreement.

Accordingly, attached please find for your review and consideration copies of the proposed Agreement (with all Attachment A documents to date).

Lastly, please be advised that Engineering Department will have a representative present at your upcoming meeting to answer any questions you may have regarding this matter.

Thank you.

SDP/sdp
Attachment

cc: Attorney Lynn McHale, via email, w/o attachment.
Selection Committee Members, via email, w/o attachment.
David B. Simpson, Director of Public Works, via email, w/o attachment.
Carrie Swain, Clerk, Board of Education, via email, with attachment.
File C268

PROFESSIONAL SERVICES AGREEMENT
RFQ No. 8132
for
ENGINEERING ON-CALL SERVICES
2025 THROUGH 2027
between
The City of Waterbury, Connecticut
and
WESTON & SAMPSON ENGINEERS, INC.

THIS AGREEMENT, effective on the date signed by the Mayor, is by and between the CITY OF WATERBURY, City Hall, 235 Grand Street, Waterbury, Connecticut 06702 (the "City") and WESTON & SAMPSON ENGINEERS, INC., located at 55 Walkers Brook Drive, Suite 100, Reading, MA 01867, a State of Connecticut duly registered foreign (MA) corporation with a place of business at 712 Brook Street, Suite 102, Rocky Hill, CT 06547 (the "Consultant").

WHEREAS, the Consultant submitted a proposal to the City responding to **RFQ No. 8132** for **ENGINEERING ON-CALL SERVICES 2025 THROUGH 2027**; and

WHEREAS, the City selected the Consultant to perform services regarding **RFQ No. 8132**; and

WHEREAS, the City desires to obtain the Consultant's services pursuant to the terms, conditions and provisions set forth in this agreement (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Consultant shall furnish all of the labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. shall comply with any and all applicable Local, State and Federal laws, statutes, ordinances and regulations and with generally accepted professional standards. The Consultant shall make such revisions or modifications to its work, at its own cost and expense, as the City may require in order to be deemed complete.

1.1. The Project consists of **ENGINEERING ON-CALL SERVICES 2025 THROUGH 2027** pertaining to services for which the Consultant has been deemed qualified by the City's Purchasing Director ("Qualified Engineering Services") as detailed and described in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Consultant as having been received, or are

otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 The City's **RFQ No. 8132** for **ENGINEERING ON-CALL SERVICES 2025 THROUGH 2027** (incorporated by reference);

1.1.2 **Addenda #1** to the City's **RFQ No. 8132**, dated October 23, 2024 and consisting of 8 pages (attached hereto);

1.1.3 The Consultant's Qualifications submitted in response to the City's **RFQ No. 8132**, dated November 1, 2024 and consisting of 218 pages (incorporated by reference), and the Consultant's completed ATTACHMENT D – DISCIPINE LIST, and ATTACHMENT E – COST INFORMATION SCHEDULE (15 page "Cost Information Schedule Packet") (attached hereto);

1.1.4 Consultant's Certificate(s) of Insurance (attached hereto);

1.1.5 All applicable Federal, State and local statutes, regulations charter and ordinances (incorporated by reference);

1.1.6 All permits and licenses (incorporated by reference); and

1.1.7 Any and all amendment(s) and Change Orders issued by the City after execution of Agreement (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Consultant. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 Federal, State, and local laws, regulations, charter and ordinances

1.2.2 Contract Amendment(s) and Change Orders

1.2.3 Contract

1.2.4 Consultant's response to the City's **RFQ No. 8132**, dated November 1, 2024 and consisting of 218 pages, and Consultant's Cost Information Schedule, consisting of 15 pages

1.2.5 RFQ Addenda

1.2.6 RFQ Documents not included in 1.2.1-1.2.5

1.3 Task Order Development. The parties hereto agree that the City, through its Using Agency (i.e., City Department or Waterbury Development Corporation), may request from the Consultant at any time during the term of this Agreement a proposal to perform services pertaining to **Qualified Engineering Services** that shall be completed within the Contract Time of this Agreement and as further provided in the applicable Task Order(s) and agreed to by the Consultant. The Consultant's **Qualified Engineering Services** are:

- Parks/Recreation – Inspection
- Construction Administration
- Construction or Resident Engineering Inspection Services
- Water Pollution Control Facility Construction Administration Services
- Water Pollution Control Facility Resident Engineer and Inspection Services
- Sanitary Sewer Collection System Construction Administration Services
- Sanitary Sewer Pump Station Construction Administration Services
- Sanitary Sewer Collection System Resident Engineer & Inspection Services
- Sanitary Sewer Pump Station Resident Engineer & Inspection Services
- Water Pump Station Inspection Services
- Reservoir/Dam – Inspection Services
- Water Filtration Plant Improvement Inspection Services
- Water Main Inspection Services
- Water Storage Tank Inspection Services

The Consultant shall prepare for the Using Agency's review, comment and approval a Task Order that:

1.3.1 assigns a Task Order number;

1.3.2 provides a general description of the Task Order project;

1.3.3 provides the time by which all work under the Task Order shall be completed;

1.3.4 proposes a not to exceed cost to perform all work under the Task Order with compensation being based upon the hourly rates provided in the Consultant's response to the City's **RFP No. 8132** and paid on a time and materials basis;

1.3.5 provides a spreadsheet of the Consultant's proposed level of effort for the Task Order work that includes staff positions and man-hours budgeted for each subtask within the Task Order;

1.3.6 addresses any comments provided by the Using Agency;

1.4 The parties hereto agree that no work shall commence under a Task Order until and unless it has been fully executed by the Consultant (through its Project Manager) and by the City (through the Department Head of the Using Agency) and a City Purchase Order for said work has been issued.

1.5 Task Order Process. The parties hereto agree that for all Task Orders approved in writing by the City's Using Agency:

1.5.1 The Using Agency shall process a requisition with the City's Finance Department for each specific Task Order;

1.5.2 The Using Agency shall not issue a Notice to Proceed with the Task Order work to the Consultant until and unless the City issues a Purchase Order for such work; and

1.5.3 The Consultant shall provide invoices to the Using Agency on a monthly basis for services rendered under each Task Order during the period in question and shall include therewith a narrative detailing the services rendered during the period in question and any further information requested by the Using Agency.

2. Consultant Representations Regarding Qualification and Accreditation. The Consultant represents that, to the extent required by law, its employees are licensed to perform the scope of work set forth in this Contract. The Consultant further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon these.

2.1. Representations regarding Personnel. The Consultant represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved by the City in writing. As set forth above, all the services required hereunder shall be performed by the Consultant under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide to the City a copy of the Consultant's licenses, certifications, registrations, etc.

3. Responsibilities of the Consultant. All data, information, etc. given by the City to the Consultant and/or created by the Consultant shall be treated by the Consultant as proprietary to the City and confidential unless the City agrees in writing to the contrary and shall be used solely for the purposes of providing services under this Contract. The Consultant agrees to forever hold in confidence all files, records, documents and other information which may come into the Contractor's possession during the term of this Contract, except where a disclosure is expressly stated as a requirement of this Contract. Notwithstanding the foregoing, where a Consultant disclosure is required to comply with statute, regulation, or court order, the Consultant shall provide prior advance written notice to the City of the need for such disclosure. The Consultant agrees to properly implement the services required in the manner herein provided.

3.1. Use of City Property. To the extent the Consultant is required to be on City

property to render its services hereunder, the Consultant shall have access to such areas of City property as the City and the Consultant agree are necessary for the performance of the Consultant's services under this Contract (the "Site" or the "Premises") and at such times as the City and the Consultant may mutually agree. Consultant shall perform all work in full compliance with Local, State and Federal health and safety regulations. All work hereunder shall be performed in a safe manner. Consultant shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Consultant, City may, but shall not be required to, correct same at Consultant's expense. City shall confirm in writing any oral notice given within five (5) business days thereafter.

3.2. Working Hours. To the extent the Consultant is required to be on City property to render its services hereunder, the Consultant shall coordinate its schedule so that work on the Premises is performed during those hours the City sets forth in a written notice to the Consultant, unless written permission is obtained from the City to work during other times. This condition shall not excuse Consultant from timely performance under the Contract. The work schedule must be agreed upon by the City and the Consultant.

3.3. Cleaning Up. To the extent the Consultant is required to be on City property to render its services hereunder, the Consultant shall at all times keep the Premises free from accumulation of waste materials or rubbish caused by Consultant, its employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Premises "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Consultant.

3.4. Publicity. Consultant agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity, unless the City gives prior written consent to such use of the City's name in each instance.

3.5. Standard of Performance. All workmanship, services, materials or equipment, either at the Premises or intended for it, shall conform in all respects with the requirements of all this Contract, and shall be the best obtainable from the crafts and trades. In all cases, the services, materials, equipment, reports, plans, specifications, deliverables, workmanship, etc. shall be equal to or better than the grade specified, and the best of their kind that is obtainable for the purpose for which they are intended. The standard of care and skill for all services performed by the Consultant shall be that standard of care and skill ordinarily used by other members of the Consultant's profession practicing under the same or similar conditions at the same time and in the same locality. The Consultant's services rendered hereunder shall be rendered completely and by qualified personnel in accordance with standard industry practice.

3.6. Consultant's Employees. The Consultant shall at all times enforce strict discipline and good order among its employees, and shall not employ any unfit person or anyone not skilled in the work assigned.

3.7. Due Diligence Obligation. The Consultant acknowledges its responsibilities to examine and to be thoroughly familiar with the City's proposal document, including, but not limited to the specifications, and any addenda thereto. The Consultant hereby warrants and represents that prior to the submission of its proposal during the proposal process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services or functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items facilities, services or functions are included in this Contract and thereby warrants that:

3.7.1 it conducted or had opportunity to conduct all Due Diligence prior to the submission of its proposal and, accordingly, any additional costs, services or products resulting from the failure of the Consultant to complete Due Diligence prior to submission of its proposal shall be borne by the Consultant. Furthermore the Consultant had the opportunity during the proposal process to ask questions it saw fit and to review the responses from the City;

3.7.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.7.3 it is solely responsible for resolving any issues resulting from the failure to conduct Due Diligence and shall assume any costs that may result during the implementation of the Project, including, but not limited to, adherence to specifications and pricing for the Project.

3.7.4 it was responsible for specifying any changes and disclosing any new costs prior to the submittal of its proposal. Thus, in the event any changes or costs are disclosed by the Consultant, or otherwise required, during the performance of its services, the sole responsibility for any modification, delay and cost of such changes shall reside with the Consultant.

3.7.5 has familiarized itself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, State and Local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work;

3.7.6 has given the City written notice of any conflict, error or discrepancy that the Consultant has discovered in the Proposal Documents; and

3.7.7 agrees that the Proposal Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

3.8. Reporting Requirement. Unless the applicable Task Order(s) provide otherwise, the Consultant shall deliver (at a minimum) weekly written Task Order updates in a form and with detail acceptable to the Using Agency and shall deliver monthly written reports to the City's Using Agency setting forth **(i)** the issue date of the report, **(ii)** the time period covered by the report, **(iii)** a brief description of the work and services completed by the Consultant and/or delivered by the Consultant during the time period covered by the report, **(iv)** expressed as a percentage of the total work and services required under this contract, the percentage of the total work represented by the work and services described in subsection iii above, **(v)** expressed as a percentage of this contract's Section 6 total compensation, the percentage of the total compensation represented by the work and services described in subsection iii above, **(vi)** the Consultant's declaration as to whether the entirety of the Consultant's work and services required in this contract will be, or will not be, completed within the Contract's Section 6 total compensation amount, and **(vii)** any and all additional useful and/or relevant information. Each report shall be signed by a Consultant representative acceptable to the City's Using Agency.

NOTE: the Consultant's failure to deliver any report required herein shall be deemed a material breach of this Contract, the City hereby reserving the right to exercise all available legal remedy(ies) to address said breach.

3.9. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students are Present. For all activities in school facilities and/or Department of Education facilities, the Consultant shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc. Consultant shall enter and exit all school facilities and Department of Educational facilities as designated as authorized by the appropriate Department/personnel in Education, or the designated person.

3.10. Criminal Background Check and DCF Registry Check. The Consultant shall comply with the requirements of C.G.S. 10-222 c (g) and shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City students are present, that will or may have direct contact with a student while providing services pursuant to this Agreement, has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Consultant shall further ensure, and represents to the City that any person who will have direct contact with a student has submitted to a records check of the Department of Children and Families Child Abuse and Neglect Registry established pursuant to Conn. Gen. Stat. §17a-101k, as

well as State and National criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the Federal National Child Protection Act of 1993, and the Federal Volunteers for Children Act of 1998. The Consultant shall not permit any person with a disqualifying criminal history to have contact with a student. The Consultant agrees that "direct contact" shall include the Consultant and its employees providing services under this Contract if said services are performed on school grounds/Department of Education Property/at Department of Education events and/or where City students are present.

4. Responsibilities of the City. Upon the City's receipt of Consultant's written request, the City will provide the Consultant with all documents, data and other materials the City agrees are necessary and appropriate to the service to be performed by the Consultant hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Consultant for the purpose of carrying out the services under this Contract.

5. Contract Time. The Consultant shall complete all work and services required under this Contract by **December 31, 2027** and in accordance with all Project Phase Completion Dates, Project Milestones, and Substantial and Final Completion Dates identified in fully executed Task Orders under this Contract ("Contract Time").

5.1. Time is and shall be of the essence for all Project milestones, completion date for the Project. The Consultant further agrees that the Work shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Consultant and City, that the Contract Time is reasonable for the completion of the Work. The Consultant shall be subject to City imposed fines and/or penalties in the event the Consultant breaches the foregoing dates.

6. Compensation. The City shall compensate the Consultant for satisfactory provision of all of the goods and services set forth in this Contract as follows in this Section 6.

6.1. Fee Schedule. The fee payable to the Consultant shall be in accordance with the Consultant's response to **RFQ No. 8132**, dated November 1, 2024, Consultant's Cost Information Schedule Packet and all applicable fully executed Task Orders and Purchase Orders.

6.2. Limitation of Payment. Compensation payable to the Consultant is limited to those fees set forth in Section 6.1. above. Such compensation shall be paid by the City upon review and approval of the Consultant's invoices for payment and review of the work, services, deliverables, etc. required in this Contract and review as may be further required by the Charter and Ordinances of the City. Consultant's invoices shall describe the work, services, reports, plans, specifications, deliverables, etc. rendered and the compensation sought therefore in a form and with detail and clarity acceptable to the City.

6.2.1 The Consultant and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Consultant in an amount equaling the sum or sums of money the Consultant and/or its affiliates is/are, or becomes delinquent or in arrears on, regarding the Consultant's and/or its affiliate's real and personal tax obligations to the City.

6.3. Review of Work. The Consultant shall permit the City to review, at any time, all work performed under the terms of this Contract at any stage of the work. The Consultant shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Consultant's demand for payment. The City shall not certify fees for payment to the Consultant until the City has determines that the Consultant has completed the work in accordance with the requirements of this Contract.

6.4. Response Costs. All costs of the Consultant in preparing its Response to **RFQ No. 8132** shall be solely borne by the Consultant and are not included in the compensation to be paid by the City to the Consultant under this Contract or any other Contract.

6.5. Payment for Services, Materials, Employees. The Consultant shall be fully and solely responsible for the suitability, and compliance with the Contract, of all labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. furnished to the City under this Contract. The Consultant shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc., going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final payment is made, the Consultant shall furnish a legal statement to the City that all payments required under this subparagraph have been made.

6.6. Liens. Neither the final payment nor any part of the retained percentage, if any, shall become due until the Consultant shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, in either case, an affidavit that so far as the Consultant has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Consultant may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Consultant shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

7. Passing of Title and Risk of Loss. Title to each item of equipment, material, reports, plans, specifications, supplies, services, etc. required to be delivered to the City hereunder shall

pass to City upon City payment to the Consultant for that item. Consultant and its insurer shall assume the risk of loss or damage up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's negligence.

8. Indemnification.

8.1. The Consultant shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Consultant, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Consultant duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

8.2. In any and all claims against the City or any of its boards, agents, employees or officers by the Consultant or any employee of the Consultant, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 8.1, above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Consultant or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

8.3. The Consultant understands and agrees that any insurance required by this Contract, or otherwise provided by the Consultant, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City as provided in this Contract.

8.4. The Consultant expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Consultant, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, agents, employees or officers as provided herein.

8.5. Royalties and Patents. The Consultant shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Consultant's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Consultant shall pay such awards and hold the City harmless in connection with

any patent suits that may arise as a result of installations made by the Consultant and as to any award made thereunder.

8.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Consultant shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Consultant, or its subcontractor, omission or commission..

9. Consultant's Insurance.

9.1. The Consultant shall not commence work under this Contract until all insurance required under this Section 9 has been obtained by the Consultant and such insurance has been approved by the City. The Consultant shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers that are satisfactory to the City, authorized to do business in the State of Connecticut, that have at least an "A-" Best's Rating, and are in an A.M. Best financial size category of VIII or higher. The A.M. Best classifications are based on the most current A.M. Best Company ratings or an equivalent City approved rating system.

9.2. At no additional cost to the City, the Consultant shall purchase and maintain the insurance coverages set forth below which shall protect the City from claims which may arise out of or result from the Consultant's obligation under this Contract, whether such obligations are the Consultant's or subcontractor or person or entity directly or indirectly employed by said Consultant or subcontractor, or by any person or entity for whose acts said Consultant or subcontractor may be liable.

9.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

9.4. The following policies with stated limits shall be maintained, in full force and effect, at all times during which the services are to be performed by the Consultant:

9.4.1 General Liability Insurance:

$1,000,000.00 Each Occurrence
$2,000,000.00 General Aggregate
$2,000,000.00 Products/Completed Operations Aggregate

Providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

9.4.2 Automobile Liability Insurance:

$1,000,000.00 combined single limit (CSL)

Providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

9.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

$1,000,000.00 EL Each Accident
$1,000,000.00EL Disease Each Employee
$1,000,000.00EL Disease Policy Limit

Consultant shall comply with all State of Connecticut statutes as it relates to workers' compensation.

9.4.4 Excess/Umbrella Liability Insurance:

$1,000,000.00 Each Occurrence
$1,000,000.00 Aggregate
Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability, Professional Liability and Workers Compensation insurances

9.4.5 Professional Liability/E&O Insurance:

$1,000,000.00 Each Wrongful Act
$1,000,000.00 Aggregate
Professional liability (also known as, errors and omissions) insurance providing coverage to the Consultant.

Additionally, for services that may involve Contaminated and/or Hazardous Substances, the Consultant shall provide the following:

9.4.6 Contractor's Pollution Liability Insurance

$1,000,000.00 Each Occurrence/Claim
$1,000,000.00 Aggregate

There will be no exclusion for Hazardous materials, including Asbestos & Lead

9.5. Failure to Maintain Insurance: In the event the Consultant fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Consultant's invoices for the cost of said insurance.

9.6. Cancellation: The City of Waterbury shall receive written notice of cancellation from the Consultant at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

9.7. Certificates of Insurance: The Consultant's General, Automobile and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City and its Board of Education as an Additional Insured and include a waiver of subrogation on all policies except Professional Liability. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Consultant's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. At the time the Consultant executes this Contract, it shall furnish to the City, subject to City approval, certificate(s) of insurance, and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education are listed as Additional Insured on a primary and non-contributory basis on all policies except Workers' Compensation and Professional Liability. All policies shall include a Waiver of Subrogation except Professional Liability."** The Consultant must supply replacement/renewal certificates at least thirty (30) calendar days prior to the expiration of the policy(ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of not less than thirty (30) calendar days has been mailed to the Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

9.8. If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

9.9 Original, completed Certificates of Insurance must be presented to the City of Waterbury prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least thirty (30) calendar days prior to the expiration date of the policies.

Should any of the above described policies be cancelled, limits reduced or coverage altered, thirty (30) calendar days written notice must be given to the City of Waterbury.

10. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Consultant represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Consultant of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: *EQUAL EMPLOYMENT OPPORTUNITY ACT*; *COPELAND ANTI-KICKBACK ACT*, as supplemented in the Department of Labor Regulations (29 CFR Part 3); *DAVIS-BACON ACT* as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the *HOUSING and COMMUNITY DEVELOPMENT ACT of 1974*, as amended; TITLE 31 and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference and made a part hereof.

10.1. Permits, Laws, and Regulations. Permits and licenses necessary for the delivery and completion of the Consultant's work and services shall be secured in advance and paid by the Consultant. The Consultant shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work and services as specified.

10.2. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Consultant for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Consultant remains liable, however, for any applicable tax obligations it incurs. Moreover, the Consultant represents that the proposal and pricing contained in this Contract do not include the amount payable for said taxes.

10.3. Labor and Wages. The Consultant and its subcontractors shall conform to the labor laws of the State of Connecticut, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

10.3.1 The Consultant is aware of the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages and other payments or contributions established by the State of Connecticut Labor Commissioner for work on public facilities. The provisions of the Act are incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic,

laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

10.3.2 The Consultant is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

11. Discriminatory Practices. In performing this Contract, the Consultant shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as herein specified. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all Local, State and Federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

11.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

11.2. Equal Opportunity. In its execution of the performance of this Contract, the Consultant shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Consultant agrees to comply with all Local, State and Federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors.

12. Housing and Urban Development Section 3 Clause. In the event this Contract is funded, in whole or in part, through Housing and Urban Development assistance, 24 C.F.R. §135.38 may apply and the Consultant shall then be required to comply with the following (referred to as the "Section 3 clause"):

12.1. The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. § 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted Projects covered by Section 3, shall, to the greatest extent feasible, be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

12.2. The parties to this Contract agree to comply with HUD's regulations in 24 C.F.R. part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

12.3. The Consultant agrees to send to each labor organization or representative of workers with which the Consultant has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the Consultant's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

12.4. The Consultant agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. part 135. The Consultant will not subcontract with any subcontractor where the Consultant has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. part 135.

12.5. The Consultant will certify that any vacant employment positions, including training positions, that are filled (i) after the Consultant is selected but before the Contract is executed, and (ii) with persons other than those to whom the regulations of 24 C.F.R. part 135 require employment opportunities to be directed, were not filled to circumvent the Consultant's obligations under 24 C.F.R. part 135.

12.6. Noncompliance with HUD's regulations in 24 C.F.R. part 135 may result in sanctions, termination of this Contract for default, and debarment or suspension from future HUD assisted contracts.

12.7. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450e) also applies to the work to be performed under this Contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this Contract that are subject to the provisions of Section 3 and section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

13. Termination.

13.1. Termination of Contract for Cause. If, through any cause, in part or in full, not the fault of the Consultant, the Consultant shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Consultant shall violate any of the covenants, agreements, or stipulations of this Contract , the City shall thereupon have the right to terminate this Contract by giving written notice to the Consultant of such termination and specifying the effective date thereof, at least five (5) business days before the effective date of such termination.

13.1.1 In the event of such termination, all finished or unfinished documents, data, studies, reports, specifications, deliverables, etc. prepared by the Consultant under this Contract shall, at the option of the City, become the City's property, and the Consultant shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

13.1.2 Notwithstanding the above, the Consultant shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Consultant, and the City may withhold any payments to the Consultant for the purpose of setoff until such time as the exact amount of damages due the City from the Consultant is determined.

13.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Consultant. If this Contract is terminated by the City as provided herein, the Consultant will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Consultant covered by this Contract, less payments of compensation previously made.

13.3. Termination for Non-Appropriation or Lack of Funding. The Consultant acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Consultant therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty in the event

sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized or not made available pursuant to law, or such funding has been reduced pursuant to law.

13.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Consultant.

13.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Consultant for the agreed to level of the products, services and functions to be provided by the Consultant under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) calendar days written notice to the Consultant, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

13.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Consultant for any lost or expected future profits.

13.4. Rights Upon Cancellation or Termination.

13.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Consultant shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the documents, data, studies, reports, specifications, deliverables, etc. provided to, in possession of, and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. With regard to third party products, the Consultant shall transfer all licenses to the City which the Consultant is permitted to transfer in accordance with the applicable third party license. The City shall have no financial obligation to compensate the Consultant for such terminated documents, data, studies, reports, specifications, deliverables, etc. unless payment is otherwise approved by the City prior to such termination. The Consultant shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this agreement in whole or in part.

13.4.2 Termination for Lack of Funding or Convenience. In the event of termination of this Contract by the City for lack of funding or convenience, the City shall pay the Consultant for all documents, data, studies, reports, specifications, deliverables, etc. (including any holdbacks), installed and delivered

to the City as of the Termination Date and the Consultant shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said documents, data, studies, reports, specifications, deliverables, etc. in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Consultant shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Consultant may negotiate a mutually acceptable payment to the Consultant for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to Changes in the Work.

13.4.3 Termination by the Consultant. The Consultant may, by written notice to the City, terminate this Contract if the City materially breaches, provided that the Consultant shall give the City thirty (30) calendar days prior written notice and an opportunity to cure by the end of said thirty (30) day period. In the event of such termination, the Consultant will be compensated by the City for work performed prior to such termination date and the Consultant shall deliver to the City all deliverables as otherwise set forth in this Contract.

13.4.4 Assumption of Subcontracts. In the event of termination of this Contract, the City shall have the right to assume, at its option, any and all subcontracts for products, services and functions provided exclusively under this Contract, and may further pursue completion of the work under this Contract by replacement contract or otherwise as the City may in its sole judgment deem expedient.

13.4.5 Delivery of Documents. In the event of termination of this Contract, **(i)** the Consultant shall promptly deliver to the City, in a manner reasonably specified by the City, all labor, services, equipment, materials, reports, plans, specifications, deliverables, incidentals, etc. and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Consultant for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

14. Ownership of Instruments of Professional Services. The City acknowledges the Consultant's documents, data, studies, reports, specifications, deliverables, etc. created and to be created pursuant to this Contract, including electronic files, are Instruments of Professional Services. Nevertheless, the final Instruments of Professional Services, including, but not limited to documents, data, studies, reports, specifications, deliverables, etc. prepared for the City under this Contract shall become the property of the City upon City payment for that Instrument of Professional Services and the City reserves the right to use the Instruments of Professional Services.

15. Force Majeure. Consultant shall not be held responsible for delays nor be subject to

liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

15.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies.

15.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Consultant shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

16. Subcontracting. The Consultant shall not, without the prior written approval of the City, subcontract, in whole or in part, any of the Consultant's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Consultant and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all Federal, State and Local, laws, regulations and ordinances but such requirement shall not relieve the Consultant from its requirement that all work and services provided or required hereunder shall comply with all Federal, State and Local, laws, regulations and ordinances.

16.1. The Consultant shall be as fully responsible to the City for the acts and omissions of the Consultant's subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Consultant.

17. Assignability. The Consultant shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Consultant from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

18. Audit. The City reserves the right to audit the Consultant's books of account in relation to this Contract any time during the period of this Contract or at any time during the twelve month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Consultant shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

19. Risk of Damage and Loss. The Consultant shall be solely responsible for causing the timely repair to and/or replacement of, City property or item(s) intended to become City property hereunder, where the need for repair or replacement was caused by the Consultant, by someone under the care and/or control of the Consultant, by any subcontractor of the Consultant, or by any shipper or delivery service. The Consultant shall be solely responsible for all costs and expenses,

including but not limited to shipping, delivery, insurance, etc. associated with the foregoing repair and replacement obligation. Further, the Consultant shall be solely responsible for securing the City's written acceptance of all completed repairs and replacements required hereunder. The City hereby retains sole discretion to determine whether a repair or a replacement is the proper remedy.

20. Interest of Consultant. The Consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Consultant further covenants that in the performance of this Contract no person having any such interest shall be employed.

21. Entire Agreement. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Consultant.

22. Independent Contractor Relationship. The relationship between the City and the Consultant is that of client and independent contractor. No agent, employee, or servant of the Consultant shall be deemed to be an employee, agent or servant of the City. The Consultant shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract. It is the express intention of the parties hereto, and the Consultant hereby agrees and covenants, that it and any and all third party(ies) and subcontractor(s) retained by the Consultant hereunder is/are not and shall not be deemed an employee of the City of Waterbury, but is/are and shall remain an independent contractor relative to the City and that nothing herein shall be interpreted or construed as creating or establishing the relationship of employer-employee between the City of Waterbury and the Consultant or between the City of Waterbury and any third party(ies) or subcontractor(s). Thus, the Consultant hereby covenants that it, its subcontractor(s) and third party(ies) shall not be entitled to the usual characteristics of employment, such as income tax withholding, F.I.C.A. deductions, pension or retirement privileges, Workers Compensation coverage, health benefits, etc. and that the Consultant shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants, representatives, subcontractors and third party(ies).

23. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

24. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

25. Contract Change Orders.

25.1. At the sole discretion of the City, a Change Order may be issued solely by the City to modify an existing party obligation set forth in this Contract where the scope of the Change Order is:

25.1.1 within the scope of the original Contract OR is made pursuant to a provision in the original Contract, AND

25.1.2 the Change Order monetary cost is charged solely against those funds encumbered for and at the time the Contract was originally executed by the City, that is those funds set forth in the original Contract as a not to exceed payment amount OR within the original Contract's contingency / allowance / reserve amount (if any is stated therein), AND

25.1.3 the Final Completion Date has not been changed.

25.2. Notwithstanding the foregoing subsection A, a Change Order shall not include:

25.2.1 an upward adjustment to a Consultant's payment claim, or

25.2.2 a payment increase under any escalation clause set forth in the original contract, or any Change Order, or any amendment.

25.3. That the work and/or services contemplated are necessary does not, in itself, permit a Change Order. Should the need for a Change Order arise, the request shall be reviewed, and if agreed to, approved by the City's Using Agency and any City designated representative(s). To be binding and enforceable, a Change Order shall thereafter be signed by both the Consultant, any City designated representative(s), and a duly authorized representative of the City's Using Agency prior to the Consultant's delivery of the services, etc. contemplated in said Change Order. All Change Orders are governed by the provisions of this Contract. Any contract change NOT fully complying with this Section 25 shall be effectuated solely by an amendment to this Contract complying with Section 38.073 of the City's "Centralized Procurement System" ordinance.

26. Conflicts or Disputes. This Contract represents the full and complete concurrence between the City and the Consultant and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents. Without regard to the order of precedence, to resolve such conflicts or disputes, the historical documents are **(i)** the City's aforementioned **RFP No. 8132** and **(ii)** the Consultant's proposal responding to the aforementioned **RFP No.**

8132.

26.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

26.2. Presumption. This Contract or any section thereof shall not be construed against any party due to the fact that the Contract or any section thereof was drafted by such party.

27. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Consultant agrees that its waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Consultant shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

28. Binding Agreement. The City and the Consultant each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

29. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

30. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

31. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City's Using Agency or the Consultant, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Consultant: WESTON & SAMPSON ENGINEERS, INC.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867

With a copy to: WESTON & SAMPSON ENGINEERS, INC.
712 Brook Street, Suite 103
Rocky Hill, CT 06067

City: City of Waterbury
c/o _____

Waterbury, CT 0670__

With a copy to: City of Waterbury
Office of the Corporation Counsel
City Hall Municipal Building - 3rd Floor
235 Grand Street
Waterbury, CT 06702

32. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions.
The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the documents, data, studies, reports, specifications, deliverables, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc. whether or not they are expressly stated in this Contract, including but not limited to the following:

32.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

32.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

32.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Consultant or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

32.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to

said Charter and/or Ordinances may be recovered by the City.

32.5. Upon a showing that a subcontractor made a kickback to the City, a prime Consultant or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

32.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 32.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 32.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

32.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 32.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

32.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 32.1-32.7.

32.9. The Consultant is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

32.10. The Consultant hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

32.11. The Consultant is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" and the State of Connecticut Legislature's Special Act No. 01-1.

32.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

32.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains shall have any personal interest, direct or indirect, in this Contract.

32.14. PROHIBITION AGAINST CONTINGENCY FEES. The Consultant hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

32.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Consultant set forth in Section 6 herein is greater than $2,500,000.00, the City is entitled to receive a copy of any and all Consultant records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

(signature page follows)

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

CITY OF WATERBURY

By:_____
Paul K. Pernerewski, Jr.
Mayor

Date: _____

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

WESTON & SAMPSON ENGINEERS, INC.

By:_____
Print name:
Its _____

Date: _____

ATTACHMENT A

Attachment A shall consist of the following, which are attached hereto, are acknowledged by the Consultant as having been received, or are otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 The City's **RFQ No**. **8132** for **ENGINEERING ON-CALL SERVICES 2025 THROUGH 2027** (incorporated by reference);

1.1.2 **Addenda #1** to the City's **RFQ No. 8132**, dated October 23, 2024 and consisting of 8 pages (attached hereto);

1.1.3 The Consultant's Qualifications submitted in response to the City's **RFQ No. 8132**, dated November 1, 2024 and consisting of 218 pages (incorporated by reference), and the Consultant's completed ATTACHMENT D – DISCIPINE LIST, and ATTACHMENT E – COST INFORMATION SCHEDULE (15 page "Cost Information Schedule Packet") (attached hereto);

1.1.4 Consultant's Certificate(s) of Insurance (attached hereto);

1.1.5 All applicable Federal, State and local statutes, regulations charter and ordinances (incorporated by reference);

1.1.6 All permits and licenses (incorporated by reference); and

1.1.7 Any and all amendment(s) and Change Orders issued by the City after execution of Agreement (incorporated by reference).

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

October 23, 2024

RFQ 8132 Engineering On Call Services 2025-2027

Please Be Advised:

1. All Respondents are hereby notified that this Addendum No. 1 shall be part of the Contract Documents for the above referenced **RFQ #8132**.
2. This Addendum amends or supplements the RFP Documents. All provisions which are not so amended or supplemented remain in full force and effect.
3. Each Respondent shall be responsible for determining that it has received all Addenda issued and shall acknowledge receipt of all Addenda on the Addendum Acknowledgment Form (see Attachment C). Failure to do so may subject the Respondent to disqualification.

The RFQ Documents are hereby amended as follows:

Amendments to RFQ Documents:

1) Attachment D (Discipline List, BFO Information and MBE, DBE, WBE, SBE Status) – Delete Page 1 of 7 of Attachment D and replace with the attached "Attachment D, Page 1 of 7, Rev. - Addendum #1 – 10/23/2024."

2) Attachment E (Cost Information Schedule). Delete Page 1 of 6 of Attachment E and replace with the attached "Attachment E, Page 1 of 6, Rev. - Addendum #1 – 10/23/2024."

*3) RFQ Subsection 2, Insurance Requirements, of Section B, Qualifications is deleted in its entirety and replaced by the one (1) page document attached hereto, entitled "***REQUEST FOR QUALIFICATIONS (RFQ # 8132) BY THE CITY OF WATERBURY FOR ENGINEERING ON-CALL SERVICES 2025 THROUGH 2027 Insurance Requirements."**
Note: At time of contracting, the language in said attachment will be incorporated into the final Master Contracts.

4) Regarding information to be provided pursuant to RFQ Section H, Submittal Requirements & Required Format, any requests therein for information that is also required by SF330 need not be submitted, provided it is included in completed SF330 form.

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

Clarifications:

Notwithstanding statements to the contrary in the RFQ, one original (clearly identified as such) seven (7) paper copies of your firm's Response to RFQ are required. Qualifications submitted in response to this RFQ must include a letter of interest, together with general information on the firm and proposed sub consultants, the firm's brochure, current Federal Form SF330, experience of the firms, and resumes of key personnel as well as all other requested information / documentation, including Attachment D (Discipline List, BFO Information and MBE, DBE, WBE, SBE Status).

One original hard copy of Attachment E (Cost Information Schedule) shall be submitted in a separate, sealed envelope marked "Confidential: Attachment E (Cost Information Schedule).

Additionally, submit a portable memory device (flash drive) containing: a) Firm's Response to the RFQ (as one PDF) and b) a PDF of Firm's Attachment E (Cost Information Schedule).

Please refer to the questions and answers below.

Question: My company is very interested in participating as a Sub-Consultant. Where can I get the list of companies participating in this proposal?
Answer: No list exists, and thus, cannot be provided.

Question: Can the City clarify the scopes needed for Master Planning?
Answer:

1. Engage Stakeholders: Involve the community or relevant stakeholders to gather input and ensure their needs and aspirations are considered in the planning process. Experience in community outreach techniques and conducting successful Public Information Meetings and hearings.
2. Gather and Analyze Data: Collect data on current conditions, trends, and future projections. This could include demographic information, economic data, and environmental assessments.
3. Identify Goals and Objectives: Clearly define what City wants to achieve. This could be improving infrastructure, enhancing community services, neighborhood redevelopment or setting milestones. Planning can be for facilities, parks, sanitation, health initiatives, public buildings, transportation design, needs assessments, plans of conservation and development, etc…
4. Develop Strategies: Outline the steps needed to achieve City goals. This might include specific projects or phases, policy changes, or new initiatives.
5. Create an Implementation Plan: Detail how the strategies will be put into action, including timelines, responsible parties, and required resources.
6. Funding: Identify and assist or apply for funding using existing programs available.

7. Monitor and Adjust: Regularly review progress and make adjustments as needed to stay on track and address any emerging challenges.

Question: The City has requested a SF330 form for qualifications. A standard 330 form limits the submitter to only 10 projects. Would we be able to provide more than 10 projects for our firm in the SF330 format?
Answer: Yes – they should be applicable to the disciplines being submitted on (see additional related questions below).

Question: Under Section H, Submittal Requirements & Required Format, consultants are noted to provide seven (7) paper copies of our response. One needs to be clearly marked as an original. Is the original copy included in the seven (7) copies, or should we include the original and seven (7) copies in addition?
Answer: See "Amendments to RFQ Documents" above.

Question: Under section H. Submittal Requirements & Required Format, consultants are noted to provide seven (7) paper copies of our response. However, under no. 4, section H mentions including a USB drive in our submittal requirements. Is this USB drive specifically for the response to ' Cost Information Schedule/ Discipline List/BFO Information?
Answer: See "Amendments to RFQ Documents" above.

Question: For the separate Attachment submissions, do you expect 7 hard copies and 1 file uploaded to USB for strictly the Attachments? Or are the one (1) original, 7 paper copies including the full proposal, the attachments, and the USB? Please clarify the two separate submission processes.
Answer: See "Amendments to RFQ Documents" above.

Question: Under section H. Submittal Requirements & Required Format, Question 2, part b, Summary of Relevant Experience. We are requested to provide all our completed relevant projects that fall within the last five (5) years. Our office is one of many across the United States, specifically in the Northeast. Is this requesting projects only from our office in Connecticut office team or our company as a whole?
Answer: Provide at least 5 relevant projects. Your discretion whether or not projects are just from Connecticut office or from entire organization keeping in mind that the work will be done in the City and firm(s) selected to be based upon responsiveness.

Question: This solicitation is for On-Call Engineering but has a fee schedule that includes Architecture. Can an Architecture firm submit a fee schedule for Architectural Services only, without Engineering sub-contractors?
Answer: Yes.

Question: Please clarify that the submission for this On-Call includes one (1) full SF330 with all disciplines our firm is submitting under identified, rather than a categorical based submission.
Answer: One full SF 330.

Question: How many total projects is The City looking for? SF330 format calls for ten (10) total projects. Would this be ten (10) projects per discipline, or ten (10) projects total?
Answer: Can be up to ten per discipline submitted on.

Question: Given this RFQ was released on 10/8/2024, would it be possible to request an extension?
Answer: No; for various reasons, requests for extensions of time will not be considered.

Question: Attachment D, which lists the disciplines selected by the consultant, is to be included in a separate envelope. Since that attachment is to be opened after the QBS process, do we also identify our selected disciplines within the text of our submittal?
Answer: No need to identify selected disciplines within the text of our submittal. Attachment D shall not be submitted in the separate, sealed envelope. It shall now be submitted as part of the Firms response to the RFQ. (Only Attachment E [Cost Information Schedule] shall be submitted in a separate, sealed envelope marked "Confidential: Attachment E (Cost Information Schedule).

Question: During our review of the RFQ we noted that certain portions of the insurance requirements are not applicable to consulting services, including Builders Risk/Installation Floater Insurance and Contractor's Pollution Liability Insurance. Please let us know if these policies will be required as they are not traditionally held by consulting firms.
Answer:

Question: Relative to the City's standard agreement language, including Exhibits B1 and B2, would the City be amenable to negotiating mutually acceptable and insurable terms? Proposed modification would be provided as an appendix to the proposal response within the allowance noted in the exceptions and alternatives section of the RFQ.
Answer: Pursuant to Section H. Submittal Requirements & Required Format, Paragraph 6, Exceptions and Alternatives, Respondents may take exceptions to any requirement in the RFQ and/or offer alternatives to any provision thereof (including the attached City Contract form(s)); however, such exceptions or alternates cannot, in the sole discretion of the City, materially affect the substance of the RFQ or the provisions of the attached Contracts.

Further, the taking any exception or proposing any alternative is of not binding on the City, legally or otherwise, and in no way gives rise to any contractual relationship or rights, express or implied, between the City and the Respondent.

Lastly, while negotiations are permissible for contract provisions that are non-material in nature, please be advised that contract language pertaining to damages, insurance and/or indemnification is non-negotiable.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

ATTACHMENT D – DISCIPLINE LIST, BFO Information * And MBE, DBE, WBE, SBE STATUS**

NOTE: Attachment D shall be submitted as part of Firm's Repsonse to the RFQ. (Attachment D shall not be submitted in the separate, sealed envelope).

Submitted By: _____
(Print Firm Name)

Firm shall specify which disciplines they are submitting qualifications and provide BFO Information for each discipline selected.

* NOTE: If you have different BFO rates for various disciplines within your Firm, please provide this information, by discipline, where indicated below.

**NOTE: Provide MBE/DBE/WBE/SBE status and certification/documentation of same.

Additionally, on attached sheet(s), clearly identify any subconsultants/subcontractors, if known, and provided requested information.

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Roadway Engineering Design / Reconstruction	_____	_____	_____	_____	_____
Mechanical Engineering/Heating, Ventilation and Air Conditioning Engineering/Testing/ Adjusting/Balancing/Commissioning	_____	_____	_____	_____	_____
Electrical Engineering	_____	_____	_____	_____	_____

ATTACHMENT E – COST INFORMATION SCHEDULE

NOTE: An original hard copy of Attachment E shall be submitted in a separate, sealed envelope marked "Confidential: Cost Information Schedule."

Submitted By: _____
(Print Firm Name)

For Calendar Year(s): (check applicable*)

- □ 2025 – 2027, inclusive
- □ 2025
- □ 2026
- □ 2027

* Check applicable box(es) to indicate if providing cost information for entire 3-year initial Term, or for individual calendar years. If providing cost information for individual years, for each calendar year: a) make a copy of Attachment E, and b) check the appropriate box.

I. Respondents must provide pricing/rates in Attachment E for the services it seeks to provide under this RFQ.

Title/ Class	Job Description / Tasks	Straight Time	Overtime
Professional Engineer (Project) (Specialties include: civil, electrical, mechanical, structural, environmental, geotechnical, wastewater, landfill etc.).	Holds a bachelor's degree or higher in relevant engineering discipline. Licensed for this occupation by the CT Department of Consumer Protection. Designs and oversees construction of systems. Affixes professional engineer seal to documents when required. Specify minimum _____ years of experience and specialty.	$ _____	$ _____
Professional Engineer (Senior) (Specialties include: civil, electrical, mechanical, structural, environmental, geotechnical, wastewater, landfill etc.).	See Professional Engineer. Specify minimum _____ years of experience and specialty.	$ _____	$ _____

REQUEST FOR QUALIFICATIONS (RFQ # 8132)
BY
THE CITY OF WATERBURY
FOR
ENGINEERING ON-CALL SERVICES
2025 THROUGH 2027
Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name the City of Waterbury and the Waterbury Board of Education as Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of "A"VIII.

If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

Original, completed Certificates of Insurance must be presented to the City of Waterbury and the Waterbury Board of Education prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, 30 days written notice must be given to the City of Waterbury and the Waterbury Board of Education.

General Liability:	**$1,000,000 each Occurrence** **$2,000,000 General Aggregate** **$2,000,000 Products/ Completed Operations Aggregate**
Auto Liability:	**$1,000,000 Combined Single Limit each Accident** **Any Auto, All Owned and Hired Autos**
Workers Compensation:	**WC Statutory Limits** **Employer Liability (EL)** **$1,000,000 EL each Accident** **$1,000,000 EL Disease each Employee** **$1,000,000 EL Disease Policy Limits**
Excess/Umbrella Liability:	**$1,000,000 each Occurrence** **$1,000,000 Aggregate**
Professional Liability/E&O:	**$1,000,000 each Wrongful Act** **$1,000,000 Aggregate**

Additionally, for services that may involve Contaminated and/or Hazardous Substances, consultant shall also provide the following:

Contractor's Pollution Liability Insurance: **$1,000,000 each Occurrence**
$1,000,000 Aggregate
There will be no exclusion for Hazardous Materials, including Asbestos and Lead

Wording for Additional Insured Endorsement and Waiver of Subrogation:
The City Waterbury and its Board of Education is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation and Professional Liability. All policies shall include a Waiver of Subrogation except Professional Liability.

City of Waterbury
CONNECTICUT

DISCIPLINE LIST, BFO INFORMATION & MBE, DBE, WBE, SBE STATUS

November 2024

Engineering On-Call Services 2025 through 2027

RFQ No. 8132








November 1, 2024

712 Brook Street, Suite 103, Rocky Hill, CT 06067
Tel: 860.513.1473

Mr. Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street
Room 103
Waterbury, CT 06702

Re: RFP #8132 Discipline List, BFO Information, MBE, DBE, SBE Status Information Schedule

Dear Mr. Kevin McCaffery:

We appreciate the opportunity to submit our qualifications to provide on-call professional engineering services for the City of Waterbury.

As instructed in your Request for Qualifications (RFQ), we have provided the following form separately from our Technical Proposal. With our diverse service offerings, multidisciplinary capacity, and extensive project experience, Weston & Sampson is well positioned to provide the required services for this program. We are confident the experience of our project team will ensure expert, timely, and cost-effective services for your project.

We thank you for taking the time to review our proposal and appreciate your consideration of Weston & Sampson for this opportunity. Please contact project manager Raju Vasamsetti, PE, by phone at 860-986-7933 or by email at vasamsettir@wseinc.com if you have any questions or would like more information.

Sincerely,
WESTON & SAMPSON ENGINEERS, INC.

Raju Vasamsetti, PE, CFM
Regional Manager

RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

ATTACHMENT D – DISCIPLINE LIST, BFO Information * And MBE, DBE, WBE, SBE STATUS**

NOTE: Attachment D shall be submitted as part of Firm's Repsonse to the RFQ. (Attachment D shall not be submitted in the separate, sealed envelope).

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

Firm shall specify which disciplines they are submitting qualifications and provide BFO Information for each discipline selected.

* NOTE: If you have different BFO rates for various disciplines within your Firm, please provide this information, by discipline, where indicated below. ***Our BFO is 1.85 across all disciplines for all years.**

NOTE: Provide MBE/DBE/WBE/SBE status and certification/documentation of same. **No MBE/DBE/WBE/SBE Status included for all disciplines.

Additionally, on attached sheet(s), clearly identify any subconsultants/subcontractors, if known, and provided requested information.

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Roadway Engineering Design / Reconstruction	☑				
Mechanical Engineering/Heating, Ventilation and Air Conditioning Engineering/Testing/ Adjusting/Balancing/Commissioning	☐				
Electrical Engineering	☐				

ATTACHMENT D – DISCIPLINE LIST
RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Structural Engineering Buildings and Walls	☑				
Traffic Planning, Safety and Engineering	☑				
Bridge Design Services	☑				
Drainage Improvements	☑				
Land Survey Work	☐				
AST/UST Engineering Services	☑				
Environmental Engineering / Hazardous Waste-Abatement Services / Environmental Services	☑				
Architectural Services	☑				
Landscape Architect Services	☑				

ATTACHMENT D – DISCIPLINE LIST
RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Wetland mapping, wetland evaluation and wetland restoration plans – Soil Scientist	☐				
Hydraulic/Hydrology Engineering Services (dams, culverts, etc.)	☑				
GIS / Cartographer Services	☑				
Solid Waste Management	☑				
Property Appraisal and Evaluations/Rights of Way and Easements Evaluations and Negotiations	☑				
Parks/Recreation – Design / Engineering / Inspection	☑				
Constructability Reviews	☑				
General Civil / Site Engineering	☑				
General Municipal Improvements	☑				

ATTACHMENT D – DISCIPLINE LIST
RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Master Planning/Site Development	☑				
Construction Administration	☑				
Construction or Resident Engineering Inspection Services	☑				
Landfill Facility Engineering Services	☑				
Water Pollution Control Facility Design Services	☑				
Water Pollution Control Facility Construction Administration Services	☑				
Water Pollution Control Facility Resident Engineer and Inspection Services	☑				
Sanitary Sewer Pump Station Design Services	☑				

ATTACHMENT D – DISCIPLINE LIST
RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Sanitary Sewer Collection System Construction Administration Services	☑				
Sanitary Sewer Pump Station Construction Administration Services	☑				
Sanitary Sewer Collection System Design Services	☑				
Sanitary Sewer Collection System Resident Engineer and Inspection Services	☑				
Sanitary Sewer Pump Station Resident Engineer and Inspection Services	☑				
Water Pump Station Design / Engineering & Inspection Services	☑				
Hydraulic Modeling for Water Distribution Design / Engineering Services	☑				
Reservoir / Dam Design / Engineering & Inspection Services	☑				
Water Filtration Plant Improvement Design / Engineering / Inspection Services	☑				

ATTACHMENT D – DISCIPLINE LIST
RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

Discipline	Check each discipline qualifications are being submitted	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)
Water Main Design / Engineering & Inspection Services	☑				
Chemical Engineering	☐				
Water Storage Tank Design / Engineering/Inspection Services	☑				
GEO Tech Engineering Services for Reservoir Dams	☑				
Advisory & Implementation services for Asset Management, PMIS, Business Intelligence & Analytics	☐				
Water financial planning, ratees & grant support services	☑				
Geotechnical Engineering / Testing	☑				

ATTACHMENT D – DISCIPLINE LIST
RFQ #8132 - ENGINEERING ON CALL SERVICES 2025 THROUGH 2027

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

SUBCONSULTANT /SUBCONTRACTOR INFORMATION (if known)

Provide Name	Provide Discipline(s)	Indicate MBE, DBE, WBE, SBE Status and Ownership Percentage	BFO Information By Discipline (for 2025)	BFO Information By Discipline (for 2026)	BFO Information By Discipline (for 2027)

ATTACHMENT E – COST INFORMATION SCHEDULE

NOTE: An original hard copy of Attachment E shall be submitted in a separate, sealed envelope marked "Confidential: Cost Information Schedule."

Submitted By: Weston & Sampson Engineers, Inc.
(Print Firm Name)

For Calendar Year(s): (check applicable*)

- [x] 2025 – 2027, inclusive
- [ ] 2025
- [ ] 2026
- [ ] 2027

* Check applicable box(es) to indicate if providing cost information for entire 3-year initial Term, or for individual calendar years. If providing cost information for individual years, for each calendar year: a) make a copy of Attachment E, and b) check the appropriate box.

I. Respondents must provide pricing/rates in Attachment E for the services it seeks to provide under this RFQ.

Title/ Class	Job Description / Tasks	Straight Time	Overtime
Professional Engineer (Project) (Specialties include: civil, electrical, mechanical, structural, environmental, geotechnical, wastewater, landfill etc.).	Holds a bachelor's degree or higher in relevant engineering discipline. Licensed for this occupation by the CT Department of Consumer Protection. Designs and oversees construction of systems. Affixes professional engineer seal to documents when required. Specify minimum 5 years of experience and specialty.	$ 150	$ 150
Professional Engineer (Senior) (Specialties include: civil, electrical, mechanical, structural, environmental, geotechnical, wastewater, landfill etc.).	See Professional Engineer. Specify minimum 10 years of experience and specialty.	$ 190	$ 190

ATTACHMENT E – COST INFORMATION SCHEDULE

City of Waterbury

Engineer (Project) (Specialties include: civil, electrical, mechanical, structural, chemical, environmental, geotechnical, wastewater, landfill etc.).	Holds a bachelor's degree or higher in civil, mechanical, electrical, structural engineering or other relevant engineering discipline. Performs engineering tasks and analysis related to site investigation and designs projects, oversees construction of projects, etc. Specify minimum 3 years of experience and specialty.	$ 125	$ 125
Engineer (Senior) (Specialties include: civil, electrical, mechanical, structural, chemical, environmental, geotechnical, wastewater, landfill etc.).	See Engineer. Specify minimum 8 years of experience and specialty.	$ 160	$ 160
Cartographer/GIS Specialist	Prepares maps on topography, etc. to be digitized. Designs and draws original maps of cities and regions. Adapts existing maps. Uses geographic information systems and global positioning system to prepare maps of topography. Analyzes spatial and environmental data. Specify minimum 8 years of experience and specialty.	$ 150	$ 150
Draftsperson	Draws site plans, layouts, and detailed drawings on CAD System. Specify minimum 3 years of experience and specialty.	$ 115	$ 115
Senior Field Technician	Collects samples for material testing, performs field material testing provides field support, uses, maintains and deploys equipment. Specify minimum 6 years of experience and specialty.	$ 140	$ 140
Field Technician	Collects samples for material testing, performs field material testing, provides field support, uses, maintains and deploys equipment. Specify minimum 3 years of experience and specialty.	$ 110	$ 110
Licensed Surveyor	Licensed for this professional title by the CT Department of Consumer Protection. Specify minimum 5 years of experience and specialty.	$ 130	$ 130
Licensed Environmental Professional	Has engineering, geology or hydrogeology training and is licensed by the state of Connecticut for this professional title. Specify minimum 10 years of experience and specialty.	$ 180	$ 180
Wetland/Soil Scientist project	Holds a bachelor's or higher degree in soil science, geology, earth science, biology, botany or other relevant discipline plus specialized training and experience in wetland evaluation or soil science. Delineates wetlands using recognized Federal or state methodologies. Interprets and evaluates soil types. Classifies soil samples and evaluates effects of contaminants on wetlands and related animal and plant communities. Specify minimum _____ years of experience and specialty.	$ n/a	$
Architect	Holds a bachelor's degree or higher. Licensed for this professional title by the CT Department of Consumer Protection. Specify minimum 6 years of experience and specialty.	$ 140	$ 140

Landscape Architect	Holds a bachelor's degree or higher. Licensed by the CT Department of Consumer Protection. Specify minimum _____ years of experience and specialty.	$ 160	$ 160
Construction Inspector (Senior)	ACI and NICET certified or Professional Engineer, Specify minimum 15 years of experience and specialty.	$ 180	$ 180
Construction Inspector (Staff)	ACI and NICET certified Specify minimum 5 years of experience and specialty.	$ 150	$ 150
Project Manager	Oversees and coordinates projects from an administrative and operations standpoint. Initial contact at site for projects. City liaison. Specify minimum 10 years of experience and specialty.	$ 180	$ 180
Clerical Staff	Uses computers, typewriters and other office equipment to provide clerical and logistical support to project. May type reports, correspondence and other written material. May prepare bills, invoices, and related documents. Specify minimum 10 years of experience and specialty.	$ 80	$ 80
2 Man Survey Crew	Survey Crew consists of a party Chief with a minimum of 6 years of experience and a Rod Man with a minimum of 6 months experience,	$ 240	$ 240
3 Man Survey Crew	Survey Crew consists of a party Chief with an minimum of Four year's experience, Instrument man with a minimum of two years' experience and a Rod Man with a minimum of 6 months experience,	$ 300	$ 300

II. Respondents may provide additional job classes/titles below. These additional proposed job classes/titles may be considered if in the best interest of the City.

Title/ Class	Job Description / Tasks	Straight Time	Overtime
Senior Project Manager	Specify minimum 20 years of experience and specialty. WATER, WASTERWATER, ENVIRONMENTAL, TRANSPORTATION, ARCHITECTURE, DRAINAGE	$ 220	$ 220
Team Leader	Specify minimum 20 years of experience and specialty. WATER, WASTERWATER, ENVIRONMENTAL, TRANSPORTATION, ARCHITECTURE, DRAINAGE	$ 220	$ 220
Senior Team Leader	Specify minimum 25 years of experience and specialty. WATER, WASTERWATER, ENVIRONMENTAL, TRANSPORTATION, ARCHITECTURE, DRAINAGE	$ 250	$ 250
Principal, VP	Specify minimum 25 years of experience and specialty. WATER, WASTERWATER, ENVIRONMENTAL, TRANSPORTATION, ARCHITECTURE, DRAINAGE	$ 280	$ 280

_____	Specify minimum _____ years of experience and specialty. _____	$ _____	$ _____
_____	Specify minimum _____ years of experience and specialty. _____	$ _____	$ _____

III. Respondents may provide pricing in Attachment D for the direct expense services it seeks to provide under this RFQ. **Direct expenses listed below will be included along with the project fees on a per project basis. Mileage will be billed at the standard federal rate of 67c/mile.**

Item No.	Direct Expense Services	Unit of Measure	Rate Per Unit
1	Printing Greater than 11" X 17"	S.F.	$ _____
2	Color Printing and photocopies (Up to 11"x17")	Each.	$ _____
3	Large Format Monochrome Printing and Plotting (sheet sizes greater than 11"x17")	S.F.	$ _____
4	Large Format Color Plotting (sheet sizes >11"x17")	S.F.	$ _____
5	Large Format Mylar Plotting	S.F.	$ _____
6	Electronic Scanning	S.F.	$ _____
7	In-house Printing and photocopies up to 11 X 17"	Each	$ _____
8	Blackline prints	Cost	Cost + ____%
9	Plotting & printing charges (outside vendors)	Cost	Cost + ____%
10	Regular Mail, Express or certified postage charges	Per item	Cost + ____%
11	Other project-related reimbursable expenses	Cost	Cost + ____%

12	Reproduction Costs	Per page	Cost + ____%
13	Borings and test pits for subsurface investigation	At cost	Cost + ____%
14	Outside Services (subconsultant/laboratory)	At Cost	Cost + ____%

IV. Other Rates

Item No.	Description	Unit of Measure	Rate Per Unit
15	Mileage	Mile	IRS Rate + 0 ___ %

NOTES:

1. All job classes noted above shall include the required modern equipment associated with the classification. For example, the hourly rate for a Licensed Surveyor or Draftsperson shall include the electronic surveying/drafting equipment respectively, software, equipment hourly operating costs, personnel protective equipment and other normal associated tools of the trade or profession.

2. NOTE: Rates/pricing provided above shall be either for the initial 3-year Term of the contract or for individual calendar years. No rate escalation is permitted. After the initial three (3) year Term, rate increases shall be requested in writing by the Firm and subject to negotiation, at the sole option of the City, on a yearly basis, for each of the two (2) one-year extensions.

3. All job classes and rates include the consultant providing the City of Waterbury with electronic files of all work product in the form of a PDF and the format of the original software used to create the work product; however, all AutoCAD submissions to City shall be in the version required by the City's Engineering Department.

4. Straight time is defined as any contiguous 8 Hour period during any 2 calendar days.

5. Overtime is defined as any working time over contiguous period over 8 Hours during any 2 calendar days.

6. Response to Unscheduled or emergency calls outside of normal work day of 7AM to 5 PM will be paid for at the hourly rate for Overtime.

7. Respondents are not required to provide rates for all "Title/Class" listed, but only for those applicable to selected disciplines.

8. Where required, Consultant shall provide project cost estimating, and development of contract documents and specifications, based on City the City's standard documents and required formats.

END OF SECTION

City of Waterbury
Financial Status Report
July and August 2026

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SARAH R. GEARY
MANAGER OF BUDGET
DEVELOPMENT AND OVERSIGHT



OFFICE OF BUDGET CONTROL

THE CITY OF WATERBURY

CONNECTICUT

To: The Honorable Paul K. Pernerewski, Jr., Mayor
The Honorable Board of Aldermen

From: Sarah R. Geary, Manager of Budget Development and Oversight SRG

Date: September 22, 2026

Subject: City of Waterbury's Financial Status Report – July and August 2026

Attached please find the Financial Status Report for the operations of the City of Waterbury for the months of July and August of 2026.

This is the first report of Fiscal Year 2027 and is based on limited actual data and 10 months' worth of projections. At this time, the report shows that a negative difference of $707,754 exists between the budget estimates for revenue and expenditure projections at this early stage of the current fiscal year. This would be a function of having projected revenue of $805,926 more than budgeted, while also having projected expenditures of $1,513,680 more than budgeted. These are preliminary numbers and the Office of Budget Control (OBC) takes a conservative approach to these projections. It is expected that these projections will improve throughout the year. The Cost Containment and Oversight Committee (CCOC) continues to meet on a weekly basis to review personnel and purchasing requisitions, public safety overtime spending and tax collections. The CCOC meets with department heads throughout the fiscal year to discuss the budget impacts of various purchases, programs and services. The tight expenditure controls that are consistently practiced each year, help ensure that the City is in a positive position at the end of each fiscal year.

The City recently issued the final Financial Status Report for FY26 where it was noted that tax collection rate on current taxes was 97.9% of the adjusted levy. Collections on current taxes in the first two months of FY27 have been strong. This report shows that collections of $1.8 million more than budgeted could be reached in the tax area. This report adjusts downward several other revenue line item projections to levels closer to actual amounts collected in the previous fiscal year. More detail on specific revenue and expenditures tracked by the OBC can be found below.

Revenue

In FY27, the City budgeted $262.8 million for the collection of current taxes. This is approximately $6.2 million more than the $256.7 million budgeted in FY26. The City's Grand List experienced significant growth as a result of the 10/1/22 Revaluation. FY27 is the final year of a four-year phase in of this Revaluation.

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This is the eleventh year that the City is utilizing two mill rates as well as receiving a State grant to account for the loss of local motor vehicle property tax revenue. The mill rate for real estate and personal property is 43.34 mills in FY27, which is 1.64 mills less than FY26. The FY27 budget includes revenue of $243.8 million for the collection of current real estate and personal property taxes. The mill rate for motor vehicles is 32.46 mills, which is the cap pursuant to State law and the same as FY26. The FY27 budget includes revenue of $19.1 million for the collection of current motor vehicle property taxes. In FY27, the City has received a grant in the amount of $8.8 million related to the mill rate cap.

As in previous years, the City's budget is comprised mostly of tax revenue and state aid; these two line items account for 93% of the City's FY27 General Fund budget. More detail can be found below.

Current Taxes — This report includes several schedules on tax collections. Reports indicate that through the end of August, approximately $156.7 million in current taxes has been collected against a budgeted line item of $262.8 million; this is $8.7 million or 5.86% more than the $148 million million collected in July and August of 2025.

As previously stated, in FY27 the expectation for current tax revenue was increased by $6.2 million compared to FY26. The current budget is again predicated on a collection rate of 96.0% being attained at year-end. OBC Tax schedules indicate that in the 2026 fiscal year, the City collected 97.9% of current tax collections against the Adjusted Levy at year-end, while 97.5% was collected in FY25 and 93.9% in FY24.

At this time this report projects that the City will reach 96% at year-end based on recent history and the collections of these past two months. The budget target for September current collections is $3.5 million and as of September 17th $2.7 million of that target has been collected.

Supplemental MV, Prior Year Taxes & Interest, & Lien Fees — In FY27, these line items have been budgeted at $9.55 million from all the named sources. FY26 collections for these line items were received at approximately $10.1 million.

This report has these line items coming in at $8.9 million, approximately $624K less than budget at this early time in the year. In the past, there have been budgetary shortfalls in these line items that have been made up by overages in the current tax collection area. We will continue to monitor and adjust projections as the data becomes more reliable.

State Aid — In FY27, the City's budget includes State Aid grants in the amount of approximately $154.2 million, which is $4.2 million more than the amount of General Fund State Aid that was budgeted in FY26. There is a decrease in the motor vehicle mill rate cap grant of $4.2 million due to the fact that the City's FY27 real estate and personal property mill rate has gotten closer to the motor vehicle mill rate cap of 32.46 mills. Therefore, the State is reimbursing the City for a smaller motor vehicle tax revenue loss. However, there is a new Supplemental Pequot Mohegan Grant budgeted in the amount of $5.1 million and a $3 million increase to the City's Supplemental Revenue Sharing Grant, resulting in a total grant amount of $8.6 million.

In FY27, the City expects to receive $113.6 million in the General Fund portion of the ECS Grant. The Alliance Grant portion of ECS, which is sent directly to the Education Department, is expected to be approximately $87.9 million. The Education Department will also receive a new Supplemental Education Grant in the amount of $14.8 million, which is not budgeted as General Fund revenue. This grant will be maintained in a separate account for audit purposes as

recommended by the Connecticut State Department of Education, which is a best practice. The Special Education Excess Cost Grant is budgeted at $5.4 million in FY27, which is $60k less than the amount that was received in FY26.

As of August 31st, approximately $8.8 million in State Aid has been received. This receipt is the motor vehicle mill rate cap grant. This report includes a detailed spreadsheet on page 48 that shows State Aid budget and actual receipts year-to-date.

Investment Income — In FY27, the City's budget includes a line item for investment income in the amount of $3.8 million. This is the same as the amount that was included in last year's budget. In FY26, approximately $2.1 million in interest revenue was achieved. This report includes a projection of $3.8 million being received by year-end. The OBC will continue to monitor these receipts as the year progresses.

Town Clerk Revenue — In FY27, the City's budget includes aggregate revenue from the TC office in the amount of $2.98 million. Most of the revenue in the TC budget is received from real estate conveyance and deed recording activities. In FY26, aggregate collections of $3.2 million were received due to a strong real estate market. This report has revenue coming in at the budgeted amount by FY27 year-end. The OBC will continue to monitor these receipts and provide updates in future reports.

Police Department Revenue — In FY27, the City's budget includes aggregate revenue from the Police Department of $1.265 million. A level of $1 million was reached in FY26 with a significant portion of the shortfall coming from the line items for fees related to parking violations and on street parking. This report has taken the Department's revenue projection down by $25K. The current projection for FY27 year-end revenue of $1.1 million is $91K more than the amount received last year and continued monitoring will be required here as well.

Department of Inspections— In FY27, the City's budget includes aggregate revenue from the Inspections Department in the amount of $2.82 million. Most of the revenue in the department is received from building permits and other permit activities. In FY26, aggregate collections of $5.6 million were achieved. This report has increased revenue expectations by $13K, compared to budget, to a projected revenue amount of $2.83 million at year-end. This is $2.8 million less than the amount collected last year and would appear reachable at this time, but we will continue to monitor collections and adjust projections if necessary. Most permit revenue accounts significantly exceeded their budgets in FY26, largely due to permit fees related to the Amazon development.

Expenditures

This early in the year the Office of Budget Control assumes that all of the "Other Expense" line items will be fully expended by year-end. We spend most of our time analyzing the vacant positions and consequent salary savings and any potential impact on the overtime accounts from vacant positions being unfilled for periods of time.

At this time, the City does have many vacant positions. There are assumptions stated in the specific Department detail pages that most of these positions may be filled. All vacancy fillings, however, are first being brought to the Cost Containment and Oversight Committee for review prior to approval. Future savings will surely occur but are not assumed at this early point in the fiscal year.

General Government Payroll — This report includes actual costs of 4 biweekly payrolls and 8 weekly payrolls; it utilizes those costs to make projections for the 10 months to come. There are also projections for payroll accruals in each department due to the timing of several days' worth of payroll at fiscal year-end.
The Police and Fire Departments both conducted training academies in FY26, but also still operated with vacancies throughout the fiscal year. This caused both departments to be over budget in their overtime accounts. Both departments continue to have vacancies in FY27. We expect overtime spending to continue to be a challenge for both departments until training academies, which are expected to begin soon, are completed.

Police Department – The Police Department has the budgetary authority to hire up to 315 police officers and now reports that they have 300 officers on staff. The department has a line item for overtime worth $3.2 million. In FY26, the overtime expenses reached $4.3 million due to a number of vacant positions throughout the year. This report currently projects that the department will end the year on budget with overtime expenses of $3.2 million. We will monitor this area closely throughout the year. This report includes overtime data for the first 11 payrolls of the fiscal year. At this time, the overtime line item is approximately $134K less than last year's level for the same period.

Fire Department – The Fire Department is currently operating with a number of vacancies. The overtime budget for the Department is $2.3 million in FY27. After 11 pay periods of overtime, this line item is $244K more than last year's level for the same period. Overtime spending will continue to be a challenge due to position vacancies. The Fire Department is planning to begin a new training class soon. Once the new firefighters are fully trained in the second half of the fiscal year, we expect overtime spending to be reduced. We will monitor this line item closely and make adjustments as necessary. The Fire Department is currently projected to be $1.1 million over budget at fiscal year end, largely due to the fact that the Fire Union contract was not settled for FY26 or FY27 at budget development time. The successor contract has since been approved and the payroll figures for the department now contain two-years' worth of salary increases. A budget transfer from the Contingency account will be submitted to the Board of Aldermen later in the fiscal year to keep the department within budget.

Department of Public Works – This department is also operating with a certain degree of unfilled vacancies. We will continue to monitor the budget, as most shortfalls do not become apparent until the winter season sets in.

Education — The Department of Education received an FY27 General Fund Appropriation of $158.4 million. Staff of the Department develops its own Financial Status Report which they forward to the OBC for inclusion in this report. We did not request a report for July and August as they have minimal data available for these months and they are concentrating on school startup operations. We will request a September report.

Other Expenses — In FY27, the City has a Contingency account of $4.7 million to cover any potential shortfalls. This is $2.2 million more than the amount budgeted in FY26. The Contingency account will be used to account for personal service account overages that could occur because of outstanding labor contracts. At budget development time, the Management and Fire Union contracts were not settled for FY26 or FY27 and the White Collar and Blue Collar Union contracts were not settled for FY27. Therefore, any awarded salary increases would need to be funded by the Contingency account. In some cases, departments may be able to accommodate salary increases without a transfer from the Contingency account due to budget savings they are able to generate during the year from vacant positions or other expense savings. Successor contracts

were approved for the Management and Fire Unions and the new pay rates, which account for two-years' worth of salary increases, are now included in the payroll figures in this report. These increases are causing some departments to be projected to end the fiscal year over budget. A budget transfer from the Contingency account will be submitted to the Board of Aldermen for approval later in the fiscal year to keep these departments within budget.
The Contingency account is a source of funds for any shortfalls associated with winter expenses such as sand and salt or outside contractors and additional fuel expenses. It also provides the City with the ability to move forward with any operating budget priorities that occur during the fiscal year that might not have been known at the time of budget development. This report assumes that the account will be fully expended by year-end. At this time, there have not been any transfers from the Contingency account.

The OBC monitors all of these issues and reports regularly to the Board of Aldermen on any significant changes to these projections via this report. The Office can be reached at 203-574-6730 if assistance is needed.

cc: Joseph A. Geary, Chief of Staff
Judith Mancini, Advisor to the Mayor
Michael LeBlanc, Director of Finance
Michael Dalton, City Clerk

CITY OF WATERBURY
FY27 - GENERAL FUND

Projections as of 8/31/26

	Budget	Projections	Difference
Revenues	$457,551,465	$458,357,391	$805,926
Expenditures	$457,551,465	$459,065,145	$1,513,680
Result of Operations	**$0**	**($707,754)**	**($707,754)**

YTD Expenditures includes # of biweekly pay periods	**4**
Biweekly Pay periods to pay thru year end	**22**
YTD Expenditures includes # of weekly pay periods	**8**
Weekly Pay periods to pay thru year end	**44**

CITY OF WATERBURY FY27
REVENUE PROJECTION SUMMARY

Description	Three Year Comparables FY25 Actual	FY26 Actual	FY27 Year to Date As of 8/31/26	Projected 10 months	Projected at Year-End	FY27 Adopted Budget	Variance Over/(Under)
Revenue Collector - Taxes	$265,546,979	$272,261,707	$157,910,711	$116,399,555	$274,310,266	$272,513,098	$1,797,168
Payments by Other Jurisdictions	$40,485,530	$30,375,285	$8,755,672	$25,026,361	$33,782,033	$33,807,033	($25,000)
Transfers from other Funds	$4,546,500	$4,490,233	$4,151,402	$0	$4,151,402	$4,151,402	$0
Use of Fund Balance	$0	$0	$0	$3,000,000	$3,000,000	$3,000,000	$0
Finance Dept.--Other	$5,567,564	$7,341,938	$1,604,909	$12,830,091	$14,435,000	$15,250,000	($815,000)
Legal Department	$45,399	$44,393	$27	$20,473	$20,500	$20,500	$0
City Clerk	$30	$0	$0	$250	$250	$250	$0
Town Clerk	$3,333,041	$3,202,062	$604,312	$2,372,188	$2,976,500	$2,976,500	$0
Human Resources	$730	$810	$11,030	$0	$11,030	$1,000	$10,030
Registrar of Voters	$0	$0	$0	$0	$0	$250	($250)
Assessment Department	$265	$2,426	$1,000	$1,050	$2,050	$1,500	$550
Purchasing Department	$0	$0	$0	$0	$0	$0	$0
Information Technology Dept.	$0	$0	$0	$0	$0	$250	($250)
Police Department	$1,028,180	$1,048,648	$80,719	$1,059,281	$1,140,000	$1,265,000	($125,000)
Fire Department	$156,074	$198,195	$20,767	$89,483	$110,250	$110,250	$0
Dept. of Public Works	$239,172	$577,029	$134,155	$214,839	$348,994	$345,250	$3,744
City Plan	$84,845	$103,310	$22,640	$88,860	$111,500	$126,000	($14,500)
Dept. of Inspection	$3,370,293	$5,633,008	$1,324,282	$1,504,151	$2,828,433	$2,815,000	$13,433
Health Department	$132,456	$140,136	$6,050	$145,950	$152,000	$191,000	($39,000)
Dept. of Education	$122,391,182	$121,351,556	$310,020	$120,667,162	$120,977,182	$120,977,182	$0
TOTAL	**$446,928,240**	**$446,770,736**	**$174,937,697**	**$283,419,694**	**$458,357,391**	**$457,551,465**	**$805,926**

Pluses	$1,824,926
Minuses	($1,019,000)
No use of FB	$0
Total	$805,926

CITY OF WATERBURY FY27

EXPENDITURE PROJECTION SUMMARY

Description	Three Year Comparables FY25 Actual	FY26 Actual	FY27 Expenditures As of 8/31/26	Projected 10 months	Projected at Year-End	FY27 Adopted Budget	Variance Over/(Under)
General Government	$6,751,960	$6,687,113	$708,378	$7,122,197	$7,830,575	$7,812,450	$18,125
Finance	$7,393,843	$8,247,200	$1,346,434	$7,486,652	$8,833,086	$8,643,171	$189,915
Public Safety	$67,611,952	$71,790,519	$10,639,407	$64,432,428	$75,071,836	$73,948,739	$1,123,097
Public Works	$24,390,188	$25,429,580	$2,614,060	$25,689,139	$28,303,199	$28,283,734	$19,465
Planning & Development	$1,455,651	$1,444,288	$157,083	$1,603,652	$1,760,734	$1,748,943	$11,791
Human Services	$7,327,556	$8,022,889	$738,621	$7,796,044	$8,534,665	$8,383,378	$151,287
Operating Charges	$123,214,043	$112,475,517	$104,291,894	$16,075,106	$120,367,000	$120,367,000	$0
Retirement Board	$49,119,662	$49,828,399	$49,888,367	$100,683	$49,989,050	$49,989,050	$0
Education	$158,362,759	$158,276,532	$9,412,923	$148,962,077	$158,375,000	$158,375,000	$0
TOTAL GENERAL FUND	**$445,627,614**	**$442,202,038**	**$179,797,168**	**$279,267,977**	**$459,065,145**	**$457,551,465**	**$1,513,680**

CITY OF WATERBURY FY27
EXPENDITURE PROJECTION SUMMARY

Description	Three Year Comparables FY25 Actual	FY26 Actual	FY27 Expenditures As of 8/31/26	Projected 10 months	Projected at Year-End	FY27 Adopted Budget	Variance Over/(Under)
GENERAL GOVERNMENT							
101 MAYOR'S OFFICE	$1,142,706	$1,265,945	$126,725	$1,197,527	$1,324,252	$1,338,198	($13,946)
103 BOARD OF ALDERMAN	$63,999	$63,999	$10,667	$53,333	$64,000	$64,000	$0
107 LEGAL DEPARTMENT	$2,709,526	$2,466,936	$201,900	$3,033,862	$3,235,763	$3,236,636	($874)
110 CITY CLERK	$271,760	$265,814	$30,957	$245,230	$276,187	$276,424	($237)
113 TOWN CLERK	$710,324	$727,216	$98,753	$685,834	$784,587	$778,976	$5,611
116 HUMAN RESOURCES DEPT	$1,237,627	$1,208,027	$121,131	$1,269,464	$1,390,595	$1,365,608	$24,987
119 REGISTAR OF VOTERS	$476,107	$503,656	$99,205	$511,716	$610,921	$608,337	$2,584
122 CITY SHERIFF	$20,171	$20,171	$3,156	$17,015	$20,171	$20,171	$0
125 PROBATE	$119,738	$165,350	$15,883	$108,217	$124,100	$124,100	($0)
SUBTOTAL	$6,751,960	$6,687,113	$708,378	$7,122,197	$7,830,575	$7,812,450	$18,125
FINANCE							
201 DEPARTMENT OF FINANCE	$2,388,114	$2,524,055	$180,810	$2,471,279	$2,652,089	$2,568,590	$83,499
204 ASSESSMENT	$746,168	$809,207	$111,140	$810,138	$921,278	$892,023	$29,255
207 TAX COLLECTOR	$1,168,052	$1,195,113	$137,761	$1,193,385	$1,331,146	$1,353,812	($22,666)
28 PURCHASING DEPT	$336,942	$349,379	$39,892	$319,130	$359,021	$349,096	$9,925
25 AUDIT	$173,833	$137,519	$15,062	$171,654	$186,716	$188,560	($1,844)
12 BUDGET	$189,175	$268,104	$35,435	$278,688	$314,124	$296,441	$17,683
26 INFORMATION SERVICES	$2,391,559	$2,963,824	$826,334	$2,242,378	$3,068,712	$2,994,649	$74,063
SUBTOTAL	$7,393,843	$8,247,200	$1,346,434	$7,486,652	$8,833,086	$8,643,171	$189,915

Description	Three Year Comparables FY25 Actual	FY26 Actual	FY27 Expenditures As of 8/31/26	Projected 10 months	Projected at Year-End	FY27 Adopted Budget	Variance Over/(Under)
PUBLIC SAFETY							
50 POLICE DEPARTMENT	$42,524,820	$45,863,268	$6,930,817	$40,902,515	$47,833,332	$47,850,042	($16,710)
55 FIRE DEPARTMENT	$25,087,132	$25,927,251	$3,708,590	$23,529,913	$27,238,504	$26,098,697	$1,139,807
SUBTOTAL	$67,611,952	$71,790,519	$10,639,407	$64,432,428	$75,071,836	$73,948,739	$1,123,097
DEPT OF PUBLIC WORKS							
48 DEPT. OF PUBLIC WORKS	$24,390,188	$25,429,580	$2,614,060	$25,689,139	$28,303,199	$28,283,734	$19,465
SUBTOTAL	$24,390,188	$25,429,580	$2,614,060	$25,689,139	$28,303,199	$28,283,734	$19,465
PLANNING & DEVELOPMENT							
47 CITY PLAN	$368,683	$394,342	$46,063	$509,323	$555,386	$548,510	$6,876
56 DEPT. OF INSPECTIONS	$1,086,968	$1,049,947	$111,020	$1,094,329	$1,205,349	$1,200,433	$4,916
SUBTOTAL	$1,455,651	$1,444,288	$157,083	$1,603,652	$1,760,734	$1,748,943	$11,791
HUMAN SERVICES							
60 HEALTH DEPARTMENT	$5,007,956	$5,462,026	$299,129	$5,398,702	$5,697,831	$5,566,604	$131,227
63 WBY SENIOR CENTER	$319,697	$342,018	$52,179	$328,179	$380,358	$371,061	$9,297
73 SILAS BRONSON LIBRARY	$1,999,903	$2,218,846	$387,313	$2,069,163	$2,456,476	$2,445,713	$10,763
SUBTOTAL	$7,327,556	$8,022,889	$738,621.19	$7,796,044	$8,534,665	$8,383,378	$151,287
EDUCATION							
70 BOARD OF EDUCATION	$158,362,759	$158,276,532	$9,412,923	$148,962,077	$158,375,000	$158,375,000	$0
SUBTOTAL	$158,362,759	$158,276,532	$9,412,923	$148,962,077	$158,375,000	$158,375,000	$0

Description	Three Year Comparables FY25 Actual	FY26 Actual	FY27 Expenditures As of 8/31/26	Projected 10 months	Projected at Year-End	FY27 Adopted Budget	Variance Over/(Under)
OPERATING CHARGES							
21 DEBT AND SUNDRY							
Employee Benefits (520's)	$78,483,824	$73,677,450	$68,403,587	$7,460,413	$75,864,000	$75,864,000	$0
Purchased Prof. Services (530's)	$320,864	$197,746	$60,000	$312,000	$372,000	$372,000	$0
Purch. Other Services (550's)	$4,500,000	$5,000,000	$5,600,000	$0	$5,600,000	$5,600,000	$0
Other Objects (580's)	$8,319,355	$7,590,322	$5,919,974	$1,298,027	$7,218,000	$7,218,000	$0
Other Uses (590's)	$31,590,000	$26,010,000	$24,308,333	$7,004,667	$31,313,000	$31,313,000	$0
SUBTOTAL	$123,214,043	$112,475,517	$104,291,894	$16,075,106	$120,367,000	$120,367,000	$0
19 RETIREMENT BOARD	$49,119,662	$49,828,399	$49,888,367	$100,683	$49,989,050	$49,989,050	$0
TOTAL GENERAL FUND BUDGET	**$445,627,614**	**$442,202,038**	**$179,797,168**	**$279,267,977**	**$459,065,145**	**$457,551,465**	**$1,513,680**

	REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
	TAX COLLECTOR - TAXES						
414000	CURRENT PROPERTY TAXES	$246,198,317	$146,561,154	$102,750,000	$249,311,154	$243,785,097	$5,526,057
414003	CURRENT MOTOR VEHICLE TAX	$15,934,290	$10,147,945	$5,800,000	$15,947,945	$19,053,001	($3,105,056)
	Total Current Year Taxes	$262,132,608	$156,709,099	$108,550,000	$265,259,099	$262,838,098	$2,421,001
414001	PRIOR YEAR PROPERTY TAXES*	$3,892,980	$779,402	$2,890,000	$3,669,402	$3,650,000	$19,402
414006	60 DAY TAX ACCRUAL	($147,000)	($51,000)	$150,000	$99,000	$0	$99,000
414007	CAPITAL TAX RECOVERY & MTS	($475,888)	($17,318)	($520,000)	($537,318)	$0	($537,318)
414008	TAX OVERPAYMENTS	$43,246	$0	($1,000,000)	($1,000,000)	$0	($1,000,000)
414010	TAX SERVE FEES	($779,825)	($113,470)	($650,000)	($763,470)	$0	($763,470)
	Total Prior Year Taxes*	$2,533,513	$597,614	$870,000	$1,467,614	$3,650,000	($2,182,386)
414002	SUPPLEMENTAL AUTO LIST	$2,667,573	$0	$2,660,000	$2,660,000	$2,600,000	$60,000
414004	INT CURRENT PROPERTY TAXES	$2,184,569	$168,719	$2,050,000	$2,218,719	$1,100,000	$1,118,719
414005	INT PRIOR YEAR'S PROPERTY TAXES	$2,696,705	$434,835	$2,145,000	$2,579,835	$2,200,000	$379,835
425000	EXEMPTIONS FOR ELDERLY	$11,339	$0	$20,000	$20,000	$20,000	$0
425001	VETERAN'S ADD'L EXP	$34,625	$0	$100,000	$100,000	$100,000	$0
425002	ABATEMENT FOR ELDERLY HOUSING	$0	$0	$0	$0	$0	$0
488005	MISCELLANEOUS	$775	$445	$4,555	$5,000	$5,000	$0
	TOTAL TAXES	**$272,261,707**	**$157,910,711**	**$116,399,555**	**$274,310,266**	**$272,513,098**	**$1,797,168**

* The Collection numbers reflected for "Prior Year Taxes" are affected by certain fees not budgeted but tracked separately

	PAYMENTS BY OTHER JURISDICTIONS						
422028	FEDERAL GRANT-PASS THRU	$0	$0	$0	$0	$0	$0
425008	PILOT-TIERED REIMBURSEMENT	$9,118,075	$0	$8,692,290	$8,692,290	$8,692,290	$0
425012	PEQUOT - STATE PROPERTIES	$2,637,435	$0	$2,637,435	$2,637,435	$2,637,435	$0
425013	MUNICIPAL REVENUE SHARING	$0	$0	$0	$0	$0	$0
425014	MRSA-MOTOR VEHICLES	$13,005,170	$8,755,672	$0	$8,755,672	$8,755,672	$0
425015	SUPPLEMENTAL REVENUE SHARING GRANT	$5,614,605	$0	$8,582,559	$8,582,559	$8,582,559	$0
425016	MUNICIPAL STABILIZATION GRANT	$0	$0	$0	$0	$0	$0
425018	PILOT-HOUSING AUTHORITY PROPERTIES	$0	$0	$0	$0	$25,000	($25,000)
425019	ADDITIONAL SUPPORT DISTRESSED MUNI	$0	$0	$0	$0	$0	$0
425020	SUPPLEMENTAL PEQUOT MOHEGAN GRANT	$0	$0	$5,114,077	$5,114,077	$5,114,077	$0
	TOTAL FROM OTHER JURISDICTIONS	**$30,375,285**	**$8,755,672**	**$25,026,361**	**$33,782,033**	**$33,807,033**	**($25,000)**

	REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
	FINANCE DEPT- OTHER REVENUE						
436000	INCOME FROM INVESTMENTS	$2,092,469	$1,142,954	$2,657,046	$3,800,000	$3,800,000	$0
441088	RENTAL FEES OF PUBLIC BUILDINGS	$1,949,572	$325,816	$1,674,184	$2,000,000	$2,000,000	$0
441147	ONE EXCHANGE PARKING GARAGE	$0	$0	$0	$0	$0	$0
445009	PROCEEDS-OFF TRACK REVENUE	$118,249	$18,166	$101,834	$120,000	$180,000	($60,000)
445020	OTHER CITY PORPERTY RENTS	$90,397	$0	$65,000	$65,000	$65,000	$0
445085	PROBATE COURT -WOLCOTT	$22,898	$0	$30,000	$30,000	$30,000	$0
461118	MARRIOTT RAMP GARAGE	$0	$0	$0	$0	$5,000	($5,000)
472001	EMPLOYEES-FRINGE BENEFIT CONTR.	$2,594,043	$112,902	$8,082,098	$8,195,000	$8,945,000	($750,000)
480001	USE OF FUND BALANCE	$0	$0	$3,000,000	$3,000,000	$3,000,000	$0
480001	USE OF FUND BALANCE - CAP PROJECTS	$0	$0	$0	$0	$0	$0
485016	DISTRESSED MUNICIPALITIES	$0	$0	$0	$0	$0	$0
485017	TELEPHONE ACCESS LINES	$430,788	$0	$200,000	$200,000	$200,000	$0
488005	MISCELLANEOUS	$43,520	$5,072	$19,928	$25,000	$25,000	$0
	TOTAL FINANCE OTHER REVENUE	**$7,341,938**	**$1,604,909**	**$15,830,091**	**$17,435,000**	**$18,250,000**	**($815,000)**
	TRANSFERS FROM OTHER FUNDS						
499001	TRANSFER-WATER FUND-SERVICE	$800,000	$800,000	$0	$800,000	$800,000	$0
499002	TRANSFER-PUBLIC UTILITY SERVICE CHG	$200,000	$200,000	$0	$200,000	$200,000	$0
499003	TRANSFER-SEWER FUND SERVICE CHARGE	$300,000	$300,000	$0	$300,000	$300,000	$0
499008	WATER FUND-FRINGE BENEFITS	$1,633,643	$1,467,379	$0	$1,467,379	$1,467,379	$0
499009	SEWER FUND-FRINGE BENEFITS	$972,000	$975,000	$0	$975,000	$975,000	$0
499011	PUBLIC UTILITY ADMIN - BENEFITS	$584,590	$409,023	$0	$409,023	$409,023	$0
	TOTAL TRANSFERS FROM OTHER FUNDS	**$4,490,233**	**$4,151,402**	**$0**	**$4,151,402**	**$4,151,402**	**$0**
	TOTAL FINANCE DEPT. REVENUE	**$42,207,456**	**$14,511,984**	**$40,856,452**	**$55,368,435**	**$56,208,435**	**($840,000)**

REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
1070001 LEGAL DEPARTMENT						
488005 MISCELLANEOUS	$44,393	$27	$19,973	$20,000	$20,000	$0
488017 LEGAL CLAIMS	$0	$0	$500	$500	$500	$0
TOTAL LEGAL DEPARTMENT	**$44,393**	**$27**	**$20,473**	**$20,500**	**$20,500**	**$0**
1100001 CITY CLERK						
488005 MISCELLANEOUS	$0	$0	$250	$250	$250	$0
TOTAL CITY CLERK	**$0**	**$0**	**$250**	**$250**	**$250**	**$0**
1130001 TOWN CLERK						
441000 DEED RECORDING FEES	$412,211	$73,542	$326,458	$400,000	$400,000	$0
441001 DEED TRANSFER FEES	$2,790	$514	$2,486	$3,000	$3,000	$0
441006 LANDLORD REGISTRATIONS	$2,125	$150	$350	$500	$500	$0
441010 REAL ESTATE CONVEYANCE	$2,238,500	$433,369	$1,511,631	$1,945,000	$1,945,000	$0
441014 VITAL STATISTICS FEES	$378,975	$61,560	$333,440	$395,000	$395,000	$0
441018 RECORD COPY FEES	$71,272	$13,408	$96,592	$110,000	$110,000	$0
441042 BURIAL AND TRANSIT PERMITS	$10,385	$1,570	$4,430	$6,000	$6,000	$0
441046 DOG LICENSES	$5,766	$2,823	$4,178	$7,000	$7,000	$0
441052 MARRIAGE LICENSES	$9,600	$6,750	$250	$7,000	$7,000	$0
441084 OTHER TOWNS-VITAL STATISTICS	$74	$0	$3,000	$3,000	$3,000	$0
488005 MISCELLANEOUS	$31,896	$5,570	$14,430	$20,000	$20,000	$0
488014 DEPARTMENT CHARGES (PHOTOSTAT)	$38,468	$5,057	$74,943	$80,000	$80,000	$0
TOTAL TOWN CLERK	**$3,202,062**	**$604,312**	**$2,372,188**	**$2,976,500**	**$2,976,500**	**$0**
1160001 HUMAN RESOURCES DEPARTMENT						
488014 DEPT. CHARGES	$810	$11,030	$0	$11,030	$1,000	$10,030
TOTAL HUMAN RESOURCES DEPT	**$810**	**$11,030**	**$0**	**$11,030**	**$1,000**	**$10,030**
1190001 REGISTRAR OF VOTERS						
488005 MISCELLANEOUS	$0	$0	$0	$0	$250	($250)
TOTAL ROV DEPARTMENT	**$0**	**$0**	**$0**	**$0**	**$250**	**($250)**

REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
2040001 ASSESSMENT DEPARTMENT						
441134 PHOTOCOPY FEES	$176	$0	$50	$50	$1,500	($1,450)
488005 MISCELLANEOUS	$2,250	$1,000	$1,000	$2,000	$0	$2,000
TOTAL ASSESSMENT DEPARTMENT	**$2,426**	**$1,000**	**$1,050**	**$2,050**	**$1,500**	**$550**
2100001 PURCHASING DEPARTMENT						
488005 MISCELLANEOUS	$0	$0	$0	$0	$0	$0
TOTAL PURCHASING DEPARTMENT	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
2220001 INFORMATION TECHNOLOGY DEPT						
488005 MISCELLANEOUS	$0	$0	$0	$0	$250	($250)
TOTAL I.T. DEPARTMENT	**$0**	**$0**	**$0**	**$0**	**$250**	**($250)**
3010001 POLICE DEPARTMENT						
425013 MUNICIPAL REVENUE SHARING	$70,345	$18,972	$16,028	$35,000	$35,000	$0
441002 DOG POUND FEES	$2,650	$160	$9,840	$10,000	$10,000	$0
441003 FALSE ALARMS FINES	$13,775	$50	$39,950	$40,000	$40,000	$0
441008 PARKING VIOLATION FEES	$266,245	$23,068	$251,932	$275,000	$375,000	$450
441018 RECORD COPY FEES	$37,052	$6,379	$23,621	$30,000	$30,000	$0
441056 MISC. LICENSES AND PERMITS	$51,902	$7,147	$32,853	$40,000	$40,000	$0
441110 RAMPGARAGES-SPRING ST.	$52,697	$777	$64,223	$65,000	$65,000	$0
441115 RAMPGARAGES-BUCKINGHAM ST.	$412,351	$11,543	$338,457	$350,000	$350,000	$0
441116 SURFACE PARKING LOTS	$18,905	$1,081	$18,919	$20,000	$25,000	($5,000)
441117 ON STREET PARKING METERS	$0	$0	$0	$0	$0	$0
441143 SURFACE LOT KIOSKS	$55,588	$7,122	$47,878	$55,000	$55,000	$0
441144 ON STREET KIOSKS	$60,824	$3,436	$201,564	$205,000	$225,000	($20,000)
488005 MISCELLANEOUS	$6,314	$983	$14,017	$15,000	$15,000	$0
TOTAL POLICE DEPT.	**$1,048,648**	**$80,719**	**$1,059,281**	**$1,140,000**	**$1,265,000**	**($24,550)**
3100001 FIRE DEPARTMENT						
422020 STATE GRANT	$0	$0	$0	$0	$0	$0
422028 FEDERAL GRANT- PASS THRU	$110,690	$0	$50,000	$50,000	$50,000	$0
441003 FALSE ALARM FINES	$0	$0	$0	$0	$0	$0
441070 STORAGE-EXPLOSIVES PERMITS	$0	$0	$0	$0	$0	$0
441071 STORAGE-LIQUID INFLAMMABLES	$0	$0	$0	$0	$0	$0
441118 HAZ-MAT BILLING	$0	$0	$0	$0	$0	$0
441119 FIRE MARSHALL PERMITS	$87,429	$20,767	$39,233	$60,000	$60,000	$0
488005 MISCELLANEOUS	$76	$0	$250	$250	$250	$0
TOTAL FIRE DEPARTMENT	**$198,195**	**$20,767**	**$89,483**	**$110,250**	**$110,250**	**$0**

REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
4010001 PUBLIC WORKS DEPARTMENT						
422019 FED. GRANT - FEMA REIMBURSEMENT	$0	$0	$0	$0	$0	$0
441018 RECORD COPY FEES	$0	$0	$250	$250	$250	$0
441062 REFUSE DISPOSAL CHARGE	$184,446	$89,634	$85,366	$175,000	$175,000	$0
441068 SEWER PERMITS	$36,165	$11,145	$28,855	$40,000	$40,000	$0
441088 BUILDING RENTAL FEES	$0	$3,744	$0	$3,744	$0	$3,744
441092 EVICTION FEES	$3,000	$300	$9,700	$10,000	$10,000	$0
461205 RECYCLING REVENUE/LEAG BAG REVENUE	$0	$0	$0	$0	$0	$0
488004 INSURANCE CARRIER REFUND	$299,864	$18,874	$31,126	$50,000	$50,000	$0
488005 MISCELLANEOUS	$53,554	$10,458	$59,542	$70,000	$70,000	$0
488014 DEPARTMENT CHARGES	$0	$0	$0	$0	$0	$0
499007 RECREATIONAL PROGRAM FEES	$0	$0	$0	$0	$0	$0
TOTAL PUBLIC WORKS DEPT.	**$577,029**	**$134,155**	**$214,839**	**$348,994**	**$345,250**	**$3,744**
5010001 CITY PLAN COMMISSION						
441021 STATE LAND USE SURCHARGE	$9,180	$1,980	$8,020	$10,000	$10,000	$0
441076 ADMINISTRATIVE REVIEW FEES	$44,260	$7,710	$37,290	$45,000	$45,000	$0
441138 CITY PLAN COMM. FEES	$5,400	$600	$4,400	$5,000	$5,000	$0
441139 ZONING COMM. FEES	$12,250	$5,400	$19,600	$25,000	$25,000	$0
441140 ZONING BOARD OF APPLEALS FEES	$22,650	$5,300	$9,700	$15,000	$15,000	$0
441141 INLAND WETLAND FEES	$3,850	$250	$4,750	$5,000	$5,000	$0
441150 STATE SIGN OFFS	$5,700	$900	$4,100	$5,000	$5,000	$0
488005 MISCELLANEOUS	$20	$500	$1,000	$1,500	$16,000	($14,500)
TOTAL CITY PLAN COMMISSION	**$103,310**	**$22,640**	**$88,860**	**$111,500**	**$126,000**	**($14,500)**

REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
5040001 DEPT OF INSPECTIONS						
441041 BUILDING PERMITS	$3,502,382	$965,355	$359,645	$1,325,000	$1,325,000	$0
441045 DEMOLITION PERMITS	$8,525	$0	$25,000	$25,000	$25,000	$0
441047 ELECTRICAL WORK PERMITS	$1,065,860	$256,675	$458,325	$715,000	$715,000	$0
441049 HEATING ETC. PERMITS	$578,481	$38,495	$461,505	$500,000	$500,000	$0
441054 OCCUPANCY PERMITS	$123,155	$20,648	$29,353	$50,000	$50,000	$0
441057 PLUMBING PERMITS	$335,180	$25,975	$162,025	$188,000	$188,000	$0
441073 STREET SIGN FEES	$16,480	$3,700	$6,300	$10,000	$10,000	$0
441083 STATE-BUILDING FEE	$2,912	$13,433	$0	$13,433	$0	$13,433
488005 MISCELLANEOUS	$33	$1	$1,999	$2,000	$2,000	$0
TOTAL DEPT. OF INSPECTIONS	**$5,633,008**	**$1,324,282**	**$1,504,151**	**$2,828,433**	**$2,815,000**	**$13,433**
6010001 DEPARTMENT OF HEALTH (AU#6010001)						
441018 RECORD COPY FEES	$0	$0	$0	$0	$0	$0
441059 PRIVATE SEWAGE DISPOSAL	$0	$0	$1,500	$1,500	$1,500	$0
441063 RESTAURANT LICENSE PERMITS	$118,100	$4,200	$115,800	$120,000	$145,000	($25,000)
441065 ROOMING HOUSE PERMITS	$2,700	$0	$5,000	$5,000	$5,000	$0
441080 PUBLIC POOLS PERMITS	$2,000	$400	$4,600	$5,000	$5,000	$0
441081 TEMP FOOD PERMITS	$0	$0	$0	$0	$5,000	($5,000)
441142 COSMETOLOGY FEES	$8,200	$400	$8,600	$9,000	$15,000	($6,000)
488005 MISCELLANEOUS	$3,836	$300	$4,200	$4,500	$4,500	$0
488014 DEPARTMENT CHARGES	$0	$0	$1,000	$1,000	$2,000	($1,000)
488022 APPLICATIONS	$5,300	$750	$5,250	$6,000	$8,000	($2,000)
TOTAL DEPARTMENT OF HEALTH	**$140,136**	**$6,050**	**$145,950**	**$152,000**	**$191,000**	**($39,000)**

	REVENUE DESCRIPTION APPROVED BUDGET	REVENUE FY26 Actual	Y-T-D As of 8/31/26	PROJECTED 10 months	PROJECTED AT YEAR-END	FY27 BUDGET REVENUE	BUDGETARY DIFFERENCE
	DEPARTMENT OF EDUCATION (AU#89010004)						
422010	EDUCATION EQUALIZATION GRANT (ECS)	$113,512,553	$0	$113,617,182	$113,617,182	$113,617,182	$0
422014	NON-PUBLIC SCHOOL SERVICE (NURSES)	$281,249	$0	$270,000	$270,000	$270,000	$0
422017	SPEC ED-AG. PLACEMENTS & EXCESS COST	$5,460,745	$0	$5,400,000	$5,400,000	$5,400,000	$0
422018	SPECIAL EDUCATION - MEDICAID GRANT	$1,301,367	$0	$850,000	$850,000	$850,000	$0
422020	STATE GRANT - OTHER	$193,338	$0	$175,000	$175,000	$175,000	$0
422022	SCHOOL TRANSPORTATION - NON PUBLIC	$0	$0	$0	$0	$0	$0
422023	SCHOOL TRANSPORTATION - PUBLIC	$0	$0	$0	$0	$0	$0
472007	REIMBURSEMENT FROM OTHER TOWNS	$546,716	$299,253	$300,747	$600,000	$600,000	$0
488005	MISCELLANEOUS	$120	$0	$15,000	$15,000	$15,000	$0
488014	DEPARTMENT CHARGES	$55,469	$10,767	$39,233	$50,000	$50,000	$0
	TOTAL DEPARTMENT OF EDUCATION	**$121,351,556**	**$310,020**	**$120,667,162**	**$120,977,182**	**$120,977,182**	**$0**
	TOTAL GENERAL FUND REVENUE	**$446,770,736**	**$174,937,697**	**$283,419,694**	**$458,357,391**	**$457,551,465**	**$906,376**

1010001 OFFICE OF THE MAYOR

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,074,140	$1,185,427	$118,263	$1,125,489	$1,243,752	$1,257,698	($13,946)
Personal Services-Overtime (102)	$0	$0	$0	$0	$0	$0	$0
Personal Services-Other (other 100's)	$700	$20,865	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$1,074,840	$1,206,292	$118,263	$1,125,489	$1,243,752	$1,257,698	($13,946)
Purch. Professional Services (530's)	$0	$0	$0	$0	$0	$0	$0
Purch. Property Services (540's)	$0	$0	$177	$4,323	$4,500	$4,500	$0
Purch. Other Services (550's)	$2,321	$2,647	$102	$3,398	$3,500	$3,500	$0
Supplies (560's)	$12,510	$14,197	$821	$14,679	$15,500	$15,500	$0
Other Objects (580's)	$53,036	$42,809	$7,362	$49,638	$57,000	$57,000	$0
TOTAL	$1,142,706	$1,265,945	$126,725	$1,197,527	$1,324,252	$1,338,198	($13,946)
				Bi-Weekly PP posted 9/17/2026		$38,136	

Payroll Projections include salary accrual of: $40,000
Includes projection for filling of existing vacancies - $195,000

1030001 BOARD OF ALDERMEN

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$63,999	$63,999	$10,667	$53,333	$64,000	$64,000	$0
Sub-Total--Personal Services	$63,999	$63,999	$10,667	$53,333	$64,000	$64,000	$0
Other Objects (580's)	$0	$0	$0	$0	$0	$0	$0
TOTAL	$63,999	$63,999	$10,667	$53,333	$64,000	$64,000	$0

1070001 LEGAL DEPARTMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,287,703	$1,180,636	$117,727	$1,724,574	$1,842,301	$1,850,286	($7,985)
Personal Services-Overtime (102)	$24,985	$16,499	$1,112	$6,000	$7,112	$0	$7,112
Personal Services-Other (other 100's)	$243,102	$193,595	$37,901	$179,249	$217,150	$217,150	$0
Sub-Total--Personal Services	$1,555,790	$1,390,730	$156,739	$1,909,823	$2,066,563	$2,067,436	($873)
Purchased Prof. Services (530's)	$1,094,633	$1,019,925	$40,290	$1,051,210	$1,091,500	$1,091,500	$0
Purch. Property Services (540's)	$8,229	$7,784	$1,213	$8,687	$9,900	$9,900	$0
Purch. Other Services (550's)	$2,148	$2,166	$420	$2,580	$3,000	$3,000	$0
Supplies (560's)	$28,425	$22,513	$304	$29,696	$30,000	$30,000	$0
Property (570's)	$4,346	$550	$0	$10,000	$10,000	$10,000	$0
Other Objects (580's)	$15,955	$23,269	$2,934	$21,866	$24,800	$24,800	$0
TOTAL	$2,709,526	$2,466,936	$201,900	$3,033,862	$3,235,763	$3,236,636	($873)

Payroll Projections include salary accrual of: $50,000
Includes projection for filling of existing vacancies - $800,000

Bi-Weekly PP posted 9/17/2026 $39,753
Bi-Weekly Part-Time posted 9/17/2026 $6,191

1100001 CITY CLERK

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$213,772	$238,475	$28,372	$213,665	$242,037	$242,274	($237)
Personal Services-Overtime (102)	$25,282	$18,079	$2,548	$16,452	$19,000	$19,000	$0
Personal Services-Other (other 100's)	$24,417	$308	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$263,470	$256,862	$30,921	$230,117	$261,037	$261,274	($237)
Purch. Property Services (540's)	$2,057	$2,067	$0	$2,150	$2,150	$2,150	$0
Purch. Other Services (550's)	$4,043	$5,121	$37	$7,663	$7,700	$7,700	$0
Supplies (560's)	$2,191	$1,763	$0	$5,000	$5,000	$5,000	$0
Property (570's)	$0	$0	$0	$0	$0	$0	$0
Other Objects (580's)	$0	$0	$0	$300	$300	$300	$0
TOTAL	$271,760	$265,814	$30,957	$245,230	$276,187	$276,424	($237)

Includes projection for filling of existing vacancies - $0
Payroll Projections include salary accrual of: $10,000

Bi-Weekly PP posted 9/17/2026 $8,985

1130001 TOWN CLERK

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$507,594	$536,739	$66,502	$492,735	$559,237	$553,626	$5,611
Personal Services-Overtime (102)	$22,810	$5,762	$710	$9,290	$10,000	$10,000	$0
Personal Services-Other (other 100's)	$10,401	$1,458	$701	$1,299	$2,000	$2,000	$0
Sub-Total--Personal Services	$540,805	$543,960	$67,913	$503,324	$571,237	$565,626	$5,611
Purch. Property Services (540's)	$51,387	$51,555	$10,708	$54,292	$65,000	$65,000	$0
Purch. Other Services (550's)	$87,350	$97,102	$15,756	$96,244	$112,000	$112,000	$0
Supplies (560's)	$29,898	$33,505	$4,071	$30,929	$35,000	$35,000	$0
Property (570's)	$0	$0	$0	$0	$0	$0	$0
Other Objects (580's)	$885	$1,093	$305	$1,045	$1,350	$1,350	$0
TOTAL	$710,324	$727,216	$98,753.25	$685,834	$784,587	$778,976	$5,611

Payroll Projections include salary accrual of: $22,000
Includes projection for filling of existing vacancies - $0

Bi-Weekly PP posted 9/17/2026 $21,397
Bi-Weekly Part-Time posted 9/17/2026 $0

1160001 DEPARTMENT OF HUMAN RESOURCES

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,045,190	$951,557	$117,562	$912,753	$1,030,315	$1,005,328	$24,987
Personal Services-Overtime (102)	$1,221	$1,041	$0	$10,000	$10,000	$10,000	$0
Personal Services-Other (other 100's)	$7,900	$46,057	$270	$9,730	$10,000	$10,000	$0
Sub-Total--Personal Services	$1,054,312	$998,654	$117,832	$932,483	$1,050,315	$1,025,328	$24,987
Purchased Prof. Services (530's)	$158,611	$188,569	$2,905	$292,095	$295,000	$295,000	$0
Purch. Property Services (540's)	$2,450	$2,521	$0	$2,880	$2,880	$2,880	$0
Purch. Other Services (550's)	$12,228	$6,706	$364	$28,036	$28,400	$28,400	$0
Supplies (560's)	$9,474	$9,908	$30	$10,970	$11,000	$11,000	$0
Property (570's)	$0	$0	$0	$0	$0	$0	$0
Other Objects (580's)	$553	$1,669	$0	$3,000	$3,000	$3,000	$0
TOTAL	$1,237,627	$1,208,027	$121,131	$1,269,464	$1,390,595	$1,365,608	$24,987

Payroll Projections include salary accrual of: $40,000
Includes projection for filling of existing vacancies - $45,000

Bi-Weekly PP posted 9/17/2026 $37,625

1190001 REGISTRAR OF VOTERS

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$246,991	$272,832	$32,435	$242,186	$274,621	$272,037	$2,584
Personal Services-Overtime (102)	$0	$1,139	$283	$2,217	$2,500	$2,500	$0
Personal Services-Other (other 100's)	$131,458	$98,600	$44,975	$100,025	$145,000	$145,000	$0
Sub-Total--Personal Services	$378,449	$372,571	$77,693	$344,428	$422,121	$419,537	$2,584
Employee Benefits (520's)	$45	$253	$117	$383	$500	$500	$0
Purchased Prof. Services (530's)	$0	$0	$0	$0	$0	$0	$0
Purch. Property Services (540's)	$16,674	$44,440	$7,496	$39,004	$46,500	$46,500	$0
Purch. Other Services (550's)	$76,916	$79,070	$12,532	$120,468	$133,000	$133,000	$0
Supplies (560's)	$1,310	$2,961	$57	$2,943	$3,000	$3,000	$0
Other Objects (580's)	$2,714	$4,362	$1,310	$4,490	$5,800	$5,800	$0
TOTAL	$476,107	$503,656	$99,205	$511,716	$610,921	$608,337	$2,584

Payroll Projections include salary accrual of: $12,000
Includes projection for filling of existing vacancies - $0

Bi-Weekly PP posted 9/17/2026 $10,463
Bi-Weekly Part-Time posted 9/17/2026 $0

1220001 CITY SHERIFF

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$16,021	$16,021	$2,811	$13,210	$16,021	$16,021	$0
Sub-Total--Personal Services	$16,021	$16,021	$2,811	$13,210	$16,021	$16,021	$0
Employee Benefits (520's)	$4,150	$4,150	$346	$3,804	$4,150	$4,150	$0
TOTAL	$20,171	$20,171	$3,156	$17,015	$20,171	$20,171	$0

Payroll Projections include salary accrual of: $0

Bi-Weekly PP posted 9/17/2026 $616

1250001 PROBATE COURT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Purch. Property Services (540's)	$88,124	$106,094	$7,274	$66,326	$73,600	$73,600	$0
Purch. Other Services (550's)	$18,175	$41,985	$7,997	$16,003	$24,000	$24,000	$0
Supplies (560's)	$10,794	$15,794	$611	$17,889	$18,500	$18,500	$0
Property (570's)	$2,645	$1,476	$0	$8,000	$8,000	$8,000	$0
TOTAL	$119,738	$165,350	$15,883	$108,217	$124,100	$124,100	$0

2010001 DEPARTMENT OF FINANCE

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$2,261,728	$2,393,483	$180,446	$2,322,493	$2,502,939	$2,419,440	$83,499
Personal Services-Overtime (102)	$8,449	$8,952	$0	$20,000	$20,000	$20,000	$0
Personal Services-Other (other 100's)	$34,623	$23,326	$2,101	$3,549	$5,650	$5,650	$0
Sub-Total--Personal Services	$2,304,799	$2,425,761	$182,546	$2,346,043	$2,528,589	$2,445,090	$83,499
Purchased Prof. Services (530's)	$149	$174	$0	$1,000	$1,000	$1,000	$0
Purch. Property Services (540's)	$5,329	$5,365	$781	$5,219	$6,000	$6,000	$0
Purch. Other Services (550's)	$35,191	$48,484	($3,946)	$70,446	$66,500	$66,500	$0
Supplies (560's)	$27,127	$25,930	$1,183	$33,817	$35,000	$35,000	$0
Property (570's)	$10,955	$6,574	$0	$7,500	$7,500	$7,500	$0
Other Objects (580's)	$4,565	$11,768	$246	$7,254	$7,500	$7,500	$0
TOTAL	$2,388,114	$2,524,055	$180,810	$2,471,279	$2,652,089	$2,568,590	$83,499

Payroll Projections include salary accrual of: $100,000
Includes projection for filling of existing vacancies - $75,000

Bi-Weekly PP posted 9/17/2026 $97,613

2040001 DEPARTMENT OF ASSESSMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$621,798	$691,906	$84,349	$695,729	$780,078	$750,823	$29,255
Personal Services-Overtime (102)	$9,187	$8,510	$0	$12,000	$12,000	$12,000	$0
Personal Services-Other (other 100's)	$19,285	$3,398	$0	$5,455	$5,455	$5,455	$0
Sub-Total--Personal Services	$650,271	$703,814	$84,349	$713,184	$797,533	$768,278	$29,255
Employee Benefits (520's)	$3,867	$3,941	$609	$13,091	$13,700	$13,700	$0
Purchased Prof. Services (530's)	$31,796	$34,711	$24,245	$35,745	$59,990	$59,990	$0
Purch. Property Services (540's)	$5,685	$5,740	$1,045	$6,955	$8,000	$8,000	$0
Purch. Other Services (550's)	$48,824	$53,259	$375	$30,625	$31,000	$31,000	$0
Supplies (560's)	$3,660	$5,742	$517	$7,783	$8,300	$8,300	$0
Other Objects (580's)	$2,065	$2,000	$0	$2,755	$2,755	$2,755	$0
TOTAL	$746,168	$809,207	$111,140	$810,138	$921,278	$892,023	$29,255

Payroll Projections include salary accrual of: $28,000 Bi-Weekly PP posted 9/17/2026 $27,397
Includes projection for filling of existing vacancies - $65,000

2070002 DEPARTMENT OF REVENUE COLLECTION

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$873,228	$954,656	$112,424	$927,252	$1,039,676	$1,062,342	($22,666)
Personal Services-Overtime (102)	$14,089	$9,257	$8,487	$6,513	$15,000	$15,000	$0
Personal Services-Other (other 100's)	$78,623	$0	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$965,940	$963,913	$120,911	$933,766	$1,054,676	$1,077,342	($22,666)
Purchased Prof. Services (530's)	$17,195	$18,152	$9,147	$11,303	$20,450	$20,450	$0
Purch. Property Services (540's)	$7,710	$8,018	$4,876	$15,324	$20,200	$20,200	$0
Purch. Other Services (550's)	$165,504	$188,678	$1,811	$210,784	$212,595	$212,595	$0
Supplies (560's)	$8,230	$12,535	$0	$14,700	$14,700	$14,700	$0
Property (570's)	$2,561	$2,600	$50	$2,950	$3,000	$3,000	$0
Other Objects (580's)	$912	$1,217	$966	$4,559	$5,525	$5,525	$0
TOTAL	$1,168,052	$1,195,113	$137,761	$1,193,385	$1,331,146	$1,353,812	($22,666)

Payroll Projections include salary accrual of: $40,000 Bi-Weekly PP posted 9/17/2026 $32,375
Includes projection for filling of existing vacancies - $175,000

2100001 DEPARTMENT OF PURCHASING

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$315,003	$329,092	$39,413	$294,708	$334,121	$324,196	$9,925
Personal Services-Overtime (102)	$0	$0	$0	$0	$0	$0	$0
Personal Services-Other (other 100's)	$3,115	$0	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$318,118	$329,092	$39,413	$294,708	$334,121	$324,196	$9,925
Purch. Property Services (540's)	$1,328	$1,086	$121	$1,679	$1,800	$1,800	$0
Purch. Other Services (550's)	$16,103	$17,313	$358	$19,742	$20,100	$20,100	$0
Supplies (560's)	$1,393	$1,888	$0	$3,000	$3,000	$3,000	$0
Other Objects (580's)	$0	$0	$0	$0	$0	$0	$0
TOTAL	$336,942	$349,379	$39,892	$319,130	$359,021	$349,096	$9,925
				Bi-Weekly PP posted 9/17/2026		$12,714	

Payroll Projections include salary accrual of: $15,000
Includes projection for filling of existing vacancies - $0

2130001 DEPARTMENT OF AUDIT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$170,259	$135,312	$15,060	$155,346	$170,406	$172,250	($1,844)
Personal Services-Overtime (102)	$0	$0	$0	$0	$0	$0	$0
Personal Services-Other (other 100's)	$0	$1,422	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$170,259	$136,734	$15,060	$155,346	$170,406	$172,250	($1,844)
Purchased Prof. Services (530's)	$699	$0	$0	$2,000	$2,000	$2,000	$0
Supplies (560's)	$295	$20	$3	$1,497	$1,500	$1,500	$0
Property (570's)	$0	$0	$0	$10,560	$10,560	$10,560	$0
Other Objects (580's)	$2,580	$765	$0	$2,250	$2,250	$2,250	$0
TOTAL	$173,833	$137,519	$15,062	$171,654	$186,716	$188,560	($1,844)
				Bi-Weekly PP posted 9/17/2026		$3,152	

Payroll Projections include salary accrual of: $6,000
Includes projection for filling of existing vacancies - $80,000

2190001 DEPARTMENT OF BUDGET CONTROL

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$181,486	$261,408	$35,435	$273,038	$308,474	$290,791	$17,683
Personal Services-Overtime (102)	$0	$0	$0	$0	$0	$0	$0
Personal Services-Other (other 100's)	$3,477	$3,477	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$184,963	$264,885	$35,435	$273,038	$308,474	$290,791	$17,683
Purch. Other Services (550's)	$2,251	$2,045	$0	$2,700	$2,700	$2,700	$0
Supplies (560's)	$1,961	$1,174	$0	$2,800	$2,800	$2,800	$0
Other Objects (580's)	$0	$0	$0	$150	$150	$150	$0
TOTAL	$189,175	$268,104	$35,435	$278,688	$314,124	$296,441	$17,683

Payroll Projections include salary accrual of: $12,000
Includes projection for filling of existing vacancies - $0

Bi-Weekly PP posted 9/17/2026 $11,865

2220001 DEPT. OF INFORMATION TECHNOLOGY

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,286,786	$1,454,148	$175,943	$1,308,653	$1,484,596	$1,410,533	$74,063
Personal Services-Overtime (102)	$3,075	$8,195	$729	$3,271	$4,000	$4,000	$0
Personal Services-Other (other 100's)	$37,285	$40,732	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$1,327,145	$1,503,075	$176,672	$1,311,925	$1,488,596	$1,414,533	$74,063
Purchased Prof. Services (530's)	$485	$684	$0	$16,875	$16,875	$16,875	$0
Purch. Property Services (540's)	$746,429	$1,121,263	$619,597	$551,357	$1,170,954	$1,170,954	$0
Purch. Other Services (550's)	$294,030	$314,655	$29,436	$329,401	$358,837	$358,837	$0
Supplies (560's)	$1,451	$2,172	$105	$4,895	$5,000	$5,000	$0
Property (570's)	$12,022	$12,965	$525	$18,875	$19,400	$19,400	$0
Other Objects (580's)	$9,996	$9,010	$0	$9,050	$9,050	$9,050	$0
TOTAL	$2,391,559	$2,963,824	$826,334	$2,242,378	$3,068,712	$2,994,649	$74,063

Includes projection for filling of existing vacancies - $0
Payroll Projections include salary accrual of: $60,000

Bi-Weekly PP posted 9/17/2026 $56,757

3010001 POLICE DEPARTMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$29,919,983	$31,991,420	$4,423,294	$29,307,330	$33,730,624	$33,747,334	($16,710)
Personal Services-Overtime (102)	$3,909,751	$4,336,288	$466,323	$2,733,677	$3,200,000	$3,200,000	$0
Personal Services-Other (other 100's)	$1,664,638	$2,049,849	$56,014	$1,620,146	$1,676,160	$1,676,160	$0
Sub-Total--Personal Services	$35,494,372	$38,377,557	$4,945,631	$33,661,153	$38,606,784	$38,623,494	($16,710)
Employee Benefits (520's)	$573,961	$579,306	$106,349	$436,816	$543,165	$543,165	$0
Purchased Prof. Services (530's)	$3,257,551	$3,274,038	$1,520,273	$1,754,696	$3,274,969	$3,274,969	$0
Purch. Property Services (540's)	$1,999,659	$2,277,598	$256,265	$3,777,802	$4,034,067	$4,034,067	$0
Purch. Other Services (550's)	$165,066	$155,173	$12,171	$161,019	$173,190	$173,190	$0
Supplies (560's)	$948,060	$1,074,355	$81,286	$990,226	$1,071,512	$1,071,512	$0
Property (570's)	$75,386	$115,307	$4,951	$111,549	$116,500	$116,500	$0
Other Objects (580's)	$10,765	$9,934	$3,890	$9,255	$13,145	$13,145	$0
Other Uses (590's)	$0	$0	$0	$0	$0	$0	$0
TOTAL	$42,524,820	$45,863,268	$6,930,817	$40,902,515	$47,833,332	$47,850,042	($16,710)

Payroll Projections include salary accrual of: $800,000
Includes Workers Compensation credit of - $275,000
Includes DOE credit for SRO positions of - $745,000
Includes COPS Grant credit of - $593,000
Vacant positions create savings in regular salaries but increase use of overtime
Includes projection for filling existing vacancies - $1,975,000

Bi-Weekly PP posted 9/17/2026	$76,029
Weekly PP posted 9/17/2026	$601,652
Current Year Weekly Average Overtime	$54,811
Last Year's Average Weekly OT	$83,390

3100001 FIRE DEPARTMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$19,182,745	$20,361,832	$2,918,059	$18,510,735	$21,428,794	$20,688,987	$739,807
Personal Services-Overtime (102)	$2,533,976	$2,467,431	$570,217	$2,129,783	$2,700,000	$2,300,000	$400,000
Personal Services-Other (other 100's)	$1,736,177	$1,434,501	$102,003	$1,122,372	$1,224,375	$1,224,375	$0
Sub-Total--Personal Services	$23,452,898	$24,263,764	$3,590,279	$21,762,889	$25,353,169	$24,213,362	$1,139,807
Employee Benefits (520's)	$132,908	$139,208	$772	$151,228	$152,000	$152,000	$0
Purchased Prof. Services (530's)	$70,918	$77,351	($10,207)	$98,207	$88,000	$88,000	$0
Purch. Property Services (540's)	$520,216	$539,374	$35,308	$587,802	$623,110	$623,110	$0
Purch. Other Services (550's)	$78,360	$84,443	$9,147	$89,853	$99,000	$99,000	$0
Supplies (560's)	$717,621	$710,524	$74,413	$701,712	$776,125	$776,125	$0
Property (570's)	$112,804	$109,500	$6,799	$125,301	$132,100	$132,100	$0
Other Objects (580's)	$1,407	$3,089	$2,079	$12,921	$15,000	$15,000	$0
Other Uses (590's)	$0	$0	$0	$0	$0	$0	$0
TOTAL	$25,087,132	$25,927,251	$3,708,590	$23,529,913	$27,238,504	$26,098,697	$1,139,807

Payroll Projections include salary accrual of: $500,000
Includes Workers Compensation credit of - $50,000
Vacant positions create savings in regular salaries but increase use of overtime
Includes projection for filling of existing vacancies - $1,300,000

Bi-Weekly PP posted 9/17/2026	$22,263
Weekly PP posted 9/17/2026	$369,794
Current Year Weekly Average Overtime	$73,564
Last Year's Average Weekly OT	$47,451

48 DEPARTMENT OF PUBLIC WORKS

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$10,545,977	$11,071,916	$1,438,466	$10,519,348	$11,957,814	$11,938,349	$19,465
Personal Services-Overtime (102)	$1,082,680	$1,359,146	$130,389	$823,611	$954,000	$954,000	($0)
Personal Services-Other (other 100's)	$1,607,034	$1,701,543	$611,536	$1,496,875	$2,108,411	$2,108,411	$0
Sub-Total--Personal Services	$13,235,691	$14,132,604	$2,180,391	$12,839,835	$15,020,225	$15,000,760	$19,465
Employee Benefits (520's)	$84,591	$94,662	$3,548	$104,549	$108,097	$108,097	$0
Purchased Prof. Services (530's)	$312,182	$342,305	$4,900	$387,450	$392,350	$392,350	$0
Purch. Property Services (540's)	$7,737,923	$7,765,333	$168,818	$9,252,650	$9,421,468	$9,421,468	$0
Purch. Other Services (550's)	$40,983	$43,027	$2,849	$52,388	$55,237	$55,237	$0
Supplies (560's)	$2,852,446	$2,965,032	$248,513	$2,941,695	$3,190,208	$3,190,208	$0
Property (570's)	$4,863	$12,740	$664	$15,336	$16,000	$16,000	$0
Other Objects (580's)	$71,509	$73,878	$4,378	$95,236	$99,614	$99,614	$0
Other Uses (590's)	$50,000	$0	$0	$0	$0	$0	$0
TOTAL	$24,390,188	$25,429,580	$2,614,060	$25,689,139	$28,303,199	$28,283,734	$19,465

Department wide payroll	
Bi-Weekly PP posted 9/17/2026	$143,013
Weekly PP posted 9/17/2026	$139,933
	$282,946

5010001 CITY PLAN

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$333,190	$349,353	$41,891	$457,295	$499,186	$492,310	$6,876
Personal Services-Overtime (102)	$0	$0	$0	$4,500	$4,500	$4,500	$0
Personal Services-Other (other 100's)	$2,352	$2,352	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$335,542	$351,705	$41,891	$461,795	$503,686	$496,810	$6,876
Employee Benefits (520's)	$318	$393	$32	$968	$1,000	$1,000	$0
Purchased Prof. Services (530's)	$1,578	$4,737	$962	$4,039	$5,000	$5,000	$0
Purch. Property Services (540's)	$3,975	$4,143	$508	$5,492	$6,000	$6,000	$0
Purch. Other Services (550's)	$17,894	$23,039	$2,536	$23,964	$26,500	$26,500	$0
Supplies (560's)	$2,113	$1,565	$134	$2,366	$2,500	$2,500	$0
Property (570's)	$1,059	$0	$0	$1,500	$1,500	$1,500	$0
Other Objects (580's)	$6,204	$8,760	$0	$9,200	$9,200	$9,200	$0
TOTAL	$368,683	$394,342	$46,063	$509,323	$555,386	$548,510	$6,876

Includes projection for filling of existing vacancies - $145,000 Bi-Weekly PP posted 9/17/2026 $13,513
Payroll Projections include salary accrual of: $15,000

5040001 DEPARTMENT OF INSPECTIONS

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$903,346	$977,122	$111,562	$949,827	$1,061,389	$1,056,473	$4,916
Personal Services-Overtime (102)	$3,680	$1,674	$1,167	$6,833	$8,000	$8,000	$0
Personal Services-Other (other 100's)	$127,678	$20,798	($4,418)	$65,278	$60,860	$60,860	$0
Sub-Total--Personal Services	$1,034,704	$999,594	$108,311	$1,021,938	$1,130,249	$1,125,333	$4,916
Employee Benefits (520's)	$33,586	$31,567	$1,496	$38,504	$40,000	$40,000	$0
Purchased Prof. Services (530's)	$0	$0	$0	$1,000	$1,000	$1,000	$0
Purch. Other Services (550's)	$3,528	$3,357	$535	$4,365	$4,900	$4,900	$0
Supplies (560's)	$9,389	$8,558	$128	$13,872	$14,000	$14,000	$0
Property (570's)	$2,768	$3,241	$0	$8,000	$8,000	$8,000	$0
Other Objects (580's)	$2,992	$3,630	$550	$6,650	$7,200	$7,200	$0
TOTAL	$1,086,968	$1,049,947	$111,020	$1,094,329	$1,205,349	$1,200,433	$4,916

Includes projection for filling of existing vacancies - $130,000 Bi-Weekly PP posted 9/17/2026 $35,447
Payroll Projections include salary accrual of: $40,000

601 HEALTH DEPARTMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$4,089,176	$4,601,193	$282,226	$4,952,362	$5,234,587	$5,103,360	$131,227
Personal Services-Overtime (102)	$39,181	$74,014	$7,204	$32,796	$40,000	$40,000	$0
Personal Services-Other (other 100's)	$782,414	$683,670	$0	$300,905	$300,905	$300,905	$0
Sub-Total--Personal Services	$4,910,771	$5,358,876	$289,430	$5,286,063	$5,575,492	$5,444,265	$131,227
Employee Benefits (520's)	$1,450	$1,620	$0	$1,740	$1,740	$1,740	$0
Purchased Prof. Services (530's)	$494	$291	$0	$2,300	$2,300	$2,300	$0
Purch. Property Services (540's)	$4,501	$4,264	$0	$6,225	$6,225	$6,225	$0
Purch. Other Services (550's)	$14,961	$17,595	$1,568	$17,132	$18,700	$18,700	$0
Supplies (560's)	$31,081	$36,926	$4,610	$33,890	$38,500	$38,500	$0
Other Objects (800's)	$44,697	$42,453	$3,520	$51,354	$54,874	$54,874	$0
TOTAL	$5,007,956	$5,462,026	$299,129	$5,398,702	$5,697,831	$5,566,604	$131,227

Includes projection for filling of existing vacancies - $50,000
Payroll Projections include salary accrual of: $200,000

Bi-Weekly PP posted 9/17/2026	$211,744
Weekly PP posted 9/17/2026	$1,000
Seasonal Wages posted 9/17/2026	$0

603 WATERBURY SENIOR CENTER

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$182,871	$190,166	$22,947	$172,852	$195,799	$186,502	$9,297
Personal Services-Overtime (102)	$0	$0	$0	$0	$0	$0	$0
Personal Services-Other (other 100's)	$24,548	$43,215	$4,833	$45,167	$50,000	$50,000	$0
Sub-Total--Personal Services	$207,419	$233,381	$27,780	$218,019	$245,799	$236,502	$9,297
Employee Benefits (520's)	$0	$0	$0	$0	$0	$0	$0
Purchased Prof. Services (530's)	$0	$0	$0	$0	$0	$0	$0
Purch. Property Services (540's)	$75,258	$73,093	$21,172	$62,387	$83,559	$83,559	$0
Purch. Other Services (550's)	$5,116	$3,750	$705	$5,295	$6,000	$6,000	$0
Supplies (560's)	$31,904	$31,793	$2,521	$42,479	$45,000	$45,000	$0
Other Objects (580's)	$0	$0	$0	$0	$0	$0	$0
TOTAL	$319,697	$342,018	$52,179	$328,179	$380,358	$371,061	$9,297

Includes projection for filling of existing vacancies - $0
Payroll Projections include salary accrual of: $10,000

Bi-Weekly PP posted 9/17/2026	$7,402

7010001 SILAS BRONSON LIBRARY

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,462,436	$1,610,727	$203,470	$1,486,251	$1,689,721	$1,678,958	$10,763
Personal Services-Overtime (102)	$6,641	$6,096	$454	$9,546	$10,000	$10,000	$0
Personal Services-Other (other 100's)	$65,956	$88,446	$9,110	$81,295	$90,405	$90,405	$0
Sub-Total--Personal Services	$1,535,033	$1,705,269	$213,034	$1,577,092	$1,790,126	$1,779,363	$10,763
Employee Benefits (520's)	$1,037	$1,022	$0	$1,050	$1,050	$1,050	$0
Purch. Property Services (540's)	$186,829	$215,069	$20,912	$318,588	$339,500	$339,500	$0
Purch. Other Services (550's)	$1,382	$1,470	$319	$1,681	$2,000	$2,000	$0
Supplies (560's)	$63,899	$68,941	$8,116	$78,684	$86,800	$86,800	$0
Property (570's)	$209,363	$220,000	$143,370	$81,630	$225,000	$225,000	$0
Other Objects (580's)	$2,360	$7,075	$1,562	$10,438	$12,000	$12,000	$0
TOTAL	$1,999,903	$2,218,846	$387,313	$2,069,163	$2,456,476	$2,445,713	$10,763

Payroll Projections include salary accrual of: $65,000
Includes projection for filling of existing vacancies - $0

Bi-Weekly PP posted 9/17/2026	$57,873
Weekly PP posted 9/17/2026	$3,365
Bi-Weekly Part-Time posted 9/17/2026	$2,655

1001 DEBT AND SUNDRY

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Employee Benefits (520's)							
ER FICA Costs - General Gov.	$785,706	$840,665	$119,135	$695,865	$815,000	$815,000	$0
ER FICA Costs - Education	$1,166,024	$1,114,634	$57,632	$1,169,368	$1,227,000	$1,227,000	$0
ER Medicare Costs - General Gov.	$1,446,511	$1,551,436	$209,736	$1,325,264	$1,535,000	$1,535,000	$0
ER Medicare Costs - Education	$2,630,638	$2,664,380	$156,000	$2,619,000	$2,775,000	$2,775,000	$0
ER 401(A) Match - General Gov.	$324,701	$339,821	$61,599	$273,401	$335,000	$335,000	$0
ER 401(A) Match - Education	$81,048	$83,426	$18,220	$70,780	$89,000	$89,000	$0
Employer Drop Plan Contribution	$121,866	$128,101	$21,978	$113,022	$135,000	$135,000	$0
Group Life Insurance - General Gov.	$332,711	$340,468	$43,617	$289,383	$333,000	$333,000	$0
Group Life Insurance - Education	$595,596	$615,551	$15,670	$554,330	$570,000	$570,000	$0
Major Medical Health Ins. - Actives	$29,540,773	$25,906,508	$29,572,278	$0	$29,572,278	$29,572,278	$0
Major Medical Health Ins. - Retired	$39,959,227	$39,093,492	$37,427,722	$0	$37,427,722	$37,427,722	$0
Unemployment Comp. - General Gov.	$70,792	$97,128	$0	$100,000	$100,000	$100,000	$0
Unemployment Comp. - Education	$228,230	$201,839	$0	$250,000	$250,000	$250,000	$0
Heart and Hypertension Contribution	$1,200,000	$700,000	$700,000	$0	$700,000	$700,000	$0
Purchased Prof. Services (530's)							
Professional Services	$203,864	$98,587	$0	$250,000	$250,000	$250,000	$0
Auditing	$117,000	$99,159	$60,000	$62,000	$122,000	$122,000	$0
Purch. Other Services (550's)							
General Liability	$2,700,000	$3,050,000	$3,300,000	$0	$3,300,000	$3,300,000	$0
Property Insurance	$1,800,000	$1,950,000	$2,300,000	$0	$2,300,000	$2,300,000	$0
Other Objects (580's)							
Municipal Groups	$399,803	$397,364	$225,899	$174,101	$400,000	$400,000	$0
Holiday Activities	$55,500	$55,500	$40,000	$15,500	$55,500	$55,500	$0
Senior Citizen Activities	$129,507	$419,386	$4,991	$535,009	$540,000	$540,000	$0
Area Health Systems	$17,000	$17,000	$0	$17,000	$17,000	$17,000	$0
Culture/Youth Activities	$352,000	$352,000	$135,000	$195,500	$330,500	$330,500	$0
Mayor's Council on Culture	$40,000	$39,990	$11,530	$28,470	$40,000	$40,000	$0
Taxes to Other Towns	$25,545	$9,082	$2,553	$32,447	$35,000	$35,000	$0
Worker's Compensation	$6,500,000	$5,500,000	$5,000,000	$0	$5,000,000	$5,000,000	$0
Waterbury Promise	$500,000	$500,000	$500,000	$0	$500,000	$500,000	$0
Waterbury Land Bank	$300,000	$300,000	$0	$300,000	$300,000	$300,000	$0
Other Uses (590's)							
Transfers to Capital Improvement Funds	$4,450,000	$500,000	$500,000	$0	$500,000	$500,000	$0
Transfers to Debt Service	$22,500,000	$22,000,000	$22,000,000	$0	$22,000,000	$22,000,000	$0
Transfer to WDC	$1,250,000	$1,250,000	$308,333	$1,541,667	$1,850,000	$1,850,000	$0
Transfer to Special Revenue Fund	$1,790,000	$600,000	$0	$600,000	$600,000	$600,000	$0
Transfer to Vehicle Replacement Fund	$1,500,000	$1,500,000	$1,500,000	$0	$1,500,000	$1,500,000	$0
Transfer to Golf Courses	$0	$0	$0	$0	$0	$0	$0
Transfer to NVRDC	$100,000	$25,000	$0	$25,000	$25,000	$25,000	$0
Transfer to Community Development	$0	$135,000	$0	$138,000	$138,000	$138,000	$0
Contingency	$0	$0	$0	$4,700,000	$4,700,000	$4,700,000	$0
Accruals	$0	$0	$0	$0	$0	$0	$0
TOTAL	$123,214,043	$112,475,517	$104,291,894	$16,075,106	$120,367,000	$120,367,000	$0

1019 RETIREMENT BOARD

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Transfers to Pension Plan	$24,709,249	$26,282,479	$27,253,550	$0	$27,253,550	$27,253,550	$0
Purchased Prof. Services (530's)	$75,553	$61,740	$1,248	$98,752	$100,000	$100,000	$0
Purch. Other Services (550's)	$0	$0	$69	$931	$1,000	$1,000	$0
Other Objects (580's)	$0	$0	$0	$1,000	$1,000	$1,000	$0
Transfers to Debt Service	$24,334,860	$23,484,180	$22,633,500	$0	$22,633,500	$22,633,500	$0
TOTAL	$49,119,662	$49,828,399	$49,888,367	$100,683	$49,989,050	$49,989,050	$0
GENERAL GOVERNMENT EXP.	**$287,264,855**	**$283,925,506**	**$170,384,245**	**$130,305,900**	**$300,690,145**	**$299,176,465**	**$1,513,680**

800 DEPARTMENT OF EDUCATION

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$84,435,721	$79,594,491	$5,750,100	$68,307,775	$74,057,875	$74,057,875	$0
Personal Services-Overtime	$1,388,878	$905,902	$86,845	$1,088,155	$1,175,000	$1,175,000	$0
Personal Services-Early Incentive	$1,372,677	$711,075	$424,392	($100,812)	$323,580	$323,580	$0
Sub-Total--Personal Services	$87,197,276	$81,211,468	$6,261,337	$69,295,118	$75,556,455	$75,556,455	$0
Employee Benefits (520's)	$10,130,428	$11,127,023	$14,770	$11,105,030	$11,119,800	$11,119,800	$0
Purchased Prof. Services (530's)	$4,978,218	$6,064,983	$11,980	$4,836,390	$4,848,370	$4,848,370	$0
Purch. Property Services (540's)	$7,247,076	$7,329,055	$725,033	$6,795,974	$7,521,007	$7,521,007	$0
Purch. Other Services (550's)	$41,724,082	$43,377,624	$1,564,066	$51,257,246	$52,821,312	$52,821,312	$0
Supplies (560's)	$4,595,178	$5,073,093	$220,694	$5,262,958	$5,483,652	$5,483,652	$0
Property (570's)	$202,341	$188,783	$56,453	$157,441	$213,894	$213,894	$0
Other Objects (580's)	$596,605	$600,946	$548,731	$71,919	$620,650	$620,650	$0
Transfers (590's)	$1,691,556	$3,303,558	$9,860	$180,000	$189,860	$189,860	$0
TOTAL EDUCATION EXP.	**$158,362,759**	**$158,276,532**	**$9,412,923**	**$148,962,077**	**$158,375,000**	**$158,375,000**	**$0**
TOTAL GENERAL FUND EXP.	**$445,627,614**	**$442,202,038**	**$179,797,168**	**$279,267,977**	**$459,065,145**	**$457,551,465**	**$1,513,680**

48 DEPARTMENT OF PUBLIC WORKS

DEPARTMENT SUMMARY PAGE

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$10,545,977	$11,071,916	$1,438,466	$10,519,348	$11,957,814	$11,938,349	$19,465
Personal Services-Overtime (102)	$1,082,680	$1,359,146	$130,389	$823,611	$954,000	$954,000	$0
Personal Services-Other (other 100's)	$1,607,034	$1,701,543	$611,536	$1,496,875	$2,108,411	$2,108,411	$0
Sub-Total--Personal Services	$13,235,691	$14,132,604	$2,180,391	$12,839,835	$15,020,225	$15,000,760	$19,465
Employee Benefits (520's)	$84,591	$94,662	$3,548	$104,549	$108,097	$108,097	$0
Purchased Prof. Services (530's)	$312,182	$342,305	$4,900	$387,450	$392,350	$392,350	$0
Purch. Property Services (540's)	$7,737,923	$7,765,333	$168,818	$9,252,650	$9,421,468	$9,421,468	$0
Purch. Other Services (550's)	$40,983	$43,027	$2,849	$52,388	$55,237	$55,237	$0
Supplies (560's)	$2,852,446	$2,965,032	$248,513	$2,941,695	$3,190,208	$3,190,208	$0
Property (570's)	$4,863	$12,740	$664	$15,336	$16,000	$16,000	$0
Other Objects (580's)	$71,509	$73,878	$4,378	$95,236	$99,614	$99,614	$0
Other Uses (590's)	$50,000	$0	$0	$0	$0	$0	$0
TOTAL	$24,390,188	$25,429,580	$2,614,060	$25,689,139	$28,303,199	$28,283,734	$19,465

Department-wide payroll

Bi-Weekly PP posted 9/17/2026	$143,013
Weekly PP posted 9/17/2026	$139,933
	$282,946

4010001 OFFICE OF DIRECTOR OF PUBLIC WORKS

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$701,185	$733,354	$88,448	$670,607	$759,054	$716,539	$42,515
Personal Services-Overtime (102)	$1,651	$989	$0	$2,000	$2,000	$2,000	$0
Personal Services-Other (other 100's)	$3,109	$3,109	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$705,945	$737,452	$88,448	$672,607	$761,054	$718,539	$42,515
Employee Benefits (520's)	$0	$0	$0	$0	$0	$0	$0
Purchased Prof. Services (530's)	$2,375	$0	$0	$2,500	$2,500	$2,500	$0
Purch. Property Services (540's)	$6,760	$13,109	$7,385	$6,662	$14,047	$14,047	$0
Purch. Other Services (550's)	$40,151	$42,570	$2,849	$47,588	$50,437	$50,437	$0
Supplies (560's)	$12,195	$10,945	$220	$13,280	$13,500	$13,500	$0
Property (570's)	$1,167	$1,021	$434	$1,566	$2,000	$2,000	$0
Other Objects (580's)	$5,892	$5,970	$243	$16,122	$16,365	$16,365	$0
TOTAL	$774,484	$811,067	$99,579	$760,325	$859,903	$817,388	$42,515

Payroll Projections include salary accrual of: $30,000 Bi-Weekly PP posted 9/17/2026 $28,300
Includes projection for filling of existing vacancies - $0

4040001 DEPARTMENT OF ENGINEERING

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,242,618	$1,339,833	$163,970	$1,479,579	$1,643,549	$1,645,918	($2,369)
Personal Services-Overtime (102)	$11,887	$20,505	$1,307	$13,693	$15,000	$15,000	$0
Personal Services-Other (other 100's)	$73,950	$131,144	$29,924	$58,614	$88,538	$88,538	$0
Sub-Total--Personal Services	$1,328,454	$1,491,482	$195,201	$1,551,886	$1,747,087	$1,749,456	($2,369)
Employee Benefits (520's)	$3,362	$3,029	$0	$5,000	$5,000	$5,000	$0
Purchased Prof. Services (530's)	$291,332	$304,355	$0	$357,000	$357,000	$357,000	$0
Purch. Property Services (540's)	$87,317	$118,393	$12,565	$130,435	$143,000	$143,000	$0
Purch. Other Services (550's)	$0	$0	$0	$3,500	$3,500	$3,500	$0
Supplies (560's)	$25,084	$38,081	$4,377	$37,123	$41,500	$41,500	$0
Property (570's)	$666	$7,876	$0	$10,000	$10,000	$10,000	$0
Other Objects (580's)	$2,470	$1,974	$55	$9,434	$9,489	$9,489	$0
TOTAL	$1,738,685	$1,965,191	$212,197	$2,104,379	$2,316,576	$2,318,945	($2,369)

Payroll Projections include salary accrual of: $65,000 Bi-Weekly PP posted 9/17/2026 $54,754
Includes projection for filling of existing vacancies - $210,000 Weekly PP posted 9/17/2026 $0

4070001 PARKS DEPARTMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,525,899	$1,644,821	$226,941	$1,476,889	$1,703,831	$1,710,006	($6,175)
Personal Services-Overtime (102)	$275,533	$293,119	$60,632	$134,368	$195,000	$195,000	$0
Personal Services-Other (other 100's)	$158,677	$152,604	$33,960	$233,942	$267,902	$267,902	$0
Sub-Total--Personal Services	$1,960,108	$2,090,544	$321,533	$1,845,200	$2,166,733	$2,172,908	($6,175)
Employee Benefits (520's)	$7,978	$9,087	$0	$9,700	$9,700	$9,700	$0
Purch. Property Services (540's)	$604,928	$630,165	$14,420	$719,884	$734,304	$734,304	$0
Purch. Other Services (550's)	$0	$0	$0	$0	$0	$0	$0
Supplies (560's)	$260,115	$216,210	$17,916	$275,084	$293,000	$293,000	$0
Property (570's)	$0	$0	$0	$0	$0	$0	$0
Other Objects (580's)	$1,015	$1,195	$0	$4,000	$4,000	$4,000	$0
Other Uses (590's)	$50,000	$0	$0	$0	$0	$0	$0
TOTAL	$2,884,144	$2,947,202	$353,869	$2,853,868	$3,207,737	$3,213,912	($6,175)

Payroll Projections include salary accrual of: $55,000
Includes projection for filling of existing vacancies - $50,000

Bi-Weekly PP posted 9/17/2026	$8,604
Weekly PP posted 9/17/2026	$26,877
Seasonal Wages posted 9/17/2026	$4,013

4070002 DEPARTMENT OF PUBLIC BUILDINGS

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,127,431	$1,204,468	$162,284	$1,099,623	$1,261,907	$1,259,910	$1,997
Personal Services-Overtime (102)	$55,083	$69,029	$11,164	$63,836	$75,000	$75,000	$0
Personal Services-Other (other 100's)	$2,369	$2,369	$0	$350	$350	$350	$0
Sub-Total--Personal Services	$1,184,884	$1,275,867	$173,448	$1,163,809	$1,337,257	$1,335,260	$1,997
Employee Benefits (520's)	$20,528	$23,802	$2,640	$23,460	$26,100	$26,100	$0
Purch. Property Services (540's)	$1,382,988	$1,307,211	$25,112	$1,659,348	$1,684,460	$1,684,460	$0
Purch. Other Services (550's)	$0	$0	$0	$0	$0	$0	$0
Supplies (560's)	$490,848	$652,329	$29,182	$658,818	$688,000	$688,000	$0
TOTAL	$3,079,248	$3,259,208	$230,382	$3,505,435	$3,735,817	$3,733,820	$1,997

Payroll Projections include salary accrual of: $30,000
Includes projection for filling of existing vacancies - $120,000

Bi-Weekly PP posted 9/17/2026	$4,284
Weekly PP posted 9/17/2026	$19,440

4070003 BUREAU OF LEISURE

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$504,300	$525,251	$57,362	$466,416	$523,777	$523,110	$667
Personal Services-Overtime (102)	$44,696	$61,770	$2,159	$27,841	$30,000	$30,000	$0
Personal Services-Other (other 100's)	$1,111,205	$1,124,690	$522,504	$919,049	$1,441,553	$1,441,553	$0
Sub-Total--Personal Services	$1,660,201	$1,711,710	$582,025	$1,413,306	$1,995,330	$1,994,663	$667
Employee Benefits (520's)	$0	$0	$0	$0	$0	$0	$0
Purch. Professional Services (530's)	$0	$0	$0	$0	$0	$0	$0
Purch. Property Services (540's)	$5,641	$9,599	$3,672	$11,328	$15,000	$15,000	$0
Supplies (560's)	$5,851	$8,452	$278	$9,822	$10,100	$10,100	$0
Other Objects (580's)	$6,029	$7,005	$0	$9,000	$9,000	$9,000	$0
TOTAL	$1,677,723	$1,736,766	$585,974	$1,443,456	$2,029,430	$2,028,763	$667

Payroll Projections include salary accrual of: $20,000
Includes projection for filling of existing vacancies - $40,000

Bi-Weekly PP posted 9/17/2026 $18,473
Seasonal Wages posted 9/17/2026 $28,709

4100001 CENTRAL VEHICLE MAINTENANCE

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,247,090	$1,298,038	$175,033	$1,178,691	$1,353,724	$1,358,572	($4,848)
Personal Services-Overtime (102)	$109,396	$123,740	$6,698	$83,302	$90,000	$90,000	$0
Personal Services-Other (other 100's)	$14,668	$42,977	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$1,371,154	$1,464,756	$181,731	$1,261,993	$1,443,724	$1,448,572	($4,848)
Employee Benefits (520's)	$7,205	$7,156	$860	$7,729	$8,589	$8,589	$0
Purchased Prof. Services (530's)	$2,700	$3,350	$0	$4,000	$4,000	$4,000	$0
Purch. Property Services (540's)	$300,482	$301,639	$32,014	$273,486	$305,500	$305,500	$0
Purch. Other Services (550's)	$832	$457	$0	$1,000	$1,000	$1,000	$0
Supplies (560's)	$516,385	$532,610	$74,048	$468,702	$542,750	$542,750	$0
Property (570's)	$3,031	$3,843	$230	$3,770	$4,000	$4,000	$0
Other Objects (580's)	$8,004	$9,694	$0	$11,500	$11,500	$11,500	$0
TOTAL	$2,209,792	$2,323,504	$288,883	$2,032,180	$2,321,063	$2,325,911	($4,848)

Includes projection for filling of existing vacancies - $55,000
Payroll Projections include salary accrual of: $30,000

Bi-Weekly PP posted 9/17/2026 $8,213
Weekly PP posted 9/17/2026 $20,750

4100002 REFUSE COLLECTION

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$2,709,788	$2,757,037	$368,467	$2,538,289	$2,906,757	$2,911,470	($4,713)
Personal Services-Overtime (102)	$229,152	$230,434	$37,070	$177,930	$215,000	$215,000	$0
Personal Services-Other (other 100's)	$188,075	$173,886	$14,297	$218,479	$232,776	$232,776	$0
Sub-Total--Personal Services	$3,127,015	$3,161,357	$419,835	$2,934,698	$3,354,533	$3,359,246	($4,713)
Employee Benefits (520's)	$22,244	$23,175	$0	$26,850	$26,850	$26,850	$0
Purchased Prof. Services (530's)	$0	$0	$0	$0	$0	$0	$0
Purch. Property Services (540's)	$5,117,884	$5,204,866	$65,704	$6,175,701	$6,241,405	$6,241,405	$0
Supplies (560's)	$160,316	$115,210	$784	$125,716	$126,500	$126,500	$0
Other Objects (580's)	$0	$0	$0	$0	$0	$0	$0
TOTAL	$8,427,460	$8,504,608	$486,323	$9,262,965	$9,749,288	$9,754,001	($4,713)

Includes projection for filling of existing vacancies - $135,000
Payroll Projections include salary accrual of: $75,000

Bi-Weekly PP posted 9/17/2026	$8,510
Weekly PP posted 9/17/2026	$48,661
Seasonal Wages posted 9/17/2026	$5,054

4100003 STREET DEPARTMENT

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$1,247,515	$1,312,185	$163,320	$1,387,766	$1,551,086	$1,560,520	($9,434)
Personal Services-Overtime (102)	$344,531	$547,330	$10,956	$309,044	$320,000	$320,000	$0
Personal Services-Other (other 100's)	$54,981	$70,611	$10,851	$66,441	$77,292	$77,292	$0
Sub-Total--Personal Services	$1,647,028	$1,930,126	$185,126	$1,763,252	$1,948,378	$1,957,812	($9,434)
Employee Benefits (520's)	$22,790	$28,412	$48	$31,010	$31,058	$31,058	$0
Purchased Prof. Services (530's)	$1,000	$2,100	$4,000	$0	$4,000	$4,000	$0
Purch. Property Services (540's)	$187,943	$146,535	$7,587	$205,413	$213,000	$213,000	$0
Purch. Other Services (550's)	$0	$0	$0	$300	$300	$300	$0
Supplies (560's)	$1,368,255	$1,374,710	$121,709	$1,324,291	$1,446,000	$1,446,000	$0
Other Objects (580's)	$48,000	$48,000	$4,000	$45,020	$49,020	$49,020	$0
TOTAL	$3,275,016	$3,529,883	$322,471	$3,369,285	$3,691,756	$3,701,190	($9,434)

Includes projection for filling of existing vacancies - $235,000
Payroll Projections include salary accrual of: $40,000

Bi-Weekly PP posted 9/17/2026	$7,288
Weekly PP posted 9/17/2026	$21,646
Seasonal Wages posted 9/17/2026	$3,567

4100004 NORTH END DISPOSAL

Description	6/30/25 FY25 Actual	6/30/26 FY26 Actual	Year to Date **As of 8/31/26**	Projected 10 months	Projected at Year End	FY27 Approved Budget	Variance Over/(Under)
Personal Services-Salaries (100, 101)	$240,150	$256,928	$32,642	$221,488	$254,130	$252,304	$1,826
Personal Services-Overtime (102)	$10,752	$12,229	$403	$11,597	$12,000	$12,000	$0
Personal Services-Other (other 100's)	$0	$152	$0	$0	$0	$0	$0
Sub-Total--Personal Services	$250,902	$269,309	$33,045	$233,085	$266,130	$264,304	$1,826
Employee Benefits (520's)	$485	$0	$0	$800	$800	$800	$0
Purchased Prof. Services (530's)	$14,775	$32,500	$900	$23,950	$24,850	$24,850	$0
Purch. Property Services (540's)	$43,980	$33,814	$357	$70,395	$70,752	$70,752	$0
Purch. Other Services (550's)	$0	$0	$0	$0	$0	$0	$0
Supplies (560's)	$13,397	$16,486	$0	$28,858	$28,858	$28,858	$0
Other Objects (580's)	$99	$40	$80	$160	$240	$240	$0
TOTAL	$323,637	$352,150	$34,382	$357,247	$391,630	$389,804	$1,826

Payroll Projections include salary accrual of: $8,000
Includes projection for filling of existing vacancies - $0

Bi-Weekly PP posted 9/17/2026 $4,586
Weekly PP posted 9/17/2026 $2,559

WATERBURY POLICE DEPARTMENT
THREE YEAR HISTORY - WEEKLY OVERTIME COSTS

FY24	FY25	FY26	FY27	Pay Period Posted	Pay P. Count	FY27 Estimates	Diff. In Estimates
$22,031	$0	$17,999	$5,485	7/9/26	1 B	$5,485	($12,514)
$126,420	$94,281	$77,561	$93,544	7/16/26	2	$93,544	$15,983
$108,143	$98,147	$105,591	$87,707	7/23/26	3 B	$87,707	($17,884)
$103,693	$97,856	$71,760	$61,582	7/30/26	4	$61,582	($10,178)
$91,317	$77,422	$81,977	$74,237	8/6/26	5 B	$74,237	($7,740)
$112,376	$73,964	$75,078	$77,516	8/13/26	6	$77,516	$2,438
$103,166	$89,066	$87,886	$75,751	8/20/26	7 B	$75,751	($12,135)
$82,785	$82,200	$86,521	$89,367	8/27/26	8	$89,367	$2,846
$97,486	$89,952	$108,683	$86,280	9/3/26	9 B	$86,280	($22,403)
$82,357	$73,009	$89,754	$60,464	9/10/26	10	$60,464	($29,290)
$104,077	$89,126	$99,482	$56,309	9/17/26	11 B	$56,309	($43,173)
$106,709	$59,079	$90,038		9/24/26	12	$61,000	$0
$83,768	$103,422	$105,195		10/1/26	13 B	$61,000	$0
$75,946	$94,169	$89,643		10/8/26	14	$61,000	$0
$96,403	$91,917	$88,438		10/15/26	15 B	$61,000	$0
$88,082	$71,726	$78,849		10/22/26	16	$61,000	$0
$95,231	$109,224	$101,190		10/29/26	17 B	$61,000	$0
$69,080	$70,452	$92,166		11/5/26	18	$61,000	$0
$91,959	$79,717	$113,584		11/12/26	19 B	$61,000	$0
$94,202	$63,524	$82,378		11/19/26	20	$61,000	$0
$101,431	$81,556	$77,591		11/25/26	21 B	$61,000	$0
$104,805	$74,728	$110,478		12/3/26	22	$61,000	$0
$83,430	$64,561	$81,987		12/10/26	23 B	$61,000	$0
$85,913	$71,058	$66,104		12/17/26	24	$61,000	$0
$100,988	$70,066	$81,408		12/24/26	25 B	$61,000	$0
$114,721	$53,181	$51,304		12/31/26	26	$61,000	$0
$96,254	$59,536	$94,427		1/7/27	27 B	$61,000	$0
$65,636	$70,994	$72,335		1/14/27	28	$61,000	$0
$78,902	$87,038	$80,383		1/21/27	29 B	$61,000	$0
$76,953	$67,263	$84,891		1/28/27	30	$61,000	$0
$84,597	$96,644	$89,760		2/4/27	31 B	$61,000	$0
$100,588	$57,039	$63,808		2/11/27	32	$61,000	$0
$88,353	$86,936	$86,165		2/18/27	33 B	$61,000	$0
$78,026	$50,779	$81,391		2/25/27	34	$61,000	$0
$65,631	$92,478	$79,872		3/4/27	35 B	$61,000	$0
$73,136	$110,248	$69,379		3/11/27	36	$61,000	$0
$62,277	$86,963	$92,145		3/18/27	37 B	$61,000	$0
$72,809	$79,697	$74,987		3/25/27	38	$61,000	$0
$71,391	$76,138	$91,693		4/1/27	39 B	$61,000	$0
$62,910	$85,054	$90,599		4/8/27	40	$61,000	$0
$90,506	$79,841	$116,533		4/15/27	41 B	$61,000	$0
$63,320	$81,553	$95,615		4/22/27	42	$61,000	$0
$93,174	$105,297	$112,240		4/29/27	43 B	$61,000	$0
$76,966	$84,571	$99,035		5/6/27	44	$61,000	$0
$88,097	$77,013	$100,911		5/13/27	45 B	$61,000	$0
$93,567	$79,791	$99,109		5/20/27	46	$61,000	$0
$97,412	$103,821	$94,450		5/27/27	47 B	$61,000	$0
$83,190	$117,960	$100,442		6/3/27	48	$61,000	$0
$115,077	$96,866	$109,273		6/10/27	49 B	$61,000	$0
$85,236	$74,349	$87,416		6/17/27	50	$61,000	$0
$63,243	$97,451	$95,523		6/24/27	51 B	$61,000	$0
$83,776	$63,599	$79,431		7/1/27	52	$61,000	$0
$81,716	$73,710	$110,159		7/8/27	53 B	$61,000	$0
Grant Credits/Adjustments	($225,114)	($356,280)	($328,325)	($165,325)		($165,325)	
Total Cost	$4,394,146	$3,909,751	$4,336,288	$602,918		$3,164,918	($134,051)
Budgeted Amount	$2,700,000	$3,200,000	$3,200,000	$3,200,000		$3,200,000	Adj. in Rprt
Budgetary Diff.	($1,694,146)	($709,751)	($1,136,288)	$2,597,082		$35,082	

Average of last 11 weeks worked	**$69,840**
Current fiscal year weekly OT average	**$54,811**
Prior fiscal year weekly OT average	**$83,390**

WATERBURY FIRE DEPARTMENT
THREE YEAR HISTORY - WEEKLY OVERTIME COSTS

FY24	FY25	FY26	FY27	Pay Period Posted	Pay P. Count	FY27 Estimates	Diff. In Estimates
$45,949	$34,851	$19,899	$5,102	7/9/26	1 B	$5,102	($14,797)
$58,626	$41,499	$95,294	$79,375	7/16/26	2	$79,375	($15,920)
$37,886	$35,147	$67,414	$77,671	7/23/26	3 B	$77,671	$10,258
$49,827	$38,417	$53,248	$75,146	7/30/26	4	$75,146	$21,898
$59,905	$43,227	$51,736	$96,424	8/6/26	5 B	$96,424	$44,688
$55,656	$47,132	$82,043	$71,012	8/13/26	6	$71,012	($11,030)
$69,394	$27,790	$34,686	$79,170	8/20/26	7 B	$79,170	$44,485
$45,077	$36,344	$33,250	$86,317	8/27/26	8	$86,317	$53,066
$58,036	$49,631	$46,929	$69,801	9/3/26	9 B	$69,801	$22,872
$72,009	$53,186	$33,416	$84,793	9/10/26	10	$84,793	$51,376
$47,750	$60,789	$46,845	$84,396	9/17/26	11 B	$84,396	$37,551
$56,627	$71,314	$39,542		9/24/26	12	$44,000	$0
$56,262	$74,156	$53,902		10/1/26	13 B	$44,000	$0
$52,678	$43,460	$33,913		10/8/26	14	$44,000	$0
$52,819	$54,366	$28,478		10/15/26	15 B	$44,000	$0
$55,844	$46,203	$32,522		10/22/26	16	$44,000	$0
$62,849	$54,640	$28,196		10/29/26	17 B	$44,000	$0
$49,647	$41,202	$32,417		11/5/26	18	$44,000	$0
$60,634	$62,766	$32,895		11/12/26	19 B	$44,000	$0
$48,636	$39,772	$33,917		11/19/26	20	$44,000	$0
$59,423	$57,087	$37,451		11/25/26	21 B	$44,000	$0
$56,595	$64,447	$41,423		12/3/26	22	$44,000	$0
$50,944	$54,451	$52,042		12/10/26	23 B	$44,000	$0
$50,792	$55,093	$51,554		12/17/26	24	$44,000	$0
$81,571	$48,472	$102,126		12/24/26	25 B	$44,000	$0
$74,699	$82,527	$60,060		12/31/26	26	$44,000	$0
$58,834	$65,008	$88,765		1/7/27	27 B	$44,000	$0
$38,959	$20,673	$34,073		1/14/27	28	$44,000	$0
$44,011	$51,776	$18,757		1/21/27	29 B	$44,000	$0
$28,920	$41,486	$48,109		1/28/27	30	$44,000	$0
$24,139	$37,307	$39,170		2/4/27	31 B	$44,000	$0
$11,129	$32,687	$25,812		2/11/27	32	$44,000	$0
$19,012	$48,537	$31,014		2/18/27	33 B	$44,000	$0
$6,818	$40,101	$35,057		2/25/27	34	$44,000	$0
$15,625	$50,065	$40,883		3/4/27	35 B	$44,000	$0
$8,726	$33,284	$25,941		3/11/27	36	$44,000	$0
$15,318	$31,237	$42,399		3/18/27	37 B	$44,000	$0
$14,012	$40,477	$32,403		3/25/27	38	$44,000	$0
$15,116	$41,148	$41,095		4/1/27	39 B	$44,000	$0
$12,198	$30,390	$24,671		4/8/27	40	$44,000	$0
$20,217	$28,405	$37,680		4/15/27	41 B	$44,000	$0
$22,468	$36,901	$41,699		4/22/27	42	$44,000	$0
$17,400	$55,745	$30,130		4/29/27	43 B	$44,000	$0
$14,550	$52,726	$40,959		5/6/27	44	$44,000	$0
$13,406	$46,365	$52,035		5/13/27	45 B	$44,000	$0
$20,721	$58,902	$53,558		5/20/27	46	$44,000	$0
$21,114	$59,779	$47,155		5/27/27	47 B	$44,000	$0
$25,778	$58,482	$51,107		6/3/27	48	$44,000	$0
$18,857	$47,892	$66,836		6/10/27	49 B	$44,000	$0
$26,671	$77,345	$62,002		6/17/27	50	$44,000	$0
$43,524	$57,656	$60,025		6/24/27	51 B	$44,000	$0
$24,437	$66,713	$75,599		7/1/27	52	$44,000	$0
$637	$44,764	$97,778		7/8/27	53 B	$44,000	$0
Grant Credits/Adjustments	($78,640)	($39,845)	($2,477)			$0	
Total Cost	$1,974,090	$2,533,976	$2,467,431	$809,207		$2,657,207	$244,447
Budgeted Amount	$2,050,000	$2,050,000	$2,415,000	$2,300,000		$2,300,000	Adj. in Rprt
Budgetary Diff.	$75,910	($483,976)	($52,431)	$1,490,793		($357,207)	

Average of last 11 weeks worked	**$73,564**
Current fiscal year weekly OT average	**$73,564**
Prior fiscal year weekly OT average	**$47,451**

PROPERTY TAX COLLECTIONS REPORT FOR FY26 AND FY27

PROPERTY TAX COLLECTION AND PROJECTION REPORT: THROUGH AUGUST 31, 2026

	Current Collected	Remaining Current	All Collected	All at Yr End
FY26	$148,038,976	$114,093,631	$ 149,648,888	$ 272,214,968
FY27	$156,709,099	$108,550,000	$ 158,092,055	$ 274,185,266
	$8,670,122	($5,543,631)	$ 8,443,167	$ 1,970,298
	5.86%	-4.86%	5.64%	0.72%

	Current Year Taxes		Prior Year Taxes		Supplemental MV		Interest Current Year Tx		Interest Prior Year Taxes		Total	Total
	Actual	YTD & Proj	Actual	YTD & Proj	Actual	YTD & Proj	Actual	YTD & Proj	Actual	YTD & Proj	Collections	Collections
Month	FY 26	FY 27	FY 26	FY 27	FY 26	FY 27	FY 26	FY 27	FY 26	FY 27	FY 26	FY 27
July	$96,231,672	$142,060,395	$490,021	$315,979	$0	$0	$83,859	$91,741	$276,346	$262,932	$97,081,897	$142,731,047
August	$51,807,305	$14,648,704	$465,077	$463,424	$0	$0	$69,588	$76,978	$225,022	$171,903	$52,566,991	$15,361,008
Subtotal Collection	$148,038,976	$156,709,099	$955,098	$779,402	$0	$0	$153,447	$168,719	$501,367	$434,835	$149,648,888	$158,092,055
September	$3,590,182	$3,500,000	$292,754	$250,000	$0	$0	$152,883	$150,000	$244,470	$225,000	$4,280,289	$4,125,000
October	$1,785,418	$1,800,000	$404,642	$400,000	$0	$0	$60,096	$60,000	$238,013	$230,000	$2,488,169	$2,490,000
November	$1,581,110	$1,600,000	$370,042	$375,000	$0	$0	$56,413	$55,000	$177,196	$175,000	$2,184,761	$2,205,000
December	$26,537,508	$26,600,000	$341,431	$340,000	$4,919	$0	$59,916	$60,000	$190,138	$190,000	$27,133,912	$27,190,000
January	$52,435,200	$52,500,000	($43,847)	$100,000	$1,090,825	$1,100,000	$86,473	$85,000	$135,245	$135,000	$53,703,898	$53,920,000
February	$11,159,349	$10,750,000	$367,581	$300,000	$831,014	$825,000	$143,539	$145,000	$213,113	$210,000	$12,714,596	$12,230,000
March	$12,944,563	$8,300,000	$425,550	$400,000	$379,404	$375,000	$1,070,567	$1,100,000	$293,405	$290,000	$15,113,489	$10,465,000
April	$1,468,611	$1,550,000	$368,508	$350,000	$152,761	$150,000	$137,446	$135,000	$273,587	$275,000	$2,400,914	$2,460,000
May	$932,580	$975,000	$187,485	$175,000	$116,370	$115,000	$118,647	$120,000	$206,266	$200,000	$1,561,348	$1,585,000
June	$1,659,110	$975,000	$223,737	$200,000	$92,279	$95,000	$145,142	$140,000	$223,905	$215,000	$2,344,172	$1,625,000
Subtotal Collection	$114,093,631	$108,550,000	$2,937,883	$2,890,000	$2,667,573	$2,660,000	$2,031,122	$2,050,000	$2,195,338	$2,145,000	$123,925,547	$118,295,000
Subtotal Collection	$262,132,608	$265,259,099	$3,892,980	$3,669,402	$2,667,573	$2,660,000	$2,184,569	$2,218,719	$2,696,705	$2,579,835	$273,574,435	$276,387,055
% of Budget	102.1%	100.9%	106.7%	100.5%	102.6%	102.3%	198.6%	201.7%	122.6%	117.3%	102.8%	101.5%
% of Levy	97.9%	96.0%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
60 day entry			($198,000)	($51,000)							($198,000)	($51,000)
60 day entry			$51,000	$150,000							$51,000	$150,000
Adj. (3rd party fees)			($1,255,713)	($1,300,788)							($1,255,713)	($1,300,788)
Adj. Overpayments			$43,246	($1,000,000)							$43,246	($1,000,000)
Total Year-End	$ 262,132,608	$ 265,259,099	$ 2,533,513	$ 1,467,614	$ 2,667,573	$ 2,660,000	$ 2,184,569	$ 2,218,719	$ 2,696,705	$ 2,579,835	$ 272,214,968	$ 274,185,266
% of Budget	102.1%	100.9%	69.4%	40.2%	102.6%	102.3%	198.6%	201.7%	122.6%	117.3%	102.3%	100.7%
% of Levy	97.9%	96.0%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Budget	$ 256,657,334	$ 262,838,098	$ 3,650,000	$ 3,650,000	$ 2,600,000	$ 2,600,000	$ 1,100,000	$ 1,100,000	$ 2,200,000	$ 2,200,000	$ 266,207,334	$ 272,388,098
Adjusted Levy	$267,850,878	$276,244,696	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Budget Collect %	96.0%	96.0%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Mill Rate	44.98	43.34										
Italics=Projected												

Total Collections	Actuals FY 26	Actuals FY 27	Incremental Difference	Percentage Difference
July	$97,081,897	$142,731,047	$45,649,150	47.02%
August	$52,566,991	$15,361,008	($37,205,983)	-70.78%
Totals	$149,648,888	$158,092,055	$8,443,167	5.64%

	Projection For September	Actuals as of 9/17/26	9 days Balance to Collect	Potential Tax Impact $ 1,797,168
Current Taxes	$3,500,000	$2,699,821	($800,179)	$88,909
Prior Year Taxes	$250,000	$500,881	$250,881	($27,876)
Supplemental	$0	$0	$0	$0
Current Interest	$150,000	$101,088	($48,912)	$5,435
Prior Interest	$225,000	$120,827	($104,173)	$11,575
Total	$4,125,000	$3,422,617	($702,383)	$78,043

City of Waterbury
Revenue Collection and
Contractual Disbursements

REVENUE COLLECTED
FISCAL YEAR 2026–2027

CURRENT TAXES	$156,455,017.63
CURRENT INTEREST	$156,455,017.63
WATER COLLECTIONS	$603,421.56
PRIOR TAXES	$1,451,383.48
PRIOR INTEREST	$299,433.10
LIENS	$4,794.00
*FEES	$277,387.94
PARKING	$23,120.00
ADVANCE OF LEVY	$0.00
OVERAGES AND SHORTAGES	$3,095.68
SUBTOTAL	$156,455,017.63
	$0.00
DEFFERRED REVENUE	$0.00
	$0.00
TOTAL REVENUE COLLECTED	$156,455,017.63
	$0.00
60 DAY ENTRY	$0.00
BOUNCED CHECKS	$385,656.03
REFUNDS	$41,958.99
BANK FEES	$0.00
TAXSERV FEES	$119,554.15
	$0.00
SUBTOTAL	$547,169.17
	$0.00
MTS TAX AND INTEREST @ 45%	$27,913.45
CAPITAL TAX RECOVERY TAX AND INTEREST @ 40%	$11,916.00
CTR $50 PER PLATE FEE	$4,650.00
	$0.00
SUBTOTAL	$44,479.45
	$0.00
TOTAL CONTRACTUAL DISBURSEMENTS	$591,648.62
	$0.00
REVENUE COLLECTED FISCAL YEAR 2026–2027	$156,455,017.63
	$0.00
LESS CONTRACTUAL DISBURSMENTS, BOUNCED CHECKS AND REFUNDS	$591,648.62
	$0.00
TOTAL REVENUE FOR CITY OF WATERBURY	$156,455,017.63

* FEES - WARRANTS, CT FRAUD, TAXSERV, NSF CHECKS, & CREDIT CARD

City of Waterbury
Revenue Collection and
Contractual Disbursements

REVENUE COLLECTED
JULY 2026

CURRENT TAXES	$141,624,853.47
CURRENT INTEREST	$0.00
WATER COLLECTIONS	$392,909.68
PRIOR TAXES	$975,174.03
PRIOR INTEREST	$182,446.75
LIENS	$3,242.00
*FEES	$177,493.02
PARKING	$13,350.00
ADVANCE OF LEVY	$0.00
OVERAGES AND SHORTAGES	$204.25
SUBTOTAL	$143,369,673.20
DEFFERRED REVENUE	$0.00
TOTAL REVENUE COLLECTED	$143,369,673.20
60 DAY ENTRY	$0.00
BOUNCED CHECKS	$186,140.66
REFUNDS	$41,958.99
BANK FEES	$0.00
TAXSERV FEES	$72,323.37
SUBTOTAL	$300,423.02
MTS TAX AND INTEREST @ 45%	$14,068.71
CAPITAL TAX RECOVERY TAX AND INTEREST @ 40%	$2,299.30
CTR $50 PER PLATE FEE	$950.00
SUBTOTAL	$17,318.01
TOTAL CONTRACTUAL DISBURSEMENTS	$317,741.03
REVENUE COLLECTED FISCAL YEAR 2026–2027	$143,369,673.20
LESS CONTRACTUAL DISBURSMENTS, BOUNCED CHECKS AND REFUNDS	$317,741.03
TOTAL REVENUE FOR CITY OF WATERBURY	$143,051,932.17

* FEES - WARRANTS, CT FRAUD, TAXSERV, NSF CHECKS, & CREDIT CARD

City of Waterbury
Revenue Collection and
Contractual Disbursements

REVENUE COLLECTED
AUGUST 2026

CURRENT TAXES	$14,830,164.16
CURRENT INTEREST	$93,306.25
WATER COLLECTIONS	$210,511.88
PRIOR TAXES	$476,209.45
PRIOR INTEREST	$116,986.35
LIENS	$1,552.00
*FEES	$99,894.92
PARKING	$9,770.00
ADVANCE OF LEVY	$0.00
OVERAGES AND SHORTAGES	$2,891.43
SUBTOTAL	$15,841,286.44
DEFFERRED REVENUE	$0.00
TOTAL REVENUE COLLECTED	$15,841,286.44
60 DAY ENTRY	$0.00
BOUNCED CHECKS	$199,515.37
REFUNDS	$0.00
BANK FEES	$0.00
TAXSERV FEES	$47,230.78
SUBTOTAL	$246,746.15
MTS TAX AND INTEREST @ 45%	$13,844.74
CAPITAL TAX RECOVERY TAX AND INTEREST @ 40%	$9,616.70
CTR $50 PER PLATE FEE	$3,700.00
SUBTOTAL	$27,161.44
TOTAL CONTRACTUAL DISBURSEMENTS	$273,907.59
REVENUE COLLECTED FISCAL YEAR 2026–2027	$15,841,286.44
LESS CONTRACTUAL DISBURSMENTS, BOUNCED CHECKS AND REFUNDS	$273,907.59
TOTAL REVENUE FOR CITY OF WATERBURY	$15,567,378.85

* FEES - WARRANTS, CT FRAUD, TAXSERV, NSF CHECKS, & CREDIT CARD

STATE AID FORMULA GRANTS	FY26 ACTUAL RECEIPTS	FY27 CITY ADOPTED BUDGET	RECEIVED TO DATE As of 8/31/26	BALANCE TO BE RECEIVED	TOTAL COLLECTED AT YEAR END	BUDGET IMPACT AT YEAR END
STATE AID - FORMULA GRANTS - CITY						
P.I.L.O.T. -- TIERED REIMBURSEMENT	$9,118,075	$8,692,290	$0	$8,692,290	$8,692,290	$0
PEQUOT -- STATE PROPERTIES GRANT	$2,637,435	$2,637,435	$0	$2,637,435	$2,637,435	$0
MUNICIPAL REVENUE SHARING	$0	$0	$0	$0	$0	$0
MRSA-MOTOR VEHICLES	$13,005,170	$8,755,672	$8,755,672	$0	$8,755,672	$0
SUPPLEMENTAL REVENUE SHARING GRANT	$5,614,605	$8,582,559	$0	$8,582,559	$8,582,559	$0
MUNICIPAL STABILIZATION GRANT	$0	$0	$0	$0	$0	$0
SUPPLEMENTAL PEQUOT MOHEGAN GRANT	$0	$5,114,077	$0	$5,114,077	$5,114,077	$0
Subtotal	$30,375,285	$33,782,033	$8,755,672	$25,026,361	$33,782,033	$0
STATE AID - FORMULA GRANTS - EDUCATION						
EDUCATION EQUALIZATION (ECS)	$113,512,553	$113,617,182	$0	$113,617,182	$113,617,182	$0
NON-PUBLIC SCHOOL TRANSPORTATION	$0	$0	$0	$0	$0	$0
PUBLIC SCHOOL TRANSPORTATION	$0	$0	$0	$0	$0	$0
Subtotal	$113,512,553	$113,617,182	$0	$113,617,182	$113,617,182	$0
Subtotal - Formula Grants	$143,887,838	$147,399,215	$8,755,672	$138,643,543	$147,399,215	$0
STATE AID - REIMBURSEMENTS						
EXEMPTIONS FOR ELDERLY	$11,339	$20,000	$0	$20,000	$20,000	$0
VETERANS ADDITIONAL EXEMPTION	$34,625	$100,000	$0	$100,000	$100,000	$0
ABATEMENT FOR ELDERLY HOUSING	$0	$0	$0	$0	$0	$0
DISTRESSED MUNICIPALITIES	$0	$0	$0	$0	$0	$0
STATE AID - REIMBURSEMENTS - EDUCATION						
SPECIAL EDUCATION REIMBURSEMENTS	$5,460,745	$5,400,000	$0	$5,400,000	$5,400,000	$0
NON-PUBLIC SCHOOL SERVICE (NURSES)	$281,249	$270,000	$0	$270,000	$270,000	$0
SPECIAL EDUCATION - MEDICAID GRANT	$1,301,367	$850,000	$0	$850,000	$850,000	$0
STATE GRANT - OTHER	$193,338	$175,000	$0	$175,000	$175,000	$0
Subtotal	$7,282,663	$6,815,000	$0	$6,815,000	$6,815,000	$0
Total	$151,170,501	$154,214,215	$8,755,672	$145,458,543	$154,214,215	$0

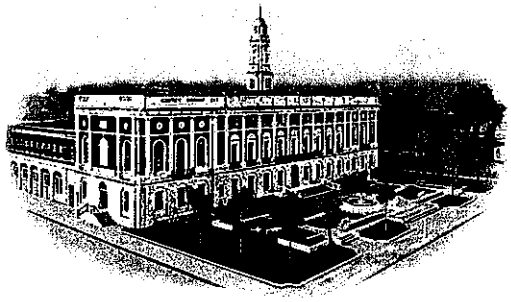
CITY OF WATERBURY - PENSION PLAN

Pension Plan Payments to Retirees

	Fiscal Year 20/21	Fiscal Year 21/22	Fiscal Year 22/23	Fiscal Year 23/24	Fiscal Year 24/25	Fiscal Year 25/26		Fiscal Year 26/27
July	$4,203,851	$4,228,120	$4,300,182	$4,368,772	$4,443,042	$4,547,503		$4,560,214
August	$4,208,925	$4,236,796	$4,305,591	$4,405,472	$4,480,321	$4,562,435		$4,773,992
September	$4,193,764	$4,235,959	$4,278,994	$4,413,460	$4,481,613	$4,557,798		$4,557,798
October	$4,212,863	$4,273,684	$4,311,462	$4,403,007	$4,493,003	$4,563,242		$4,563,242
November	$4,215,503	$4,273,008	$4,314,876	$4,410,718	$4,488,471	$4,556,209		$4,556,209
December	$4,189,544	$4,255,506	$4,319,215	$4,411,232	$4,625,674	$4,547,096		$4,547,096
January	$4,191,130	$4,268,555	$4,295,177	$4,381,509	$4,487,711	$4,547,244		$4,547,244
February	$4,207,153	$4,256,974	$4,342,060	$4,399,507	$4,474,650	$4,507,746		$4,507,746
March	$4,189,044	$4,278,719	$4,340,141	$4,426,356	$4,491,880	$4,520,919		$4,520,919
April	$4,192,081	$4,273,265	$4,367,057	$4,415,428	$4,511,668	$4,539,764		$4,539,764
May	$4,207,456	$4,285,305	$4,374,569	$4,457,190	$4,476,115	$4,543,540		$4,543,540
June	$4,205,884	$4,296,865	$4,369,321	$4,449,218	$4,504,396	$4,552,087		$4,552,087
Total	$50,417,198	$51,162,756	$51,918,647	$52,941,870	$53,958,541	$54,545,582		$54,769,849
GF Contribution	$21,829,498	$22,515,092	$23,545,674	$23,100,463	$24,709,249	$26,282,479		$27,253,550
Interest Needed	($28,587,700)	($28,647,664)	($28,372,973)	($29,841,407)	($29,249,292)	($28,263,103)		($27,516,299)
Bold = Actuals								
Italics = Projections								

	Fiscal Year 20/21	Fiscal Year 21/22	Fiscal Year 22/23	Fiscal Year 23/24	Fiscal Year 24/25	Fiscal Year 25/26		Fiscal Year 26/27
July	$574,007	$572,905	$423,319	$451,727	$512,179	$653,040		$695,805
August	$416,649	$419,016	$466,433	$547,463	$620,580	$552,977		$556,422
September	$486,596	$566,295	$615,394	$535,425	$580,041	$603,952		$603,952
October	$587,591	$830,861	$511,309	$554,886	$782,083	$811,931		$811,931
November	$500,243	$498,554	$501,712	$734,249	$593,088	$650,380		$650,380
December	$840,782	$828,027	$829,206	$738,478	$808,147	$959,859		$959,859
January	$500,735	$486,847	$490,128	$556,713	$688,090	$612,507		$612,507
February	$506,307	$495,609	$593,736	$667,451	$600,866	$632,544		$632,544
March	$499,113	$583,343	$594,800	$571,793	$606,981	$627,451		$627,451
April	$584,268	$496,610	$502,863	$573,334	$601,583	$829,057		$829,057
May	$508,838	$487,637	$505,852	$755,578	$802,805	$705,642		$705,642
June	$498,536	$642,512	$706,816	$555,490	$606,126	$641,466		$641,466
Total	$6,503,665	$6,908,218	$6,741,567	$7,242,587	$7,802,570	$8,280,806		$8,327,016

SARAH R. GEARY
MANAGER OF BUDGET
DEVELOPMENT AND OVERSIGHT



OFFICE OF BUDGET CONTROL

THE CITY OF WATERBURY

CONNECTICUT

To: The Honorable Board of Aldermen

From: Sarah R. Geary, Manager of Budget Development and Oversight SRG

Date: September 24, 2026

Subject: Budget Transfer – Capital Improvement Fund FY27

At the request of the Mayor, please give favorable consideration to this budget transfer from the City's **Capital Improvement Fund** for the Fiscal Year ending June 30, 2027 in the amount of $4,000,000.

Department/Account	Acct. Unit	Activity #	Acct #	Budget	Projected	From	To
Capital Improvement Fund							
Unallocated Capital	60180	6018021999995	547000	$9,733,820	$5,733,820	$4,000,000	
Public Works							
Chase Municipal Building Rehabilitation	60119	6011941028245	547000	$30,000,000	$34,000,000		$4,000,000
Total CIF Transfers						**$4,000,000**	**$4,000,000**

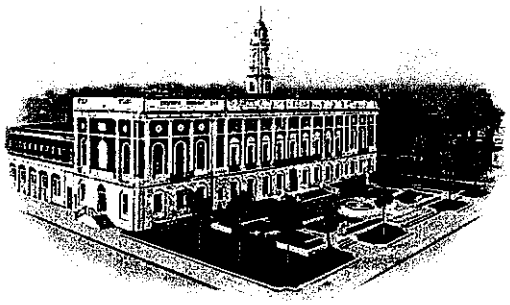
This budget transfer would move $4,000,000 from the Unallocated Capital account to an existing capital project for the rehabilitation of the Chase Municipal Building. The Board of Aldermen approved a capital appropriation and bond authorization in the amount of $30 million for the Chase Municipal Building Rehabilitation project on January 23, 2023. At that time, the project construction cost was estimated to be $25 million with the remaining $5 million being needed for design/engineering, construction administration services, commissioning agent services, legal expenses and bond issuance costs, along with costs associated with employee swing space fit-out and a modest contingency. Moving forward with the construction RFP was significantly delayed as the City and architect worked through the State Historical Preservation Commission's review and acceptance of several renovation components of the project, particularly with regards to the windows.

Responses to a Request for Proposals (RFP) for the Chase Municipal Building Rehabilitation project were recently received and evaluated, with KBE Building Corporation being selected as the contractor for the project. The final construction contract amount came in at $28.2 million, which is $3.2 million more than the initial project estimate from several years ago. The existing budget for this project currently has an available balance of $24.9 million, with nearly $5 million being spent on or currently committed to the ancillary project costs previously mentioned. The scope of the construction project includes site, building facade and exterior landscaping improvements, installation of new building mechanical, electrical, plumbing and fire protection systems, interior renovations, elevator replacements, code upgrades, window replacements, roof replacement and selective demolition and abatement throughout. In order to fully fund the construction contract and any remaining ancillary costs, we are requesting approval of this budget transfer in the amount of $4 million.

This request has been vetted by the Office of Budget Control and the Mayor's Office. We respectfully request approval of this item by the Board of Aldermen at its meeting on October 5, 2026.

cc: The Honorable Paul K. Pernerewski, Jr., Mayor, City of Waterbury
Joseph A. Geary, Chief of Staff, City of Waterbury
Judith Mancini, Advisor to the Mayor, City of Waterbury
Michael LeBlanc, Finance Director, City of Waterbury
Michael Dalton, City Clerk, City of Waterbury
File

SARAH R. GEARY
MANAGER OF BUDGET
DEVELOPMENT AND OVERSIGHT



OFFICE OF BUDGET CONTROL

THE CITY OF WATERBURY

CONNECTICUT

To: The Honorable Board of Aldermen

From: Sarah R. Geary, Manager of Budget Development and Oversight

Date: September 24, 2026

Subject: Budget Transfer – Capital Improvement Fund FY27

At the request of the Mayor, please give favorable consideration to this budget transfer from the City's **Capital Improvement Fund** for the Fiscal Year ending June 30, 2027 in the amount of $1,850,000.

Department/Account	Acct. Unit	Activity #	Acct #	Available	Projected	From	To
Capital Improvement Fund							
Unallocated Capital	60180	6018021999995	547000	$5,733,820	$3,883,820	$1,850,000	
WDC							
Waterbury Community Health Resource Center	60061	60061	547000	$0	$1,850,000		$1,850,000
Total CIF Transfers						**$1,850,000**	**$1,850,000**

This budget transfer would move $1,850,000 from the Unallocated Capital account to a project for the renovation of the Waterbury Community Health Resource Center. This project was awarded a $5 million federal Congressionally Directed Spending Grant administered by the Health Resources & Services Administration. The requested budget transfer of $1,850,000 would supplement the grant funding and allow the City to fully fund a construction contract with J.A. Rosa Construction in the amount of $6,850,000. The construction contract is a separate item on your agenda for approval.

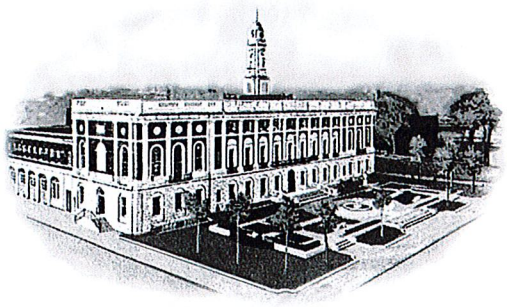
The Waterbury Community Health Resource Center project will upgrade the former church located at 24 Branch Street to provide a fully accessible, clean, and secured facility to be utilized for City public health functions as well as a completed shell ready to market to medical tenants. The project's scope includes the remediation and full removal of hazardous materials and demolition of interior walls and components, full roof and glazing assembly replacements, full site utilities and core infrastructure components to support the anticipated full future fit outs, as well as a total overhaul of the existing grounds to provide parking and vehicular site access. Other upgrades will include improved site and building accessibility and the creation of a new core restroom. Once completed, this facility is intended to help attract potential healthcare suitors to provide and support program functions including adult and pediatric dental facilities, adult and pediatric mental health resources, primary care facilities, phlebotomy lab and a small pharmacy, as well as community and youth services spaces.

This request has been vetted by the Office of Budget Control and the Mayor's Office. We respectfully request approval of this item by the Board of Aldermen at its meeting on October 5, 2026.

cc: The Honorable Paul K. Pernerewski, Jr., Mayor, City of Waterbury
Joseph A. Geary, Chief of Staff, City of Waterbury
Judith Mancini, Advisor to the Mayor, City of Waterbury
Michael LeBlanc, Finance Director, City of Waterbury
James Nardozzi, Executive Director, Waterbury Development Corporation
Aisling McGuckin, Director of Public Health, City of Waterbury
Michael Dalton, City Clerk, City of Waterbury
File

#16

PAUL K. PERNEREWSKI, JR.
MAYOR



OFFICE OF THE MAYOR
THE CITY OF WATERBURY
CONNECTICUT

September 24, 2026

Timothy DeCarlo, President
Board of Agents of the Silas Bronson Library-
H-14 Clematis Avenue
Waterbury, CT 06708

Re: Appointments to Board of Agents of the Silas Bronson Library

Dear President DeCarlo:

Pursuant to Section 6E-1 (c)(1) of the Charter of the City of Waterbury, the following individual, having been nominated by the chair of the democratic town committee of the City of Waterbury, is hereby appointed to the Board of Agents of the Silas Bronson Library:

Democratic Town Committee Appointee	**Term of Appointment**
Naida M. Hall (D)	July 4, 2026-July 4, 2032

WATERBURY CITY CLERK
RECEIVED
2026 SEP 24 P 3:15

Respectfully submitted,

Paul K. Pernerewski, Jr.
Mayor, City of Waterbury

Cc: Michael Dalton, City Clerk

Office of the Corporation Counsel

THE CITY OF WATERBURY
CONNECTICUT

#17

ANGELA R. JULIANI
CORPORATION COUNSEL

LYNN M. MCHALE*
KEVIN J. DALY
RICHARD J. SCAPPINI
PAUL M. PIESZAK
JOSEPH W. BRITTON
KRISTEN M. NELSON
EVAN W. FOLEY

JUSTIN P. SOARES
ASSISTANT CORPORATION COUNSEL, INTERIM

JOSEPH A. MENGACCI
SPECIAL COUNSEL

235 GRAND STREET
WATERBURY, CT 06702
TELEPHONE: (203) 574-6731
FAX: (203) 574-8340

*Also admitted in Florida

WATERBURY CITY CLERK
RECEIVED
2026 SEP 24 P 4:07

September 24, 2026

Board of Aldermen
City of Waterbury
c/o Office of City Clerk
235 Grand Street
Waterbury, CT 06702

RE: Request for Public Hearing and Approval of Ordinance Creating a Loneliness and Social Isolation Commission

Dear Honorable Board Members:

On behalf of Alderman Kenneth Curran and Alderman John. Drewry, please see the attached Ordinance creating a Loneliness and Social Isolation Commission. I am hereby requesting that a public hearing be set to receive public comment and thereafter be approved by this Honorable Board of Aldermen.

Thank you for your attention to this matter.

Respectfully Submitted on Behalf of
Alderman Kenneth Curran
Alderman John Drewry

Justin P. Soares, Esq.
Interim Assistant Corporation Counsel

cc: Alderman Michael DiGiovancarlo
Mayor Paul K. Pernerewski, Jr.

Enc.

NEW DRAFT ORDINANCE

§ 31.012 LONELINESS AND SOCIAL ISOLATION COMMISSION

In accordance with the provisions of § 6D-1 of the Charter of the city, there shall be a Loneliness and Social Isolation Commission.

(A) *Membership, appointments, and terms of office*. The Loneliness and Social Isolation Commission shall consist of seven members, no more than four of whom shall be members of the same political party.

(1) The Mayor shall appoint all members in accordance with Section 4-2 (b) of the Charter. One member shall be a member of the Board of Aldermen, whose term shall correspond with that member's immediate term as an Alderman. Other members shall be health professionals, senior service providers, youth service providers, new parents, students, older adults, or caregivers.

(2) No later than sixty days after the effective date of this Ordinance, the Mayor shall appoint three members whose terms shall expire on December 31, 2027, and three members whose terms shall expire on December 31, 2029. At the end of their respective terms, their successors shall be appointed for a term of four years.

(B) *No compensation.* Members shall serve without compensation, but may be reimbursed for any expenses incurred under their official duties within the limitations of appropriations.

(C) *Organization of the Loneliness and Social Isolation Commission.* During its initial meeting, and in January of every even-numbered year after, the Commission shall select from among its members a chair, a secretary, and any other officers desired by the Commission.

(1) *Secretary and record keeping.* The Commission shall appoint a secretary with responsibility of all correspondence and record keeping. The Secretary shall forward copies of all things relevant to the City Clerk in accordance with the applicable law.

(2) *Meeting schedule.* The Commission shall meet on the third Tuesday of every month at 6:00 p.m., subject to any change in meeting schedule that the Commission may adopt in accordance with sections 31.285-31.286 of this code.

(3) *Authority and actions of members.* No member shall have any authority to act on behalf of the Commission except under order properly made at a regular meeting of the Commission.

(4) *Quorum and voting requirements.* Four members shall constitute a quorum and a concurrent vote of no fewer than four members shall be necessary for the transaction of business.

(5) *Public meetings and public participation.* All meetings shall be public, except executive sessions as defined in the State Freedom of Information Act or any successor. At the start of each regularly scheduled public meeting, the Commission shall allot a minimum of fifteen (15) minutes for public speaking.

(6) *Bylaws.* The Commission shall have the power to adopt its own bylaws for the conduct of its business in accordance with the foregoing.

(D) *Powers and duties.* The Commission shall have the power and duty to assess and address areas of need within the city for persons suffering from loneliness or social isolation, and shall make recommendations to the Board of Aldermen and the Mayor regarding addressing loneliness and social isolation. In assessing and addressing those issues, the Commission shall assess and address promoting stronger social connection and promoting improved physical, mental, and community health.

TAX COLLECTOR'S OFFICE

Memo

To: City Clerk's Office

From: Tax Collector

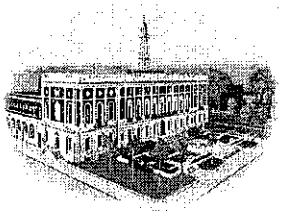
CC:

Date: 9/24/2026

Re: Tax Refunds for the Board of Aldermen meeting on October 5, 2026.

Please acknowledge receipts of the attached vouchers representing tax refunds to be approved by the Board of Aldermen meeting on October 5, 2026

The vouchers represent $23,378.22 in tax refunds.



OFFICE OF THE TAX COLLECTOR
THE CITY OF WATERBURY
CONNECTICUT

September 24, 2026

The Honorable Board of Aldermen
C/o City Clerk's Office
235 Grand St
Waterbury, CT 06702

Dear Honorable Board,

I hereby request that the following vouchers be approved by your Board. The vouchers represent tax refunds by the taxpayers for the tax bills as follows:

** SEE ATTACHED**

LIST YR	AC #	BILL #	NAME AND ADDRESS	AMOUNT	REASON
25mv	30007	various	Affordable Rental Car 2122 S Main St	$492.16	Excessive Payment
24mv	30039	various	Ally Financial PO Box 71119	$310.44	MV Adjustment
25mv	29942	52176	Maria or Eusebio Alves 476 Como Ave	$102.51	MV Adjustment
24mv	30064	62426	Vebi Coma 51 Harper Ave	$224.73	MV Adjustment
25mv	29943	63269	Raven Cooper 124 E Liberty St	$95.76	MV Adjustment
25real	29896	15049	Cotality 3001 Hackberry Rd	$3,541.96	Atty & mtg
25real	30050	1549	Cotality 3001 Hackberry Rd	$167.04	Excessive Payment
25real	30051	3541.96	Cotality 3001 Hackberry Rd	$2,246.55	Atty & veterans
24supp	30045	82442	Jonathan Crowder 34 Taft Pt	$306.03	Excessive Payment
24mv	29976	66916	Bobby Dickens 361 Scott Rd	$811.99	Excessive Payment
25mv	30034	77142	Kristen or Paul Gwiazdoski 183 Clough Rd	$939.00	Excessive Payment
25mv	30047	various	Honda Lease Trust 11675 Great Oaks Way	$3,123.78	MV Adjustment
25mv	29967	83215	Thomas Kabelka 26 Hill Top Rd	$109.71	MV Adjustment
24mv	29987	82724	Flornce Kelly 328 Beth Ln	$171.71	Excessive Payment
25mv	30035	88740	Earl Mann 149 Filmore St	$64.82	MV Adjustment
25mv	29941	89069	Daisy Mariscal 23 W Birch Dr	$83.36	MV Adjustment
24mv	29995	88976	Ameila Masotta 73 Greenleaf Ave	$107.77	Excessive Payment
24mv	29996	90132	Helen Mecca 15 Willowdale Ave	$196.06	Excessive Payment
25mv	30018	95022	Joseph Natale 346 Bradley Ave	$172.83	MV Adjustment
25mv	30039	various	Nissan Motor Acceptance PO Box 22059	$1,512.33	MV Adjustment
25mv	29926	96496	Dennis Oconnor or Belinda Greco 41 Bronx Ave	$105.77	MV Adjustment
24mv	29596	96687	Xiomara Pais 131 Edin Ave	$148.64	MV Adjustment
25mv	30020	99339	James Percy or Ginette Dunn 317 Beth Ln	$259.00	Excessive Payment
24mv	30001	110751	Gabril Sousa 975 Meriden Rd	$133.41	Excessive Payment
24mv	29962	111300	Sterling Security 211 Schraffts Dr	$54.37	MV Adjustment
24mv	29961	various	Torringtin Supply PO Box 2838	$232.34	MV Adjustment
24/25mv	30049	various	Toyota Lease Trust 525 Fellowship Rd	$6,323.31	MV Adjustment
24/25mv	29913	various	VW Credit Leasing 1401 Franklin Blvd	$1,125.62	MV Adjustment
24mv	30004	118081	Ellen Wilcox 72 Bateswood Rd	$215.22	Excessive Payment
			Total	$23,378.22	

Respectfully submitted,



Cassie M. Gorman, CCMC
Tax Collector

CMG/wf