INVITATION FOR BIDS
GHTD IFB #02-025

PARKING LOT EXPANSION
(GHTD PARATRANSIT EMPLOYEE PARKING LOT)

Greater Hartford Transit District
ADA Paratransit Operations and Maintenance Facility
148 Roberts Street, East Hartford, CT 06108

March 4, 2025

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NOTICE
GREATER HARTFORD TRANSIT DISTRICT
INVITATION FOR BIDS
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The Greater Hartford Transit District (GHTD), Hartford, Connecticut, a municipal corporation formed under Chapter 103a of the Connecticut General Statutes, Revision of 1958, as amended, is seeking a contractor to expand the parking lot at the Greater Hartford Transit District's ADA Paratransit Operations and Maintenance Facility, located at 148 Roberts Street, East Hartford, CT 06108 onto the acquired parcel at 144 Roberts Street. All work details are indicated in the Bid Documents. The project location is the Greater Hartford Transit District's ADA Paratransit Operations and Maintenance Facility, located at 148 Roberts Street, East Hartford, CT 06108.

Bid documents including drawings and specifications will be available on or **after Tuesday, March 4, 2025**. Bid documents will be available on the District's website at: https://www.hartfordtransit.org/business-opportunities/ and on the State of Connecticut DAS Contracting Portal at https://portal.ct.gov/DAS/CTSource/CTSource.

Bids shall be submitted to LaShaunda Drake, Greater Hartford Transit District, One Union Place, Hartford, CT. 06103, on or before **10:00 a.m. local time on Wednesday, April 9, 2025**. There will be a virtual public bid opening at 10:10 a.m. local time held via zoom.

To join the meeting:

https://us06web.zoom.us/j/84105545842?pwd=PCw4VDSMmPgUaz3YoxCzyMZbVeYOMV.1
Meeting ID: 841 0554 5842
Passcode: 080665
To call in by phone: (929) 205 6099

An In-person Pre-Bid Conference will be held by the District on Tuesday, March 18, 2025, 10:00 AM (EST) in the training room of the District's ADA Paratransit Operations and Maintenance Facility which is located at 148 Roberts Street, East Hartford, CT 06108, to provide an opportunity to outline the requirements the District will expect of the Bidder, as well as to provide the opportunity for questions and explanations. **The In-person Pre-Bid Conference will be immediately followed by an outdoor site visit of the project site located at 144 Roberts Street, East Hartford, CT, 06108**.

Attendance at the Pre-Bid Conference and Site Visit is not mandatory, and is not a condition for final award.

Questions concerning the bidding process should be submitted in writing to LaShaunda Drake at ldrake@ghtd.org.

Bids received after the deadline will not be considered and will be returned to the bidder unopened. Any changes, or any requests for changes in the specifications, will not be recognized after sealed bids are submitted to the District.

Any contract resulting from this invitation for bids is subject to a financial assistance contract between the District and the Federal Transit Administration and the District and the State of Connecticut. All bidders will be required to certify that they are not on the Comptroller General's list of ineligible contractors. Further, the contractor will be required to comply with all applicable equal employment opportunity laws and regulations.

The GHTD hereby notifies all bidders that in regard to any contract entered into pursuant to this Invitation for Bids, advertisement or solicitation, disadvantaged business enterprises will be afforded full opportunity to submit proposals in response, and will not be subjected to discrimination on the basis of race, color, sex or national origin in consideration for an award.

The GHTD reserves the right to reject any and all bids as submitted by this Invitation for Bids, and to waive informalities and irregularities, as it deems in its best interest.

IFB KEY INFORMATION SUMMARY SHEET

Invitation for Bids:	Parking Lot Expansion (Roberts Street)
Solicitation Number:	IFB #02-025
IFB Issue Date:	March 4, 2025
IFB Issuing Office:	Greater Hartford Transit District
Procurement Officer:	LaShaunda Drake Contract & Procurement Specialist Greater Hartford Transit District One Union Place Hartford, CT 06103 Direct Phone: (860) 380-2012 Email: ldrake@ghtd.org
Proposal to be sent to:	Greater Hartford Transit District One Union Place Hartford, CT 06103 Attn: LaShaunda Drake
In-Person Pre-Bid Conference And On-Site Walk-Through: ***Participation is NOT mandatory***	March 18, 2025 at 10:00 a.m.–12:00 p.m. Local Time GHTD ADA Operations & Maintenance Facility Training Room 148 Roberts Street East Hartford, CT 06108
Approved Equals Request Deadline:	March 25, 2025 at 12:00 p.m. Local Time
Inquiries Deadline:	March 25, 2025 at 12:00 p.m. Local Time
Bid Due Date and Time:	April 9, 2025 at 10:00 a.m. Local Time Bid opening promptly at 10:10 a.m. Local Time Web Meeting via Zoom https://us06web.zoom.us/j/84105545842?pwd=PCw4VDSMmPgUaz3YoxCzyMZbVeYOMV.1 Meeting ID: 841 0554 5842 Passcode: 080665 To call in by phone: (929) 205 6099

SECTION I – GENERAL INFORMATION FOR BIDDERS

1. INTRODUCTION

The Greater Hartford Transit District (the "District") is a quasi-municipal corporation operating under the authority of Chapter 103a of the Connecticut General Statutes. The District, a demand-response transit provider, is responsible for the provision of Americans with Disabilities (ADA) compliant door to door transportation services for disabled residents within the service area of CT Transit's Hartford, Bristol, and New Britain Divisions.

The District has broad powers to acquire, operate, finance, plan, develop, maintain and otherwise provide all forms of land transportation and related services including the development or renewal of transportation centers and parking facilities.

The District is also the owner of the Greater Hartford Transit District ADA Paratransit Operations and Maintenance Facility (the "Facility") located at 148 Roberts Street in East Hartford, CT.

The District, as the owner and operator of the Facility, issues this formal Invitation for Bids (IFB) from a qualified firm or firms for a contractor to construct a new employee parking lot, retaining wall, stormwater management system, and the associated site amenities to replace the former failed construction efforts at 144 Roberts Street, East Hartford, CT 06108, a parcel owned by the Greater Hartford Transit District which is directly adjacent to the District's ADA Paratransit Operations & Maintenance Facility, located at 148 Roberts Street, East Hartford, CT 06108. More specifically, the project site is located along the North side of Roberts Street, approximately 950 feet to the east of the intersection of Roberts Street and Wrobel Place and is accessed via the existing paved parking lot of the ADA Paratransit Operations and Maintenance Facility. The total project work area is approximately 0.5 acres (ac). and is bordered by the existing paved parking lot to the west, Roberts Street to the south, and wooded areas to the north and east (see Exhibit H for complete Scope of Work).

The specifics of the services, and other documents relevant to this IFB, are set forth in the Scope of Services and in the Exhibits attached hereto and made a part hereof.

2. SUBMISSION OF BIDS

In order to respond, the Candidate must supply the required information on and along with the response forms. An officer or explicit agent of your organization must sign the response form and any supplementary proposal documents.

a) Date and Location for Submittal

Bids must be submitted to the District on or before **Wednesday, April 9, 2025 at 10:00 a.m. local time**. There will be a public bid opening at 10:10 a.m. local time held virtually via Zoom.

To join the meeting:
https://us06web.zoom.us/j/84105545842?pwd=PCw4VDSMmPgUaz3YoxCzyMZbVeYOMV.1
Meeting ID: 841 0554 5842
Passcode: 080665
To call in by phone: (929) 205 6099

Each bid shall be securely sealed in a suitable envelope and marked "GHTD IFB #02-025 PARKING LOT EXPANSION (ROBERTS STREET)" in capital letters on the envelope. Bids should be delivered to:

LaShaunda Drake
Contract and Procurement Specialist
Greater Hartford Transit District
One Union Place
Hartford, Connecticut 06103-1409
(860) 380-2012

Late submissions will not be accepted. It is the responsibility of a Bidder to ensure that its Bid is delivered to the District by the date and time referred to hereinabove. Delivery via electronic means will be accepted. It is the responsibility of the bidder to confirm electronic delivery prior to the deadline. All bids received before the opening date will be kept unopened until the time of the bid opening. The person whose duty it is to open the bids will determine when the time stated for opening has arrived. All bids will be opened in public at the bid opening. Any person present shall have the right to have any part of the bids read aloud. The District reserves the right to postpone the bid opening if it is determined to be in the best interest of the District.

b) Form of Bid

One copy of the bid form shall be completed, signed and submitted. No other form of bid or proposal will be acceptable.

Every designated space on the bid form shall be filled in or otherwise marked to show the bidder's intention clearly. Interlineations, alterations, erasures or any other change must be clearly initialed by the bidder. All amounts shall be stated in figures. The bid form is to be submitted along with the Certifications and other documents required by this IFB. Any conditional or qualified bid will be rejected. **In addition to the bid proposal form (Exhibit D), bidders must also submit a rate sheet for all staff working on the project.**

3. BID INQUIRIES

Communication by any bidder with any agent or employee of the District on the subject of this IFB, or the pending process may result in the bidder being deemed ineligible with regard to this IFB. All questions and requests for clarification regarding this IFB or this process must be submitted in writing to LaShaunda Drake at ldrake@ghtd.org on or before **12:00 p.m. local time on Tuesday, March 25, 2025**. Responses shall be in writing and posted in the form of an addendum and will be distributed to all known recipients of the IFB document.

The bids submitted for the work must be based upon the text of this document including the General Information, Special Instructions, Specifications, all Addenda, and any referenced plans, and no oral or informal statement or representation by any representative or employee of the District or the designer shall be considered an amendment to or waiver of any statements in or requirement of such bidding or proposed contract documents and no claim or right of action shall accrue in favor of any respondent as a result of or founded on such oral or informal statements or representations. The District or its agents shall not be responsible for any oral instructions or interpretations given to a Bidder.

4. PRE-BID CONFERENCE & SITE INSPECTION

An In-Person Pre-Bid Conference will be held by the District on **Tuesday, March 18, 2025 at 10:00 a.m. local time**, to provide an opportunity to outline the requirements the District will expect of the Bidder, as well as to provide the opportunity for questions and explanations. The Bidder may submit any written requests for clarification as well as any questions regarding this solicitation package prior to the pre-bid conference. **The In-Person Pre-Bid Conference will take place in the training room of the District's ADA Paratransit Operations and Maintenance Facility which is located at 148 Roberts Street, East Hartford, CT 06108**. **The Pre-Bid Conference will be immediately followed by an on-site walk-through of the project site located at 144 Roberts Street, East Hartford, CT, 06108**.

Attendance at the Pre-Bid Conference and On-Site Walk-Through is not mandatory, and is not a condition for final award.

The District reserves the right to issue addenda to this IFB as a result of inquiries received, or to adjust its project schedule if it is deemed in the District's best interest to do so. The District further reserves the right to reject any and all Proposals resulting from this IFB if the District deems that it is in the best interest of the District to do so.

Information contained in these documents is provided in good faith only that all Proposers may have access to the same information utilized by the District, and is not intended as a substitute for personal investigations, interpretations and judgment of the Proposer.

Submission of a bid shall be evidence that the Proposer has examined the site, compared it with the drawings and specifications and satisfied itself of the conditions existing at the site, the storage and handling of materials, and all other matters incidental to the work under this contract. No additional compensation will be allowed for difficulties which the Proposer could have discovered or reasonably anticipated prior to bidding.

5. COMMENCEMENT OF SERVICES

It is the intent of the District to execute an agreement with the successful bidder, and for work to commence upon execution of contract. Work under this contractual agreement is expected to be completed within **150 days**. The Contractor is expected to immediately communicate with the District any delays experienced which may impede the anticipated project timeline.

6. FUNDING

Any contract resulting from this Invitation for Bids is subject to a financial assistance contract between the District and the Federal Transit Administration and between the District and the State of Connecticut Department of Transportation. All firms will be required to certify that they are not on the U.S. Department of Transportation's list of ineligible contractors. Further, the contractor will be required to comply with all applicable equal employment opportunity laws and regulations.

No bids will be accepted from, or a Contract awarded to any person, firm, or corporation that is in arrears or is in default to the State of Connecticut upon any debt or contract or that is in default as a surety or in any other manner is in default of any obligation to the State. Additionally, no Contract shall be awarded to any person, firm, or corporation that has failed to perform on any prior or previous contract, agreement, or license with the

State. Nor will any Contract be awarded to any firm that is not registered with the Secretary of State's Office to conduct business in the State of Connecticut.

7. FEDERAL GRANT REQUIREMENTS

Exhibit A attached hereto and made a part hereof sets forth federal requirements placed upon vendors who are participating in a project funded in whole or in part with Federal grants. Its provisions are hereby included herein as an integral part of this IFB.

8. STATE GRANT REQUIREMENTS

Contractor must comply with State Grant Requirements (Exhibit B).

9. PROCUREMENT AND APPEALS PROCESS

The District's procurement procedures and appeals process are contained in Exhibit C attached hereto and made a part hereof.

10. DISADVANTAGED BUSINESS ENTERPRISE

It is the policy of the District that disadvantaged business enterprises ("DBE's") be afforded the maximum opportunity to participate in the performance of all contracts let by the District. This participation may be in the form of prime contracts, and/or sub-contracts, and/or direct or general overhead items procured from DBEs allocated to the Services. The term "disadvantaged business enterprise" means a business enterprise that is at least 51% owned and controlled by one or more socially disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background, or other similar cause. Such persons would include but not be limited to citizens of the United States who are: African Americans (not of Hispanic origin); Hispanic Americans; Native Americans; Asian-Pacific Americans; and, women regardless of race and ethnicity. Proposers will submit a statement indicating its own DBE status and what subcontracts and/or overhead purchases with amounts thereof under this project it will get to comply with the District's DBE goal of **7.9%.** DBEs must be certified with the CTDOT.

If the Contractor is unable to achieve the specified contract goals, the Contractor must submit written documentation to the District indicating his/her good faith efforts to satisfy goal requirements. The bidder must present information on DBEs proposed to meet the goal as part of bid responsiveness (provided at the time of bid) or no later than five (5) calendar days after bid opening as a matter of responsibility**.** An example of a good faith effort includes whether the contractor provided written notice to a reasonable number of DBEs with potential interest in the contract and with sufficient time to allow participation. It is important to note that DBEs are certified to perform certain types of work. To receive credit for good faith efforts and to count towards goal attainment, named DBEs must be certified to do the scopes of work that they are contacted/contracted to perform.

The District is a part of the State of Connecticut Department of Transportation Unified Certification Program ("UCP") and any contractor and/or sub-contractor and/or vendor utilized to meet the DBE Participation requirements must be certified through that UCP. A list of CTDOT Certified DBE vendors can be found at: http://www.biznet.ct.gov/dot_dbe/dbesearch.aspx. Upon request, the District will provide information related to the state certification process.

11. VALIDITY OF PROPOSALS

Bidders agree that their proposals remain valid for a period of one hundred eighty (180) days after the above cited due date for submission of bids and may be extended beyond that time by mutual agreement.

By responding to this IFB, the bidder implicitly states that the bid is not made in connection with any competing firm submitting a separate response to this IFB, and is in all respects fair and without collusion or fraud. It is further implied that the bidder did not participate in the District's IFB development process, had no knowledge of the specific contents of this IFB prior to its issuance, and that no employee of the District participated directly or indirectly in the firm's bid preparation.

Please note that the costs associated with the preparation of a Bid are the sole responsibility of the applicable Bidder. Bidder shall not include any such expenses as part of the price proposed in response to the IFB.

12. INFORMATION TO BIDDERS

(a) Discrepancy in Bid Documents

If a bidder becomes aware of any discrepancy, ambiguity, error or omission in this solicitation package, he or she shall report it to the District's representative, LaShaunda Drake, ldrake@ghtd.org, Greater Hartford Transit District, One Union Place, Hartford, CT 06103. The District will determine the necessity for clarification and may issue addenda as a result.

Any interpretation, change, clarification or correction in the bid documents will be made only by written instrument(s) issued by the District. Copies of such instrument(s) will be emailed or delivered to each person, firm or corporation which has received this IFB document.

(b) Brand Names

If present, brand, manufacturer or product names are indicated on the plans or in the specifications only for the purpose of establishing identification and a general description of the item(s) sought. Items of equal quality, not bearing such names, may be submitted in the bid, provided however that prior approval for the item is obtained from the District.

(c) Requests for Clarification

Requests for clarification of plans or specifications and any protest thereof must be received by the District, in writing, to LaShaunda Drake at ldrake@ghtd.org on or before **12:00 p.m. local time on Tuesday, March 25, 2025.** Responses shall be in writing and posted in the form of an addendum and will be distributed to all known recipients of the IFB document.

Requests for Approved Equal Status

In all cases, materials must be furnished as specified. Where brand names or specific items are used in the plans or specifications, consider the term "or approved equal" to follow.

Any unapproved deviations, exceptions, substitutions, alternates or conditional qualifications contained in a proposal may be cause for its rejection. If contractors believe that their product is an equal to the product specified, they must submit a written request to District in triplicate and this request will be approved or rejected by the District at least fifteen (15) calendar days prior to the scheduled opening of the bids. Requests for approved equals must be received by the District in writing by **12:00 p.m. local time on Tuesday, March 25, 2025**.

Any request for an approved equal must be fully supported with catalog information, specifications and illustrations or other pertinent information as evidence that the substitute offered is equal to or better than the specification. Where an approved equal is requested, the contractor must clearly demonstrate the equality of this product to the District to determine whether the proposer's product is or is not equal to that specified. An Approved Equal Form is included in Exhibit E. Further changes in the specifications will be made by addendum.

(d) Obligations of the Proposer

At the time of the opening of proposals, each Proposer will be presumed to be thoroughly familiar with the IFB requirements, and the objectives for each element of the project, item, or service. A plea of mistake in the accepted response shall not be available to the Proposer for the recovery of the bid surety or as a defense to any action based upon an accepted response.

(e) Omission of Details

No advantage shall be taken by the Proposer in the omission of any part or detail which is required to make the project complete and ready for service, even though such part of detail is not mentioned explicitly in the specifications. All units or parts not herein specified shall be manufacturer's standard units and shall conform to the highest standard in the industry.

(f) Qualification of Bidders

Contractor shall submit documentation of Qualifications to perform the work of this contract. Qualifications at a minimum will include CT license, list of projects of similar scope (subject and cost) for last five (5) years, references from past Owners for this kind of work, and any other materials that will provide assurance that Contractor has qualifications for the work. The District may make such investigations as deemed necessary to determine the ability of the Candidate to perform the work and the degree to which any Candidate meets the criteria for award listed herein. A Statement of Bidders Qualification is included in Exhibit E.

(f) Determination of Successful Bidder

In determining the successful bidder, consideration will be given to price, financial responsibility of the bidder, responsiveness to the specifications, warranty, suitability of the product offered for use, past experience, financial ability to meet the contract, facilities and equipment, availability of labor, delivery promise, terms of payment, and other objective and accountable factors which are reasonable.

Award of any contract from this Invitation for Bids shall be made to the bidder quoting the lowest total computed base bid items and/or add/deduct items, including delivery

charges, and payment terms, as described in the Bid (where applicable), provided the bid is responsive in all respects to the procurement requirements.

All materials, parts and equipment furnished by the contractor shall be new, high grade and free from defects. Materials and workmanship not conforming to the requirements of the specifications shall be considered defective and will be subject to rejection.

If the contractor fails to replace any defective or damaged work or materials after reasonable notice, the District may cause such work or materials to be replaced. The replacement expenses shall be deducted from the amount to be paid to the contractor.

The District may inspect all material and workmanship at any time during the progress of the work and shall have the right to reject all materials and workmanship which does not conform to the specifications or which is not considered to be of adequate quality.

(g) Disqualification of Bidders

Proposers may be disqualified and bids may be rejected for any of, but not limited to, the following causes:

- Failure to use Bid Proposal Form furnished by the District
- Lack of signature by an authorized representative on the Bid Proposal Form
- Failure to properly complete the Bid Proposal form
- Evidence of collusion among bidders
- Unauthorized alteration of Bid Proposal Form
- Failure to submit signed required certifications

The District reserves the right to waive any minor informality or irregularity.

13. QUANTITIES AND/OR USAGES

Quantities and/or usages are estimates only and in no way represent a commitment and/or intent to purchase the estimated amount. Actual quantities and delivery locations may vary. The District reserves the right to order all quantities that may be needed, at the contract price, during the contract term regardless of the estimates provided in this IFB.

14. SAMPLES

Samples are furnished free of charge and may be held for comparison with deliveries. Proposers must arrange for their return if desired. Samples are assumed to meet, at a minimum, District specifications for quality. All deliveries shall have at least the same quality as the accepted proposal sample. Latent deficiencies will be remedied by the contractor at no additional cost, or loss of service, to the District.

15. PAYMENT OF PREVAILING WAGES/DAVIS BACON WAGE RATES

The Proposer agrees that the contractor's laborers and mechanics and any subcontractor's, of any tier, laborers and mechanics who work on this project and who fall within any job classification established and published by the Connecticut Department of Labor shall be paid, at a minimum, the prevailing wage rates as certified by said Department. Each contractor and subcontractor of any tier performing work on this project shall post on the project the applicable prevailing wage rates and hourly basic rates of pay for the County or area within which the project is being performed,

including the effective date of any changes thereof, in at least one conspicuous place for the information of the employees working on the project. The information so posted shall include a breakdown of contributions for health and welfare benefits, vacation benefits, pension benefits and any other economic benefit required to be paid. See Exhibit A: Federal Requirements for more details. See Exhibit G for Prevailing Wage Rates.

16. BONDING REQUIREMENTS/PERMITTING

Each bid must be accompanied by Bid Security made payable to the District in an amount of five percent (5%) of Bidder's maximum Bid Price and in the form of cash, a certified or cashier's check, or a Bid Bond, issued by a surety. The Bid Security shall be sealed in a separate envelope containing the Bid.

In addition, a performance bond from a licensed bonding agent in the State of Connecticut shall be required for the Contract amount (100%) for the faithful performance of the work. A payment bond equal to forty percent (40%) of the Contract amount is also required from a licensed bonding agent in the State of Connecticut.

The Contractor is responsible for obtaining all permits for the project, including but not limited permits for demolition, and street opening.

17. SINGLE BIDDER/SOLE SOURCE PROCUREMENT

In the event that a single bid is received, the District will conduct a price and/or cost analysis and review and audit all business records and related documents of the Bidder and any affiliated or parent company to determine the fairness and reasonableness of the bid. A price analysis is the process of examining the bid and evaluating a prospective price without evaluating separate cost elements. It should be recognized that a price analysis through comparison to other similar procurements must be based on an established or competitive price of the elements used in the comparisons. The comparison must be made to a purchase of similar quantity and involving similar specifications. Where a difference exists, a detailed analysis must be made of this difference and costs attached thereto.

Where it is impossible to obtain a valid price analysis, it may be necessary for the District to conduct a cost analysis of the bid price. The price and/or cost analysis shall be made by competent and experienced auditors or price analysis; an engineer's estimate or comparison of the prices is insufficient.

The Federal Transit Administration (FTA) may be asked to lend support in obtaining the services of the Defense Contract Audit Agency, if necessary. The District will submit to FTA all data and analysis of determination prior to award of a sole source contract.

18. WITHDRAWAL OF BIDS

Bids may be withdrawn only by written request. For bids already submitted, written request to withdraw must be delivered to the District prior to bid opening. All bids opened will be considered to be valid offers and may not be withdrawn for a period of one hundred eighty (180) business days following the opening of the bids, unless the bidder is given written notice that its bid is not responsive to the specifications of this IFB.

19. SUBCONTRACTING

If subcontractors are necessary to complete any functions of this requirement, the Proposer must list the names and business locations of any proposed subcontractors, using the Subcontractor Form. The District reserves the right to review and approve any subcontractors proposed by the Respondent. Any approval of the subcontractor shall not be construed as making the District party of such contract, giving the subcontractor privities of contract with the District, or subjecting the District to liability of any kind to any subcontractor.

20. CONTRACTING

The District reserves the right to require the successful candidate to execute a contract in a format supplied by the District. The terms and conditions of the contract to be signed upon the award of the IFB will supersede any inconsistent provisions of the IFB documents.

The award of any contract is subject to the following conditions and contingencies:

1. The approval of such governmental agencies as may be required by law.
2. The appropriation of adequate funds by the proper agencies.
3. Compliance with all applicable laws, regulations, ordinances and codes of the United States and, the state of Connecticut.
4. The selected Proposer must be current in all tax or any other monetary obligation owed to the State of Connecticut.
5. The selected Candidate must have a current EEO certification on file with the State.

Contract Documents

The Contract Documents consist of the Contract, this Invitation for Bids (IFB) and its reference documents, drawings, any Addenda issued, the Contractor's response to the IFB, the federal Requirements (Exhibit A), other documents listed in the Contract, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by the parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a Minor change in the Work issued by the Design Professional on behalf of the District.

21. RETAINAGE

When progress payments are being made for items being built, the District will withhold 5% of the total project cost, or as otherwise specified in the contract for this project.

22. ASSIGNMENT

The contractor shall not assign, transfer, convey or otherwise dispose of the agreement or his/her or its interest in the same, or any part thereof, without prior written approval of the District.

23. REQUIRED CERTIFICATIONS

The required certifications must be submitted with the bid form for the proposal to be considered responsive to the bid specifications. All certification forms are contained in Exhibits E and F. Those bids which do not contain the required standard certifications, complete and signed as appropriate, will be determined ineligible.

24. INSURANCE REQUIREMENTS

Contractor shall obtain and maintain throughout the term of this Contract (or such longer period as may be specified below, if any) the following insurance:

A. Commercial General Liability

The Contractor shall carry Commercial General Liability Insurance, including a broad form comprehensive general liability endorsement and coverage against claims for personal injury, bodily injury, death or property damage, to be on the so-called "occurrence" form with a combined limit of not less than Two Million Dollars ($2,000,000) in the aggregate and One Million Dollars ($1,000,000) per occurrence, and to cover at least the following hazards: (1) premises and operations; (2) products and completed operations on an "if any" basis; (3) independent contractors; (4) blanket contractual liability for all insured contracts; and (5) contractual liability covering the indemnities in this Contract.

B. Excess Liability

Excess liability coverage, providing for increased limits to the General Liability, Automobile Liability, and Employers Liability, in the amount of $4M per occurrence/aggregate.

C. Workers' Compensation Insurance

With respect to all services the Contractor performs and all those performed for the Contractor by its subcontractors, the Contractor and its subcontractor(s) shall carry Workers' Compensation Insurance and, as applicable, insurance required in accordance with the U.S. Longshore and Harbor Workers' Compensation Act, in accordance with the requirements of the laws of the State of Connecticut, and of the laws of the United States, respectively. Employers Liability: Each Accident ($1,000,000), Disease: Each Employee ($1,000,000), Disease Policy Limit ($1,000,000).

D. Business Automobile Insurance

Business Automobile Liability Insurance, to cover the use of all owned, hired, and non-owned vehicles, providing for the following minimum liability limits: One Million Dollars ($1,000,000) for all damages arising out of bodily injuries to or death of all persons in any one accident or occurrence, and for all damages arising out of injury to or destruction of property in any one accident or occurrence. In cases where the insurance policy shows an aggregate limit as part of the automobile liability coverage, the aggregate limit must be at least Two Million Dollars ($2,000,000).

E. Professional Liability Insurance

If the Contractor or any of its subcontractors are providing design, architectural or engineering services with respect to this Contract, the Contractor and such subcontractors shall carry Professional Liability Insurance Policy in an annual aggregate amount not less than Two Million Dollars ($2,000,000), which coverage shall be maintained in force for a period of not less than three (3) years after the completion of the work under this Contract.

F. Contractors Pollution Liability Insurance

If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than

one million dollars ($1,000,000) per claim and two million dollars ($2,000,000) in the aggregate.

G. Certificate of Insurance

All insurance provided for above shall be obtained under valid and enforceable policies, and issued by financially sound and responsible insurance companies authorized to do business in the State of Connecticut and having a general policy rating of A- or better and a financial class of VIII or better, each as determined by AM Best Company, Inc. Prior to commencing any work under this Contract and at least ten (10) days prior to the expiration dates of any insurance required hereunder, Contractor shall deliver to the District certificates of insurance evidencing such coverage and any renewal or successor policies. If the Contractor engages any subcontractor to perform any of its obligations under this Contract, the Contractor shall also deliver to the District certificates of insurance from such subcontractor evidencing such coverage and any renewal or successor policies. All policies of insurance required hereunder shall name the District (and such other persons or entities designated by the District) as an additional insured (except the workers' compensation and Professional Liability insurance). For the Workers' Compensation Insurance and, as applicable, U.S. Longshore and Harbor Workers' Compensation Act coverage, the policy number(s) and term of the policy(ies) shall be indicated on the certificate. With the exception of Professional Liability Insurance, each insurance policy shall state that the insurance company agrees to investigate and defend the insured against all claims for damages, even if groundless. All insurance policies provided for above shall contain clauses or endorsements to the effect that: (i) no act or negligence of the Contractor, or anyone acting for the Contractor, or failure to comply with the provisions of any policy, which might otherwise result in a forfeiture of the insurance or any part thereof, shall in any way affect the validity or enforceability of the insurance insofar as the District is concerned; (ii) no such policies shall be canceled without at least thirty (30) days' notice to the District (10 days for non-payment of premium); (iii) shall contain a waiver of subrogation in favor of the District, and (iv) shall provide that such coverage is primary and non-contributory.

Such insurance shall protect the District against all claims, liabilities, suits, actions, damages, or costs resulting from or arising out of the ownership, lease, operation, maintenance, repairs, or use in any way of any project equipment for the purposes of the program covered by this Contract and for any other purpose. No project equipment shall be delivered to the Contractor, or operated by the Contractor until the Contractor has delivered the certificate(s) of insurance required hereunder. Prior to the annual renewal of a motor vehicle registration, the Contractor shall submit to the District a certificate of insurance for the project equipment. This Section shall not prevent the District from contracting for such required insurance coverage at any time, and in such event the Contractor shall pay the District for all costs of such insurance.

H. Indemnification

To the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the District and its officers, directors, employees and agents (collectively "Indemnified Parties") from and against all claims, damages, demands, losses, expenses, fines, penalties, causes of action, suits or other liabilities (including all costs of reasonable attorneys' fees) arising out of, related to, in connection with or resulting from, or alleged to arise out of or arise from the negligent acts or omissions, breach or failure to perform under the Contract or the violation of any applicable law or regulation, by

Contractor, Contractor's subcontractors or anyone directly or indirectly employed by Contractor or by Contractor's subcontractors or anyone for whose acts any of them may be responsible or liable and whether such claim, damage, demand, loss, expense, fine, penalty, cause of action, suit or other liability is attributable to bodily injury, personal injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom. This indemnity shall be effective regardless of whether or not such claim, damage, loss or expense is caused in part by any of the Indemnified Parties (but the indemnity shall not cover liability to the extent resulting from gross negligence or willful misconduct of the Indemnified Parties). Such indemnity obligation shall not be in derogation or limitation of any other obligation or liability of the Contractor or the rights of the District contained in this Contract or otherwise. This indemnification shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor under any workers' compensation acts, disability benefit acts or other employee benefits acts and includes any loss or injury suffered by an employee of Contractor. This indemnification shall survive the completion of the Work or the termination of the Contract.

To the extent the foregoing Indemnity applies to any violation of federal, state or local laws, ordinances or regulations, Contractor shall do and perform all work necessary to correct such violation.

25. NOTICE OF AWARD

The selected proposer will be provided with a written Notice of Award which shall be contingent upon the submission by the respondent of all documents required including, but not limited to, proper insurance certificates, performance and payment bonds, verification of DBE percentage contribution to the work and execution of contract within 10 days of the notice of award.

26. ATTACHED EXHIBITS

The following attachments are included in this package:

EXHIBIT A

- Federally Required Contract Clauses

EXHIBIT B

- State of Connecticut Grant Requirements

EXHIBIT C

- Procurement Procedures and Appeals Process

EXHIBIT D

- Bid Proposal Form **(A/E firm must also include a rate sheet for all staff working on the project)**

EXHIBIT E

- Required Certifications
  - Affidavit
  - Certificate of Eligibility
  - Certificate of Non-Collusion.

- Certificate of Restrictions on Lobbying
- Contractor's Statement on Sub-Contractors
- Certificate for Disadvantaged Business Enterprise
- DBE Good Faith Efforts Documentation Form
- DBE Letter of Intent
- Buy America Certification
- Approved Equal Form
- Statement of Bidder's Qualifications

EXHIBIT F

- State of Connecticut Contract Requirements

EXHIBIT G

- Connecticut Department of Labor Prevailing Wage Bid Package

EXHIBIT H

- Technical Specifications and Special Provisions

EXHIBIT A
FEDERALLY REQUIRED CONTRACT CLAUSES

FEDERALLY REQUIRED CONTRACT CLAUSES

Access to Records and Reports –

a. Record Retention. The Contractor will retain, and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, data, documents, reports, statistics, leases, subcontracts, arrangements, other third party Contracts of any type, and supporting materials related to those records.
b. Retention Period. The Contractor agrees to comply with the record retention requirements
in accordance with 2 C.F.R. § 200.334. The Contractor shall maintain all books, records, accounts and reports required under this Contract for a period of at not less than three (3) years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.
c. Access to Records. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to performance of this contract in accordance with 2 CFR § 200.337.
d. Access to the Sites of Performance. The Contractor agrees to permit FTA and its contractors access to the sites of performance under this contract in accordance with 2 CFR § 200.337.

Americans with Disabilities Act (ADA) –

The contractor agrees to comply with all applicable requirements of section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, which prohibits discrimination on the basis of handicaps, with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 et seq., which requires that accessible facilities and services be made available to persons with disabilities, including any subsequent amendments to that Act, and with the Architectural Barriers act of 1968, as amended, 42 U.S.C. §§ 4151 et seq., which requires that buildings and public accommodations be accessible to persons with disabilities, including any subsequent amendments to that Act. In addition, the contractor agrees to comply with any and all applicable requirements issued by the FTA, DOT, DOJ, U.S. GSA, U.S. EEOC, U.S. FCC, any subsequent amendments thereto and any other nondiscrimination statute(s) that may apply to the Project.

Bond Requirements –

For construction or facility improvement contracts or subcontracts exceeding the Simplified Acquisition Threshold, the Federal awarding agency or pass-through entity may accept the bonding policy and requirements of the non-Federal entity provided that the Federal awarding agency or pass-through entity has made a determination that the Federal interest is adequately protected. If such a determination has not been made, the minimum requirements must be as follows:

(a) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon

acceptance of the bid, execute such contractual documents as may be required within the time specified.

(b) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's requirements under such contract.

(c) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

It is also understood and agreed that if the bidder should withdraw any part or all of their bid within [90] days after the bid opening without the written consent of the Agency, or refuse or be unable to enter into this Contract as provided above, or refuse or be unable to furnish adequate and acceptable Performance and Payment Bonds, or refuse or be unable to furnish adequate and acceptable insurance, as provided above, it shall forfeit its bid guaranty to the extent Agency’s damages occasioned by such withdrawal, or refusal, or inability to enter into a Contract, or provide adequate security thereof.

It is further understood and agreed that to the extent the defaulting bidder's bid guaranty shall
prove inadequate to fully recompense Agency for the damages occasioned by default, then the bidder agrees to indemnify Agency and pay over to Agency the difference between the bid guarantee and Agency’s total damages so as to make Agency whole.

The bidder understands that any material alteration of any of the above or any of the material contained herein, other than that requested will render the bid unresponsive.

Performance Guarantee. A Performance Guarantee in the amount of 100% of the Contract value is required by the Agency to ensure faithful performance of the Contract. Either a Performance Bond or an Irrevocable Stand-By Letter of Credit shall be provided by the Contractor and shall remain in full force for the term of the Contract. The successful Bidder shall certify that it will provide the requisite Performance Guarantee to the Agency within ten (10) business days from Contract execution. The Agency requires all Performance Bonds to be provided by a fully qualified surety company acceptable to the Agency and listed as a company currently authorized under 31 C.F.R. part 22 as possessing a Certificate of Authority as described hereunder. Agency may require additional performance bond protection when the contract price is increased. The increase in protection shall generally equal 100 percent of the increase in contract price. The Agency may secure additional protection by directing the Contractor to increase the amount of the existing bond or to obtain an additional bond.

If the Bidder chooses to provide a Letter of Credit as its Performance Guarantee, the Bidder shall furnish with its bid, certification that an Irrevocable Stand-By Letter of Credit will be furnished should the Bidder become the successful Contractor. The Bidder shall also provide a statement from the banking institution certifying that an Irrevocable Stand-By Letter of Credit for the action will be provided if the Contract is awarded to the Bidder. The Irrevocable Stand-By Letter of Credit will only be accepted by the Agency if:

1. A bank in good standing issues it. The Agency will not accept a Letter of Credit from an entity other than a bank.
2. It is in writing and signed by the issuing bank.
3. It conspicuously states that it is an irrevocable, non-transferable, "standby" Letter of Credit.
4. The Agency is identified as the Beneficiary.
5. It is in an amount equal to 100% of the Contract value. This amount must be in U.S. dollars.
6. The effective date of the Letter of Credit is the same as the effective date of the Contract
7. The expiration date of the Letter of Credit coincides with the term of the contract.
8. It indicates that it is being issued in order to support the obligation of the Contractor to perform under the Contract. It must specifically reference the Contract between the Agency and the Contractor the work stipulated herein.

The issuing bank's obligation to pay will arise upon the presentation of the original Letter of
Credit and a certificate and draft to the issuing bank's representative at a location and time to be determined by the parties. This documentation will indicate that the Contractor is in default under the Contract.

Payment Bonds. A Labor and Materials Payment Bond equal to the full value of the contract must be furnished by the contractor to Agency as security for payment by the Contractor and subcontractors for labor, materials, and rental of equipment. The bond may be issued by a fully qualified surety company acceptable to (Agency) and listed as a company currently authorized under 31 C.F.R. part 223 as possessing a Certificate of Authority as described thereunder.

Buy America –
The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661 and 2 CFR § 200.322 Domestic preferences for procurements, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7.

Construction materials used in the Project are subject to the domestic preference requirement of the Build America, Buy America Act, Pub. L. 117-58, div. G, tit. IX, §§ 70911 – 70927 (2021), as implemented by the U.S. Office of Management and Budget, the U.S. Department of Transportation, and FTA. The Recipient acknowledges that this agreement is neither a waiver of § 70914(a) nor a finding under § 70914(b).

Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C), 49 U.S.C. § 5323(u) and 49 C.F.R. § 661.11. Domestic preferences for procurements.

The bidder or offeror must submit to the Agency the appropriate Buy America certification. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as nonresponsive. For more information, please see the FTA's Buy America webpage at: https://www.transit.dot.gov/buyamerica.

Cargo Preference Requirements –

The contractor agrees:
a. to use privately owned United States-Flag commercial vessels to ship at least 50 percent
of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;

b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for
shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA Recipient (through the contractor in the case of a subcontractor's bill-of-lading.); and

c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

Civil Rights Laws and Regulations –

The following Federal Civil Rights laws and regulations apply to all contracts.
1 **Federal Equal Employment Opportunity (EEO) Requirements**. These include, but are not limited to:
a) Nondiscrimination in Federal Public Transportation Programs. 49 U.S.C. § 5332, covering projects, programs, and activities financed under 49 U.S.C. Chapter 53, prohibits discrimination on the basis of race, color, religion, national origin, sex (including sexual orientation and gender identity), disability, or age, and prohibits discrimination in employment or business opportunity.

b) Prohibition against Employment Discrimination. Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and Executive Order No. 11246, “Equal Employment Opportunity,” September 24, 1965, as amended, prohibit discrimination in employment on the basis of race, color, religion, sex, or national origin.

2 **Nondiscrimination on the Basis of Sex.** Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. § 1681 et seq. and implementing Federal regulations, “Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance,” 49 C.F.R. part 25 prohibit discrimination on the basis of sex.

3 **Nondiscrimination on the Basis of Age**. The “Age Discrimination Act of 1975,” as amended, 42 U.S.C. § 6101 et seq., and Department of Health and Human Services implementing regulations, “Nondiscrimination on the Basis of Age in Programs or

Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, prohibit discrimination by participants in federally assisted programs against individuals on the basis of age. The Age Discrimination in Employment Act (ADEA), 29 U.S.C. § 621 et seq., and Equal Employment Opportunity Commission (EEOC) implementing regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, also prohibit employment discrimination against individuals age 40 and over on the basis of age.

4 **Federal Protections for Individuals with Disabilities**. The Americans with Disabilities Act of 1990, as amended (ADA), 42 U.S.C. § 12101 et seq., prohibits discrimination against qualified individuals with disabilities in programs, activities, and services, and imposes specific requirements on public and private entities. Third party contractors must comply with their responsibilities under Titles I, II, III, IV, and V of the ADA in employment, public services, public accommodations, telecommunications, and other provisions, many of which are subject to regulations issued by other Federal agencies.

Civil Rights and Equal Opportunity

The Agency is an Equal Opportunity Employer. As such, the Agency agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, the Agency agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance
awarded by FTA to support procurements using exclusionary or discriminatory specifications.
Under this Contract, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part
thereof.

1. **Nondiscrimination**. In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

2. **Race, Color, Religion, National Origin, Sex**. In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for

training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

3. **Age**. In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any Implementing requirements FTA may issue.

4. **Disabilities**. In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

5. **Promoting Free Speech and Religious Liberty**. The Contractor shall ensure that Federal funding is expended in full accordance with the U.S. Constitution, Federal Law, and statutory and public policy requirements: including, but not limited to, those protecting free speech, religious liberty, public welfare, the environment, and prohibiting discrimination.

Clean Air Act and Federal Water Pollution Control Act –

The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act (42 U.S.C. § 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251-1387). Violations must be reported to FTA and the Regional Office of the Environmental Protection Agency. The following applies for contracts of amounts in excess of $150,000:

Clean Air Act

(1) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

(2) The contractor agrees to report each violation to the Agency and understands and agrees that the Agency will, in turn, report each violation as required to assure notification to the Agency, Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(3) The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA.

Federal Water Pollution Control Act

(1) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

(2) The contractor agrees to report each violation to the Agency and understands and agrees that the Agency will, in turn, report each violation as required to assure notification to the Agency, Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(3) The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA."

Contract Work Hours and Safety Standards Act –

a. Applicability: This requirement applies to all FTA grant and cooperative agreement programs.

b. Where applicable (see 40 U.S.C. § 3701), all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations at 29 C.F.R. Part 5. See 2 C.F.R. Part 200, Appendix II.

c. Under 40 U.S.C. § 3702, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week.

d. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

e. The regulation at 29 C.F.R. § 5.5(b) provides the required contract clause concerning compliance with the Contract Work Hours and Safety Standards Act:

Compliance with the Contract Work Hours and Safety Standards Act.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate

not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section."

Davis Bacon Act and Copeland Anti-Kickback Act –

For all prime construction, alteration or repair contracts in excess of $2,000 awarded by FTA, the Contractor shall comply with the Davis-Bacon Act and the Copeland "Anti-Kickback" Act. Under 49 U.S.C. § 5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor shall also comply with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by DOL regulations at 29 C.F.R. part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States." The Contractor is prohibited from inducing, by any means, any person employed in the construction,

completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

Debarment and Suspension–

The Contractor shall comply and facilitate compliance with U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

a) Debarred from participation in any federally assisted Award;
b) Suspended from participation in any federally assisted Award;
c) Proposed for debarment from participation in any federally assisted Award;
d) Declared ineligible to participate in any federally assisted Award;
e) Voluntarily excluded from participation in any federally assisted Award; or
f) Disqualified from participation in ay federally assisted Award.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows: The certification in this clause is a material representation of fact relied upon by the AGENCY. If it is later determined by the AGENCY that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the AGENCY, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

Disadvantaged Business Enterprises -–

(Does not apply to projects fully funded by the Tribal Transportation Program (TTP).)

It is the policy of the Agency and the United States Department of Transportation ("DOT") that Disadvantaged Business Enterprises ("DBE's"), as defined herein and in the Federal regulations published at 49 C.F.R. part 26, shall have an equal opportunity to participate in DOT-assisted contracts.

The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 C.F.R. part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Agency deems appropriate, which may include, but is not limited to:

(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or

(4) Disqualifying the contractor from future bidding as non-responsible. 49 C.F.R. § 26.13(b).

Prime contractors are required to pay subcontractors for satisfactory performance of their contracts no later than 30 days from receipt of each payment the Agency makes to the prime contractor. 49 C.F.R. § 26.29(a).

Finally, for contracts with defined DBE contract goals, each FTA Recipient must include in each prime contract a provision stating that the contractor shall utilize the specific DBEs listed unless the contractor obtains the Agency's written consent; and that, unless the Agency's consent is provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE. 49 C.F.R. § 26.53(f) (1).

Energy Conservation –

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C.§ 6201).

Equal Employment Opportunity–

During the performance of this contract, the contractor agrees as follows:
(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
(4) The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be

provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
(7) In the event of the contractor's non-compliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
(8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Notice to Third Party Participants –

Federal requirements that apply to the Recipient or the Award, the accompanying Underlying Agreement, and any Amendments thereto may change due to changes in federal law, regulation, other requirements, or guidance, or changes in the Recipient's Underlying Agreement including any information incorporated by reference and made part of that Underlying Agreement; and Applicable changes to those federal requirements will apply to each Third-Party Agreement and parties thereto at any tier.

Federal Changes

Proposer shall at all times comply with all applicable federal regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the District and the FTA as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

Federal Tax Liability and Recent Felony Convictions –

(1) The contractor certifies that it:

(a) Does not have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

(b) Was not convicted of the felony criminal violation under any Federal law within the preceding 24 months.

If the contractor cannot so certify, the Recipient will refer the matter to FTA and not enter into any Third-Party Agreement with the Third-Party Participant without FTA's written approval.

(2) Flow-Down. The Recipient agrees to require the contractor to flow this requirement down to participants at all lower tiers, without regard to the value of any subagreement.

Fly America Requirements –

a) Definitions. As used in this clause—

1) "International air transportation" means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.
2) "United States" means the 50 States, the District of Columbia, and outlying areas.
3) "U.S.-flag air carrier" means an air carrier holding a certificate under 49 U.S.C. Chapter 411.

b) When Federal funds are used to fund travel, Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) (Fly America Act) requires contractors, Agency's, and others use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

c) If available, the Contractor, in performing work under this contract, shall use U.S.-flag carriers for international air transportation of personnel (and their personal effects) or property.

d) In the event that the Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, the Contractor shall include a statement on vouchers involving such transportation essentially as follows:

Statement of Unavailability of U.S.-Flag Air Carriers
International air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons. See FAR § 47.403. [State reasons]:

e) Contractor shall include the substance of this clause, including this paragraph (e), in each subcontract or purchase under this contract that may involve international air transportation.

Incorporation of Federal Transit Administration (FTA) Terms –

The provisions within include, in part, certain Standard Terms and Conditions required under the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (2 CFR § 200), whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, detailed in 2 CFR § 200 or as amended by 2 CFR § 1201, or the most recent version of FTA Circular 4220.1 are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any request which would cause a violation of the FTA terms and conditions.

No Government Obligation to Third Parties –

The Recipient and Contractor acknowledge and agree that, notwithstanding any concurrence by
the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the Recipient, Contractor or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying Contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by the FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

Notification to FTA –

If a current or prospective legal matter that may affect the Federal Government emerges, the Recipient must promptly notify the FTA Chief Counsel and FTA Regional Counsel for the Region in which the Recipient is located. The Recipient must include a similar notification requirement in its Third-Party Agreements and must require each Third Party Participant to include an equivalent provision in its subagreements at every tier, for any agreement that is a “covered transaction” according to 2 C.F.R. §§ 180.220 and 1200.220.

(1) The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason.

(2) Matters that may affect the Federal Government include, but are not limited to, the Federal Government’s interests in the Award, the accompanying Underlying Agreement, and any Amendments thereto, or the Federal Government’s administration or enforcement of federal laws, regulations, and requirements.

(3) The Recipient must promptly notify the U.S. DOT Inspector General in addition to the FTA Chief Counsel or Regional Counsel for the Region in which the Recipient is located, if the Recipient has knowledge of potential fraud, waste, or abuse occurring on a Project receiving assistance from FTA. The notification provision applies if a person has or may have submitted a false claim under the False Claims Act, 31 U.S.C. § 3729 et seq., or has or may have committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bribery, gratuity, or similar misconduct. This responsibility occurs whether the Project is subject to this Agreement or another agreement between the Recipient and FTA, or an agreement involving a principal, officer, employee, agent, or Third-Party Participant of the Recipient. It also applies to subcontractors at any tier. Knowledge, as used in this paragraph, includes, but is not limited to, knowledge of a criminal or civil investigation by a Federal, state, or local law enforcement or other investigative agency, a criminal indictment or civil complaint, or probable cause that could support a criminal indictment, or any other credible information in the possession of the Recipient.

Program Fraud and False or Fraudulent Statements and Related Acts –

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment –

a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

1) Procure or obtain;

2) Extend or renew a contract to procure or obtain; or

3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

b) In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

c) See Public Law 115-232, section 889 for additional information.

d) See also § 200.471.

Prompt Payment –

(Does not apply to projects fully funded by the Tribal Transportation Program (TTP).)

The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the contractor's receipt of payment for that work. In addition, the contractor is required to return any retainage payments to those subcontractors within 30 days after the subcontractor's work related to this contract is satisfactorily completed.

The contractor must promptly notify the Agency, whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work and must make good faith efforts to engage another DBE subcontractor to perform at least

the same amount of work. The contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of the Agency.

Restrictions on Lobbying –

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of $100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

Conditions on use of funds.

(a) No appropriated funds may be expended by the recipient of a Federal contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) Each person who requests or receives from an agency a Federal contract, grant, loan, or cooperative agreement shall file with that agency a certification, that the person has not made, and will not make, any payment prohibited by paragraph (a) of this section.

(c) Each person who requests or receives from an agency a Federal contract, grant, loan, or a cooperative agreement shall file with that agency a disclosure form if such person has made or has agreed to make any payment using non-appropriated funds (to include profits from any covered Federal action), which would be prohibited under paragraph (a) of this section if paid for with appropriated funds.

(d) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a statement, whether that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

(e) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a disclosure form if that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

Certification and disclosure.

(a) Each person shall file a certification, and a disclosure form, if required, with each submission that initiates agency consideration of such person for:

(1) Award of a Federal contract, grant, or cooperative agreement exceeding $100,000; or

(2) An award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

(b) Each person shall file a certification, and a disclosure form, if required, upon receipt by such person of:

(1) A Federal contract, grant, or cooperative agreement exceeding $100,000; or

(2) A Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000,

Unless such person previously filed a certification, and a disclosure form, if required, under paragraph (a) of this section.

(c) Each person shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under paragraphs (a) or (b) of this section. An event that materially affects the accuracy of the information reported includes:

(1) A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,

(3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(d) Any person who requests or receives from a person referred to in paragraphs (a) or (b) of this section:

(1) A subcontract exceeding $100,000 at any tier under a Federal contract;

(2) A subgrant, contract, or subcontract exceeding $100,000 at any tier under a Federal grant;

(3) A contract or subcontract exceeding $100,000 at any tier under a Federal loan exceeding $150,000; or,

(4) A contract or subcontract exceeding $100,000 at any tier under a Federal cooperative agreement,

Shall file a certification, and a disclosure form, if required, to the next tier above.

(e) All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the person referred to in paragraphs (a) or (b) of this section. That person shall forward all disclosure forms to the agency.

(f) Any certification or disclosure form filed under paragraph (e) of this section shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared by any tier to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification or disclosure, respectively. If a person fails to file a required certification or disclosure, the United States may pursue all available remedies, including those authorized by section 1352, title 31, U.S. Code.

(g) For awards and commitments in process prior to December 23, 1989, but not made before that date, certifications shall be required at award or commitment, covering activities occurring between December 23, 1989, and the date of award or commitment. However, for awards and commitments in process prior to the December 23, 1989

effective date of these provisions, but not made before December 23, 1989, disclosure forms shall not be required at time of award or commitment but shall be filed within 30 days.
(h) No reporting is required for an activity paid for with appropriated funds if that activity is allowable under either subpart B or C.

Safe Operation of Motor Vehicles –

Seat Belt Use
The Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company rented vehicles, or personally operated vehicles. The terms "company-owned" and "company-leased" refer to vehicles owned or leased either by the Contractor or Agency.

Distracted Driving
The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contactor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this Contract.

Seismic Safety –

The contractor agrees that any new building or addition to an existing building will be designed
and constructed in accordance with the standards for Seismic Safety required in Department of
Transportation (DOT) Seismic Safety Regulations 49 C.F.R. part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract, including work performed by a subcontractor, is in compliance with the standards required by the Seismic Safety regulations and the certification of compliance issued on the project.

Severability –

The Contractor agrees that if any provision of this agreement or any amendment thereto is determined to be invalid, then the remaining provisions thereof that conform to federal laws, regulations, requirements, and guidance will continue in effect.

Simplified Acquisition Threshold –

Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. § 1908, or otherwise set by law, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate. (Note that the simplified acquisition threshold determines the procurement procedures that must be employed pursuant to 2 C.F.R. §§ 200.317–200.327. The simplified acquisition threshold does not exempt a procurement from other eligibility or processes requirements that may apply. For example, Buy

America's eligibility and process requirements apply to any procurement in excess of $150,000. 49 U.S.C. § 5323(j)(13).)

Solid Wastes –

A Recipient that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

Special DOL EEO Clause –

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another

employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local

government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

Special Notification Requirements for States –

Applies to States –

a. To the extent required under federal law, the State, as the Recipient, agrees to provide the following information about federal assistance awarded for its State Program, Project, or related activities:

(1) The Identification of FTA as the federal agency providing the federal assistance for a State Program or Project;

(2) The Catalog of Federal Domestic Assistance Number of the program from which the federal assistance for a State Program or Project is authorized; and

(3) The amount of federal assistance FTA has provided for a State Program or Project.

b. Documents - The State agrees to provide the information required under this provision in the following documents: (1) applications for federal assistance, (2) requests for proposals or solicitations, (3) forms, (4) notifications, (5) press releases, and (6) other publications.

Termination –

Termination for Convenience (General Provision)
The Agency may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the Agency's best interest. The Contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination.

The Contractor shall promptly submit its termination claim to Agency to be paid the Contractor. If the Contractor has any property in its possession belonging to Agency, the Contractor will account for the same, and dispose of it in the manner Agency directs.

Termination for Default [Breach or Cause] (General Provision)
If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the Agency may terminate this contract for default. Termination shall be effected by serving a Notice of Termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will be paid only the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract. If it is later determined by the Agency that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, the Agency, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

Opportunity to Cure (General Provision)
The Agency, in its sole discretion may, in the case of a termination for breach or default, allow the Contractor [an appropriately short period of time] in which to cure the defect. In such case, the Notice of Termination will state the time period in which cure is permitted and other appropriate conditions

If Contractor fails to remedy to Agency's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within [10 days] after receipt by Contractor of written notice from Agency setting forth the nature of said breach or default, Agency shall have the right to terminate the contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude Agency from also pursuing all available remedies against Contractor and its sureties for said breach or default.

Waiver of Remedies for any Breach
In the event that Agency elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this contract, such waiver by Agency shall not limit Agency's remedies for any succeeding breach of that or of any other covenant, term, or condition of this contract.

Termination for Convenience (Professional or Transit Service Contracts)
The Agency, by written notice, may terminate this contract, in whole or in part, when it is in the Agency's interest. If this contract is terminated, the Agency shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

Termination for Default (Supplies and Service)

If the Contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension, or if the Contractor fails to comply with any other provisions of this contract, the Agency may terminate this contract for default. The Agency shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner or performance set forth in this contract.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Agency.

Termination for Default (Transportation Services)
If the Contractor fails to pick up the commodities or to perform the services, including delivery services, within the time specified in this contract or any extension, or if the Contractor fails to comply with any other provisions of this contract, the Agency may terminate this contract for default. The Agency shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of default. The Contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in this contract.

If this contract is terminated while the Contractor has possession of Agency goods, the Contractor shall, upon direction of the Agency, protect and preserve the goods until surrendered to the Agency or its agent. The Contractor and Agency shall agree on payment for the preservation and protection of goods. Failure to agree on an amount will be resolved under the Dispute clause.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Agency.

Termination for Default (Construction)
If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will ensure its completion within the time specified in this contract or any extension or fails to complete the work within this time, or if the Contractor fails to comply with any other provision of this contract, Agency may terminate this contract for default. The Agency shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. In this event, the Agency may take over the work and compete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the Agency resulting from the Contractor's refusal or failure to complete the work within specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the Agency in completing the work.

The Contractor's right to proceed shall not be terminated nor shall the Contractor be charged with damages under this clause if:
1. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include: acts of God, acts of Agency, acts of another contractor in the performance of a contract with Agency, epidemics, quarantine restrictions, strikes, freight embargoes; and
2. The Contractor, within [10] days from the beginning of any delay, notifies Agency in writing of the causes of delay. If, in the judgment of Agency, the delay is excusable, the time for completing the work shall be extended. The judgment of Agency shall be final and conclusive for the parties, but subject to appeal under the Disputes clause(s) of this contract.
3. If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of Agency.

Termination for Convenience or Default (Architect and Engineering)
The Agency may terminate this contract in whole or in part, for the Agency’s convenience or because of the failure of the Contractor to fulfill the contract obligations. The Agency shall terminate by delivering to the Contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the Contractor shall (1) immediately discontinue all services affected (unless the notice directs otherwise), and (2) deliver to the Agency‘s Contracting Officer all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process. Agency has a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or

otherwise use, all such data, drawings, specifications, reports, estimates, summaries, and other information and materials.

If the termination is for the convenience of the Agency, the Agency's Contracting Officer shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services.

If the termination is for failure of the Contractor to fulfill the contract obligations, the Agency may complete the work by contact or otherwise and the Contractor shall be liable for any additional cost incurred by the Agency.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of Agency.

Termination for Convenience or Default (Cost-Type Contracts)
The Agency may terminate this contract, or any portion of it, by serving a Notice of Termination on the Contractor. The notice shall state whether the termination is for convenience of Agency or for the default of the Contractor. If the termination is for default, the notice shall state the manner in which the Contractor has failed to perform the requirements of the contract. The Contractor shall account for any property in its possession paid for from funds received from the Agency, or property supplied to the Contractor by the Agency. If the termination is for default, the Agency may fix the fee, if the contract provides for a fee, to be paid the Contractor in proportion to the value, if any, of work performed up to the time of termination. The Contractor shall promptly submit its termination claim to the Agency and the parties shall negotiate the termination settlement to be paid the Contractor.

If the termination is for the convenience of Agency, the Contractor shall be paid its contract close-out costs, and a fee, if the contract provided for payment of a fee, in proportion to the work performed up to the time of termination.

If, after serving a Notice of Termination for Default, the Agency determines that the Contractor has an excusable reason for not performing, the Agency, after setting up a new work schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

Tracking In Persons –

The contractor agrees that it and its employees that participate in the Recipient's Award, may not:

(a) Engage in severe forms of trafficking in persons during the period of time that the Recipient's Award is in effect;

(b) Procure a commercial sex act during the period of time that the Recipient's Award is in effect; or

(c) Use forced labor in the performance of the Recipient's Award or subagreements thereunder.

Veterans Hiring Preference –

Veterans Employment - Recipients and subrecipients of Federal financial assistance shall ensure that contractors working on a capital project funded using such assistance give a hiring preference, to the extent practicable, to veterans (as defined in section 2108 of title 5) who have the requisite skills and abilities to perform the construction work required under the contract. This subsection shall not be understood, construed or enforced in any manner that would require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

Violation and Breach of Contract –

Disputes:
Disputes arising in the performance of this Contract that are not resolved by agreement of the parties shall be decided in writing by the authorized representative of the agency. This decision shall be final and conclusive unless within [10] days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the agencies authorized representative. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the agencies authorized representative shall be binding upon the Contractor and the Contractor shall abide be the decision.

Performance During Dispute:
Unless otherwise directed by the agencies authorized representative, contractor shall continue performance under this contract while matters in dispute are being resolved.

Claims for Damages:
Should either party to the contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefore shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies:
Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between the agencies authorized representative and contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the Agency is located.

Rights and Remedies:
Duties and obligations imposed by the contract documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the Agency or contractor shall constitute a waiver of any right or duty afforded any of them under the contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

ADDITIONAL FTA PROCUREMENT PROVISIONS–

Geographic Preference: The Greater Hartford Transit District will conduct procurements in a manner that does not give in-State or local geographic preferences in the evaluation of bids or proposals, except in those cases where applicable Federal or State statutes expressly mandate or encourage geographic preference. This does not preempt Connecticut licensing laws from being considered in those disciplines that are regulated by the State. This is in accordance with FTA Circular 4220.1F, Third Party Contracting Guidance.

Cost Plus a Percentage of Cost: The Greater Hartford Transit District strictly prohibits the use of cost plus a percentage of cost based contracts in accordance with FTA Circular 4220.1F., as the Common Grant Rules states that this method of contracting is strictly prohibited.

EXHIBIT B
STATE OF CONNECTICUT
GRANT REQUIREMENTS

STATE OF CONNECTICUT GRANT REQUIREMENTS

Small Business Enterprises. In connection with the performance of this Agreement, the Consultant shall cooperate with the District in meeting its commitments and goals with regard to the maximum utilization of small business enterprises ("SBEs"), as defined in Section 4a-60 of the Connecticut General Statutes, and will use its best efforts to insure that SBEs shall have the maximum practicable opportunity to compete for any sub-contract work under this Agreement.

The District has agreed with the Connecticut Department of Transportation to include in the Agreement the Special Provisions Requirements of Section 46a-68j-30(9) of the Contract Compliance Regulations.

The Contractor agrees to ensure that small business enterprises as defined in Section 4a-60 of the Connecticut General Statutes have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with State funds provided under this agreement. In this regard all recipients or contractors shall take necessary and reasonable steps in accordance with Section 4a-60 of the Connecticut General Statutes to ensure that small business enterprises have the maximum opportunity to compete and perform contracts. Recipients and their contractors shall not discriminate on the basis of race, creed, color, national origin, age or sex in the award of federal assisted contracts.

Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient (the District) deems appropriate.

Non-Discrimination in Employment and Affirmative Action. In connection with the carrying out of the Project the Consultant shall not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Consultant shall take affirmative action to ensure that applicants are employed, and that employees are treated during their pre-employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff, or termination; rates of pay, or other forms of compensation; and selection for training, including apprenticeship. The provisions of Executive Order No. 11246 of September 21, 1965, as amended, and all rules, regulations and orders of the Federal government issued pursuant thereto are incorporated herein by reference and made a part hereof. The Consultant agrees to comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. §2000d-4) and all requirements imposed by Title 49 C.F.R. part 21 and other pertinent directives of the federal government to the end that no person shall on the grounds of race, color, sex or national origin be excluded from participation in, or be denied the benefits of, or be otherwise subjected to discrimination under the Project.

The District has agreed with the Connecticut Department of Transportation ("CTDOT") to include in this Agreement the following Sections from the Agreement between the District and CTDOT:

Section 32 Civil Rights. (b)(1) The Second Party (the "District and its Operator") agrees and warrants that in the performance of the contract such Second Party will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation or physical disability, including, but not limited to, blindness, unless shown by such Second Party that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut. The Second Party further agrees to take affirmative action to insure that applicants with job related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, or physical disability, including, but not limited to, blindness, unless shown by such Second Party that such disability prevents performance of the work involved; (2) the Second Party agrees, in all solicitations or advertisements for employees placed by or on behalf of the Second Party, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission (on Human Rights and Opportunities of the State of Connecticut); (3) the Second Party agrees to provide each labor union or representative of workers with which such Second Party has a collective bargaining agreement or other contract or understanding and each vendor with which such Second Party has a contract or understanding, a notice to be provided by the Commission advising the labor union or workers' representative of the Second Party's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Second Party agrees to comply with each provision of this section and Conn. Gen. Stat. §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Conn. Gen. Stat. §§ 46a-56, 46a-68e, and 46a-68f; (5) the Second Party agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Second Party as they relate to the provisions of this section and § 46a-56.

Section 33. Nondiscrimination (Sexual Orientation). (a) Pursuant to § 4a.60 of the Connecticut General Statutes, (1) the Second Party agrees and warrants that in the performance of the contract such Second Party sill not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Second Party agrees to provide each labor union or representative of workers with which such Second Party has a collective bargaining agreement or other contract or understanding and each vendor with which such Second Party has a contract or understanding, a notice to be provided by the Commission advising the labor union or workers' representative of the Second Party's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Second Party agrees to comply

with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to § 46a-56 of the general statutes; (4) the Second Party agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Second Party as they relate to the provisions of this section and § 46a-56.

Non-Discrimination on the Basis of Disability. The Consultant shall insure that all fixed facility construction or alteration and all new equipment purchased to provide the Services comply with applicable regulations regarding Non-Discrimination on the Basis of Handicap in Programs and Activities Receiving or Benefitting from Federal Financial Assistance, set forth at Title 49, Code of Federal Regulations, Part 27, and any amendments thereto.

The Agreement shall be deemed to include the CONNECTICUT REQUIRED CONTRACT/AGREEMENT PROVISIONS including but not limited to Equal Employment Opportunity Responsibilities, Policy on SBEs, and Code of Ethics, incorporated herein by reference, and all requirements upon consultants and contractors of the "Second Party" (the "District") set forth in said PROVISIONS shall be deemed requirements upon the Consultant hereunder. In any event, the Consultant shall do nothing which would cause the District to be in violation of the requirements upon it, as the "Second Party" under said PROVISIONS.

EXECUTIVE ORDERS

This Agreement is subject to the provisions of Executive Order No 7C of Governor M. Jodi Rell, promulgated July 13, 2006, concerning contracting reforms, Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of this agreement as if they had been fully set forth in it.

Environmental Law Compliance
The Proposer shall be responsible to comply with all federal and state environmental laws and regulations pertaining to the operation of transit motor buses and/or facilities managed by the Second Party, including but not limited to, pollutants emissions control, storage and/or disposal of waste, fluids, fuels, oil, and chemicals in general. The Second Party shall be responsible to comply with OSHA regulations. The Second Party will hold the State and CTTRANSIT harmless of any lawsuits and/or fines with respect to any environmental and/or OSHA regulations violations.

Publication of Reports
The ownership of all data and material collected under this Agreement shall be vested in the Proposer and the State. All reports shall be submitted to District for review prior to publication. The following statement should appear on the cover or title page of any published report prepared under the terms of this Agreement:

"Prepared in cooperation with the U.S. Department of Transportation (including its participating agencies), Connecticut Department of Transportation and the Greater Hartford Transit District. The opinions, findings and conclusions expressed in this publication are those of the Second Party and do not necessarily reflect the official views or policies of the District, Connecticut Department of Transportation and/or the U.S. Department of Transportation."

Jurisdiction and Forum Language
This Agreement shall be governed, interpreted and construed under and in accordance with the laws of the State of Connecticut, whether or not its conflict of laws principles would dictate otherwise. This Agreement shall be deemed to have been made in Hartford, Connecticut.

The Proposer irrevocably consents with respect to any claims or remedies at law or in equity, arising out of or in connection with this Agreement to the jurisdiction of the Connecticut Superior Court (except as otherwise required by law or that Agreement), and, with respect to any claim between the Parties, to venue in Judicial District of Hartford-New Britain at Hartford or the United States Federal Court, District of Connecticut, and irrevocably waives any objections that it may have to such jurisdiction on the grounds of lack of personal jurisdiction of such court or the laying of venue of such court or on the basis of forum non convenience or otherwise. Nothing herein shall be construed to waive any of the States or the District's immunities.

Litigation
The Proposer agrees that the sole and exclusive means for the presentation of any claim against the State arising from or in connection with this Agreement shall be in accordance with Chapter 53 of the Connecticut General Statutes (Claims against the State) and the Proposer further agrees not to initiate legal proceedings in any State or Federal Court in addition to, or in lieu of, said Chapter 53 proceedings.

FREEDOM OF INFORMATION ACT
The State is entitled to receive a copy of records and files related to the performance of the Proposer under this Agreement, and such records and files may be subject to the Freedom of Information Act and may be disclosed by the Sate pursuant to the Freedom of Information Act. No request to inspect or copy such records or files shall be valid unless the request is made to the State in accordance with the Freedom of Information Act. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of Sections 1-205 and 1-206 of the Connecticut General Statutes.

RIGHT TO INSPECT RECORDS
By way of its agreement with the Connecticut Department of Transportation, the District agrees to include in all its subcontracts a provision to the effect the subcontractor agrees that the State, the U.S. Department of Transportation and the Comptroller General of the United States or any of their duly authorized representatives, shall, until the expiration of three (3) years after the final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontractor. The term "subcontractor" as used in this clause excludes work not exceeding $25,000.00.

The period of access and examination described above, for records which relate to (1) appeals for disputes, (2) litigation of the settlement of claims arising out of the performance of this contract, or (3) costs and expenses in relation to the performance of this contract to which exception has been taken by the State, the Comptroller General or any of their duly authorized representatives, shall continue until such appeals, litigation, claims or exceptions have been disposed of.

PROVISIONS DATED MARCH 6, 1998
"SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES"

1. General

   A. Equal employment Opportunity Requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246, Executive Order 11375, the Railroad Revitalization and Regulatory Reform Act of 1976 and other U.S. Department of Transportation nondiscrimination legislation are set forth in this Required Contract/Agreement Provision. The requirements set forth in these special provisions shall constitute the specific affirmative action requirements for project activities under this contract (or agreement) and supplement the equal employment opportunity requirements set forth in other related contract provisions.

   B. "Company" refers to any entity doing business with the Connecticut Department of Transportation and includes but is not limited to the following:

Contractors	Vendors (where applicable)
Subcontractors	Suppliers of Materials (where applicable)
Consultants	Municipalities (where applicable)
Subconsultants	Utilities (where applicable)

   C. The Company will work with the Connecticut Department of Transportation and the federal government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract or agreement.

   E. The Company and all their subcontractors or subconsultants holding subcontracts or subagreements of $10,000 or more on federally assisted projects and $5,000 or more on state funded projects, will comply with the following minimum specific requirement activities of equal employment opportunity. The Company will physically include these requirements in every subcontract or subagreement meeting the monetary criteria above with such modification or language as is necessary to make them binding on the subcontractor or subconsultant.

   F. These Required Contract Provisions apply to all state funded and/or federally assisted projects. activities and programs in all facets of the Connecticut Department of Transportation operations resulting in contracts or agreements.

2. Equal Employment Opportunity Policy

   The Company will develop, accept and adopt as its operating policy and Affirmative Action Plan utilizing as a guide the Connecticut Department of Transportation Affirmative Action Plan Guideline.

3. Equal Employment Opportunity Officer

The Company will designate and make known to the State Department of Transportation contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. Dissemination of Policy

A. All members of the Company's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the Company's equal employment opportunity policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

(1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less than once every six (6) months thereafter, at which time the Company's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable Company Official.

(2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable Company official covering all major aspects of the Company's equal employment opportunity obligations within thirty (30) days following their reporting for duty with the Company.

(3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate Company official in the Company's procedures for locating and hiring protected class group employees.

B. In order to make the Company's equal employment opportunity policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the Company will take the following actions:

(1) Notices and posters setting forth the Company's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
(2) The Company's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. Recruitment

A. When advertising for employees, the Company will include in all advertisements for employees the notation: “An Equal Opportunity Employer”. All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

B. The Company will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the Company will, through its EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the Company for employment consideration.

In the event the Company has a valid bargaining agreement providing for exclusive hiring of all referrals, the Company is expected to observe the provisions of that agreement to the extent that the system permits the Company’s compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the Company to do the same, such implementation violates Executive Order 11246, as amended.)

C. The Company will encourage its present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in the areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.

6. Personnel Actions

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoffs, and termination, shall be taken without regard to race, color, religion, sex, or national origin, etc. The following procedures shall be followed:

A. The Company will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

B. The Company will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practice.

C. The Company will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Company will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective actions shall include all affected persons.

D. The Company will promptly investigate all complaints of alleged discrimination made to the Company in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the Company will inform every complainant of all of his avenues of appeal.

E. The general contact provision entitled A(76) Affirmative Action Requirements is made part of this document by reference. In conjunction with this contract provision, only the job categories will change in order to be comparable with the job categories utilized by the Company proposing to do business with the Connecticut Department of Transportation. The goals and timetables will remain the same throughout the contract provision.

7. Training and Promotion

A. The Company will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

B. Consistent with the Company's work force requirements and as permissible under Federal and State regulations, the Company shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contact performance. Where feasible, 25 percent of apprentices of trainees in each occupation shall be in their first year of apprenticeship of training. In the event the Training Special Provision is provided under this contract, this subparagraph will be superseded.

C. The Company will advise employees and applicants for employment of available training programs and entrance requirements for each.

D. The Company will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

8. Unions

If the Company relies in whole or in part upon unions as a source of employees, it will use its best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the Company either directly or through an association acting as agent will include the procedures set forth below:

A. The Company will use its best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

B. The Company will use its best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin, etc.

C. The Company is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the Company, the Company shall so certify to the Connecticut Department of Transportation and shall set forth what efforts have been made to obtain such information.

D. In the event the union is unable to provide the Company with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the Company will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex or national origin, etc. making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that there shall be no excuse that the union with which the Company has a collective bargaining agreement providing for exclusive referral failed to refer minority employees). In the event the union referral practice prevents the Company from meeting the obligations pursuant to Executive Order 11246, as amended, and these provisions, such Company shall immediately notify the Connecticut Department of Transportation.

9. Subcontracting

A. The Company will use its best efforts to solicit Bids from and to utilize minority group subcontractors, or subcontractors with meaningful minority group and female representation among their employees. Companies shall obtain a list of applicable Disadvantaged Business Enterprise firms from the Division of Contract Compliance.

B. The Company will use its best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

C. The General Contract Provisions entitled “Minority Business Enterprises as Subcontractors” is made part of this document by reference and its requirements are applicable to all entities proposing to do business with the Connecticut Department of Transportation.

10. Records and Reports

For the duration of the project, the company will maintain records as are necessary to determine compliance with the Company’s equal employment opportunity obligations and Affirmative Action requirements. Additionally, the company will submit all requested reports in the manner required by the contracting agency.

A. The number of minority and non-minority group members and women employed in each work classification on the project.

B. The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to Companies which rely on whole or in part on unions as a source of their work force).
C. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and

D. The progress and efforts being made in securing the services of minority and female owned businesses.
    (1) All such records must be retained for a period of three (3) years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the State Department of Transportation and the U.S. Department of Transportation including consultant firms.

    (2) If on-the-job training is being required by the "Training Special Provision", the Company will be required to furnish a Monthly Training Report and Supplement Report (1409) for each trainee.

11. Affirmative Action Plan

A. Contractors, subcontractors, Vendors, suppliers, and all other Companies with contracts, agreements or purchase orders completely state funded will submit an Affirmative Action Plan if the contract value is $5,000 or over.

B. Contractors, subcontractors, Vendors, suppliers, and all other Companies with federally assisted contracts, agreements, or purchase orders valued at $10,000 or more will submit an Affirmative Action Plan.

Companies with contracts, agreements, or purchase orders with total dollar value under that which is stipulated in A and B above shall be exempt from the required submission of an Affirmative Action Plan unless otherwise directed by the Division of Contract Compliance.

EXHIBIT C
PROCUREMENT AND APPEALS PROCESS

GHTD PROCUREMENT PROCEDURES AND APPEALS PROCESS

It is the policy of the Greater Hartford Transit District that it is responsible for resolving all Pre-Bid, Pre-Award and Post-Award Procurement Protest disputes arising out of third party procurements using good administrative practices and sound business judgment. It is the District's intention that its procurement process provides for fair and open competition in compliance with federal and state laws and District Policies.

The District has established these pre-bid, pre-award, and post-award procurement protest policy and procedures so that all procurement protests/disputes are filed, processed and resolved in a manner consistent with the requirements of the Federal Transit Administration.

1. Pre-Bid

   A pre-bid or solicitation phase protest is received prior to the bid opening or proposal due date. Pre-bid protests are those based on the content of the initial notice and/or solicitation published by the District requesting bids or proposals from vendors or other interested parties.

2. Pre-award

   A pre-award protest is a protest against making an award and is received after receipt of proposals or bids, but before award of a contract.

3. Post-Award

   A post-award protest is a protest received after award of a contract. A post-award protest must be received within 5 business days of the notification of the award. A post-award protest generally alleges a violation of applicable federal or state law and/or District policy or procedures relative to the seeking, evaluating and/or awarding of the contract. Each Proposer will be notified by first class mail of the decision of the District as to the selection of firm under this procurement. Included in that notification will be a proposed effective date of engagement which will be no less than 15 days following the date of notification of award.

It is the policy of the District not to proceed with the award phase of any procurement if there is a pending protest.

All Protests must be filed in writing to:

Douglas C. Holcomb, Executive Director
Greater Hartford Transit District
One Union Place
Hartford, CT 06103

A Protest must be in writing and set forth the specific grounds of the dispute and shall be fully supported with technical data, test results, or other pertinent information related to the subject being protested. The Protest shall include the name and contact information of the Protester, solicitation number or description, and what remedy the Protester is seeking. The Protester is responsible for adhering to this regulation

Greater Hartford Transit District, Douglas C. Holcomb, Executive Director or designee shall make a determination on the Protest generally within ten (10) working days from receipt of the Protest. The Decision of the Executive Director or Designee must be in writing and shall

include a response to each substantive issue raised in the Protest. The Executive Director's decision shall constitute the District's final administrative determination.

If the District postpones the date of Bid submission because of a Protest or Appeal of the solicitation specifications, addenda, dates or any other issue relating to the procurement, the District will notify, via addendum, all parties who are on record as having obtained a copy of the solicitation documents that a Protest/Appeal has been filed and the due date for Bid submission shall be postponed until the District has issued its final decision.

The Protester may withdraw its Protest or Appeal at any time before a final decision is issued.

A Protester must exhaust all administrative remedies with the District before pursuing a protest with the Federal Transit Administration (FTA). Reviews of protests by the FTA will be limited to (1) failure to have or to follow the District's protest procedures or failure to review a complaint or Protest or (2) violations of Federal law or regulation.

A Protest Appeal to FTA must be received within five (5) working days of the date of the final decision by the Greater Hartford Transit District is rendered. The appeal must be in writing and must include the name and address of the protestor, cite the District as the grantee, the number of the solicitation, a statement of the grounds for protest and any supporting documentation, including a copy of the local Protest filed with the District and a copy of the District's decision, if any. Protest appeals should be filed with:

Federal Transit Administration Region 1 Office,
Kendall Square
Attention: Procurement Appeal
55 Broadway, Suite 920
Cambridge, MA 02142-1093

Upon receipt of a notice that an appeal has been submitted to FTA prior to the award of a contract, the District will immediately contact the appropriate FTA official to determine if the Response Date should be postponed. If the Response Date is postponed, the District will contact all Proposers or firms who have been furnished a copy of the IFB that an appeal has been filed and that the Response Date is postponed until FTA has issued its decision. Appropriate addenda will be issued rescheduling the Response Date.

Any appeal to FTA may be withdrawn at any time before FTA has issued its decision.

FTA's decision on any appeal will be final. No further appeals will be considered by FTA.

EXHIBIT D
BID PROPOSAL FORM

BID FORM
GHTD IFB #02-025
148 Roberts Street
GHTD Paratransit Employee Parking Lot
East Hartford, CT

GHTD PARKING LOT/RETAINING WALL BID FORM
BID ITEMS
ESTIMATE ITEMS SCHEDULE

NO.	DESCRIPTION	EST. QUANTITY	Units	UNIT BID PRICE (WORDS)	UNIT BID PRICE (FIGURES)	EXTENDED AMOUNT
1	Mobilization and Demobilization including Bonds and Insurance	1	LS			
2	Traffic Control and Protection of Vehicular Traffic and Pedestrians	1	LS			
3	Erosion Control Blankets	805	SY			
4	Anti-tracking Pad	135	SY			
5	Inlet Protection	4	EA			
6	Silt Fence	765	LF			
7	Concrete Washout Facility	1	LS			
8	Tree Protection Fencing	1	LS			
9	Temporary Construction Fencing	265	LF			
10	Clearing, Grubbing, and Removal of Miscellaneous Buried Features	1	LS			
11	Sawcutting of Existing Pavement	75	LF			
12	Removal of Existing Pavement	3	CY			
13	Removal of Existing Chain Link Fence	240	LF			
14	Excavation of Retaining Wall Backfill	5,905	BCY			
15	Haul existing retaining wall backfill off-site	6,614	LCY			
16	Demolition of existing retaining wall	3,000	CF			
17	Hauling of demolished retaining wall off-site	150	LCY			

18	Demolition of existing manholes	4	Ea			
19	Demolition of existing pipes	110	LF			
20	Demolition of existing stormwater management system	1	LS			
21	Hauling of demolished manholes, pipes, and stormwater management system off-site	300	LCY			
22	Cap pipe to remain	1	Ea			
23	Fill abandoned pipe to remain with flowable fill	5	CY			
24	Excavation/filling to subgrade	1,000	CY			
25	Excavation for new stormwater management system	450	CY			
26	Geotextile filter fabric	3,000	SY			
27	Crushed Stone	2834	Tons			
28	Lightweight Fill	4,656	CY			
29	Structural Fill	2,350	Tons			
30	Placement/Compaction of soil materials in lifts	4,525	BCY			
31	MSE Retaining Wall	5,000	SF			
32	Retaining wall geogrids	8,590	SY			
33	Retaining wall drain pipes	275	LF			
34	Cut weepholes in retaining wall blocks	12	LF			
35	New Asphalt Pavement Binder Course	141	Tons			
36	New Asphalt Pavement Wearing Course	141	Tons			
37	New process aggregate base course	358	CY			
38	Fine-grading of base course	1556	SY			
39	New Bituminous Asphalt Curb	745	LF			
40	Painted Line Striping	950	LF			

41	Painted Stenciled Pavement Markings	190	SF			
42	Furnishing and Placing Topsoil	1080	SY			
43	Turf Establishment	1080	SY			
44	New Wood Beam Guiderail	240	LF			
45	Light Pole Relocation	1	LS			
46	New Traffic Signage	6	EA			
47	New Riprap	80	CY			
48	New Landscape Stone	220	Tons			
49	New Chain Link Fence	325	LF			
50	New Landscaping and Plantings	1	LS			
51	New Electrical Conduit	1	LS			
52	New Level 2 EV Charging Station	1	LS			
53	New Catch Basin Structure	2	EA			
54	New Manhole Structure	4	EA			
55	New Stormwater Treatment Unit	1	EA			
56	New 12" HDPE Storm Pipe	130	LF			
57	New 24" HDPE Storm Pipe	20	LF			
58	New Underdrain for Detention System	135	LF			
59	New Subsurface Detention System	1	LS			
60	New Subsurface Infiltration System	1	LS			

LEGEND	
SF	Square feet
LS	Lump sum
Ea	Each
CY	Cubic yard
LCY	Loose cubic yard
BCY	Bulk cubic yard
CF	Cubic feet
CY	Cubic yard
SY	Square yard
LF	Linear feet

EXHIBIT E
REQUIRED FORMS AND CERTIFICATES

AFFIDAVIT

STATE OF CONNECTICUT)
) ss._____, 20___
COUNTY OF _____)

I,_____, being duly sworn, depose and say:
(insert name of authorized agent)

1. I am the _____of_____(the
(insert title) (insert name of company)
"Respondent") and am authorized on behalf of the Proposer to make this Affidavit.

2. I am over 18 years of age and understand the obligations of an oath.

3. There are no delinquent real and personal property taxes due the State of Connecticut from the Respondent.

4. The Respondent is current on all monetary obligations due the State of Connecticut.

5. The Respondent is currently in compliance with all applicable laws, regulations and ordinances of the United States and, State of Connecticut.

_____
(Insert name of company)

By:

_____

Name: Title:

Subscribed and sworn to before me,_____, the undersigned officer this

_____day of_____, 20___.

_____
Notary Public

My Commission Expires:

CERTIFICATION OF ELIGIBILITY

_____ hereby certifies that neither
(Name of Proposer)
it nor its "principals" is included on the U.S. Comptroller General's Debarred Bidders List.

Signature: _____

Firm: _____

The Proposer certifies to the best of its knowledge and belief that it and its principals

A. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in this transaction by any Federal department or agency.

B. Have not, within a three-year period preceding the date of this Proposal, been convicted of or had a civil judgment rendered against it for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction, violation of Federal or State anti-trust statues or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statement, or receiving stolen property.

C. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in Paragraph B of this Certification.

D. Have not, within a three-year period preceding the date of this Proposal, had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the Proposer is unable to certify to any of the statements in this certification, such Proposer shall include an explanation in such regard with its Proposal.

THE UNDERSIGNED CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

(Check One)

_____ I DO CERTIFY _____ I DO NOT CERTIFY

DATE: _____

SIGNATURE: _____

TITLE: _____

CERTIFICATION OF NON-COLLUSION

The Undersigned certifies, under penalties of perjury:

That this Proposal has been made by the Proposer independently, and has been submitted without collusion, and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in this procurement document, designed to limit independent bidding or competition;

That the contents of the proposal have not been communicated by the Proposer or its employees or agents to any person not an employee or agent of the Proposer or it's surety or any bond furnished with the proposal, and will not be communicated to any such person prior to the official awarding of this procurement.

That I have fully informed myself regarding the accuracy of the statement made in the certificate.

SIGNATURE: _____

NAME: _____

FIRM: _____

TITLE: _____

DATE: _____

CERTIFICATION OF RESTRICTIONS ON LOBBYING

I, _____, of _____,
Name & Title Name of Firm

hereby certify that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this federal contract, grant, loan or cooperative agreement, the undersigned shall complete and submit Standard Form, "Disclosure Form to Report Lobbying," in accordance with its instruction as amended.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements), and that all subrecipients shall certify and disclose accordingly.

4. The undersigned acknowledges that this certification is a material representation of fact, upon which reliance is placed at the time that the transaction concerned herewith was made or entered into, and that submission of this certification is a prerequisite for making or entering into such transaction imposed by Section 1352, Title 31, U.S. Code as amended. Any person who fails to file the required certification shall be subject to civil penalty of not less than $10,000, and not more than $100,000 for each such failure.

5. The undersigned certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the undersigned understands and agrees that the provisions of 31 US Code A3801, et seq., apply to this certification and disclosure, if any.

Executed this _____ day of _____, 20_____.

By: _____
Signature & Title of Authorized Official

CONTRACTOR'S STATEMENT ON SUB-CONTRACTORS

1. There are NO sub-Contractors associated with this proposal.

Authorized Signee:_____

Printed Name: _____

Title: Date: _____

For (Company): _____

OR

2. Listed below are sub-Contractors associated with this proposal. Additional sheets are attached as required. I _____have also attached appropriate Disadvantage Business Certifications.

Name of Company: _____

Address:_____

Contact Person: _____

Telephone #: _____

E-mail: _____

Name of Company: _____

Address:_____

Contact Person: _____

Telephone #: _____

E-mail: _____

CERTIFICATION FOR DISADVANTAGED BUSINESS ENTERPRISE

It is the policy of the U.S. Department of Transportation that disadvantaged business enterprises as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with State and/or Federal funds under this agreement.

The supplier or Contractor agrees to ensure that disadvantaged business enterprises as defined above have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this agreement. In this regard all recipients or contractors shall take necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that disadvantaged business enterprises have the maximum opportunity to compete and perform contracts. Recipients and their contractors shall not discriminate on the basis of race, creed, color, national origin, age or sex in the award of federal assisted contracts.

The specific goal for this project is a minimum of **7.9%**.

[ ] Contractor will meet the DBE goal for this contract. Proposer is certified according to requirements of DOT 49 CFR Part 26 as a DBE eligible for participation in DOT assisted contracts, and will be performing _____ percent (_____ %) of the contract work.

[ ] Contractor will meet the DBE goal for this contract. If awarded this contract, proposer will subcontract with the DBE(s) listed below which will be performing a total of _____ percent (_____%) of the total dollar amount of contract work. Each DBE listed below is certified according to requirements of DOT 49 CFR Part 26 for participation in DOT assisted contracts.

DBE Name and Address	Description of Work	Percent of Dollar Amount of Total Contract Work

(Attach additional sheets)

[ ] Contractor (if unable to meet the DBE goal of 7.9%) is committed to a minimum of ___% DBE utilization on this contract and will submit documentation demonstrating good faint efforts using the attached form.

SIGNATURE: _____

NAME: _____

FIRM: _____

TITLE: _____

DATE: _____

Any contractor and/or sub-contractor utilized to meet the DBE Participation requirements must be certified through the <u>State of Connecticut Department of Transportation's</u> Unified Certification Program (UCP.)

DBE GOOD FAITH EFFORTS DOCUMENTATION FORM
ANNUAL DBE GOAL: 7.9%

If Contractor has indicated on the DBE Participation Form that it does not meet the DBE goal, proposer must submit this form with its DBE Participation Form as documentation of its good faith efforts to meet the goal. Failure to submit this form with its proposer may render this proposal non-responsive. The Greater Hartford Transit District may require that proposer provide additional substantiation of good faith efforts.

Date: _____ Area of Expertise: _____

Name: _____ Company Name:_____

Response: _____

_____

Date: _____ Area of Expertise: _____

Name: _____ Company Name:_____

Response: _____

_____

Date: _____ Area of Expertise: _____

Name: _____ Company Name:_____

Response: _____

_____

Date: _____ Area of Expertise: _____

Name: _____ Company Name:_____

Response: _____

_____

Date: _____ Area of Expertise: _____

Name: _____ Company Name:_____

Response: _____

DBE LETTER OF INTENT
(a separate form is to be submitted for each DBE firm)

Name of bidder/offeror's firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Name of DBE firm: _____

Address: _____

City: _____State: _____ Zip: _____

Telephone: _____

Description of work to be performed by DBE firm:

_____

_____

_____

_____

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above. The estimated dollar value of this work is $ _____.

Affirmation
The above-named DBE firm affirms that it will perform the portion of the contract for the estimated dollar value as stated above and that the firm is DBE certified to perform the specific trades.

By _____Date: _____
(Signature)

_____
(Title)

If the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.

BUY AMERICA CERTIFICATION

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. Part 661, and any amendments thereto, which provide that Federal funds may not be obligated unless steel, iron, construction materials and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver.

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it **WILL MEET** the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661 and any amendment thereto.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it **CANNOT COMPLY** with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

APPROVED EQUAL FORM

_____
Bidder/ Equipment Manufacturer

IFB Equipment____ Section Number _____ Section Title _____

Bidder's Request:

The District's Response:

Approved: Denied: Noted: See Addendum:

Comments:

Procurement Officer: _____ Date: _____

STATEMENT OF BIDDER'S QUALIFICATIONS

(To be submitted by the Bidder with the Bid)

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

1. Name of Bidder: _____
2. Bidder's Tax Identification Number: _____
3. Permanent Main Office Address: _____

   _____
4. When Organized: _____
5. Organizational structure of business entity (select one):

   _____ General partnership (GP)
   _____ Limited partnership (LP)
   _____ Limited liability corporation (LLC)
   _____ Limited liability partnership (LLP)
   _____ Corporation
   _____ Individual doing business under a trade name (sole proprietor)
   _____ Other (specify)

6. If a Corporation, Where Incorporated: _____
7. How many years have you been engaged in construction under your present firm or trade name:_____
8. Contracts on hand: (Schedule these, showing gross amount of each Contract and the appropriate anticipated dates of completion).

   _____

   _____

   _____

9. General character of work performed by you:

_____

10. Have you ever failed to complete any work awarded to you? If so, where and why:

_____

_____

11. Have you ever defaulted on a Contract? If so, where and why.

_____

_____

12. List up to six past contracts of this type/size your firm has completed within the last three (3) years.

Project	Date	Contact Person	Phone No.

13. List your major equipment available for this Contract.

_____

_____

_____

_____

14. Experience in work similar in importance to this project.

_____

_____

_____

15. Background and experience of the principal members of your organization, including the officers.

_____

_____

_____

16. Give Bank reference.

_____

_____

_____

17. Status of the business and its current standing with the Secretary of State's office:

Connecticut Businesses – Are all required filings current with the Secretary of State be able to issue a Certificate of Legal Existence?	Yes _____	No _____
Out-of-State (Foreign) Businesses – Have you filed a Certificate of Authority / Application of Registration with the Connecticut Secretary of State? If not, submit a copy of your Certificate of Good Standing from your state of incorporation.	Yes _____	No _____

18. Is your local organization an affiliate of a Parent company? If so, indicate the principal place of business of the parent company and the name of agent for service.

Business Name _____

Address _____

City _____ State _____ Zip _____

Name of Agent _____

19. List of Affiliated Businesses (attach additional sheets as necessary):

Business Name	Address	Ownership Interest (%)

20. Based on the organizational structure of your business, provide a current listing of all corporate officers, principals, general or managing partners, limited partners, managers and members. If sole proprietorship or general partnership, attach trade name certificate filed with the town clerk's office.

21. Submit copies of all required business (trade and occupational) licenses with your response.

22. Your company may be asked to submit information relative to your company's financial statements and/or a Dun & Bradstreet report may be obtained prior to receiving an award. This information will be protected to the fullest extent required by law.

23. Additional information/documentation may be requested subsequent to your responding to this solicitation.

24. The undersigned hereby authorizes and requests any persons, firm, or corporation to furnish any information requested by the Greater Hartford Transit District in verification of the recitals comprising this statement of the Bidder's qualifications.

Dated at_____ this _____ day of _____ 20____.

_____
(Name of Bidder)

By: _____

Title: _____

State of _____)
) SS

County of _____)

_____ being duly sworn,

deposes and says that he/she is

_____of _____and that
he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 20___

_____
(Notary Public)

My Commission Expires: _____

EXHIBIT F
STATE OF CONNECTICUT
CONTRACT REQUIREMENTS

REQUIREMENTS OF THE STATE OF CONNECTICUT

The Agreement between the District and the Connecticut Department of Transportation has specific provisions that are passed on to all third party contractors including, but not limited to, Civil Rights, Nondiscrimination, Affirmative Action/Equal Employment Opportunities, Disadvantaged Business Enterprise, Governors' Executive Orders, Code of Ethics, and all applicable federal regulations. These provisions and all applicable appendices of the Agreement are herein incorporated by reference and made a part of this contract.

_____

Signed:

_____

Authorized Corporate Official

_____

Date

CONNECTICUT REQUIRED CERTIFICATIONS

All contract certifications required by the State of Connecticut must be included with the proposal. The instructions and affidavits forms are available at the State of Connecticut, Office of Policy and Management Internet site at:

https://portal.ct.gov/OPM/Fin-PSA/Forms/Ethics-Forms

Check this State of Connecticut Internet site immediately before you submit your proposal in case of any recent changes to the State's contractual requirements. It is the responsibility of the proposer to ensure that any and all up-to-date contract certification forms are properly filled out and submitted with your proposal.

SMALL BUSINESS ENTERPRISE (SBE) CERTIFICATION

To be eligible for the State of Connecticut's SBE certification a company must meet the legal definition of a small business or that of a minority owned firm:

SMALL BUSINESS ENTERPRISE (SBE):
Been doing business under the same ownership or management and has maintained its principal place of business in Connecticut for at least one year immediately prior to the date of application; Gross revenues not exceeding $15,000,000 during its most recent fiscal year; and, 51% ownership held by a person(s) who exercises the operational authority over daily affairs of the business and has the power to direct policies and management and receives beneficial interests of the business.

MINORITY BUSINESS ENTERPRISE (MBE):
A small business (must meet the above-stated SBE criteria) with at least 51% ownership by one or more minority person(s) who exercises operational authority over daily affairs of the business, has the power to direct management and policies, and receives the beneficial interests of the business. A minority is a person(s) who is American Indian, Asian, Black, Hispanic, has origins in the Iberian Peninsula, a woman, or an individual with a disability.

Yes_____; My Company is certified by the State of Connecticut as a SBE; attach a copy of the SBE Certification.

No_____; My Company is not certified by the State of Connecticut as a SBE.

SBE Certification

The contractor hereby acknowledges that **District** has an annual SBE goal of **25%**.

Firm Name: _____

Signature: _____

Title: _____

Date: _____

NOTE: This form is to be submitted with the Proposal. Please attach the names and addresses of any and all SBE eligible subcontractors who will perform work on this project, and the approximate dollar amounts to be paid to them. If there is no participation then this must be indicated on the form; the form executed and returned with this Proposal.

EXHIBIT G
CONNECTICUT DEPARTMENT OF LABOR PREVAILING WAGE BID PACKAGE

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 25-0856

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: 02-025 Project Town: East Hartford
State#: FAP#:
Project: Greater Hartford Transit District: Paratransit Operations Facility Employee Parking Lot Expansion

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	48.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	43.14	34.74
2) Carpenters, Piledrivermen	39.54	28.68
2a) Diver Tenders	39.54	28.68
3) Divers	48.0	28.68
03a) Millwrights	43.25	29.13
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	57.85	25.95
4a) Painters: Brush and Roller	38.07	25.80
4b) Painters: Spray Only	41.07	25.80

As of: February 14, 2025

4c) Painters: Steel Only	40.07	25.80
4d) Painters: Blast and Spray	41.07	25.80
4e) Painters: Tanks, Tower and Swing	40.07	25.80
4f) Elevated Tanks (60 feet and above)	47.07	25.80
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	45.75	33.97+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	41.27 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	49.58	35.25
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	34.5	27.26
8) Group 1a: Acetylene Burners (Hours worked with a torch)	35.5	27.26
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	34.75	27.26
10) Group 3: Pipelayers	35.0	27.26
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	35.0	27.26

As of: February 14, 2025

12) Group 5: Toxic waste removal (non-mechanical systems)	36.5	27.26
13) Group 6: Blasters	36.25	27.26
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	37.5	27.26
Group 8: Traffic control signalmen	20.7	27.26
Group 9: Hydraulic Drills	35.25	27.26
Group 10: Toxic Waste Removers A or B With PPE	37.5	27.26
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	36.73	27.26 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	35.76	27.26 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	35.76	27.26 + a
15) Form Erectors	36.09	27.26 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	35.76	27.26 + a

17) Laborers Topside, Cage Tenders, Bellman	35.65	27.26 + a
18) Miners	36.73	27.26 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: -----		
18a) Blaster	43.22	27.26 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	43.02	27.26 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	41.04	27.26 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	43.81	27.26 + a
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	33.16	32.36 + a
Three Axle Trucks; Two Axle Ready Mix	33.27	32.36 + a
Three Axle Ready Mix	33.33	32.36 + a
Four Axle Trucks	33.39	32.36 + a
Four Axle Ready-Mix	33.44	32.36 + a
Heavy Duty Trailer (40 tons and over)	35.66	32.36 + a

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	33.44	32.36 + a
Heavy Duty Trailer (up to 40 tons)	34.39	32.36 + a
Snorkle Truck	33.54	32.36 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)	55.42	28.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	50.79	28.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	55.03	28.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	54.09	28.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer).	50.4	28.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	49.45	28.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).	48.97	28.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)	48.22	28.80 + a

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	48.22	28.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	47.83	28.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	47.4	28.80 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	46.9	28.80 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	46.35	28.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	43.77	28.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	43.77	28.80 + a
Group 12: Wellpoint Operator.	43.69	28.80 + a
Group 13: Compressor Battery Operator.	42.97	28.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	41.52	28.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	41.01	28.80 + a
Group 16: Maintenance Engineer.	40.19	28.80 + a

As of: February 14, 2025

Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	45.63	28.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	42.57	28.80 + a
Surveyor: Chief of Party	45.87	28.80 + a
Surveyor: Assistant Chief of Party	42.3	28.80 + a
Surveyor: Instrument Man	40.7	28.80 + a
Surveyor: Rodman or Chairman	35.03	28.80 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	48.84	18.07
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

As of: February 14, 2025

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.1	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

Welders: Rate for craft to which welding is incidental.

Surveyors: Hazardous material removal: $3.00 per hour premium.

*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.

**Note: Hazardous waste premium $3.00 per hour over classified rate

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

As of: February 14, 2025

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: February 14, 2025

CONNECTICUT DEPARTMENT OF LABOR

Partner of the American Job Center Network

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Worker training requirements for public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (h) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 46 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268, and, on or after July 1, 2012, that any plumber or electrician subject to the continuing education requirements of section 20-334d, who has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration five or more years prior to the date such electrician or plumber begins work on such public works project, has completed a supplemental refresher training course of at least four hours in duration in construction safety and health taught by a federal Occupational Safety and Health Administration authorized trainer.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2012, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or, in the case of a supplemental refresher training course, shall include, but not be limited to, an update of revised Occupational Safety and Health Administration standards and a review of required construction hazards training, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety

and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project or, in the case of supplemental refresher training, a student course completion card issued by said Occupational Safety and Health Administration authorized trainer dated not earlier than five years prior to the date such electrician or plumber begins work on such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1; P.A. 10-47, S. 2; P.A. 11-63, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009; P.A. 10-47 made a technical change in Subsec. (a); P.A. 11-63 amended Subsec. (a) by adding provision re supplemental refresher training course for plumbers and electricians subject to Sec. 20-334d, amended Subsec. (c) by adding provisions re regulations and subject matter of refresher training course and refresher training course student completion cards, and made technical changes, effective July 1, 2011.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007,* where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Sec. 31-55a. Annual adjustments to wage rates by contractors doing state work. Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

(P.A. 02-69, S. 1.)

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

I,_____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____,_____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER | Week-Ending Date | PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY								$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							
												$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							

12/9/2013
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such person is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

_____ _____ _____

(Signature) (Title) Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:

Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE / HOURS WORKED EACH DAY: S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS: FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:
Landon Corporation, 15 Connecticut Avenue, Northford, CT 06472

SUBCONTRACTOR NAME & ADDRESS
XYZ Corporation
2 Main Street
Yantic, CT 06389

WORKER'S COMPENSATION INSURANCE CARRIER
Travelers Insurance Company
POLICY # #BAC8888928
EFFECTIVE DATE: 1/1/09
EXPIRATION DATE: 12/31/09

PAYROLL NUMBER: 1
Week-Ending Date: 9/26/09
PROJECT NAME & ADDRESS: DOT 105-296, Route 82

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE: S 20	M 21	T 22	W 23	TH 24	F 25	S 26	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS: FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
Robert Craft 81 Maple Street Willimantic, CT 06226		M/C	Electrical Lineman E-1 1234567 Owner OSHA 123456		8	8	8	8	8		S-TIME 40 O-TIME	$ 30.75 Base Rate $ 8.82 Cash Fringe	1. $ 5.80 2. $ 3. $ 2.01 4. $ 5. $ 6. $	$1,582.80				P-xxxx	$1,582.80	#123 $ xxx.xx
Ronald Jones 212 Elm Street Norwich, CT 06360	65%	M/B	Electrical Apprentice OSHA 234567		8	8	8	8	8		S-TIME 40 O-TIME	$ 19.99 Base Rate $ 16.63 Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $	$1,464.80	xx.xx	xxx.xx	xx.xx	G-xxx	$1,464.80	#124 $xxx.xx
Franklin T. Smith 234 Washington Rd. New London, CT 06320 SECTION B		M/H	Project Manager			8					S-TIME 8 O-TIME	$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $	$1,500.00	xx.xx	xx.xx	xx.xx	M-xx.x		#125 xxx.xx
											S-TIME O-TIME	$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							

7/13/2009
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER 1 OF 2

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care Blue Cross 4) Disability _____

2) Pension or retirement _____ 5) Vacation, holiday _____

3) Life Insurance Utopia 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of 9/26/09,

I, Robert Craft of XYZ Corporation, (hereafter known as

Employer) in my capacity as Owner (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

Robert Craft (Signature) owner (Title) 10/2/09 Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY
That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

Robert Craft (Signature) owner (Title) 10/2/09 Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ****License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ****License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

EXHIBIT H
TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS

SERVICE DESCRIPTION

a) Purpose

The District is requesting Competitive Sealed Bids from qualified firms for a contractor interested in contracting with the District to construct a new employee parking lot, retaining wall, stormwater management system, and the associated site amenities to replace the former failed construction efforts at 144 Roberts Street, East Hartford, CT 06108, a parcel owned by the Greater Hartford Transit District which is directly adjacent to the District's ADA Paratransit Operations & Maintenance Facility, located at 148 Roberts Street, East Hartford, CT 06108.

b) Scope of Work

Existing Site Description

The Site is located along the North side of Roberts Street, approximately 950 feet to the east of the intersection of Roberts Street and Wrobel Place. The Site is accessed via an existing paved parking lot that is located on the subject parcel. The total project work area is approximately 0.5 acres (ac). The Site is bordered by the existing paved parking lot to the west, Roberts Street to the south, and wooded areas to the north and east. Commercial development similar in nature to the developed portion of the subject parcel exists to the west and across the street from the subject parcel.

The existing conditions within the work area are the remnants of a partially-completed construction project by others. Prior to completion of the construction, a retaining wall that was installed as part of the project began to fail and construction was stopped. To mitigate the wall failure, a portion of the retaining wall, wall backfill material, and stormwater management system were removed. The existing work area is therefore comprised of a partially-intact retaining wall, wall backfill material, a partially-intact stormwater management system, and miscellaneous site features such as light poles and chain link fencing.

Project Overview

The intent of the project is to construct a new employee parking lot, retaining wall, stormwater management system, and the associated site amenities to replace the former failed construction efforts. The existing retaining wall, stormwater management system, and site features will be removed to allow for the new work to be completed. Existing wall backfill material will be excavated down to the bottom of the existing wall and removed from the site. An excavated transition slope will be created to allow for the excavation to progress from existing grade down to the bottom elevation of the existing wall.

Upon removal of the existing wall and wall backfill material, a new segmental block mechanically stabilized earth (MSE) retaining wall will be constructed, in an alignment similar to that of the former

wall. New lightweight backfill material will be placed behind the wall to alleviate the weight of heavier backfill and to replace the presence of pre-existing unstable fine grain soils present near the toe of the wall. The wall will be stabilized with geogrid reinforcement to provide resistance from overturning and sliding. A new parking lot will be constructed within the fill area behind the new wall. The new parking lot will be paved, curbed, and graded to divert runoff away from the wall structure and capture it within the central areas of the parking lot. New site appurtenances including chain link fencing, timber guiderails, signage, and light poles will be installed for proper site function and user safety.

A new stormwater management system will be installed for collection, conveyance, treatment, and detention of stormwater runoff generated across the new parking lot area. A treatment train approach comprised of catch basin sumps, catch basin trap hoods, a hydrodynamic separator stormwater treatment unit, and a detention system and infiltration system isolator row will result in improvements in stormwater quality prior to discharge into the wetlands adjacent to the work area. The drainage system outlet will be connected to an existing manhole, which has an existing outfall that flows towards the wetlands. This manhole was installed as part of the previous project and will be re-utilized for this project.

In addition to the new site features and drainage system, new landscaping will be provided to enhance and stabilize the work area. New landscaping will be planted along the site's Roberts Street frontage. Plant selections are intended to match the species selection and appearance of the existing landscaping along the frontage of the existing portion of the 148 Roberts property. New lawn will be installed within the parking lot islands and along the perimeter areas of the new parking lot where hardscape cover is not proposed. All disturbed areas below the new retaining wall will be stabilized and restored with an appropriate slope seed mix.

Greater Hartford Transit District

Paratransit Employee Parking Lot – Retaining Wall Repair

Standard Construction Specifications

Table of Contents

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Allowances.

1.2 GENERAL REQUIREMENTS

A. The Bid Documents contain one or more contract cost item entitled “ALLOWANCES”. Allowances are noncompetitive cost items the Bidder shall carry in his Bid for the purpose of permitting the Owner to estimate the total Contract cost. The number, type and value of the ALLOWANCES has been predetermined by the Owner and contained in the Bid documents.

B. “ALLOWANCES” is the means that will be used by the Owner to reimburse the Contractor for those specifically itemized project related incurred costs that are outside the scope of the work to be performed directly by the Contractor, and that are essential to the overall completeness of the project, but are to some degree, beyond the direct control of the Contractor.

C. It is understood that the Bidder has included in his total bid quote the ALLOWANCES contained in the Bid. D. Each agency/utility or service, listed as an ALLOWANCE, shall directly invoice the Contractor for providing services for the work. The Contractor shall, in turn and as part of a regular invoice to the Owner, include in his request for payment such actual incurred costs for ALLOWANCES.

D. The Contractor’s costs associated with processing said ALLOWANCES invoices (including but not limited to overhead and profit), shall be included in the various items listed in the bid proposal. There shall be no ALLOWANCE invoice mark-up by the Contractor. The Contractor agrees that no request for additional costs, overhead, or profit in connection with ALLOWANCES will be made. All other project related ALLOWANCE costs shall be included in other applicable pay items contained in the Bid.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation of temporary erosion and sedimentation control measures
2. Maintenance of temporary erosion and sedimentation control measures.
3. Monitoring of site condition and installation of supplemental temporary erosion and sedimentation control measures.
4. Sediment removal and disposal
5. Temporary seeding or other surface stabilization measures.
6. Removal of temporary erosion and sedimentation control measures.
7. Monitoring, documentation, and recordkeeping.
8. Installation of permanent erosion control materials.
9. Final cleanup.

B. Erosion and sediment control techniques include, but are in no way limited to, silt fence, hay bales, drainage structure inserts/filters, mulching with hay/straw, netting/matting, grassing, stone dikes/berms/check-dams, compost blankets and berms, barriers, diversions, traps, basins, and appurtenances which will ensure that erosion and sediment pollution will be either eliminated or maintained within acceptable limits.

C. The measures specified herein are the minimum requirements which Contractor shall comply to control erosion and siltation throughout execution of the work. Contractor shall provide additional work if necessary to control erosion and siltation throughout the duration of the construction as conditions dictate, or as directed by Engineer.

D. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

E. Contractor is responsible for all health and safety.

1.2 SUBMITTALS

A. Submit material specifications and shop drawings for all materials furnished under this Section.

B. Prior to the start of the construction, submit schedule for the construction of required stormwater detention basins, temporary and permanent erosion and sedimentation control measures, clearing and grubbing, grading, structures at watercourses, construction, and paving.

C. During construction, submit to Engineer schedule changes that affect timing of construction.

D. Submit copies of all inspection and maintenance report forms.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Regulations of Connecticut State Agencies (RCSA)

1. 22a-315-10 through 19, Soil and Water Conservation

C. Connecticut Department of Energy and Environmental Protection (DEEP)

1. Connecticut Guidelines for Soil Erosion and Sediment Control, Council on Soil and Water Conservation in Collaboration with Connecticut Department of Energy and Environmental Protection, Effective March 30, 2024.

D. State of Connecticut Department of Transportation (CTDOT)

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 819, 2024 and any supplements.

1.4 PERMIT CONDITIONS

A. Contractor and Subcontractors are bound to comply with any project-related permits obtained by Owner or Engineer for the work of the project. Such permits will affect performance of the work, and Contractor and Subcontractors are bound to comply with requirements of such permit and representations contained in permit application as though Contractor and Subcontrator were the Permittee/permit-holder. Requirements and conditions set forth in Owner or Engineer-obtained project-related permits and permit applications shall be binding on Contractor just as any Specification would be.

1.5 QUALITY CONTROL

A. Contractor shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the erosion of soil or movement of sediment from construction activities to off-site areas via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of Contractor.

B. Where additional erosion and sedimentation control measures are required beyond what is indicated on the Drawings or herein, comply with applicable sections of the Connecticut Guidelines for Soil Erosion and Sediment Control, Effective March 30, 2024.

C. If applicable, comply with applicable provisions of the Connecticut Department of Energy and Environmental Protection (DEEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, (DEEP-WPED-GP-015), latest revision thereof. Conditions of such General Permit, other conditions of approval or authorizations, and associated Stormwater Pollution Control Plan (SWPCP) shall become part of the Contract Documents.

D. Engineer has the authority to order immediate, additional, temporary control measures to prevent contamination of adjacent streams or other watercourses, or other areas of water impoundment and damage by erosion.

E. If Engineer observes construction procedures and operations that jeopardize erosion control provisions, Engineer will notify Contractor. If such construction procedures and operations are not corrected promptly, Engineer may suspend the performance of any or all construction until corrections have been made, and such suspension shall not be the basis of any claim by Contractor for additional compensation, nor for an extension of time to complete the Work.

F. Should construction materials be washed away or otherwise rendered ineffective in the opinion of Engineer during the progression of the Work, Contractor shall replace the installations at no additional cost to the Owner.

1.6 COORDINATION WITH PERMANENT EROSION CONTROL PROVISIONS

A. Coordinate temporary erosion and sedimentation control measures with permanent erosion control features to the extent practical to ensure economical, effective and continuous erosion control throughout construction and post-construction periods.

PART 2 PRODUCTS

2.1 HAY BALES

A. Hay bales shall be made of cut hay with forty (40) pounds minimum weight and 120 pounds maximum weight. Bales shall be free of rotten or degraded hay, significant splits or voids. Hay bales shall be held together with a minimum of two bands made of either wire or heavy twine.

B. Stakes to anchor the bales shall be a minimum of 36 inches long and made of hardwood with a minimum dimension of 1½-inch by 1½-inch normal size. Metal stakes may be used instead of wooden stakes. Metal stakes shall be round, “U,” “T,” “L,” or “C” shaped with a minimum weight of 0.5 pounds per foot.

C. Replace individual hay bales upon loss of 30% of original mass or volume, whichever is less.

2.2 SILT FENCE

A. Woven Polypropylene geotextile having a minimum weight of 3.1 ounces per square yard conforming to the following:

1. Mechanical and Physical Properties of Silt Fence Geotextile

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Weight	ASTM D3776	oz/yd^2	5.6
Grab Tensile Strength	ASTM D4632	Pounds	60
Grab Elongation (Max percent)	ASTM D4632	Percent (%)	15–30
Trapezoidal Tear	ASTM D4533	Pounds	30
Puncture	ASTM D4833	Pounds	30
Mullen Burst	ASTM D3786	psi	150–200
Permittivity	ASTM D4491	Sec^{-1}	0.15
Flow Rate	ASTM D4491	gal/min/ft2	15–20
Apparent Opening Size	ASTM D4751	(U.S. Sieve)	30–35
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70

B. Silt fence shall be constructed of a minimum thirty-six (36) inch wide continuous woven geotextile. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics. Edges of the fabric shall be finished to prevent the outer fibers from pulling away from the geotextile. Geotextile shall be free of defects or flaws that significantly affect its physical and/or filtering properties.

C. Fabric shall be securely fastened to stakes a minimum of 42 inches long and made of hardwood with a minimum dimension of 1½ inch by 1½ inch normal size such that a 6 to 8 inch length of fabric is unattached at the bottom for anchorage in soil. Metal stakes may be used instead of wooden stakes. Metal stakes shall be round, "U," "T," "L," or "C" shaped with a minimum weight of 0.5 pounds per foot. Stakes shall be spaced not greater than ten feet apart. When required, wire or another type of support shall be constructed between the geotextile fabric and the posts to improve the load carrying capacity of the silt fence.

2.3 CATCH BASIN INSERT

A. Manufactured "bag type" catch basin insert of woven polypropylene geotextile with integral lifting loops or straps conforming to the following:

1. Mechanical and Physical Properties of Catch Basin Insert

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Grab Tensile Strength	ASTM D4632	Pounds	315
Grab Elongation (Max percent)	ASTM D4632	Percent (%)	30 (max)
Trapezoidal Tear	ASTM D4533	Pounds	40x50 (min)
Puncture	ASTM D4833	Pounds	135 (min)
Mullen Burst	ASTM D3786	psi	420 (min)
Permittivity	ASTM D4491	gal/min/sq ft	0.7
Flow Rate	ASTM D4491	gal/min/ft2	50 (min)
Apparent Opening Size	ASTM D4751	(U.S. Sieve)	20-40
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	80 (min)

Note: Catch basin inserts for catch basins with curb openings shall be equipped with integral curb deflector.

2.4 STRAW MULCH

A. Straw mulch shall be comprised of threshold straw of oats, wheat, barely, or rye that is free from noxious weeds, mold or other objectionable material. Straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment. Straw mulch shall be utilized on all newly graded areas with slopes exceeding 5% to protect areas against washouts and erosion unless other erosion control measures are provided.

2.5 FILTER BERM COMPOST

A. Where establishing vegetation is not planned, compost shall be a decomposed, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. Compost shall possess a moisture content of 30 to 60% and a organic matter content of 25 to 100%. The maximum particle length shall be 6″, and 100% passing a 3″, 90 to 100% passing a 1″, 70% to 100% passing a 3/4″, and 30% to 75% passing a 1/4″ screen. However, no more than 50% passing a 1/4″ screen in high rainfall/flow rate situations.

B. Where establishing vegetation is planned, compost shall be use a well decomposed, stable, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. Compost shall possess a moisture content of 30 to 60%, a pH of 6.0 to 8.5 and an organic matter content of 25 to 65%. The maximum particle length shall be 6″, and 100% passing a 3″, 90 to 100% passing a 1″, 70% to 100% passing a 3/4″, and 30% to 75% passing a 1/4″ screen. However, no more than 60% passing a 1/4″ in high rainfall/flow rate situations. It shall contain no substances toxic to plants, shall possess no objectionable odors, and shall not resemble the raw material from which it was derived.

2.6 COMPOST SOIL BLANKET

A. Compost soil blankets may be utilized on slopes of up to 2:1.

B. Slightly scarify slopes and remove large clods, rocks, stumps, roots larger than 2 inches in diameter and debris on slopes, where vegetation is to be established. This soil preparation step may be eliminated where approved by the Landscape Architect/Designer, or where seeding or planting isn't planned. Track (compact) slope using a bulldozer before applying compost.

C. Apply compost at the following rates:

Compost Application Rates

Annual Rainfall/Flow Rate	Total Precipitation & Rainfall Erosivity Index	Application Rate for Slopes to be Vegetated (Note 1)	Application Rate for Slopes not being Unvegetated
Low	1″–25″ & 20–90	½″–¾ ″	1″–1½″
Average	26″–50″ & 91–200	¾″–1″	1½″–2″
High	51″ and above, & 201 and above	1″–2″	2″–4″

D. Lower application rates indicated for slopes to be vegetated should only be used in conjunction with seeding, and for compost blankets applied during the prescribed planting season for the particular region.

E. Compost shall be uniformly applied using an approved spreader unit, including bulldozers, side discharge manure spreaders, etc. Track (compact) the compost layer using a bulldozer or other appropriate equipment. (This step may be eliminated where impractical or where deemed unnecessary by the Landscape Architect/Designer.) Alternatively, apply compost using a pneumatic (blower) unit, or other unit that propels the product directly at the soil surface, thereby preventing water from moving between the soil-compost interface. Thorough watering may be used to improve settling of the compost. Apply compost layer approximately 3 feet over the top of the slope, or overlap it into existing vegetation.

F. On highly unstable soils, use compost in conjunction with appropriate structural measures.

G. Dry or hydraulic seeding may be completed following compost application, as required, or during the compost application itself, where a pneumatic unit is used to apply the compost.

2.7 STONE CHECK DAM

A. Stone shall be graded as follows:

Gradation of Stone for Check Dam (ConnDOT M.01.01 Grading No. 3)

Sieve	Percent Passing by Weight
2 1/2″	100
2″	90–100
1 1/2″	35–70
1	0–15
1/2″	0–5

Stone shall be sound, tough, durable, angular, not subject to disintegration, on exposure to water, or weathering, be chemically stable and shall be suitable in all other respects for the purpose intended.

B. Geotextile may be used under the stone to provide a stable foundation and to facilitate removal of the stone.

2.8 EROSION CONTROL SEED MIXTURE

Erosion Control Seed

Species (Note 1)	Application Rate, Pounds Per Acre	Application rate, Pounds Per 1,000 sf	Optimum Seed Depth, inches (Note 2)	Optimum Seeding Dates (Note 3)
Annual ryegrass Lolium multiflorum	40	1.00	0.5	3/1–6/15 and 8/1–10/15
Perennial ryegrass Lolium perenne	40	1.00	0.5	3/15–7/1 and 8/1–10/15
Winter Rye Secale cereale	120	3.00	1.00	4/5–7/1 and 8/15–10/15
Oats Avena sativa	86	2	1	3/1–6/15 and 8/1–9/15
Winter Wheat Triticum aestivum	120	3	1	4/15–7/1 and 8/15–10/15
Millet Echinochloa crusgalli	20	.5	1	5/15–7/15
Sudangrass Sorghum sudanese	30	.7	1	5/15–8/1
Buckwheat Fagopyrum esculentum	15	.4	1	4/1–9/15
Weeping lovegrass Eragostis curbula	5	.2	.25	6/1–7/1
ConnDOT All Purpose Mix	150	3.4	.5	3/1–6/15 and 8/1–10/15

Notes:
1 – Listed species may be used in combinations to obtain a broader time spectrum. If used in combinations, reduce each species planting rate by 20% of that listed
2 – Seed at twice the indicated depth for sandy soils.
3 – May be planted throughout summer if soil moisture is adequate or can be irrigated. Fall seeding may be extended 15 days in the coastal towns

2.9 EROSION CONTROL MATTING

A. Temporary Erosion Control Blanket shall be 1) Curlex® Excelsior Blanket, as manufactured by American Excelsior Company, 2) ERO-MAT® V75S(FD), as manufactured by Verdyol Plant Research, Ltd., or 3) Landlok® S2 RD, as manufactured by SI® Geosolutions, or 4) approved equal.

B. Degradable Erosion Control Fabric Netting shall be Landlok® 407 GR, as manufactured by 1) SI® Geosolutions, or 2) GeoJute® as manufactured by Belton Industries, Inc., or 3) BioNet® S150BN™ Double Net Straw Blanket, as manufactured by North American Green, or 4) approved equal.

C. Long-Term and Non-degradable Turf Reinforcement Mats shall be 1) Pyramat®, as manufactured by SI® Geosolutions, or 2) Recyclex® Turf Reinforcement Matting, as manufactured by American Excelsior Company, or 3) Vmax3 C350™, as manufactured by North American Green, or 4) approved equal.

D. Erosion control matting shall be secured with staples or an alternative attachment device such as geotextile pins or plastic pegs as recommended by the manufacturer. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval prior to installation.

PART 3 EXECUTION

3.1 GENERAL

A. Install erosion and sedimentation control measures as shown on the Drawings prior to any site disturbance.

B. No work shall be started until erosion control schedules and installation have been accepted by Engineer.

C. Engineer has the authority to control the surface area of each material exposed by construction operations and to direct Contractor to immediately provide permanent or temporary pollution control measures to prevent contamination of adjacent watercourses or other areas of water impoundment. Every effort shall be made by Contractor to prevent erosion on the site and abutting properties or areas.

D. Contractor shall construct all permanent erosion and sediment control features at the earliest practical time as outlined in the accepted schedule. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction, which were unforeseen, but are needed prior to installation of permanent control features, or that are needed temporarily to control erosion or sedimentation which develops during construction operations.

E. Contractor shall limit as necessary the surface area of the earth material exposed to sufficiently maintain and protect the slopes to prevent pollution. Where erosion is likely to be a problem,

clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent erosion and sediment control features can follow immediately thereafter, if conditions permit; otherwise, temporary control measures will be required between successive construction stages.

F. Erosion control measures shall be maintained by Contractor, and he shall remove such installations only upon completion of the work and the site is stabilized or when authorized to do so by Engineer.

G. Contractor shall operate all equipment and perform all construction operations so as to minimize pollution. Contractor shall cease any of his operations, which will increase pollution during rainstorms.

H. Failure by Contractor to control erosion, pollution, and siltation shall be cause for the Engineer to employ outside assistance to provide the necessary corrective measures. The cost of such assistance, including engineering costs, will be charged to Contractor and appropriate deductions made to Contractor's payment.

3.2 HAY BALES

A. Hay bales shall be positioned as indicated on the Drawings and/or as necessary to prevent off site movement of sediment produced by, or as a result of, construction activities, or as direct by the Engineer.

B. Hay bales shall be utilized on all catch basins and drainage facilities on the Project Site to prevent the entry of sediments or other debris. Maintain such protection throughout execution of the work until such drainage facilities have been abandoned/removed.

C. Bales shall be placed lengthwise with ends of adjacent bales tightly abutting one another to form a continuous barrier. Bales shall be entrenched to a depth of 4 inches and backfilled, with the backfill placed toward the potential source of runoff and sediment. All bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms. Each bale shall be anchored with a minimum of two stakes, driving the first stake in each bale towards the previously laid bale to drive the bales together. Stakes must be driven a minimum of 18 inches into the ground. Loose hay shall be inserted between bales as required to prevent water from escaping between the bales.

3.3 GEOTEXTILE SILT FENCE

A. Install a filter fabric silt fence prior to construction and remove after full surface restoration has been achieved. Install silt fence as indicated on the Drawings and/or as necessary to prevent off site movement of sediment produced by, or as a result of, construction activities.

B. Install as follows:

1. Hand shovel excavate a small trench a minimum of six inches wide by six inches deep on the upslope side of the desired fence line location.

2. Unroll the siltation fence system, position the post in the back of the trench (downhill side), and hammer the post at least 12 inches into the original ground.

3. Fabric rolls shall be spliced at posts. The fabric shall be overlapped six inches, folded over and securely fastened to posts.

4. Lay the bottom 6 inches of the fabric into the trench to prevent undermining by storm water run-off.

5. Backfill the trench and compact. Compaction is necessary to prevent the run-off from eroding the backfill.

6. For slope and swale installations, extend the ends of the trench sufficiently up slope such that the bottom end of the fence will be higher than the top of the lowest portion of the fence.

3.4 CATCH BASIN INLET SEDIMENT CONTROL

A. Install catch basin inlet sediment control devices in each exiting catch basin as long as it remains in use in accordance with manufacturer's guidelines at the locations shown on the Drawings.

B. A catch basin sediment filter shall be installed and changed/cleaned per the manufacturer's recommendations, or as directed by Engineer during construction.

C. New catch basins shall have a filter installed immediately upon completion of construction. In addition, a hay bale, or similar, barrier shall be installed around the new basin and maintained in place until binder is placed or disturbed areas draining to it are stabilized.

D. Catch basins with curb openings shall have filter fabric covering the opening and the edges of the fabric shall be secured. A filter boom shall also be placed over the opening.

3.5 TEMPORARY SEDIMENT BASINS

A. Temporary sedimentation basins shall be employed as required during construction. Sedimentation shall be periodically removed from the basins and from behind erosion and sedimentation control devices. The Contractor shall direct all possible site runoff to the temporary sedimentation basins.

B. The temporary sedimentation basins shall be maintained from the start of construction until construction of the permanent detention basins is completed and perimeter areas are stabilized.

3.6 TEMPORARY MULCHING

A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 calendar days of the completion of rough grading or where final grading has been completed but seeding is not anticipated for 20 days.

1. Straw/Hay Mulch

   Exposure Period: 6 months

   Application: By hand or machine at 110 lbs/1,000 square feet.

2. Bark Chips/Shredded Bark

   Exposure Period: Less than one year

   Application: By hand or machine at 6 cubic yards /1,000 square feet.

3.7 TEMPORARY EROSION CONTROL MATS

A. Erosion control mats shall be furnished, installed, maintained, and later removed in ditches or swales, on embankment slopes, and excavation slopes at the locations shown on the Drawings in accordance with the manufacturer's recommendations.

B. All areas shall be smooth graded and compacted. Remove all rocks, dirt clods, vegetation and other obstructions that may cause damage to the mats.

C. Unroll mats parallel to the direction of water flow and lay flat against the ground. Overlap roll ends 1–2 feet with upslope mat on the top to prevent uplift of mat end by water flow. Overlay adjacent edges of mat by six inches. Extend mat 2–3 feet above the crest of steep slopes and anchor by excavating a 6-inch-deep trench, and secure end of mat in trench, backfill and compact. Secure mat to the ground using staples or pins furnished by manufacturer of mat.

D. When no longer required, as determined by the Engineer, temporary erosion control mats shall become the property of the Contractor and be removed and properly disposed.

E. Ground disturbances, including holes and depressions caused by the installation and removal of the temporary erosion control blanket shall be backfilled and repaired.

3.8 INSPECTIONS AND MAINTENANCE

A. Contractor is responsible to maintain the sediment and erosion control features at all times throughout the project duration and until the completion certification and approval has been issued.

B. Regular erosion and sediment control system inspections shall be conducted by Contractor throughout the project duration. At a minimum, Contractor shall conduct daily inspections and maintain erosion control systems in good operating condition. Report the results of the inspection and the recommended maintenance and/or repair requirements to Engineer.

C. Additional inspections may be required and/or directed prior to, or immediately following, a storm event >0.1 inches. Repairs shall be made as necessary.

D. In the event that the sedimentation and erosion control measures employed by Contractor prove to be inadequate as determined by the Engineer, Contractor shall adjust operations to the extent necessary to prevent erosion and sediment transport.

E. Surface water shall be pumped to maintain excavations free of water. Comply with applicable requirements of the Connecticut Department of Environmental Protection, specifically those requirements related to the management of stormwater and dewatering wastewaters associated with construction activities.

F. Hay bales and/or silt fences.

1. Remove accumulated sediment once it builds up to one-half of the height of the bale or fabric.

2. Replace damaged or degraded bales as necessary or when directed by the Engineer.

3. Replace damaged fabric, or patch with a 2-ft minimum overlap. Overlaps may only be made at fence posts.

4. Make other repairs as necessary to ensure that the bales/fence is filtering all runoff.

G. Erosion Control Mats shall be inspected at least once a week. Areas where the mat has become dislodged from the soil surface or become torn shall be re-graded and re-seeded as necessary and the mat re-installed. When repetitive failures occur at the same location review conditions and modify erosion control measures to reduce failure rate. Temporary erosion control blanket damaged during the progress of work or resulting from the Contractor's vehicles, equipment, or operations shall be repaired or replaced at the expense of the Contractor.

H. Clean catch basin inlet sediment control devices in accordance with manufacturer's guidelines.

I. Any catch basins that collect sediment as a result of Contractor's work shall be thoroughly cleaned out by Contractor.

END OF SECTION

SECTION 01 57 14
TEMPORARY DUST CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnishing and spreading water, calcium chloride, and/or mulch on the subgrade, or in other areas of a Project Site or associated off-site areas, for the purpose of controlling dust emissions.

B. The requirements set forth in this section of the specifications apply to all phases and areas of construction.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Regulations of Connecticut State Agencies (RCSA)

1. RCSA Section 22a-174-1 through 43, Abatement of Air Pollution.

C. ASTM International (ASTM)

1. ASTM D98, Standard Specification for Calcium Chloride.

1.3 SUBMITTALS

A. Material certificates or other data indicating compliance with these Specifications.

B. Copies of manufacturer-provided instructions for all materials furnished under this Section.

PART 2 PRODUCTS

2.1 MATERIALS

A. Only water, calcium chloride, and mulch are approved for dust control. No asphalt or petroleum-based products may be utilized for dust control.

B. Water used shall be clean, non-polluted water obtained from sources approved by Engineer.

C. Calcium chloride, ASTM D98. Calcium chloride in pellet form and flake form shall be acceptable.

1. Calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.

2. Engineer may reject calcium chloride failing to meet the requirements of the aforementioned specifications or which has become caked or sticky in shipment.

D. Mulch

1. Straw mulch: Threshold straw of oats, wheat, barely, or rye that is free from noxious weeds, mold or other objectionable material. Straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer.

2. Wood chips: Processed tree trimmings free of trash or other physical contaminants such as metal and plastic.

PART 3 EXECUTION

3.1 GENERAL

A. Dust control shall be the responsibility of Contractor and dust control operations shall meet the requirements of the State of Connecticut Department of Environmental Protection.

B. Construction sequencing shall be organized and conducted in a manner to leave existing pavement or ground coverings in place until just prior to earth excavation for the purpose of minimizing the migration of dust beyond the Project Limits into the surrounding area.

C. Engineer reserves the right to conduct active dust monitoring using visual methods and may utilize particulate measurement equipment during the course of the work. If the amount of fugitive dust and/or particulate generated during the work is deemed unacceptable in the Engineer's judgment or exceeds baseline Project Site conditions at Engineer's monitoring locations, Engineer may require Contractor to stop work and implement corrective measures. No claim for delay will be considered for work stoppage based upon the results of Engineer's active dust monitoring results.

D. Stockpiled materials from which particle have the potential of becoming airborne shall be securely covered with a temporary waterproof covering made of polyethylene, polypropylene, hypalon, or approved equal. The covers must be in place at all times when work with the stockpiles is not occurring.

E. Subcontractor shall sweep all adjacent roads and neighboring parking lots and driveways that are impacted by the work. Whenever dirt is tracked from the site it shall be cleaned as necessary to prevent it from becoming a nuisance or hazard. At a minimum, adjacent streets shall be swept once per week.

3.2 WATER

A. The application of water shall be under the control of Engineer at all times. It shall be applied only at the locations, and at such times, and in the amount as may be directed by Engineer. Quantities of water wasted or applied without authorization will not be paid for.

B. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding or pollution.

C. Contractor shall have available and maintain in an operable condition at all times, sufficient equipment for the purpose of applying water for dust control.

D. Watering equipment shall consist of pipelines, tanks, tank trucks, distributors, pumps, meters, hose or other devices, approved by Engineer, which are capable of applying a uniform spread of water over the surface. A suitable device for a positive shut-off and for regulating the flow of water shall be located so as to permit positive operator control.

E. Applications of water for dust suppression include, but are not necessarily limited to, the following:

1. Demolition activities, material handling, material processing, and loading.

2. Earthwork.

3. Open excavation faces and dust-prone areas of the work.

4. Temporary access roads and roadway surfaces within and around the Project Site.

3.3 CALCIUM CHLORIDE

A. Calcium chloride shall be applied only at the locations, at such times and in the amount as may be directed by the Engineer and only in areas that will not be adversely affected by the application. Refer to Section 01 3543 – Environmental Protection.

B. Calcium chloride shall be uniformly applied at the rate of one and one-half (1½) pounds per square yard (lb/yd2) or at any other rate as directed by Engineer. Application shall be by means of a mechanical spreader, or other approved methods. The number and frequency of applications shall be to Engineer's satisfaction.

3.4 MULCH FOR DUST CONTROL

A. Coordinate the use of mulch for dust control with erosion and sedimentation control measures.

B. Straw mulch shall be applied at a rate of 100 pounds per 1,000 square feet (100 lb/1,000 ft2).

C. Wood chips or wood mulch shall be applied at such a rate as to form a layer one (1) inch thick.

3.5 OTHER DUST CONTROL MEASURES

A. A temporary seed mixture may be spread in lieu of, or in addition to mulch over areas where the suspension of grading work in disturbed areas is expected to be more than 30 calendar days and as directed by Engineer.

END OF SECTION

SECTION 01 71 13
MOBILIZATION

PART 1 GENERAL

1.1 SUMMARY

A. This Section specifies requirements for general preparation of the Project Site as required for construction operations including:

1. General Mobilization
2. Construction Site Safety
3. Utility Mark-Out
4. Temporary Utilities
5. Temporary Field Office
6. Security
7. Fire Protection

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor shall be responsible for all health and safety.

D. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work, including all costs, fees and taxes required or levied. Notify and obtain such permits or approvals from all agencies having jurisdiction prior to starting work.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. American National Standards Institute (ANSI)

1. ANSI Z535.1 – American National Standard, Safety Colors.

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

D. Connecticut State Building Code, including all applicable Amendments and Supplements.

1. 2003 International Building Code (IBC), Chapter 33 – Safeguards During Construction.

E. State of Connecticut Department of Transportation (ConnDOT)

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 819, 2024 and any supplements.

1.3 SAFETY REQUIREMENTS

A. As a specialist in its field of work, Contractor accepts complete responsibility for performing its work safely. This includes sole responsibility for the health and safety of its employees, agents, subcontractors (and their employees) and any other person on or adjacent to the work area. Contractor's responsibility includes compliance with all current laws, codes, ordinances, rules, regulations, standards and requirements of applicable public and private agencies and authorities ("Laws"). Contractor must take all measures and safeguards necessary to protect: (1) employees, (whether or not working for the Contractor), (2) employees and agents of Owner, (3) members of the general public and (4) public and private property.

B. Contractor is an independent contractor, with responsibility for its means and methods and the safety of its workers and Owner is not intended to be and shall not be considered an employer of Contractor's employees. As such, it shall be Contractor's sole duty to monitor the performance and practices of its employees and subcontractors for safety, to ensure that the practices and methods of performing the work are safe and to immediately stop any unsafe practices by its employees or its second or subsequent tier subcontractors ("subcontractors") or their employees. No actions taken by Owner or its consultants to monitor practices or performance of the work for safety or to stop any unsafe practices by Contractor or its subcontractors shall be construed to suggest or imply that Owner or its consultants has or has assumed any obligation or duty to take such actions.

C. Contractor accepts complete responsibility for compliance with safety procedures and policies contained in the Contract Documents and compliance with all applicable Laws, relating to health or safety, including, but not limited to the Occupational Safety and Health Act of 1970, as amended, and the regulations and standards of the Occupational Safety & Health Administration and similar state agencies ("OSHA") ("Health and Safety Laws").

D. All obligations and requirements of Contractor in this document also apply to Contractor's subcontractors. No person or entity performing work for or on behalf of Contractor is excluded from compliance.

1.4 UTILITY MARK-OUT

A. Prior to commencing work, comply with utility mark-out requirements of the Call-Before-You-Dig System (811 or 1-800-922-4455).

1. Verify the location of all subsurface utilities marked through the Call-Before-You-Dig System.

B. Not all subsurface facilities or structures will be identified through the Call-Before-You-Dig System. Confirm the location of other subsurface utilities and other subsurface facilities or structures prior to commencing work.

1.5 TEMPORARY UTILITIES

A. Temporary Water

1. All water for construction purposes, as well as the means of having the water conveyed about the work, shall be provided by Contractor and the cost of this work shall be included in the cost of the work to be done under this Contract.

a. The source, quality and quantity of water furnished shall at all times be satisfactory to Engineer.

2. Contractor shall coordinate with MDC, OR other water provider as applicable, for temporary water service. Obtain all permits and comply with applicable codes of jurisdictional authorities.

a. Contractor shall pay MDC or other water provider as applicable, all fees for the provision of temporary water service and usage, including but not necessarily limited to those levied for applications, inspections, meters, valves, backflow prevention, other devices, and usage.

b. Comply with MDC requirements for temporary water service, including equipment which may be required such as meters, valves, backflow prevention or other devices.

3. Temporary Drinking Water

a. Provide adequate potable drinking water, so piped, transported, and stored so as to keep it safe and fresh, and served from satisfactory types of sanitary drinking stands, fountains, or single service containers.

b. Provide all such facilities and services in strict accordance with applicable health regulations.

B. Temporary Electric Power

1. Contractor shall coordinate with Eversource or other electric provider as applicable for temporary electric service to operate temporary facilities, construction equipment, temporary lighting, weather protection, heating, etc. Obtain all permits and comply with applicable codes of jurisdictional authorities and OSHA.

a. Contractor shall pay Eversource or other electric provider as applicable for provision of temporary power facilities and usage.

b. Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

2. The use of alternate sources of temporary electric power such as generators shall be utilized only with the approval of Engineer.

C. Temporary Sanitary Facilities

1. Provide and maintain portable facilities and enclosures at the site as required to support the work of this project, and include cleaning, installation and removal to meet all OSHA requirements.

D. Other Temporary Services

1. Provide all other temporary services as required to satisfactorily complete the work.

1.6 TEMPORARY FIELD OFFICES

A. A temporary field office is not a requirement of the project.

1. If Contractor elects to utilize a temporary field office Contractor shall pay all costs for maintenance of temporary field office throughout the work.

2. Owner assumes no responsibility for security, theft, vandalism, or loss of any kind associated with Contractor's temporary field office.

1.7 SECURITY

A. Security of work areas must be maintained by Contractor at all times during the work. Contractor shall provide for all security as necessary to control access to the Project Site and protection of Contractor's material and equipment.

1. Owner and Engineer assume no responsibility for equipment, tools or materials stored, staged or otherwise present at the Project Site. Contractor assumes full and complete responsibility for damage, theft or other loss occurring to equipment, tools or materials stored, staged or otherwise present at the Project Site.

1.8 FIRE PROTECTION

A. Comply with all applicable fire protection and prevention requirements which may be established by Federal, State or local governmental agencies.

1. Coordinate with the [Insert local fire department].

2. Prior to the start of any on-site work, comply with the following:

a. Provide the Town of East Hartford Fire Department a summary of the work to be performed, including Contractor contact personnel and work schedule.

B. Take all precautions necessary to prevent fires. Contractor shall be responsible to ensure that the area within the Project Limits is kept orderly and clean and that combustible rubbish and construction debris is promptly removed from the Project Site.

C. Installation of equipment suitable for fire protection shall be done as soon as possible after commencement of operations.

D. Fuel for cutting and heating torches shall be gas only and shall be contained in UL-approved containers.

E. Provide and maintain fire extinguishers in the immediate vicinity where welding tools or torches of any type are in use. The fire extinguisher shall be a type appropriate for the fire hazards of the work area. Contractor shall provide a fire watch during times of welding or burning near combustible materials.

PART 2 PRODUCTS

2.1 CONSTRUCTION SIGNS

A. Construction Safety Signs: Provide Construction Safety Signs as required around the Project Site to provide warning of potential dangers or hazards associated with construction activities. Conform with 29 CFR 1926 and other State or local requirements.

B. Construction Safety Signs shall include the following:

1. Danger Signs: Danger signs shall be used only where an immediate hazard exists.

a. Danger signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording.

2. Caution Signs: Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.

a. Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording.

b. Standard color of the background: yellow; panel, black with yellow letters. Any letters used against the yellow background shall be black. Colors: opaque glossy samples, ANSI Z535.1.

3. Exit Signs: Exit signs, when required, shall be lettered in legible red letters, not less than 6 inches high, on a white field and the principal stroke of the letters shall be at least three-fourths inch in width.

4. Safety Instruction Signs: Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background.

5. Directional Signs: Directional signs, other than automotive traffic signs specified in "Traffic Signs" below, shall be white with a black panel and a white directional symbol. Any additional wording on the sign shall be black letters on the white background. Where applicable, directional signs shall conform to the *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).*

6. Traffic Signs: Construction areas shall be posted with legible traffic signs at points of hazard. All traffic control signs or devices used for protection of construction workers shall conform to the *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).*

C. Temporary Sign Mounting

1. Fence Mounted: Heavy duty nylon cable ties, stainless steel wire, or other approved method.

2. Post-mounted: Unless otherwise approved, direct driven posts, steel, 3 pounds/foot. Mounting height 7 feet and horizontal sign edge clearance minimum 2 ft from roadway/travelway edge.

PART 3 EXECUTION

3.1 GENERAL MOBILIZATION

A. Sedimentation and Erosion Control

1. Install sedimentation and erosion controls in accordance with Section 01 5713 – Temporary Erosion and Sedimentation Controls.

B. Construction Entrance

1. Locate stabilized construction entrance(s) (anti-tracking pad) as shown on the Drawings.

2. The stabilized construction entrance shall be installed prior to any site work which involving heavy equipment or any site disturbance which may reasonably be expected to generate soils, mud, or other accumulations which may adhere to vehicles leaving the Project Site.

3. Remove stabilized construction entrance at the completion of the work.

C. Fencing and Barriers

1. Temporary Construction Fencing

a. Install temporary construction fencing as shown on the Drawings. Refer to Section 32 3113 – Chain Link Fences and Gates.

b. The temporary construction fencing shown is depicted in general configuration only. Contractor is solely responsible for securing the entire Project Site or area of the Work as necessary for proper control of operations on the Project Site and as required to complete the work in a safe and secure manner whether such fencing is shown or not.

2. Other Barriers and Similar Facilities

a. Provide other safety barriers, including but not limited to, fencing, barricades, and signage as required to prevent unauthorized entry to the Project Site, construction areas or open excavations. Provide barriers which are necessary for proper control of operations on the Project Site and as required to complete the work in a safe and secure manner. Comply at all times with applicable federal, state and local regulations. Adapt barriers and associated protection to evolving site conditions throughout the work.

D. Other Safety Devices and Work Controls

1. Provide other safety devices, including but not limited to, signs, cones, barrels, lights, warning lights, and sirens as required for safety. Provide those safety devices which are necessary for proper control of operations on the Project Site and as required to complete the work in a safe and secure manner. Comply at all times with applicable federal, state and local regulations. Adapt safety devices to evolving site conditions throughout the progress of the work.

END OF SECTION

SECTION 01 71 24
AS-BUILT SURVEY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Final Survey of completed construction.

2. Preparation of "As-Built" Drawings after construction is completed.

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut, Regulations of Connecticut State Agencies (RCSA)

1. Sections 20-300b-1 through 20-300b-20, Standards for Surveys and Maps in the State of Connecticut.

1.3 SUBMITTALS

A. Surveyor: Submit name and qualifications of Professional Land Surveyor who will be responsible for the work of this Section.

B. Certificates: Submit a certificate signed by a Connecticut-licensed Land Surveyor (PLS) certifying that the location and elevation of improvements comply with the Contract Documents and any approved changes in the work.

C. Final Survey: Prepare and submit two (2) copies of the final as-built survey.

D. Project Record Documents: Submit other pertinent documentation as may be required or appropriate.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Surveyor: Engage a Land Surveyor licensed as a Professional Land Surveyor (PLS) in the State of Connecticut to perform survey work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 FINAL SURVEY

A. Provide Improvement Location Survey to depict the horizontal and vertical location of all new construction.

3.2 AS-BUILT DRAWINGS

A. Prepare final As-Built Drawings which accurately depict the final configuration of all new construction. Document by means of appropriate details and notes all changes from the Drawings or Specifications which were made in the work or additional information which was uncovered in the course of construction.

B. As-Built Drawings shall depict the horizontal and vertical location of above-grade and below grade construction. Collect sufficient survey data to accurately represent the project scope and area.

1. Location: Survey shall include locations of all physical features installed during the construction with appropriate labelling.

a. Subsurface construction shall depict the actual location, depth, and configuration.

b. Utilities shall include type, size, material of construction and depth. Include all appurtenances such as valves, tees, cleanouts, etc. Include reference to permanent surface improvements.

c. Include field changes of dimension and detail.

d. Include detail not on original Contract Drawings.

e. Include changes or modifications which result from punch lists or final inspection.

2. Topographic data: From established survey control, conduct a topographic survey of the project area after construction is complete. Generate one-foot contours throughout the area of work and show breaks in slope and other notable features.

a. Pedestrian routes shall depict sufficient topographic data to confirm compliance with handicapped accessibility requirements.

b. Accessible Routes: A minimum of three (3) elevations at each edge and centerline (cross-section), spaced at a minimum of 5 feet along the route.

c. Ramps: Elevation shall be depicted with a minimum of three (3) elevations at bottom and top of each sloped segment. Elevation of landings associated with a ramp shall be depicted with a minimum of four (4) elevations at each corner.

d. Curb Ramps: Elevation shall be depicted with a minimum of three (3) elevations at bottom and top of the accessible ramp section. Elevation of flare (wings) sections

(wings) shall be depicted with a minimum of three (3) elevations at each triangle corner.

e. Accessible Parking Spaces: Elevation of the parking area and Access Isle shall be depicted with a minimum of four (4) elevations at each corner, respectively.

C. Submit two prints of the final as-built drawings to Engineer prior to submittal of Application for Final Payment.

D. Final as-built drawings shall bear the seal and signature of a Professional Land Surveyor (PLS) licensed in the State of Connecticut.

END OF SECTION

SECTION 02 32 19

EXPLORATORY EXCAVATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavation of test pits where it may be necessary to locate or examine soils, groundwater, drains, pipes, rock, utilities, subsurface structures, or any other obstacles or subsurface conditions.

2. Stockpiling, management, and disposal of surplus or unsuitable material.

3. Backfilling and compacting of test pits with suitable material.

B. Exploratory excavations shall be conducted where shown on the Drawings, where directed or approved by Engineer, and as Contractor may deem necessary to locate or examine subsurface conditions as part of his work.

C. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

D. Contractor is responsible for all health and safety.

1.2 PAYMENT

A. Exploratory excavation work conducted by Contractor for his use or as specifically called-for on the Drawings or in the Specifications shall be considered incidental work and shall be included in Contractor's base price for the project. Contractor shall be responsible for any required backfilling with suitable materials, disposal of unsuitable excavated materials, and restoration of the excavation area.

B. Exploratory Excavation requested by Engineer shall be paid for in accordance with Contractor's Unit Price bid for "Exploratory Excavations" per Section 01 2200 – Unit Prices.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. United States Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

1.4 SAFETY

A. Contractor shall conduct all excavation activities in conformance with applicable regulations, including those relating to warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Contractor shall provide and maintain barricades, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas and open excavations. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

D. Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to construct permanent or temporary excavation support systems, including, but not necessarily limited to, sheet piling, trench shields, trench boxes, timber trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping, and benching.

E. Any time an excavation is to remain open, at a minimum, provide full enclosure with safety barriers and fencing, warning signs, and additional safety control measures as appropriate for the condition.

1.5 SUBMITTALS

A. Submit record data of observations noted in test pits, including photographs, diagrams, and descriptive notes.

1.6 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Utility Mark-out

1. Prior to commencing work, comply with utility mark-out requirements of the Call-Before-You-Dig System (1-800-922-4455).

2. Verify the location of all subsurface utilities marked through the Call-Before-You-Dig System.

3. Not all subsurface facilities or structures will be identified through the Call-Before-You-Dig System. Confirm the location of other subsurface utilities and other subsurface facilities or structures prior to commencing work. Field-mark utilities as required.

C. Utility Coordination

1. Inform all utility owners of the necessity of test pit work. Prove reasonable advance notice to allow for coordination.

2. Coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the test pit location.

3. If so desired by the respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

D. Utility Protection

1. Safeguard and protect from damage any utility to remain in service. Before excavating near any utility, notify the utility owner, coordinate protective work, and comply with the utility owners' requirements.

2. Where utilities are encountered, notify Engineer and document location and type of utility before proceeding with work in such area.

3. When uncharted or incorrectly charted piping or utilities are encountered during excavation, stop work and notify Engineer immediately. Cooperate with the utility owners in maintaining their utilities in operation prior to resuming work.

E. Retaining Structures

1. Provide bracing, shoring, sheeting, sheet piling, underpinning or other retaining structures necessary to guard against any movement or settlement of existing or new construction, utilities, paving, light standards, piping or conduit. Assume responsibility for the strength and adequacy of retaining structures, and for the safety and support of construction, utilities or paving, and for any movement, settlement or damage thereto.

1.7 SEQUENCING

A. Contractor shall provide Engineer a minimum two (2) day notice prior to test pit excavation. Notify Engineer prior to backfill.

B. If test pits are required during the work to evaluate unforeseen conditions, notify Engineer as soon as the need for such work is known.

C. Notify Engineer and/or utility companies of any conflicts or other conditions observed which may require design revisions, relocations, and/or adjustment. No work shall be started within areas where conflicts or other conditions are observed which require design revisions, relocations, and/or adjustment until authorized by Engineer.

PART 2 PRODUCTS – NOT USED

2.1 SOILS

A. Refer to applicable Earthwork specifications for backfill.

PART 3 EXECUTION

3.1 EXCAVATION

A. Test pit excavation and backfill shall comply with applicable provisions of earthwork and excavation as indicated in other applicable Specification Sections.

B. Excavation of test pits shall be accomplished by such means as are required to ensure that underground utilities or structures which may be encountered are not damaged.

C. Contractor shall measure and record the size, configuration, exact horizontal and vertical location of all utilities, pipes or other conditions/obstacles encountered.

D. Contractor shall be solely responsible for any damages incurred during excavation operations. Any such damages shall be repaired or replaced by Contractor to the satisfaction of the facility owner/operator, responsible/administering agency, and/or Engineer. Whether repair and/or replacement is Conducted by Contractor or must be conducted by owner/operator or responsible/administering agency, any and all costs thereof, including those costs associated with planning, coordination and owner/operator or responsible/administering agency personnel, shall be borne by Contractor.

E. Where an existing pavement has been removed for test pit excavation, the surface shall be restored in accordance with the Drawings and Specifications. In all other areas, the surface of test pit areas shall be backfilled and the surface restored to a condition equal to original, unless otherwise indicated by Engineer.

END OF SECTION

SECTION 02 41 23
SITE AND UTILITY DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. General Site Demolition.

2. Demolition of site structures, retaining walls, signage, light standards, foundations and appurtenances, pavement, curbing, and similar site improvements.

3. Termination of utility services.

4. Demolition or abandonment of drainage, sewer, and water pipe

5. Demolition or abandonment of miscellaneous below-grade utilities and related facilities including but not necessarily limited to electric and communications ducts, steam lines, and gas lines.

6. Demolition or abandonment of manholes, catch basins, vaults, and similar utility structures.

7. Filling of voids and excavations resulting from site demolition.

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut.

1. State of Connecticut Solid Waste Management Regulations, Section 22a-209 including any amendments thereto.

1.3 DEFINITIONS

A. Demolition: Any operation including the dismantling or wrecking of a structure, assembly, appurtenance, or any portion thereof, including major and minor components, parts, and systems. Demolition shall be inclusive of the removal, handing, processing, segregation, loading, and proper off-site disposition of materials. Demolition shall be interpreted as complete and total removal unless otherwise indicated. The term Remove shall be synonymous with Demolition.

B. Bulky Waste: Land clearing debris and non-contaminated or hazardous waste material resulting directly from demolition activities other than Clean Fill, including such materials as tree stumps,

treetops, concrete, wood, brick, plaster, roofing materials, wallboard, metals, carpeting, insulation, furniture, and furnishings. Bulky Waste shall include Construction and Demolition Debris and Construction and Demolition Waste.

1.4 SUBMITTALS

A. Salvage Schedule: List of items to be salvaged for Engineer's review and approval.

B. Abandonment procedures required by the owner of each utility prior to performing the work of utility termination/cutting/capping/plugging.

C. Material specifications and shop drawings for all materials and equipment furnished under this section, prior to performing the work of utility abandonment.

D. Schedule indicating the timing of termination for each utility.

E. Copies of permits, licenses, approvals, insurance, or bonds associated with termination of utility service.

F. Copies of utility termination letters confirming termination of service from each utility owner/operator.

G. Quality Control Submittals (prior to commencement of work).

1. Schedule of demolition activities.

2. Methods of demolition, including sequence and equipment proposed for same.

H. Contract Closeout Submittals (prior to authorization of final payment):

I. As-built drawings showing locations of all terminated/cut/capped/plugged utilities and service disconnections at or before project close-out.

1.5 SAFETY

A. Conduct the work of this Section in conformance with applicable regulations, including those relating to warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Provide and maintain barricades, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform with all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas and open excavations. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

D. Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to construct permanent or temporary excavation support systems, including, but not necessarily limited to, sheet piling, trench shields, trench boxes, timber trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping, and benching.

E. Any time an excavation is to remain open, at a minimum, provide full enclosure with safety barriers and fencing, warning signs, and additional safety control measures as appropriate for the condition.

1.6 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Utility Mark-out

1. Prior to commencing work, comply with utility mark-out requirements of the Call-Before-You-Dig System (811 or 1-800-922-4455).

2. Verify the location of all subsurface utilities marked through the Call-Before-You-Dig System.

3. Not all subsurface facilities or structures will be identified through the Call-Before-You-Dig System. Confirm the location of other subsurface utilities and other subsurface facilities or structures prior to commencing work. Field-mark utilities as required.

C. Utility Coordination

1. Inform all utility owners of the necessity of test pit work. Provide reasonable advance notice to allow for coordination.

2. Coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the test pit location.

3. If so desired by the respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

1.7 REGULATORY REQUIREMENTS

A. Comply with all applicable federal, state, and local safety and health requirements regarding all aspects of the work. Do not proceed until all permits or other approvals are secured.

B. Contractor is bound to comply with any project-related permits or approval obtained by Owner, including all requirements of such permit and representations contained in permit application as though Contractor were the permittee. Requirements and conditions set forth in Owner-obtained project-related permits and permit applications shall be binding on Contractor just as any Specification would be.

C. Do not close or obstruct roadways, sidewalks, hydrants, or other infrastructure without permits or authorization from local municipal authorities or other authorities having jurisdiction.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with the material specifications required by the owner of each utility. Where such material specifications may conflict with this Specification, utility owner's requirements shall prevail.

B. Earth Materials: Refer to applicable specification section.

C. Concrete: Refer to applicable specification section.

D. Grout: Bagged, pre-mixed formulations of non-shrink grout shall meet the requirements of ASTM C1107, Grade B or site mixed, ASTM C476.

1. Unconfined compressive strength: 7,500 psi at 28 days.

2. Grout shall be non-metallic, non-gaseous, and non-shrink when tested in accordance with ASTM C1107 Grade B or C at a fluid consistency (flow cone) of 20 to 30 seconds. Thirty-minute-old grout shall flow through the flow cone after slight agitation, in temperatures of 40 degrees F to 90 degrees F.

3. Mix Design: Obtain prior written approval of Engineer for any proposed mix design. Mix design shall include the proportions of hydraulic cement, potable water, fine aggregates, expansive agent, and any other necessary additive or admixture.

4. Grout shall be mixed to a flowable consistency as determined by ASTM C230. All bagged material shall be clearly marked with the manufacturer's name, date of production, batch number, and written instructions for proper mixing, placement and curing of the product.

5. Contractor may formulate and design a grout mix for use on the project in lieu of using a pre-bagged product.

E. Water: Potable.

F. Solid Concrete Masonry Unit: ASTM C55, sized per pipe diameter to minimize requirements for cutting.

PART 3 EXECUTION

3.1 GENERAL

A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures, utilities, and other site features prior to start of work and notify Engineer in writing, of any hazardous conditions and/or discrepancies.

B. Existing utilities at the Project Site have not been clearly defined as to location, size, and as-built condition, and all utility information shown on the Drawings or described herein must be considered approximate.

C. Primary structures and other site features are shown on the Drawings; other smaller structures and features not shown on the Drawings may exist and shall be demolished as part of the work of this Section at no additional cost.

D. Prior to commencing construction activities, Contractor shall identify and delineate those areas or specific improvements that are not to be disturbed. Areas or specific improvements within the Limits of Work/Contract Limits and general work areas which are not to be disturbed shall be clearly marked or fenced. Monuments and markers shall be protected before construction operations commence. Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting designated areas, specific improvements, monuments, and markers at the Project Site.

E. Contractor shall have sole responsibility for verification of actual field conditions. Contractor shall bear full responsibility for obtaining information regarding the location, layout, and as-built configuration of existing site improvements, including aspects of such improvements which are not readily visible, including but not necessarily limited to above-ground and underground utilities, utility structures, their connections, and other above- and below-grade construction that my affect, or be affected by, the work of this Section.

F. Utility services to buildings outside the limits of work shall be maintained and all resulting costs or charges shall be the responsibility of Contractor.

G. Although surficial features such as manholes, catch basins, valves and junction boxes may be visible and/or shown on the Drawings, Contractor is required to perform exploratory excavations as he deems appropriate to ascertain the location and nature of all subsurface utilities components which are to be terminated, abandoned, or demolished, or otherwise affected by the work.

H. Provide all required coordination with owners of the various utilities serving, or present at, the Project Site as required to complete termination, demolition and abandonment work.

I. Prior to physically cutting, disconnecting, demolishing or abandoning any facility, verify that service has been terminated and no active connections remain.

J. Coordinate as required for permanent termination of service, temporary termination of service, relocation of facilities, abandonment of facilities, demolition of facilities, cutting, capping, plugging, and bracing.

K. Comply at all times with the procedures for terminations of utility services as required by the owner of each utility.

L. When utilities are encountered that are not indicated on the Drawings, notify Engineer before proceeding with the work.

3.2 PROTECTION OF EXISTING FEATURES

A. General

1. All areas or specific improvements, including but not limited to vegetation, utilities, poles, wires, fences, curbs, monuments/property-line markers, and other structures, which must be preserved in place without being temporarily or permanently relocated shall be carefully supported and otherwise protected from damage by Contractor.

2. As excavation/demolition work approaches underground structures, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools.

B. Pavements

1. On paved surfaces to remain, Contractor shall not use or operate heavy equipment, other power-operated equipment, or store tools, equipment, or materials which may mar, cut, or otherwise damage such surfaces. If there is no alternative to the operation of heavy equipment, other power-operated equipment, or storage of tools, equipment, or materials on paved surfaces to remain, Contractor shall take all measures necessary to protect such surfaces.

2. All surfaces, which have been damaged by Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of construction operations. Such restoration shall meet the approval of Engineer and may include repair or complete replacement at Contractor's expense.

C. Planted Areas

1. All planted areas, including lawn/turf areas and landscaped areas, which have been damaged by Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of construction operations.

D. Utilities

1. Locate and identify existing utilities that are to remain and protect them from damage. Provide protection as required such as marking, blocking, bracing, stabilizing, supporting, and retaining.

2. Before excavating near any utility, notify the utility owner, coordinate protective work, and comply with the utility owners' requirements.

3. All utility services shall be supported by suitable means so that the services shall not fail when tamping and settling occurs.

4. Where known utilities are encountered, notify Engineer and document location and type of utility before proceeding with work in such area.

5. When uncharted or incorrectly charted utilities are encountered, stop work and notify Engineer. Cooperate with the utility owners in maintaining their utilities in operation prior to resuming work.

E. Retaining Structures: Provide bracing, shoring, sheeting, sheet piling, underpinning or other retaining structures necessary to guard against any movement or settlement of existing or new construction, utility systems, paving, or other improvements. Contractor assumes responsibility for the strength and adequacy of retaining structures, and for the safety and support of construction, utilities or paving, and for any movement, settlement or damage thereto.

3.3 SITE DEMOLITION

A. Conduct site demolition as shown on the Drawings.

B. Conduct site demolition operations in a manner that will prevent damage to adjacent structures, utilities, pavements and other facilities to remain.

C. Remove from the site and properly dispose of all materials resulting from site demolition operations.

D. Salvage of Materials

1. Refer to Engineer-approved Salvage Schedule.

2. If shown on the Drawings or requested by the Owner, protect, remove and store materials at a designated location at the Project Site for reuse or removal by Owner.

3.4 UTILITY TERMINATION

A. Termination: Where "Terminate" is indicated, permanently terminate utility service as indicated on the Drawings in accordance with each utility owner's specific requirements, or coordinate with the utility owner in those cases where the utility owner will perform termination.

B. Coordinate and secure required permits, licenses, approvals, insurance, or bonds associated with termination of service.

C. Coordinate inspections by utility company personnel, or if privately-owned, coordinate inspections by qualified, authorized personnel on behalf of the utility owner.

D. Provide completed and executed utility termination forms as required by each utility owner's requirements.

E. Secure any required utility termination letters from each utility which confirm that service has been terminated and no active connections remain.

F. Termination Procedure

1. Water

a. Do not impact any water pipe that may be constructed of asbestos-containing materials unless asbestos abatement specifications are part of the contract documents and the work is completed by qualified personnel in accordance with the requirements contained therein.

b. Cut and cap water pipe as indicated on the Drawings or in accordance with the water utilities' requirements. Do not leave "dead-end" pipe runs.

c. Provide restraining blocks at all capped ends.

2. Electrical and Communications

a. Remove conductors to nearest structure unless otherwise indicated. Plug openings in structures per the details or in accordance with the utilities' requirements.

b. Cut and cap conduits at each end. Caps shall match conduit type.

c. Direct-Bury Cable: Comply with the cable owner's requirements.

d. Secure termination documentation.

3. Gas

a. Comply with gas company requirements.

3.5 UTILITY ABANDONMENT

A. Abandonment: Where "Abandon" or "Abandon in-place" is indicated, terminate utility service, cut, cap and otherwise separate the facility from portions to remain and implement abandonment procedure as defined herein.

B. Sewer and Drainage Systems

1. Less than 6 inches in diameter: Provide 6-inch concrete plug at open ends on either side of the length to be abandoned as indicated on the Drawings.

2. Greater than 6 inches in diameter: Fill abandoned section with grout/flow-fill and provide 6-inch concrete plugs on either side of the length to be abandoned as indicated on the Drawings.

a. Where the filling of pipe is called-for, submit plan of proposed procedure to the owner of such utility and Engineer for approval.

b. Filling of pipe shall be with pressure (pumping) methods.

3. Where the filling of pipe or conduit is called-for, Contractor shall submit a plan of his proposed procedure to the owner of such utility and Engineer for approval.

4. All structures which are to be abandoned in-place shall have their tops or roof slabs removed and floor slabs broken so as to permit the free passage of water.

5. Unless otherwise indicated, structures which are to be abandoned in-place may be demolished such that only that portion of the structure from finished grade to a point five feet below finished grade are removed.

C. Water Pipe

1. Do not impact any water pipe that may be constructed of asbestos-containing materials unless asbestos abatement specifications are part of the contract documents and the work is completed by qualified personnel in accordance with the requirements contained therein.

2. Cut and cap water pipe on either side of the length to be abandoned as indicated on the Drawings.

3. Provide restraining blocks at all capped ends of water pipe to remain in service.

D. Electrical and Communications

1. Remove conductors to nearest structure unless otherwise indicated.

2. Cut and cap conduits on either side of the length to be abandoned as indicated on the Drawings. Caps shall match conduit type.

E. Gas

1. Comply with gas company requirements.

F. Utility Structures

1. Comply with utility owner's requirements.

2. All structures which are to be abandoned in-place shall have their tops or roof slabs removed and floor slabs broken so as to permit the free passage of water.

3. Unless otherwise indicated, structures which are to be abandoned in-place may be demolished such that only that portion of the structure from finished grade to a point five feet below finished grade are removed.

4. Backfill to match adjacent grade and restore surface area to match adjacent grade unless otherwise indicated.

3.6 UTILITY DEMOLITION

A. Where "Remove," "Demolish," or "R&D" is indicated on the Drawings, such facility or structure shall be completely removed and disposed-of, after termination.

B. Subsurface Utilities: Demolition shall include complete removal of the utility system and any associated concrete encasement, catch basins and related structures; sanitary sewerage manholes, pumps, and related facilities; valves, backflow devices, vents, reducers, couplings, meters, hydrants, fittings, thrust blocks, anchors; vaults, pull boxes, splice boxes, and handholes; or other ancillary components of the utility located within the limits to be demolished. The plugging or capping of utilities at the limit of demolition shall be as indicated on the Drawings. Where no plugging or capping is shown, comply with the requirements for utility termination at the limit of demolition.

C. Above-grade Utilities: Demolition shall include complete removal of the utility system and any associated utility poles, guys, wires, transformers, light standards, utility and light pole foundations, supports and ancillary equipment.

D. Do not demolish any utility until termination and plugging/capping has been completed and verified.

E. Prior to the demolition of any lighting system, verify that power supplies which may be shared with other lighting systems outside the Project Limits have been segregated.

F. Asbestos-Containing Materials

1. Do not impact any asbestos-insulated utility where "Remove" or "Demolish" is indicated on the Drawings until all asbestos-containing materials have been properly abated and verification of same has been either

a. Completed and verified by qualified personnel; or

b. If asbestos abatement specifications are part of the contract documents the work has been completed by Contractor's qualified personnel or subcontractor in accordance with the requirements contained therein.

2. Do not impact any asbestos-containing pipe where "Remove" or "Demolish" is indicated on the Drawings unless asbestos abatement specifications are part of the contract documents and the work is completed by qualified personnel in accordance with the requirements contained therein. If asbestos abatement specifications are not part of the contract documents coordinate with Owner's abatement contractor for completion of the work.

3.7 FILL AND BACKFILL

A. Backfill excavations from the work of this section in accordance with applicable earthwork specifications.

3.8 REPLACEMENT

A. In case of damage, Contractor shall notify the appropriate party so that proper steps may be taken to repair any and all damage done. When the Owner does not wish to make the repairs themselves, all damage shall be repaired by Contractor, or, if not promptly done by him, Engineer may have the repairs made at the expense of Contractor.

B. Contractor shall patch, repair and/or replace all adjacent materials and surfaces damaged through the prosecution of work at no expense to Owner. All repair and replacement work shall match the existing in-kind. Final acceptance of said work shall be at the sole judgment of Owner.

3.9 DOCUMENTATION

A. Field Identification

1. Physically mark the location of each subsurface utility termination with a surveyor's stake, with such stake identifying the utility type and depth below grade. Where the use of stakes at a utility termination location may be inappropriate, Contractor shall provide staking at an adjacent location(s) and include appropriate offset dimensions or other suitable demarcation.

B. As-Built Drawings

1. Provide as-built documentation for each utility termination, including location, depth, and method and material of construction for termination. Such as-built documentation shall be noted on the appropriate Drawings.

2. Contractor shall be solely responsible for complying with the requirements of local permitting authorities for preparation and submittal of as-built drawings. The requirements for the preparation of as-built drawings as defined herein shall be considered the minimum requirements of Engineer, but shall in no way relive Contractor from satisfying the requirements of local permitting authorities.

3. As work progresses, record the following on two (2) sets of Drawings:

4. All changes and deviations from the design in location, grade, size, material, or other feature as appropriate.

5. Any uncharted locations of utilities or other subsurface feature encountered during installation, including the characteristics of such uncharted utility or subsurface feature such as utility type, size, depth, material of construction, etc.

6. Recording of changes shall be clearly and neatly marked in red pen or pencil. All changes shall be noted on the appropriate Drawing sheets.

7. Make measurements from fixed, permanent points on the Project Site to accurately locate the work completed. Such measurements shall consist of at least three (3) ties showing the distance of each item relative to each of the fixed, permanent points.

8. As-Built Drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new construction. As-Built drawings shall also contain any additional information required by Engineer.

3.10 CLEAN UP

A. Contractor shall remove all debris, residuals, waste and similar materials at the conclusion of the work.

END OF SECTION

SECTION 31 11 00
CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Cutting of trees and other vegetation.

2. Removal of stumps, roots and related growth.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

1.3 DEFINITIONS

A. Clearing: Clearing shall consist in the felling, cutting up, and satisfactory disposal of trees and other vegetation designated for removal in accordance with these specifications.

B. Grubbing: Grubbing shall consist of the removal of roots 1 ½ inch and larger, organic matter and debris, and stumps having a diameter of three inches or larger, to a depth of at least 18 inches below the surface and or subgrade; whichever is lower, and the disposal thereof.

1.4 SAFETY REQUIREMENTS

A. Contractor shall conduct all clearing and grubbing activities in conformance with applicable regulations, including those relating to barriers, warning signs, excavation safety, sheeting, shoring, and stabilization.

B. Contractor shall provide and maintain barricades, warning signs, signs, lights, etc., required for the protection of personnel, materials and property. Temporary barricades, etc. shall conform all applicable codes and regulations, and shall be lighted at night with lanterns, flares and reflectorized paint as required for safety. Adapt barricades, signs, lights, etc. to evolving site conditions throughout the progress of the work.

C. Provide other safety devices as required, including adaptation of such safety devices to changing site conditions, to prevent unauthorized entry to construction areas. Provide warning signs and other temporary construction safety devices necessary for proper completion of the work in compliance with applicable safety regulations.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained, experienced, and as required licensed, in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PREPARATION

A. Secure the work area and take precautions to prevent injuries to persons or damage to property in or about the work. Protect structures, utilities, sidewalks, pavements and other facilities or sensitive areas from damage by clearing and grubbing operations.

B. Establish all required erosion and sedimentation controls prior to initiating work.

3.2 CLEARING AND GRUBBING

A. Clear, grub, remove, and dispose of all vegetation and debris within the limits of construction, as designated on the plans or as required by Engineer. Contractor shall remove only those trees and shrubs absolutely necessary to allow for the construction. The work shall also include the preservation and protection of all vegetation designated to remain.

B. A preconstruction meeting shall be held with Engineer, Owner, local authorities, property owner(s) and other appropriate personnel, if required, prior to any clearing.

C. The area within the limits of construction or as designated shall be cleared and grubbed of all trees, stumps, roots, brush, undergrowth, hedges, heavy growth of grasses or weeds, debris and rubbish of any nature which, in the opinion of Engineer, is unsuitable for foundation material. Nonperishable items that will be a minimum of five (5) feet below the finish elevation of the earthwork or slope of the embankment may be left in place.

D. Contractor shall provide barricades, fences, coverings, or other types of protection necessary to prevent damage to existing improvements, not indicated to be removed, and improvements on adjoining property. All improvements damaged by this work shall be restored to their original condition or to a condition acceptable to the owner or other parties or authorities having jurisdiction.

E. Protection of Trees and Vegetation: Contractor shall protect existing trees and other vegetation indicated on the Drawings to remain in place against cutting, breaking, or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary fences or barricades as required to protect trees and vegetation to be left standing at no additional cost.

F. Trees and shrubs that are to remain within the construction limits will be indicated on the Drawings or conspicuously marked on the Project Site. Unless otherwise noted, trees within

the construction limits shall become the property of the Contractor and shall be removed from the site.

G. Carefully and cleanly cut roots and branches of trees indicated to remain where the roots and branches obstruct construction of utilities or other subsurface improvements. Contractor shall provide protection for roots and branches over 1 ½ inches diameter that are cut during construction operations. Temporarily cover all exposed roots with wet burlap to prevent roots from drying out. Provide earth cover as soon as possible.

H. Damaged trees and vegetation designated to remain shall be repaired or replaced at Contractor's expense in a manner acceptable to Engineer if they are damaged by construction operations. Repair tree damage as directed by a qualified tree surgeon.

I. Trees and vegetation designated to remain shall be repaired or replaced at Contractor's expense in a manner acceptable to Engineer if they are damaged by construction operations. Repair tree damage as directed by a qualified arborist.

J. All brush, tree tops, stumps, and debris shall be hauled away and disposed of in accordance with all applicable laws and regulations. Contactor shall clean up debris resulting from clearing operations continuously with the progress of the work and remove promptly all salvageable material that becomes his property and is not to be reused in construction. Sale of material on the site is prohibited. Debris from the site shall be removed in such a manner as to prevent spillage. Keep pavement and area adjacent to site clean and free from mud, dirt, dust, and debris at all times.

K. The method of stripping, clearing and grubbing the site shall be at the discretion of the Contractor. However, all stumps, roots and other debris protruding through the ground surface or in excavated areas shall be completely removed to a minimum depth of 18 inches below surface and/or subgrade whichever is lower and disposed of off the site by the Contractor, at his expense.

L. Marginal Areas: In marginal areas, with Engineer's permission, remove trees where the following conditions exist.

1. Root Cutting: When clearing up to the "clearing limits," the Contractor shall also remove any tree which is deemed marginal such that when the roots are cut and the tree could be rendered unstable by the affects of high winds and in danger of toppling into either the right-of-way or onto private property.

2. Slender Bending Trees: Where young, tall, thin trees are left unsupported by the clearing operation, and are likely to bend over into the right-of-way, Contractor, during the clearing operation, shall selectively remove those trees which are located outside and adjacent to the clearing limits and any right-of-way or easement as well. During the course of construction and during the one-year warranty period, the Contractor shall remove such young trees that overhang into the right-of-way or cleared area.

M. Stripping of Topsoil: Remove the existing topsoil to a depth of 6 inches or to the depth encountered from all areas in which excavation will occur. The topsoil shall be stored in stockpiles, separate from the excavated material, if the topsoil is to be respread. Otherwise material shall be disposed of off-site at Contractor's expense.

3.3 DISPOSAL

A. Contactor shall consolidate and clean-up debris resulting from clearing and grubbing operations continuously with the progress of the work.

B. Contractor will be responsible for obtaining all applicable permits and paying all fees for the disposal of materials.

C. All brush, treetops, stumps, and debris resulting from clearing and grubbing operations shall be hauled away and disposed of in accordance with all applicable laws and regulations. Any materials salvaged by Contractor from clearing and grubbing operations shall be promptly removed from the Project Site.

D. Sale of material on the Project Site is prohibited.

E. Burning of material is prohibited.

END OF SECTION

SECTION 31 23 00
EXCAVATION, FILLING, AND GRADING

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. The scope of work under this section includes provision of all equipment, materials, and labor and performance of all demolition, excavation, fill, backfill, compaction, preparation, and grading necessary to complete the earthwork, including, but not limited to:

1. Excavating and backfilling to provide access to all work areas for demolition of existing improvements and retaining wall construction.

2. Demolishing and removing the existing stormwater storage/infiltration system, associated piping and manholes, retaining wall backfill, geogrid, and block units per project plans.

3. Layout and staking the proposed work and setting required elevations.

4. Excavation and off-site disposal of all demolition debris, unsuitable material, and excess materials and stockpiling of all suitable on-site materials required for reuse.

5. Provision, transportation, and placement of all required fill and backfill materials.

6. Excavation, fill, backfill, and refill as required, including compaction, for construction of the proposed retaining wall, pavements, and associated site improvements.

7. Trench excavation, bedding, and backfill for all stormwater management improvements, utilities, and drains, including compaction, beneath pavements and sidewalks or in other structural areas, when not specified in other sections.

8. Preparation of subgrade for the retaining wall, pavements, and other improvements.

9. Drainage and groundwater control required to perform all work in the dry.

10. Protection of all streets, existing utilities, adjacent properties, and improvements to remain.

1.02 RELATED SECTIONS

A. Section 32 32 00 – Modular Block Retaining Wall

1.02 RELATED DOCUMENTS

A. Project plans and general conditions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to the work, materials, and equipment specified in this section and shall be binding on the Contractor and/or Subcontractor who performs this work.

B. Comply with the provisions of the following, except as otherwise provided by Contract:

1. Associated General Contractors of America, Inc. (AGCA) "Manual of Accident Prevention in Construction".

2. Occupational Safety and Health Administration, United States Department of Labor Requirements including 29 CFR Part 1926 - Occupational Safety and Health Standards, Excavation; Final Rule.

3. ANSI "Safety Requirements for Construction and Demolition".

4. American Society for Testing and Materials (ASTM) Standards (current versions):

   a. ASTM C 136 – Method for Sieve Analysis of Fine and Coarse Aggregates.

   b. ASTM D 6913 – Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

   c. ASTM D 1140 – Test for Amount of Material in Soils Finer Than the No. 200 Sieve.

   d. ASTM D 1556 – Test Method for Density of Soil in Place by the Sand Cone Method.

   e. ASTM D 1557 – Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb. Hammer and 18-inch Drop.

   f. ASTM D 6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

   g. ASTM D 4318 – Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

5. State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, and Incidental Construction, Form 818, 2020 with all current supplements, subsequently referred to as ConnDOT Form 818.

1.03 QUALITY ASSURANCE

A. Codes and Standards: Comply with all rules, regulations, laws and ordinances of the State of Connecticut, the Town of East Hartford, and of all other governing authorities having jurisdiction. All labor, materials, equipment and services necessary to make the work comply with such requirements shall be provided without additional cost.

B. Earthwork Observation and Testing: The Owner and/or Owner's Agent will retain a qualified Geotechnical Engineer to perform on-site observation and testing during work under this and related sections. The services of the Geotechnical Engineer may include, but not be limited to the following:

1. Observation during excavation, subgrade preparation, and backfill operations; preparation of subgrade for retaining wall, stormwater management improvements, and pavements; and subsurface utility construction.

2. Observation and testing during placement and compaction of fill and backfill.

3. Laboratory testing and analysis of fill materials specified.

4. Review of submittals for project plans and related technical specifications.

   a. During the course of construction, the Geotechnical Engineer shall advise the Owner's Agent, in writing, with copy to the Contractor, if at any time, in his opinion, the work is not in substantial conformity with the plans and specifications. The Geotechnical Engineer's presence does not include supervision of direction of the actual work by the Contractor, his employees, subcontractors, or agents. Neither the presence of the Geotechnical Engineer, nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.

   b. Testing equipment will be provided by and testing performed by the Geotechnical Engineer, except as otherwise provided by Contract. Upon request by Owner's Agent, the Contractor shall provide such auxiliary personnel and services as needed to accomplish testing work and to repair damage caused thereby to permanent work.

   c. References herein to observations, testing, and determinations by the "Engineer" include services to be provided by the Geotechnical Engineer when appropriate and when so authorized by the Owner.

C. Special Inspections shall be completed by the designated Special Inspection Agents in accordance with the project Schedule of Special Inspections.

1.04 SUBMITTALS AND COORDINATION

A. Contractor shall be responsible for obtaining samples (50 pounds minimum) of on-site or imported materials proposed to be used as Structural Fill and transporting them to the site seven (7) calendar days in advance of the time planned for incorporating them into the work. Use of proposed materials by the Contractor prior to testing and approval or rejection shall be at the Contractor's risk. The following information shall be submitted with the samples.

1. Location of borrow source site and location within the borrow site from which the material will be obtained.

2. Information regarding the present and past usage of the source site and material to include any previously existing report(s) associated with an assessment of the source site, as relates to the presence of oil or hazardous material.

3. The Owner may require screening and or laboratory analyses of proposed borrow

materials if environmental contamination of the borrow source is indicated or suspected.

B. Up to three test series (gradation and laboratory compaction) will be completed for each category of earth materials defined in Part 2 of this section at the Owner's cost. Testing of additional samples or sources shall be at the Contractor's cost.

1.05 JOB CONDITIONS

A. Site Information:

1. Information in the Contract Plans and in the Specifications relating to subsurface conditions, existing utilities, and structures is from the best sources presently available. Such information is furnished only for the information and convenience of the Contractor, and the accuracy and completeness of this information is not guaranteed. It is expressly understood that Owner, Owner's Agent, or Design Consultants will not be responsible for interpretations or conclusions drawn therefrom by Contractor.

2. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period, as no additional compensation will be made for errors and inaccuracies that may be found therein. By submitting a bid, the Contractor affirms that he has carefully examined the site, all available information pertinent thereto, and all conditions affecting work under this section.

3. Before commencing work, field check the existing elevations and topography shown on the Plans. Report any discrepancies which will affect the work of this Contract to the Owner in writing. Should unexpected soil/subsurface conditions or discrepancies between plans and layout work occur, contact the Owner before proceeding with work in the area of discrepancy.

B. Existing Utilities:

1. Before starting excavation, establish location and extent of any underground utilities occurring in work area. Make arrangements with appropriate utility company for removal and relocation of lines, which are in the way of excavation. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner, Owner's Agent, and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

3. Inactive or abandoned utilities encountered during construction operations shall be removed, filled with flowable fill, or capped. The location of such utilities shall be noted on record drawings and reported in writing to Owner's Agent. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shut-off of services if lines are active.

4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Owner's Agent and then only after acceptable temporary utility services have been provided. Provide minimum of 48-hour notice to Owner's Agent and receive written notice to proceed before interrupting any utility.

5. When in the course of the work it is necessary to connect a utility to a main in a public way, all the requirements of both the authorities governing the utility and those governing the public way shall be met. Pavement shall be temporarily and permanently replaced as directed by these authorities at no additional cost to the Owner. All permits, fees, and other costs related to such work shall be borne by the Contractor.

6. Comply with all applicable state, local, and municipal laws, codes, and regulations including requirements to notify utility owners prior to subsurface work. Comply with all affected utility company requirements.

C. Use of Explosives:

1. No explosives are to be brought onto the site or used in the work.

D. Protection of Persons and Property

1. The work shall be executed in such manner as to prevent any damage to adjacent property and any other property and existing improvements, such as but not limited to streets, curbs, paving, service utility lines, structures, monuments, benchmarks, and other public or private property. Protect existing improvements from damage caused by settlement, lateral movements, undermining, washout, vibration, and other hazards created by earthwork operations.

2. In the case of any damage or injury caused in the performance of the work, the Contractor shall, at his own expense, make good such damage or injury to the satisfaction of and without cost to, the Owner. Existing roads, sidewalks, and curbs damaged during the project work shall be repaired or replaced to their original condition at the commencement of operations. The Contractor shall replace, at his own expense, existing benchmarks, monuments, and other reference points, which are disturbed or destroyed.

3. Barricade open excavations occurring as part of this work. Maintain barricades in good working order.

4. Buried structures, utility lines, etc., including those which project less than 18 inches above grade, which are subject to damage from construction equipment shall be clearly marked to indicate the hazard.

1.06 LAYOUT AND GRADES

A. The words "finished grades" as used herein shall mean the required final grade elevations

indicated on the project plans. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas shall be given uniform slopes between such points and existing established grades.

B. The word "subgrade" as used herein, means the required surface of existing ground or compacted fill. This surface is immediately beneath retaining wall leveling pad and reinforced fill, stormwater management improvements, or specially dimensioned fill, paving subbase, topsoil, or other surfacing material.

PART 2 - PRODUCTS

2.01 ROCK AND SOIL MATERIALS - GENERAL

A. All rock and soil materials furnished for use as fill or backfill shall be free of grease, oil, solvents, pesticides, herbicides, or other hazardous or deleterious materials and/or contaminants. All rock and soil materials incorporated into the work shall also be free from ice, snow, trash, debris, stumps, roots, and organic material.

B. Rock and soil materials shall be utilized in the applications indicated in this Part, unless otherwise specified or indicated on the project plans.

2.02 CRUSHED STONE

A. Crushed Stone shall be quarry products obtained from off-site sources for use as detailed on the project plans. Crushed Stone shall consist of durable crushed rock or gravel stone essentially free of silt, clay, loam, or other deleterious materials.

B. Crushed Stone shall meet the requirement of ConnDOT Form 818, article M.0.01 for sizes No. 6 or No. 67.

2.03 STRUCTURAL FILL

A. Structural Fill shall be obtained from suitable on- or off-site borrow sources for use as specified on the available project plans.

B. Structural Fill shall consist of nonplastic gravelly sand and shall be well graded within the following limits:

Sieve Size	Percent Finer by Weight
6"	100
No. 10	30–95
No. 40	10–70
No. 200	0–15

2.04 LIGHTWEIGHT FILL

A. Lightweight fill shall consist of G-15 Foamed Glass Aggregate (FGA) manufactured by Aero Aggregates, or equivalent approved by GEODesign.

2.05 BEDDING FILL

A. Bedding Fill for Pipes and Conduits: Backfill materials used below or within 1 foot (1') of utility lines, conduits, or duct banks shall consist of materials specified for surrounding areas, or as otherwise specified or detailed, except that such bedding fill shall not contain any stone over 2 inches in maximum dimension.

2.06 PROCESSED AGGREGATE BASE

A. Processed Aggregate Base (also called "Compacted Base" or "Road Base") used as base course below pavements or slabs shall meet the requirements of Article M.05.01 of ConnDOT Form 818.

2.07 RIPRAP

A. Riprap used for surface protection shall meet the requirements Article M.12.02 of ConnDOT Form 818 for "Standard Riprap".

2.08.1 NONWOVEN GEOTEXTILE

A. Nonwoven geotextile for use as detailed or specified shall be a nonbiodegradable, acid- and alkali-resistant, polyester, polyethylene, or polypropylene nonwoven geotextile and shall have sufficient strength and permeability for the purpose intended, including handling and backfilling operations. The fiber network must be dimensionally stable and resistant to delineation. Nonwoven geotextile shall be free of any chemical treatment or coating that will reduce its permeability. Torn or damaged nonwoven geotextile shall not be used. Nonwoven geotextile shall meet or exceed the following criteria:

Property	**Criteria**	**Test Method**
Grab Tensile Strength (lbs.)	min. 230	ASTM D4632
Grab Tensile Elongation (%)	min. 50	ASTM D4632
CBR Puncture Strength (lbs.)	min. 600	ASTM D6241
Trapezoid Tear (lbs.)	min. 95	ASTM D4533
Apparent Opening Size	No. 70 U.S. Sieve Size	ASTM D4751
Weight (oz/yd^2)	min. 8	ASTM D5261

PART 3 - EXECUTION

3.01 EXCAVATION - GENERAL

A. Excavation is Unclassified and includes all excavation to subgrade elevations indicated or required for the work, regardless of character of materials encountered.

B. Dimensions:

1. Excavate to elevations and dimensions indicated on the project plans or as otherwise

required for the work. Do all necessary excavation, including, but not limited to excavation for demolition of existing improvements, retaining wall leveling pad, retaining wall reinforced zone, stormwater management improvements, utility lines, mechanical work, drainage structures, drains, and other below grade work. Excavate sufficient material so as to allow ample space for construction operations including inspection of excavated areas.

C. Disposition of Excavated Material:

1. Sort and stockpile excavated material according to its suitability for reuse and project requirements. The Contractor shall plan his operations to facilitate prompt reuse of excavated material or provide off-site stockpile locations as required.

2. Excavated material not required to fulfill the requirements of the Contract shall become the property of the Contractor and shall be removed from the site and legally disposed.

3. Contaminated soils shall be identified, handled, and disposed as specified in the Contract Documents.

D. Unauthorized Excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer or Owner. Unauthorized excavation, as well as remedial work specified by the Engineer or Owner, shall be at the Contractor's expense. Unauthorized excavation shall be filled with Structural Fill, compacted to the requirements of this section, except where other materials are specified or detailed.

Where the excavation of otherwise suitable materials is required due to these materials being rendered unsuitable due to disturbance, construction activity, freezing, or lack of protection from the elements, the Contractor shall excavate these materials and provide remedial work as specified above at no additional cost to the Owner.

E. Authorized Additional Excavation: In the case that unsuitable materials, as determined by the Engineer, are encountered at the specified subgrade elevation, the Engineer may direct the removal of the unsuitable material and refill with specified materials.

F. Backfilling Prior to Acceptance of Work Installed:

1. Do not allow or cause the work performed or installed to be covered up or enclosed by work of this section prior to all required inspections, tests, and acceptances.

2. Should any of the work be so enclosed or covered up before it has been accepted, uncover all such work at no additional cost to the Owner.

3. After the work has been completed, tested, inspected, and accepted, make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

G. Sheeting, Shoring, and Bracing:

1. Provide sheeting, shoring, and/or bracing at excavations as required to ensure safety against collapse of earth at sides of excavations; as required for support of adjacent structures, streets, or utilities; or as required to comply with Federal, State, or Local regulations, codes, or ordinances.

2. Provide materials for sheeting, shoring, and bracing, such as sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down sheeting, shoring, and bracing as excavation progresses.

3. All sheeting and bracing not ordered left in place shall be carefully removed in such a manner as not to endanger the construction of other structures, utilities, or property whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with sand and rammed with tools especially adapted to that purpose or otherwise compacted as directed to achieve the required density.

H. Drainage and Dewatering:

1. The Contractor shall provide, at his own expense, adequate pumping and drainage facilities to keep all excavations and work dry from groundwater and/or surface runoff so as not to adversely affect construction product or procedures nor cause excessive disturbance of underlying natural ground or footing and slab subgrades. Contractor shall similarly control water entering the excavation as a result of construction operations, such as washing of concrete equipment and tools and the like.

2. The Contractor shall grade and ditch the site as necessary to direct surface runoff away from open excavations.

3. Water from trenches and excavations shall be disposed of in such a manner as will not cause injury to public health; damage to public or private property; existing work; work in progress; to the surface of roads, walks, and streets; nor cause any undue interference with the use of the same by the public. The Contractor shall comply with all applicable environmental protection and/or sediment/erosion control regulations.

4. Under no circumstances place concrete or fill, or lay piping or install appurtenances in excavations containing free water. Keep utility trenches free from water until pipe joint material has hardened.

I. Dust and Erosion Control:

1. The Contractor shall take all necessary measures and provide equipment and/or materials to minimize dust from rising and blowing across the site and also to control surface water throughout the operation so that it does not run onto paved ways without being filtered. In addition, the Contractor shall control all dust created by construction operations and movement of construction vehicles, both on site and on paved ways.

2. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public and neighbors and performance of other work on the site.

3. Repair any broken or damaged sections of haybales or other erosion and sediment control measures damaged during excavation and grading operations and install any additional sections necessary for proper control.

J. Frost Protection and Snow Removal:

1. The Contractor shall, at his own expense, keep the operations under this Contract clear and free of accumulations of snow or ice within the Limit of Contract Line as required to carry out the work.

2. Do not excavate to full depth when freezing temperatures may be expected. Protect excavated subgrades frost. Do not place fill or retaining wall leveling pad on frozen ground.

3.02 RETAINING WALL SUBGRADES

A. Retaining wall leveling pad and reinforced zone shall bear on firm natural inorganic soils or compacted Structural Fill overlying such materials, consistent with the requirements on the project plans. Where Structural Fill is used, the Structural Fill shall extend outward from 1 foot beyond the edge of the leveling pad on a one-to-one downward slope.

B. Foundation soil should be excavated as required for installation of leveling pad, geogrid, geotextile, and other elements and as shown on the construction drawings.

C. Foundation soil should be examined by the engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. Soils not meeting required strength should be removed and replaced with controlled, compacted material.

D. Overexcavated areas should be filled with approved material and compacted to 95 percent of maximum dry density in accordance with the Modified Proctor, ASTM D-1557. The exposed foundation subgrade should be proof compacted with a walk behind double drum vibratory roller or other approved equipment under the observation of the project geotechnical engineer or their qualified representative. Any soft or unstable areas identified during proof compaction should be overexcavated and backfilled with Structural Fill.

E. Any fills required to establish sloping surfaces in front of the walls should consist of Structural Fill and should be placed, compacted and field tested in accordance with the requirements specified herein.

3.03 PLACEMENT AND COMPACTION OF FILL AND BACKFILL

A. Unless otherwise specified or indicated on the project plans, the products specified in Part 2 of this section shall be employed in the various fill and backfill applications indicated in that Part.

B. All vegetation, organic topsoil or subsoil, trash, debris, roots, stumps, and any compressible or otherwise deleterious materials shall be stripped from the existing ground surface and removed from excavations prior to placement of fill or backfill.

C. All fill and backfill materials shall be placed in horizontal layers. Each layer shall be spread evenly and thoroughly mixed during spreading to ensure uniformity of material in each layer. Layer thickness shall not exceed that specified in Paragraphs 3.03.H and 303.I of this section.

D. Where horizontal fill layers meet a natural or excavated slope, the layer shall be keyed into the slope by cutting a bench. The surface of benches shall be compacted to the same requirements as apply to the area being filled.

E. In no instance place fill over materials that were permitted to freeze prior to compaction or over ice or snow. Removal of such materials will be required as directed by the Geotechnical Engineer. In no case will frozen material be allowed for use in fill or backfill.

F. No fill shall be placed or compacted during unfavorable weather conditions. When work is interrupted by heavy rains or snow, fill operations shall not be resumed until the moisture content and density of previously placed fill are as specified hereinafter.

G. Allow the Geotechnical Engineer sufficient time to make necessary observations and tests.

H. Maximum lift thickness for Crushed Stone and Structural Fill is 8 inches if hand-operated compaction equipment (i.e., plate compactors and vibratory trench rollers) is used and 12 inches if a vibratory drum roller is used. Crushed Stone and Structural Fill should be subjected to a minimum of six passes with compaction equipment.

I. Structural Fill used as wall backfill should be compacted to a minimum of 95 percent of the Modified Proctor (ASTM D-1557). Structural Fill used to backfill overexcavations of unsuitable materials below the leveling pad and/or reinforced zone should be compacted to a minimum of 95 percent of the Modified Proctor (ASTM D-1557).

J. FGA shall be compacted using either a vibratory plate compactor weighing between 110 and 220 lbs. or tracked excavation equipment with a ground pressure between 600 and 1000 psf. A minimum of four passes is required for both compaction methods. Maximum FGA lift thickness is 12 inches if a plate compactor is used and 24 inches if tracked equipment is used.

K. Processed Aggregate Base placed under pavements should be compacted to a minimum of 95 percent of the Modified Proctor (ASTM D-1557).

L. The term "under", as applied to structural areas, shall be construed to include all materials immediately below the plan area of the leveling pad and reinforced zone, as well as those materials within a line sloping at 1 horizontal foot to 1 vertical foot (1H:1V) drawn downward and outward from 1 foot beyond the exterior edges of these areas.

M. Compaction shall be by mechanical means designed specifically for compaction and approved

by the Geotechnical Engineer. The Geotechnical Engineer reserves the right to disapprove any device of inadequate capacity or of type unsuited to the character of the material being compacted. In areas which are too restricted to permit the use of mechanical compactors, fill may be placed in 3-inch layers and compacted by hand rammer or pneumatic tools to the specified densities.

N. Moisture Control: Water shall be added to fill material that does not contain sufficient moisture to be compacted to the specified densities. Fill and backfill material containing excess moisture shall be required to dry prior to or during compaction to a moisture content not greater than three percentage points (3%) above optimum, except that material which displays pronounced elasticity or deformation underfoot or under load shall be required to dry to optimum moisture content before it is placed and compacted, if that is required to achieve specified compaction and produce a stable fill. At the Contractor's choosing, material which is too wet may be removed and replaced with satisfactory material at no additional cost to the Owner.

O. Where the Geotechnical Engineer determines that fill or backfill does not conform to the compacted density specified, or did not receive the minimum compactive effort specified, such fill shall be removed and replaced with conforming materials at the Contractor's own cost.

P. Only hand-operated compaction equipment should be allowed within 4 feet of the wall face.

3.04 DISTURBANCE OF EXCAVATED AND FILLED AREAS DURING CONSTRUCTION

A. The Contractor shall take the necessary steps to avoid disturbance of subgrade during excavation and filling operations. Methods of excavation and filling shall be revised as necessary to avoid disturbance of the subgrade, including restricting the use of certain types of construction equipment and their movement over sensitive or unstable materials, dewatering, and other acceptable control measures. The Contractor shall cooperate with the Geotechnical Engineer to modify his operations as necessary to mitigate disturbance and protect bearing soils, based on the Geotechnical Engineer's observations.

B. All excavated or filled areas disturbed during construction, all loose or saturated soil, and other areas that do not meet compaction requirements as specified herein shall be removed and replaced with compacted fill materials specified. Costs of removal of disturbed material and refill with compacted fill shall be borne by the Contractor.

C. Construction equipment, other than required for placement/compaction of the FGA, shall not operate on or travel over FGA.

3.05 TRENCHING

A. General:

1. Perform all trenching required for the installation of pipes and utility structures. Perform all trenching required for the installation of other items of other sections where

the trenching is not specifically described in those other sections.

2. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of the trench and around the installed item as required for caulking, jointing, backfilling, and compacting.

3. When the material at the bottom of a trench is unsuitable as determined by the Owner's Agent and/or Engineer, it shall be removed to such depth as the Owner's Agent and/or Engineer may direct and backfilled in accordance with Paragraph 3.01.E of this section.

B. Depth:

1. Excavate to the elevations shown on the project plans. Where elevations are not shown on the project plans, excavate to sufficient depth to give a minimum of 3 feet of backfill above the top of the pipe or other item, measured from the adjacent finished grade.

C. Correction of Faulty Grades:

1. Where trench excavation is inadvertently carried below proper elevations, fill with Structural Fill and compact, in accordance with the requirements of this Section, at no additional cost to the Owner.

D. Grading and Stockpiling of Trenched Material:

1. Control the stockpiling of trenched material in a manner to prevent water running into the excavations. Do not obstruct surface drainage, but provide means whereby storm water is diverted into existing gutters, other surface drains, or temporary drains.

E. The bottom of trenches shall be graded evenly to ensure uniform bearing for the full length of all pipes. Pipe bells shall be fully bedded.

F. Install pipe in bedding material with a thickness directly under the pipe barrel of 12 inches and preshaped to a height of 10 percent of the total height of the pipe. After the pipe has been installed, the trench shall be backfilled with bedding material to a height of the pipe for pipe 12 inches diameter or larger and to 6 inches over the pipe for smaller pipes. Refer to trench details on the Plans for backfilling material specific requirements.

END OF SECTION

END OF SECTION 31 23 00

SECTION 31 66 13
PRECAST CONCRETE LIGHT POLE FOUNDATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Precast concrete light bases.

B. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. ASTM International (ASTM)

1. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

2. ASTM A706 – Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

C. American Concrete Institute (ACI)

1. ACI 318 - Building Code Requirements for Structural Concrete.

D. State of Connecticut Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 819, 2024.

E. PCI Northeast, Precast/Prestressed Concrete Institute (PCI).

1. MNL 117 - QC Manual for Architectural Precast Products.

2. MNL 120 - PCI Design Handbook, Precast and Prestressed Concrete.

1.3 SUBMITTALS

A. Shop drawings for all materials furnished under this Section that demonstrate compliance with these Specifications. Show in large-scale details any unique fabrication, assembly, and/or installation requirements.

B. Material certificates or other data indicating compliance with these Specifications for materials, size, finish type, fittings, hardware, and accessories.

C. Copies of manufacturer-provided installation instructions, operation instructions, and maintenance material for all equipment furnished under this Section.

D. Manufacturer’s warranties and associated warranty registration data in Owner’s name. Submit two (2) copies of each warranty to Engineer in the manufacture’s/supplier's standard form or if there is no standard form available, in a form specified by Engineer.

1.4 QUALITY ASSURANCE

A. Manufacturer qualifications: The precast concrete manufacturing plant shall be certified by the PCI (Precast/Prestressed Concrete Institute) plant certification program or the NPCA (National Precast Concrete Association) plant certification program. Precast concrete manufacturer must have produced product similar to what is being specified for a minimum of five years. Manufacturer shall be certified at the time of bidding. Certification shall be in the appropriate product groups and categories.

B. Quality-Control Standard: For manufacturing procedures and testing requirements, quality control recommendations, and dimensional tolerances for types of units required, comply with PCI MNL 117, "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products."

C. Random freeze thaw test shall be conducted by the manufacturer. Test specimens shall retain 60 percent of its initial modulus of elasticity after 300 cycles. Furnish test results to the Engineer upon request.

D. Soil Test Reports: Undisturbed soils intended to support pole foundations shall be inspected in the field for a minimum bearing capacity of 3,000 psf by a licensed Geotechnical Engineer prior to placement of concrete or precast concrete foundations.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products by the following, or approved equal:

1. Durastone - 150 Higginson Avenue, Lincoln, RI 02865; 401-723-7100.

2. Arrow Concrete Products - 560 Salmon Brook Street, Granby, CT 06035; 860-653-5063.

3. United Concrete Products, Inc. - 173 Church Street, Yalesville, CT 06492; 203-269-3119.

2.2 PERFORMANCE REQUIREMENTS

A. Design Standards: Comply with ACI 318 and design recommendations of PCI MNL 120, applicable to types of architectural precast concrete units indicated.

B. Structural Performance: Provide precast concrete units and connections capable of withstanding design loads indicated within limits and under conditions indicated.

2.3 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706, deformed. Only water, calcium chloride, and mulch are approved for dust control. No asphalt or petroleum-based products may be utilized for dust control.

2.4 CONDUIT MATERIALS

A. Conduit: Schedule 40 PVC electrical conduit, UL 651 and NEMA TC2.

B. PVC Connectors: Schedule 40 slip fit. Edge of connector must not protrude past face of concrete.

C. PVC Extension at top of foundation: 2 inches, minimum.

2.5 CONCRETE

A. Portland Cement: ASTM C 150/C 150M, Type I or Type III, gray, unless otherwise indicated.

B. CTDOT Form 819, M.03.

2.6 FABRICATION

A. Edge Chamfer (top): 1 inch.

B. Reinforcement: Comply with recommendations in PCI MNL 117 for fabricating, placing, and supporting reinforcement.

C. Reinforce precast concrete units to resist handling, transportation, and erection stresses and specified in-place loads.

D. Comply with requirements in PCI MNL 117 and requirements in this Section for measuring, mixing, transporting, and placing concrete. After concrete batching, no additional water may be added.

E. Place concrete in a continuous operation to prevent cold joints or planes of weakness from forming in precast concrete units.

F. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items, and minimize pour lines, honeycombing, or entrapped air voids on surfaces. Use equipment and procedures complying with PCI MNL 117.

1. Place self-consolidating concrete without vibration according to PCI TR-6, "Interim Guidelines for the Use of Self-Consolidating Concrete in Precast/Prestressed Concrete Institute Member Plants." Ensure adequate bond between face and backup concrete, if used.

G. Comply with PCI MNL 117 for hot- and cold-weather concrete placement.

H. Identify pickup points of precast concrete units and final location complying with markings indicated on Shop Drawings.

I. Cure concrete, according to requirements in PCI MNL 117, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture. Cure units until compressive strength is high enough to ensure that stripping does not have an effect on performance or appearance of final product.

J. Discard and replace precast concrete units that do not comply with requirements, including structural, manufacturing tolerance, and appearance, unless repairs meet requirements in PCI MNL 117 and Engineer approval.

2.7 FABRICATION TOLERANCES

A. Fabricate architectural precast concrete units to shapes, lines, and dimensions indicated so each finished unit complies with PCI MNL 117 product tolerances as well as position tolerances for cast-in items.

2.8 FINISHES

A. Exposed faces shall be free of joint marks, grain, and other obvious defects. Corners shall be uniform, straight, and sharp. Finish exposed-face surfaces of precast concrete units to match approved sample panels and as follows:

1. Smooth sponge float finish

B. Finish exposed top, back and side surfaces of architectural precast concrete units to match face-surface finish.

2.9 SOURCE QUALITY CONTROL

A. Quality-Control Testing: Test and inspect precast concrete according to PCI MNL 117 requirements. If using self-consolidating concrete, also test and inspect according to PCI TR-6, ASTM C 1610/C 1610M, ASTM C 1611/C 1611M, ASTM C 1621/C 1621M, and ASTM C 1712.

PART 3 EXECUTION

3.1 GENERAL

A. Verify locations of lights, bases and utility systems prior to installation. Bring conflicts to the attention of Engineer.

B. Promptly notify Engineer of site conditions which may affect performance, soil conditions observed other than those assumed, or other conditions that may require a reevaluation of the design.

C. Inspect bases for damage. Do not install bases with chips, cracks, voids, discoloration or other defects. If Engineer does not approve of repairs, base shall not be installed and shall be removed from the project site.

3.2 INSTALLATION

A. Excavate to the lines and grades required for installation of the precast concrete pole base units as shown on the Drawings. Minimize over-excavation. The bottom limits of the excavation should be well compacted and flat to allow for installation of stone foundation material.

B. Over excavation necessary for the removal of rock or frozen, low shear strength, deleterious, contaminated or otherwise unsatisfactory soils shall be as directed and quantified by Engineer.

C. The base of the excavation shall be flat, horizontal, and compacted before placement of setting base below the bottom of the precast pole base unit. The stone base shall extend at least 6-inches beyond the perimeter of the base of the unit. Verify final surface grades prior to installation to confirm exposed base dimensions.

D. Set foundations true to line and grade. Ensure plumbness and verify orientation of all conduits prior to backfilling. Base unit shall be supported in a vertical position as necessary to maintain the unit as level, true and plumb until backfill has been placed and is sufficiently consolidated.

E. Compact backfill in place with maximum 6-inch thick lifts to a minimum 95% Standard Proctor density.

END OF SECTION

SECTION 32 12 16

BITUMINOUS CONCRETE PAVEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Bituminous concrete paving.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut Department of Transportation (CTDOT).

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, 2021 and any supplements.

D. American Association of State High and Transportation Officials (AASHTO).

1. AASHTO M-17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.

2. AASHTO M 82, Cutback Asphalt (Medium-Curing Type).

3. AASHTO M-208 - Standard Method of Test for Unconfined Compressive Strength of Cohesive Soil-ASTM Designation D 2166.

4. AASHTO M-320 - Standard Specification for Performance-Graded Asphalt Binder.

5. AASHTO R-26 - Standard Recommended Practice for Certifying Suppliers of Performance-Graded Asphalt Binders.

6. AASHTO R-29 - Standard Practice for Grading or Verifying the Performance Grade of an Asphalt Binder.

7. AASHTO T-27 - Sieve Analysis of Fine and Course Aggregates.

8. AASHTO T-84 - Specific Gravity and Absorption of Fine Aggregates.

9. AASHTO T-85 - Specific Gravity and Absorption of Coarse Aggregates.

10. AASHTO T-96 - Standard Method of Test for Resistance to Degradation of small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

11. AASHTO T 104 Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

12. AASHTO T-209 - Maximum Specific Gravity and Density of Bituminous Paving Mixtures.

13. AASHTO T-245 - Standard Method of Test for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.

14. AASHTO T-355 - Standard Method of Test for In-Place Density of Asphalt Mixtures by Nuclear Methods.

E. American Society for Testing and Materials (ASTM)

1. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples.

2. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.

1.3 SUBMITTALS

A. Testing Agency: Submit name and qualifications of third-party in-field quality control Testing Agency for Engineer's approval. Submit applicable documentation of credentials, licenses, etc.

B. Mix Design: Submit mix design demonstrating compliance with these Specifications, including aggregate gradation, binder type, and target air voids.

C. Material Certifications: Submit Material Certificates for asphalt binder, aggregate, and any additives confirming compliance with these Specifications.

D. Job Mix Formula (JMF): The proposed formula that outlines the proportions of materials to meet the design criteria.

E. Quality Control Plan: Submit quality control plan for production and placement, detailing testing frequency, equipment, and personnel qualifications.

F. Field Testing Procedures: Procedures for testing temperature, thickness, compaction, and smoothness during paving operations.

G. Asphalt Content and Gradation Tests: Proposed testing methods for verifying asphalt content and aggregate gradation during production.

H. Core Sampling Plan: Plan for obtaining and testing cores to measure in-place density and thickness.

I. Field Testing:

1. Temperature Logs: Documentation of asphalt temperatures during production and placement.

2. Test Results: Results of field tests, including density, thickness and compliance with JMF.

J. Warranties: Any applicable warranties for materials or workmanship.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Temperature and Seasonal Requirements: Paving, including placement of temporary pavements, shall be divided into 2 seasons, "In-Season" and "Extended-Season." In-Season paving occurs from May 1 to October 14, and Extended Season paving occurs from October 15 to April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

1. Mixtures shall not be placed when the air or subbase temperature is less than 40°F regardless of the season.

2. Should paving operations be scheduled during the Extended Season, Contractor must submit an Extended Season Paving Plan for the Project that addresses minimum delivered mix temperature considering Warm Mix Asphalt (WMA) Technology, Polymer Modified Asphalt (PMA), or other additives; maximum paver speed; enhanced rolling patterns; and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

1.5 TESTING

A. Bituminous Pavement: All field testing for bituminous pavement shall be the responsibility of Contractor via Testing Agency. Contractor shall retain and pay for the services of such Testing Agency to perform all testing as specified herein in accordance with applicable standards.

B. Aggregate Base: All field testing for bituminous pavement aggregate base compaction shall be the conducted by Owner.

C. Bituminous Pavement Testing:

1. Temperature: Infrared or probe thermometer. Supply three infrared thermometers, acceptable to the Engineer, for mix delivery temperature verification. At the beginning of each day of pavement installation, verify that the thermometers have a minimum accuracy value of ±1% of reading or ± 2°F, whichever is greater and are in agreement within 5°F when measuring ambient, base, and mix temperature.

a. Monitor and record ambient temperature every 30–60 minutes during paving. Mixtures shall not be placed when the air or subbase temperature is less than 40°F regardless of the season.

b. Bituminous concrete temperature range, paving machine hopper: 265 deg F – 325 deg F.

c. Bituminous concrete mat temperature (During Laydown): Minimum of 250 deg F.

d. Bituminous concrete compaction temperature (Rolling Phase): 250 deg F – 300 deg F.

2. Thickness

   a. Initial Daily Measurement, Uncompacted Thickness: Use depth probe to measure freshly laid uncompacted mix thickness at the beginning of each day of pavement installation. Measure 10 locations minimum. Assume uncompacted to compacted ratio of 1.25 (uncompacted thickness/compacted thickness).

   b. Initial Daily Measurement, Compacted Thickness: Verify actual in-place compacted thickness using a notched depth gauge or similar device that allows measuring against the base surface with multiple points along the paving width at the beginning of each day of pavement installation. Measure 10 locations minimum. Correlate with uncompacted mix thickness and determine ratio for ongoing measurement of uncompacted thickness required to achieve design requirements for final pavement thickness.

   c. Ongoing Measurements Uncompacted Thickness: Use depth probe to measure freshly laid uncompacted mix thickness at a rate of 1 test per 500 yd². Utilize ratio to calculate compacted thickness per design requirements. Adjust uncompacted thickness as required.

   d. Ongoing Measurements Compacted Thickness: Verify actual in-place compacted thickness using a notched depth gauge or similar device that allows measuring against the base surface at a rate of 1 test per paving machine load.

3. Density: AASHTO T-355. Conduct 7 tests minimum per pavement lift. Testing locations shall be distributed across the entire pavement installation area at a rate of 1 test per 500 yd² with two additional tests at locations per lift determined by Engineer.

PART 2 PRODUCTS

2.1 GENERAL

A. All products furnished under this Section shall conform to the CTDOT Standard Specifications for Roads, Bridges and Incidental Construction, Form 819, 2024.

PART 3 EXECUTION

3.1 GENERAL

A. Contractor shall install all pavements as specified in the location, thickness and to the grades as shown on the Drawings and/or approved by Engineer. Materials, methods of construction, and type and thickness of pavement courses shall be as shown on the Details of the Drawings and as specified herein.

B. Owner and its representatives shall have access to all parts of the Work under construction at all times for observation and testing. Accommodate in-field testing by Owner.

3.2 EQUIPMENT

A. Contractor shall have the necessary paving and compaction equipment at the Project Site to perform the work. All equipment shall be in good working order and any equipment that is worn, defective, or inadequate for performance of the work shall be repaired or replaced by the Contractor to the satisfaction of engineer. During the paving operation, the use of solvents or

fuel oil, in any concentration, is strictly prohibited as a release agent or cleaner on any paving equipment (i.e., rollers, pavers, transfer devices, etc.).

B. Refueling or cleaning of equipment is prohibited in any location on the Project where fuel or solvents might come in contact with paved areas or areas to be paved. Solvents used in cleaning mechanical equipment or hand tools shall be stored clear of areas paved or to be paved. Before any such equipment and tools are cleaned, they shall be moved off of areas paved or to be paved.

C. Pavement Machine: The paver shall be a self-propelled unit with a receiving hopper with sufficient capacity to provide for a uniform spreading operation and a distribution system that places the mix uniformly, without segregation. Pavers shall include an activated screed or strikeoff assembly, capable of being heated if necessary, and capable of spreading and finishing the bituminous pavement mixture without segregation for the widths and thicknesses indicated.

D. Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Rollers shall be dual steel drum machines with a weight not less than 8 tons and not more than 12 tons. Rollers shall be capable of providing a minimum compactive effort of 250 pounds per inch of drum width. All rolls shall be at least 42 inches in diameter. Rollers shall be equipped with tanks and sprinkling bars for wetting the rolls.

3.3 PREPARATION

A. All soft and yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material, thoroughly compacted.

B. Roll subgrade to compact any material loosened by earthwork operations prior to placement of aggregate base course.

C. Install aggregate base course as indicated on the Drawings and compact to 95 percent of dry weight density. If Owner's testing indicated target density is not achieved, re-compact material or replace material and compact as required.

3.4 BITUMINOUS PAVEMENT INSTALLATION

A. Prior to the placement of the mixture, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance.

B. Place bituminous pavement on prepared base course with paving machine where indicated on the Drawings. Place bituminous pavement material uniformly and strike off. Place each bituminous pavement course to the required grades, cross sections, and thicknesses. All thicknesses shall be measured after compaction.

C. Limit hand work to the extent practicable. Limit hand work only to those locations where use of paving machine is not possible. Complete hand work in such a manner as to maintain required temperatures and prevent segregation.

D. Place bituminous pavement mixture at a minimum temperature of 250 deg F.

E. Place bituminous pavement in consecutive strips not less than 8 feet wide unless infill edge strips of a lesser width are required.

F. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

G. Finished bituminous pavement surface shall be of uniform texture and evenness and shall not show any indication of segregation, tearing, shoving, or pulling of the mixture.

3.5 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

B. Clean contact surfaces and apply tack coat to joints.

C. Offset longitudinal joints, in successive courses, a minimum of 6 inches.

D. Offset transverse joints, in successive courses, a minimum of 24 inches.

E. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method.

3.6 COMPACTION

A. Contractor shall compact the mixture to meet the thickness and density requirements and eliminate all roller marks without displacement, shoving cracking, or aggregate breakage Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

B. Complete compaction before mix temperature cools to 185 deg F.

C. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

D. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to an average density of 92 percent, AASHTO T-355, but not less than 90 percent or greater than 97 percent.

E. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

F. Edge Shaping: Edges of asphalt shall be formed to a 45-degree angle.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.7 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: 3/8 inch.

2. Surface Course: 1/4 inch.

B. Where the thickness of the lift of mixture is less than that shown on the plans beyond the tolerances indicated, Contractor, with the approval of the Engineer, shall take corrective action in accordance with this Section.

C. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally.

1. Base Course: 3/8 inch.

2. Surface Course: 1/4 inch.

D. Crowned Surfaces: Test with crowned template centered and at right angle to crown.

E. Maximum allowable variance from template is 1/4 inch.

END OF SECTION

SECTION 32 16 23
CURBING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Bituminous concrete lip curb.

B. Work shall also include all associated items and operations necessary and required to complete the installations, including, but not limited to, surface preparation, finishing and cleanup.

C. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

D. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. United States Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. State of Connecticut Department of Transportation (CTDOT).

1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, 2020 and any supplements.

D. ASTM International (ASTM).

1. ASTM D235 – Standard Specification for Mineral Spirits (Petroleum Spirits).

2. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.3 SUBMITTALS

A. Submit Mix design and Job Mix Formula, material certificates or other data indicating compliance with these Specifications.

B. Prior to the placement of any curb, submit a detail of the cross-section of the curb mold proposed for use in placing curbing.

PART 2 PRODUCTS

2.1 TACK COAT

A. Tack coat shall conform to CTDOT Form 819, Section M.04.

2.2 BITUMINOUS CURB MIX

A. Bituminous materials shall conform to CTDOT Form 819, Section M.04.02-1.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

A. Install curbing at the location shown on the Drawings.

B. Bituminous curbing shall be constructed by the use of an approved self-propelled extruding curb machine equipped with a material hopper, distributing screw and curb forming device capable of placing the bituminous mixture to the required lines, grades and proper curb cross-section.

3.2 SURFACE PREPARATION

A. When curbing is to be placed on existing bituminous pavements, concrete pavements or newly laid bituminous pavements which have been in place more than twenty-four (24) hours, the surface on which the curb is to be placed shall be swept and cleaned, thoroughly dried, and immediately prior to placement of the curb, the surface to be occupied by the curb shall be given an application of tack coat material.

B. Prevent spread of tack coat material beyond the area to be occupied by the curb.

C. Recently placed bituminous concrete pavement, which have been placed less than twenty-four (24) hours prior to placement of the curb need only be thoroughly swept and cleaned.

3.3 PLACING AND COMPACTION

A. The hot bituminous mixture shall be placed in the hopper of the curb paver without segregation and extruded through the mold form to provide the proper compaction and surface texture.

B. The curb paver shall be properly supported and weighted during operation along the edge of the pavement and shall be guided along string or chalk lines to maintain the proper alignment and level of the completed curb.

C. Any portions of the completed curb, which are not satisfactorily compacted, or show signs of sagging, cracking, or distortion, or do not conform to the required lines, grades or cross-section for any reason, and which cannot be satisfactorily repaired during construction, shall be removed and replaced at no additional cost to the Owner.

3.4 JOINTS

A. Bituminous curb construction shall be a continuous operation in one direction only, to eliminate joints. Excessive joints will be cause for rejection of entire length of installation.

B. When the placing of the curb is discontinued for a length of time that permits the mixture to become chilled, the curb shall be cut in a true vertical plane and the exposed end painted with a thin uniform coat of hot asphalt cement just prior to placing the fresh curb mixture against the previously constructed curb to insure a continuous bond. Joints that are not smooth and uniform, exhibit distortion, or are patched will be rejected.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Temporary or permanent painted pavement markings, including but not limited to center lines, lane lines and shoulder lines, stop bars, crosswalks, parking stalls, lane arrows, legends, markings within gore areas, and painting of paved islands or medians.

2. Temporary plastic pavement marking tape.

3. Black line mask pavement marking tape.

4. Maintaining access for vehicular and pedestrian traffic as required for other construction activities. Utilize flagmen, barricades, warning signs, and warning lights as required.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 SUBMITTALS

A. Submit material specifications and shop drawings for all materials furnished under this Section.

B. Submit material certificates signed by the material producer and Contractor, certifying that materials comply with these Specifications.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. State of Connecticut Department of Transportation (CTDOT)

1. State of Connecticut Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 819, 2024.

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction

D. ASTM International (ASTM)

1. ASTM C501 - Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.

2. ASTM D211 - Standard Specification for Chrome Yellow and Chrome Orange Pigments.

3. ASTM D476 - Standard Classification for Dry Pigmentary Titanium Dioxide Products.

4. ASTM D562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.

5. ASTM D605 - Standard Specification for Magnesium Silicate Pigment (Talc).

6. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

7. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.

8. ASTM D711 - Standard Test Method for No-Pick-Up Time of Traffic Paint.

9. ASTM D869 - Standard Test Method for Evaluating Degree of Settling of Paint.

10. ASTM D1475 - Standard Test Method for Density of Liquid Coatings, Inks, and Related Products.

11. ASTM D2240 - Standard Test Method for Rubber Property- Durometer Hardness.

12. ASTM D2486 - Standard Test Methods for Scrub Resistance of Wall Paints.

13. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

14. ASTM E303 - Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.

15. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials.

E. American Association of State High and Transportation Officials (AASHTO)

1. AASHTO M 247 - Standard Specification for Glass Beads Used in Traffic Paints.

1.4 SUBMITTALS

A. Material certificates or other data indicating compliance with these Specifications for material type and color.

B. Copies of manufacturer-provided installation instructions, operation instructions, and maintenance material for all equipment furnished under this Section.

C. Manufacturer’s warranties and associated warranty registration data in Owner’s name. Submit two (2) copies of each warranty to Engineer in the manufacture’s/supplier's standard form or if there is no standard form available, in a form specified by Engineer.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Contractor shall furnish one technical expert, who shall be fully knowledgeable about all equipment operations and application techniques, to oversee the work of this Section.

PART 2 PRODUCTS

2.1 WATERBORNE PAVEMENT MARKING PAINT

A. In accordance with CTDOT Form 819, Section M.07.20.

2.2 HOT-APPLIED WATERBORNE PAVEMENT MARKING PAINT

A. In accordance with CTDOT Form 819, Section M.07.21.

2.3 GLASS BEADS

A. In accordance with CTDOT Form 819, Section M.07.30.

PART 3 EXECUTION

3.1 GENERAL

A. Pavement markings shall be applied in accordance with the details shown on the plans and the control points established by the Contractor and approved by the Engineer.

B. No paint shall be applied to new bituminous pavement until the top course has cured at least one week minimum.

C. Pavement areas to be painted shall be dry and sufficiently cleaned of sand and road debris so as to provide an acceptable bond between the paint and the pavement.

D. All painting shall be performed in a neat and workmanlike manner. The lines shall be sharp and clear with no feathered edging or fogging and precautions shall be taken to prevent tracking by tires of the striping equipment. Paint shall be applied as shown on the Drawings with no unsightly deviations.

E. Contractor shall protect the buildings, walks, pavement, curbing, trees, shrubs, mulch, etc. from over-spray of paint and damage by his operations.

F. Operations shall be conducted only when the road surface temperature is at least 40°F or as allowed by Engineer. They shall be discontinued during periods of rain and shall not continue until Engineer determines that the pavement surface is dry enough to achieve adhesion.

G. After application, paint shall be protected from crossing vehicles using traffic cones or other acceptable method for a time at least equivalent to the drying or curing time of the paint.

H. The material shall be applied to the pavement by equipment used specifically for the application of pavement markings and shall be of a standard commercial manufacturer.

I. Contractor shall provide survey control for layout of pavement markings by utilizing his own surveyor or hiring a registered land surveyor. The cost of this survey control shall be included in other items of work.

3.2 WATERBORNE PAVEMENT MARKINGS

A. Painted legend, arrows, and markings includes paint installed with a hand striping machine such as: stop bars, crosswalks, parking stalls, lane arrows, legends, markings within gore areas, and painting of paved islands or medians.

B. Painted pavement markings and hot applied painted pavement markings include paint installed with a truck-mounted painting machine such as center lines, lane lines and shoulder lines.

C. Waterborne Paint, Ambient Temperature

1. Apply paint at a rate of 100 to 115 square feet per gallon, with glass beads applied at a rate of 6 pounds per gallon of paint for painted pavement markings and painted legend, arrows, and markings

D. Waterborne Paint, Hot-Applied

1. Hot-applied paint shall be applied at a temperature of 130°F to 145°F at the spray gun.

2. Apply paint at a rate of 8 pounds per gallon of paint for hot-applied painted pavement markings.

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes

1. Furnishing and installing woven wire fencing systems of the type and height specified and supported by metal posts erected where indicated on the Drawings and as specified herein, including fence and gates.

B. Contractor shall coordinate work between all Subcontractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

1.2 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR).

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. ASTM International (ASTM).

1. ASTM A90 – Standard Test Method for Weight (Mass) of Coating on Iron or Steel Articles with Zinc or Zinc Alloy.

2. ASTM A123 – Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

3. ASTM A153 – Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.

4. ASTM A307 – Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.

5. ASTM A392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.

6. ASTM A428 – Standard Test Method for Weight (Mass) of Coating on Aluminum-Coated Iron or Steel Articles.

7. ASTM A491 – Standard Specification for Aluminum Coated Steel Chain Link Fence Fabric.

8. ASTM A780 – Standard Specification for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

9. ASTM A817 – Standard Specification for Metallic-Coated Steel Wire for Chain Link Fence Fabric and Marcelled Tension Wire.

10. ASTM A824 – Standard Specification Metallic-Coated Steel Marcelled Tension Wire for Use with Chain Link Fence.

11. ASTM B211 – Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire.

12. ASTM C94 – Standard Specification for Ready-Mixed Concrete.

13. ASTM F552 – Standard Terminology Relating to Chain Link Fencing.

14. ASTM F567 – Standard Practice for Installation of Chain Link Fence.

15. ASTM F626 – Standard Specification for Fence Fittings.

16. ASTM F668 – Specification for Polymer Coated Chain Link Fence Fabric.

17. ASTM F900 – Standard Specification for Industrial and Commercial Swing Gates.

18. ASTM F934 – Specification for Standard Colors for Polymer-Coated Chain Link.

19. ASTM F1043 – Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.

20. ASTM F1083 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

21. ASTM F1183 – Standard Specification for Aluminum Alloy Chain Link Fence Fabric.

22. ASTM F1664 – Standard Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence.

D. Chain Link Fence Manufacturer's Institute

1. Chain Link Fence Manufacturer's Institute Product Manual, latest revision.

1.3 SYSTEM DESCRIPTION

A. Chain Link Fence

1. Fence Height: Per Drawings.

2. Mesh Size: 2 inches.

3. Mesh Gauge: 9. Gauge as measured prior to application of any coating.

4. Gates: If included, height of gate(s) shall match that of fence. Width of gate(s) shall be as shown on the Drawings.

5. Posts as indicated on the Drawings. Top rail to match exiting fence.

1.4 SUBMITTALS

A. Shop drawings showing the plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates and a schedule of components.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.

1. Fence and gate posts, rails, and fittings.

2. Chain-link fabric, fabric coatings, reinforcements, and attachments.

3. Accessories: Privacy slats.

4. Gates, locking mechanisms and hardware.

5. Gate operators, including operating instructions.

6. Motors (if applicable): Show nameplate data, ratings, characteristics, and mounting arrangements.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.

1. Gate Operator (if applicable): Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.

2. Wiring Diagrams (if applicable): For power, signal, and control wiring.

D. Samples for Initial Selection: For components with factory-applied color finishes.

E. Samples for Verification: Prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

F. Delegated-Design Submittal: For chain-link fences and gate framework indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Supply material in accordance with Chain Link Fence Manufacturer's Institute Product Manual and this Specification.

C. Perform installation in accordance with ASTM F567.

D. Maintain all facilities installed under this Section in proper and safe condition throughout the progress of the work.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to existing improvements and/or proposed construction. Verify dimensions by field measurements. Notify Engineer of any dimensional discrepancies prior to proceeding with the work. Coordinate with Engineer regarding any adjustment or modification.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

B. Packages shall be labeled with the manufacturer's name.

C. Store fence fabric and accessories in a secure and dry place.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of gate operators and controls.

b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

c. Deterioration of coatings beyond normal weathering.

B. Warranty Period: Five years from date of Substantial Completion.

C. Submit two (2) copies of each warranty to Engineer in the manufacture's/supplier's standard form or if there is no standard form available, in a form specified by Engineer.

PART 2 PRODUCTS

2.1 GENERAL

A. All posts and rails shall be straight, true to section and of sufficient length for proper installation.

B. Unless otherwise specified, hardware and accessories shall conform to the requirements of ASTM F626 and ASTM A123 or ASTM A153 as applicable for zinc-coating.

2.2 POSTS AND RAILS

A. Extruded steel tube, ASTM F1083 or rolled/welded tube, ASTM F1043, minimal yield strength 50,000 pounds per square inch (psi), hot dipped galvanized.

1. Extruded steel tube: Average zinc coating of 2.0 ounces per square foot (oz/ft^2) interior/exterior, ASTM F1083.

2. Rolled/welded tube: External zinc coating 1.0 oz/ft^2 with a clear polymeric overcoat, Type D interior 90% zinc-rich coating having a minimum thickness of 0.30 mils.

B. Post size per Table 1.

Table 1 – Post and Rail Sizes

Item	Fence Height	Outside Diameter, Inches	F1083 Schedule 40 weight lb/ft	F1043-IC WT-40 weight lb/ft
Line Posts	up to 8 ft. 8 to 12 ft.	2.375 2.875	3.65 5.79	3.12 4.64

Terminal Posts	up to 8 ft.	2.875	5.79	4.64
	8 to 12 ft.	4.000	9.11	6.56
Rails		1.660	2.27	1.84

C. Truss rod shall be ⅜-inch zinc-coated steel with adjustable turnbuckles or truss tightener.

2.3 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. Fabric Height: As indicated on Drawings.

2. Mesh Size: 2 inches.

3. Selvage: Knuckled at both selvages (KK).

4. Wire Fabric

a. Zinc-Coated Steel Fabric, 9-gauge, ASTM A817, hot-dip galvanized, ASTM A392 Class 2 – 2.0 oz/ft², coated after weaving (GAW).

1) Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.

b. Polymer-Coated Steel Fabric: ASTM F668, 9-gauge core wire, 0.3 oz/ft^2 zinc-coated with Class 2b (thermally fused and bonded) PVC coating.

1) Color: Black, ASTM F934.

2.4 TENSION WIRE

A. Match coating type to that of the chain link fabric.

1. Metallic-coated steel wire: Marcelled (spiraled or crimped), 7 gage, (0.177 inches) diameter, ASTM A824, zinc-coated, ASTM A817 Class 5 – 2.0 oz/ft².

2. Polymer-coated steel wire: Marcelled (spiraled or crimped) 7 gage, (0.177 inches) diameter (before coating), ASTM F1664.

a. Color: Black, ASTM F934.

2.5 HARDWARE AND FITTINGS

A. Tension and Brace Bands: Galvanized pressed steel complying with ASTM F626, minimum steel thickness of 12 gauge (0.105 in.), minimum width of ¾ in. and minimum zinc coating of 1.20 oz/ft². Secure bands with ⅝ in. hot-dip galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Caps, Rail and Brace Ends, Boulevard Clamps, and Rail Sleeves: In compliance to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft².

1. Rail sleeves shall not be less than 6 inches long.

C. Truss Rod Assembly: In compliance with ASTM F626, ⅜ in. diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft², assembly capable of withstanding a tension of 2,000 lbs.

D. Tension Bars: In compliance with ASTM F626. Galvanized steel one-piece length 2 in. less than the fabric height, minimum cross section of 3/16 in. by ¾ in. and minimum zinc coating of 1.2 oz./ft².

E. Miscellaneous hardware, including but not limited to nuts, bolts, washers, clips, bands, rail ends, brackets, and straps shall be provided as required, hot-dip galvanized steel, ASTM F626.

F. Brace bands shall be formed from flat or beveled steel and shall have a minimum thickness after galvanizing of 0.108 inches and a minimum width of ¾ inch.

G. Polymer-Coated Fittings: ASTM F626, PVC or polyolefin coating, minimum thickness 0.006 in., fused and adhered to the zinc-coated fittings. Color to match fence system.

2.6 TIE WIRE AND HOG RINGS

A. Tie Wire and Hog Rings: Galvanized minimum zinc coating 1.20 oz/ft², 9-gauge (0.148 in) steel wire, ASTM F626.

B. Polymer coated materials shall match the coating, class and color to that of the chain link fabric.

2.7 FASTENERS

A. All fasteners shall be hot-dip galvanized, ASTM F2329.

B. Bolts: Steel, ASTM A307, Grade A min, Hex.

C. Nuts: Steel, ASTM A563, Grade A min, Hex.

D. Washers: Steel, round, ASTM F844.

E. Polymer Coated Color Fittings: In compliance with ASTM F626, PVC or polyolefin coating minimum thickness 0.006 in. fused and adhered to the zinc-coated fittings. Color to match fence system.

2.8 MODULAR OR PANELIZED CHAIN LINK FENCE

A. Free-standing fence panels, minimum ten (10) foot panels of the height specified.

B. Fabric as specified.

C. Welded tubular steel frame.

D. Stands: Four-sided welded tubular steel frame with center bar and tubular sleeves.

2.9 GATES

A. Gate Construction: ASTM F900. Corners welded or assembled with special malleable or pressed-steel fittings and rivets or bolts to provide rigid connections.

B. Pipe and Tubing: Zinc-Coated Steel: Comply with ASTM F1043 and ASTM F1083; protective coating and finish to match fence framing.

C. Posts (Hing Posts): Round tubular steel.

1. Up to 4-foot fencing: 2⅞-inch OD Pipe.

2. Over 4-foot to 6-foot fencing: 4-inch OD Pipe.

3. Over 6-foot to 12-foot fencing: 6.625-inch OD Pipe.

D. Frames and Bracing: Round tubular steel.

1. Framing:

a. 2.375 inch OD Pipe

b. Gate Leaves: Configured with intermediate members and diagonal truss rods or tubular members as necessary to provide rigid construction, free from sag or twist. When width of gate leaf exceeds 10 feet, install mid-distance vertical tubing of the same size and weight as frame members. When either horizontal or vertical bracing is not required, provide truss rods as cross-bracing to prevent sag or twist.

c. Horizontal bid bracing shall be used on all gates.

E. Wire Fencing Fabric: Fabric shall match that of fence, attached securely to frame at intervals not exceeding 15 inches.

F. Hardware:

1. Latches, hinges, stops, keepers and other hardware items shall be furnished as required for proper operation. These elements may not be shown on the Drawings, but shall be supplied and installed as required for a complete gate system.

2. Hinges: 360-degree inward and outward swing. Set screw shall be installed drilled into the steel post to lock each hinge to the gate post and prevent rotation. No-lift-off type. Box type hinges are not acceptable.

3. Latches: permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.

4. Double gates and single gates with leaf width 4 feet and greater shall be equipped with a minimum ½″ drop bar and gate hold-backs.

5. Latches, hinges, stops, keepers and other hardware items shall be furnished as required for proper operation.

2.10 PRIVACY SLATS (IF APPLICABLE)

A. Material: PVC, UV-light stabilized, flame resistant, four ply, not less than 0.023 inch (0.58 mm) thick; sized to fit mesh specified for direction indicated.

B. Color: As selected by Owner.

2.11 CONCRETE

A. Concrete shall conform to ASTM C94; or pre-packaged concrete mix, ASTM C387. Minimum 28-day compressive strength of 3,000 psi. No air entrainment.

2.12 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 EXECUTION

3.1 GENERAL

A. Install fence with properly trained crew as shown on the drawings in accordance with ASTM F567.

B. Install all nuts for tension bands and hardware bolts on the side of the fence opposite the fabric.

C. The temporary chain link fence shall be removed at the conclusion of the work.

3.2 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.4 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F567 and more stringent requirements indicated.

1. Install fencing on established boundary lines inside property line.

3.5 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.

2. Concrete post footings shall have a plan diameter 12 inches greater than the post diameter. Holes shall be clean and free of loose soil and debris. Concrete shall be placed continuously in one operation and tamped or vibrated for consolidation. Tops of the concrete footings shall be crowned to shed water.

3. Gate post/footings shall be installed a minimum of 42 inches below grade.

4. All corner, end posts, and gate posts shall be braced.

a. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

b. Corner and terminal posts are to be braced horizontally and diagonally. The braces are to extend over one adjacent panel. Changes in line of 30 degrees or more shall be considered as corners.

c. Braces and truss rods shall be securely fastened to posts with appropriate hardware.

d. Pull posts with two braces shall be provided for all heights where changes in horizontal or vertical alignment of ten (10) degrees or more occur.

5. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Concealed Concrete: Top 3 inches below grade as indicated on Drawings to allow covering with surface material.

b. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

c. Posts Set into Voids in Concrete: Form or core drill holes not less than 5 inches deep and ¾ inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts uniformly as indicated on the Drawings. Unless indicated otherwise, spacing shall be 8 feet on-center.

E. Post Bracing and Intermediate Rails: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. horizontal braces at mid-height of fabric 72 inches or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches on-center. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:

1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches (152 mm) of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches on-center.

J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches on-center and to braces at 24 inches on-center.

K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

L. Privacy Slats: Install slats in direction indicated, securely locked in place.

1. Diagonally, for privacy factor of 80 to 85.

M. Fabric:

1. Do not install fabric until concrete post footings have cured seven (7) days. Provide fabric of the height specified. Install fabric on the public side of the fence, with bottom no greater than 2 inches above the ground surface. Fabric shall be pulled taut to prevent sagging and

provide a uniform smooth appearance. Fasten fabric to line posts at intervals not exceeding 15 inches with ties as specified.

2. Install tension wire in one continuous length between pull posts, weaved through fence fabric at top. Tension wire shall be applied to provide a wire without visible sag between posts. Fasten fabric to tension wire at intervals not exceeding 24 inches with ties or hog rings as specified.

3. Where it is not practicable to conform the fence to general contour of the ground, as at ditches, channels, etc., the opening beneath the fence shall be enclosed with chain link fabric and sufficiently braced to preclude access, but not to restrict the flow of water.

3.6 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

B. Provide swing gates at the locations and dimensions shown on the Drawings. Do not install gates until concrete post footings have cured seven (7) days.

C. Gates shall be installed plumb, level, and secure, with full opening without interference. Hardware shall be installed and adjusted for smooth operation and lubricated where necessary.

D. Provide concrete center drop to footing depth and suitable drop rod sleeve at center of double gate openings.

3.7 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of 1,500 feet except as follows:

B. Fences within 100 feet of buildings, structures, walkways, and roadways: Ground at maximum intervals of 750 feet.

1. Gates and Other Fence Openings: Ground fence on each side of opening.

2. Bond metal gates to gate posts.

3. Coordinate subparagraph below with Drawings in projects where intentional discontinuities are provided in metal fencing conductivity to localize lightning effects to the vicinity of strikes. See Evaluations.

4. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.

C. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.

D. Plans and details on Electrical Drawings and requirements in Division 26 Sections may revise or illustrate application of requirement below or may require grounding that exceeds minimum requirements in IEEE C2. Fences enclosing electrical substations are often bonded to a station grounding mat.

E. Fences Enclosing Electrical Power Distribution Equipment: Ground as required by IEEE C2 unless otherwise indicated.

F. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location, including the following:

1. Make grounding connections to each barbed wire strand with wire-to-wire connectors designed for this purpose.

2. Make grounding connections to each barbed tape coil with connectors designed for this purpose.

G. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

H. Connections: Make connections to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.

2. Make connections with clean, bare metal at points of contact.

3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.

4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.

5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

I. Bonding to Lightning Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

3.8 FIELD QUALITY CONTROL

A. Grounding-Resistance Testing: Engage a qualified testing agency to perform tests and inspections.

1. Grounding-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure grounding resistance no fewer than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural grounding resistance. Perform tests by two-point method according to IEEE 81.

2. Excessive Grounding Resistance: If resistance to grounding exceeds specified value, notify Architect promptly. Include recommendations for reducing grounding resistance and a proposal to accomplish recommended work.

3. Report: Prepare test reports certified by a testing agency of grounding resistance at each test location. Include observations of weather and other phenomena that may affect test results.

3.9 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

3.10 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION

SECTION 32 32 00
MODULAR BLOCK RETAINING WALL

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. The scope of work under this section includes furnishing and installing segmental retaining wall units, geogrid reinforcement, wall fill, and backfill to the lines and grades shown on the construction drawings and as specified herein. The contract also includes the furnishing and installing all appurtenant materials, equipment, and labor required for construction of the geogrid reinforced, segmental retaining wall.

B. The scope of work also includes obtaining all necessary permits, Call-Before-You-Dig (CBYD) notification, and preparation of a safety plan conforming to Occupational Safety and Health Administration (OSHA) standards.

1.02 RELATED SECTIONS

A. Section 31 23 00 – Excavation, Filling, and Grading

1.03 RELATED DOCUMENTS

A. Drawings and general conditions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to the work, materials, and equipment specified in this section and shall be binding on the Contractor and/or Subcontractor who performs this work.

B. Comply with the provisions of the following, except as otherwise provided by Contract:

1. Associated General Contractors of America, Inc. (AGCA) "Manual of Accident Prevention in Construction".

2. Occupational Safety and Health Administration, United States Department of Labor Requirements including 29 CFR Part 1926 – Occupational Safety and Health Standards, Excavation; Final Rule.

3. ANSI "Safety Requirements for Construction and Demolition".

4. 2021 International Building Code (IBC).

5. American Society for Testing and Materials (ASTM) Standards (current versions):

   a. ASTM C90-75 – Hollow Load Bearing Masonry Units.

   b. ASTM C140-75 – Sampling AND Testing Concrete Masonry Units.

   c. ASTM C145-75 – Solid Load Bearing Concrete Masonry Units.

   d. Geosynthetic Research Institute (GRI), GRI-GG4 – Determination of Long Term Design Strength of Geogrids.

e. ASTM D 638 – Test Method for Tensile Properties of Plastic.

f. ASTM D 1248 – Specification of Polyethylene Plastics Molding and Extrusion Materials.

g. ASTM D 1557 – Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb Hammer and 18-inch Drop.

h. ASTM D 4218 – Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle Furnace Technique.

i. ASTM D 3034 – Specification for Polyvinyl Chloride (PVC) Pipe.

j. ASTM C 1372 – Specifications for Segmental Retaining Wall Units.

6. State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, and Incidental Construction, Form 818, 2020 with all current supplements, subsequently referred to as ConnDOT Form 818.

1.04 SUBMITTALS AND CERTIFICATION

The contractor shall submit a manufacturer's certification, prior to the start of the work, that the retaining wall system components meet the requirements of ASTM C-1372 and other requirements specified herein. This certification should be provided to the geotechnical engineer for review and approval prior to wall construction.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Contractor should check the materials upon delivery to ensure that proper material has been received.

B. Contractor should prevent excessive mud, wet cement, epoxy, and like materials which may affix themselves, from coming in contact with the materials.

C. Geogrids should be stored above -20° F.

D. Contractor should protect the materials from damage. Damaged material should not be incorporated into the reinforced retaining wall.

1.06 QUALITY ASSURANCE

Owner will provide construction observation services and special inspections. Owner’s quality assurance program does not relieve the contractor of responsibility for quality control and wall performance.

1.07 DESIGN ASSUMPTIONS

Material	Friction Angle (◦)	Unit Weight (pcf)
Crushed Stone	36	130
Lightweight Fill	38	25
Structural Fill	34	130

PART 2 – PRODUCTS

2.01 DEFINITIONS

A. Geogrid is a high-density polyethylene, polyester, or polypropylene grid, specifically fabricated for use as a soil reinforcement.

B. Concrete retaining wall units are as detailed on the drawings and as specified herein.

C. Backfill is the soil which is used as fill for the reinforced soil mass.

D. Foundation soil is the in-situ soil or controlled compacted fill placed below the bottom of the retaining wall and geogrid zone.

2.02 MATERIALS

The contractor should submit manufacturer's catalog and samples of the proposed materials for approval by the project geotechnical engineer a minimum of 14 days before the start of construction. Materials should be transported to the site only after approval of the proposed materials by the project geotechnical engineer.

A. Concrete Units

1. Concrete units should be modular block retaining wall units. Substitution of other concrete units may be allowed with the prior approval of the geotechnical engineer.

2. Concrete wall units should have a minimum 28 day compressive strength of 3,000 psi, in accordance with ASTM C-90. The concrete should have adequate freeze/thaw protection with a maximum moisture absorption of 6 percent.

3. Modular concrete materials shall conform to the requirements of ASTM C-1372 - Standard Specifications for Segmental Retaining Wall Units.

4. The units shall pass 100 freeze/thaw cycles in water with less than 1% weight loss in accordance with ASTM C-1372.

5. Units should have angled sides and be capable of attaining concave and convex alignment curves. Units should be interlocked with glass-reinforced nylon pins.

6. Units should be interlocked as to provide a maximum of ¼ inch of setback per block.

B. Leveling Pad

Material for leveling pad/footing should consist of compacted free-draining coarse aggregates meeting the requirements of ConnDOT Form 818, Article M.05.01, or Article M.0.01 (sizes No. 6 or No. 67). A minimum of 6 inches deep and 24 inches wide compacted leveling pad is required.

C. Geogrid

Geogrid should be submitted and approved by the geotechnical engineer. The geogrid should have an allowable strength of 2904 pounds per foot. The allowable strength is defined as the ultimate strength divided by reduction factors for creep, durability, installation damage and should have an overall factor of safety of 1.5 or greater.

D. Connecting Pins

1. Concrete units shall be interlocked with connection pins. The pins shall consist of glass-reinforced nylon made for express use with the concrete units supplied. The connection pins should be approved by the geotechnical engineer.

2. For substitute concrete units, use of other compatible connector systems may be allowed with the prior approval of the geotechnical engineer.

E. Geotextile

Geotextile shall consist of nonwoven Mirafi S800, manufactured by TenCate Geosynthetics Americas, or equivalent approved by GEODesign.

F. Drainage Pipe

Drainage pipes should be perforated or slotted PVC pipe manufactured in accordance with ASTM D-3034.

G. Backfill

Backfill shall be environmentally clean and free of ash, refuse, trash, ice, snow, stumps, roots, organic materials and other deleterious materials. Backfill shall be placed to the limits and elevations shown on project plans. Backfill shall be as follows:

1. Crushed Stone shall consist of materials meeting the requirements of ConnDOT Form 818, Article M.0.01 for sizes No. 6 or No. 67.

2. Lightweight Fill shall consist of G-15 Foamed Glass Aggregate (FGA) manufactured by Aero Aggregates, or equivalent approved by the geotechnical engineer.

3. Structural Fill shall consist of material meeting the following specifications:

Sieve Size	Percent Passing by Weight

6 inch	100
No. 10	30 – 95
No. 40	10 – 70
No. 200	0 -15

PART 3 – EXECUTION

3.01 DEMOLITION AND EXCAVATION

A. Entire underground stormwater storage/infiltration system, including all piping and manholes must be removed per project plans. Pipes extending beneath existing retaining wall may be capped and filled with flowable fill having a minimum compressive strength of 300 psi and abandoned in place.

B. Existing retaining wall backfill, geogrids, and block units must be completely removed. Excavation sidewalls shall be sloped in accordance with OSHA requirements.

C. The contractor should excavate to the lines and grades shown on the construction drawings. Under no circumstances should the excavation lines and grades be exceeded, except with owner's approval. The contractor should protect the excavation subgrade from precipitation and disturbance by construction equipment or other traffic.

D. Excavations should be sloped or otherwise supported in accordance with OSHA and other local and state regulations.

3.02 FOUNDATION SUBGRADE PREPARATION

A. Retaining wall leveling pad and reinforced zone shall bear on firm natural inorganic soils or compacted Structural Fill overlying such materials, consistent with the requirements on the project plans. Where Structural Fill is used, the Structural Fill shall extend outward from 1 foot beyond the edge of the leveling pad on a one-to-one downward slope.

B. Foundation soil should be excavated as required for installation of leveling pad, geogrid, geotextile, and other elements and as shown on the construction drawings.

C. Foundation soil should be examined by the engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. Soils not meeting required strength should be removed and replaced with controlled, compacted material.

D. Overexcavated areas should be filled with approved material and compacted to 95 percent of maximum dry density in accordance with the Modified Proctor, ASTM D-1557. The exposed foundation subgrade should be proof compacted with a walk behind double drum vibratory roller or other approved equipment under the observation of the project geotechnical engineer or their qualified representative. Any soft or unstable areas identified during proof compaction should be overexcavated and backfilled with Structural Fill.

E. Any fills required to establish sloping surfaces in front of the walls should consist of Structural Fill and should be placed, compacted and field tested in accordance with the requirements specified herein.

3.03 LEVELING PAD

A. The leveling pad should be placed as shown on the construction drawings with a minimum thickness of 6 inches.

B. Leveling pad materials should be installed upon undisturbed in situ soils or controlled, compacted backfill.

C. Leveling pad should be prepared to ensure it is level and in complete contact with retaining wall units. Gaps between leveling pad and concrete block units should not be allowed.

3.04 UNIT INSTALLATION

A. First course of concrete wall units should be placed on the leveling pad. The units should be checked for level and alignment. The first course is the most important to provide accurate and acceptable results.

B. Ensure that units are in full contact with base.

C. Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from base line.

D. Install connecting pin.

E. Lay up each course ensuring that the connecting pins are properly inserted into the block units. Repeat procedure to the extent of wall height.

F. At the end of each course where the wall changes elevation, units should be turned into the backfill. Units should be laid as to create the minimum radius possible. Unless otherwise shown on the drawings, a minimum of one unit should be installed into the grade. Only the front face of the units should be visible from the side of the wall.

G. Convex and concave curves should be made using compact units or by trimming the concrete block units as required in accordance with manufacturer's recommendations.

H. Install 4" perforated drainage pipes concurrently with the installation of concrete units and placement of fill where shown on project plans.

I. Maximum stacked vertical height of wall units, prior to backfill placement and compaction, shall not exceed two courses.

J. Cap units should be installed as required by manufacturer.

3.05 GEOGRID INSTALLATION

A. The geogrid soil reinforcement should be laid horizontally on compacted backfill, connected to the concrete wall units. Hook grid over the connecting pin, pull taut, and anchor before backfill is placed on the geogrid.

B. Slack in the geogrid at the wall unit connections should be removed in a manner, and to such a degree, as required by the engineer.

C. Geogrid should be laid at the proper elevation and orientation as shown on the construction drawings or as directed by the engineer.

D. Correct orientation (roll direction) of the geogrid should be verified by the contractor.

E. Geogrid should be secured in-place with staples, pins, sand bags, or backfill as required by fill properties, fill placement procedures, or weather conditions, or as directed by the engineer.

F. Overlaps.

1. Uniaxial geogrid does not need to be overlapped in the across the roll direction. Uniaxial grid should be overlapped 48" in the rolled direction.

2. A layer of soil a minimum of 4 inches in thickness should be spread between uniaxial geogrid layers in the area to be overlapped, or as directed.

3.06 FILL PLACEMENT AND COMPACTION

A. Structural Fill used where specified on the project plans as wall backfill should be compacted to 95 percent of the Modified Proctor (ASTM D-1557).

B. Backfill should be placed, spread, and compacted in such a manner that minimizes the development of wrinkles in and/or movement of the geogrid.

C. Backfill should be placed from the wall outward to ensure that the geogrid remains taut.

D. Construction equipment shall not be operated directly on the geogrids. A minimum backfill thickness of 6 inches is required prior to operation of tracked equipment over the geogrids. Turning of tracked vehicles should be kept to a minimum to prevent displacing the fill and damaging or moving the geogrids. Any damaged or disturbed geogrids must be promptly repaired or replaced as directed by the geotechnical engineer.

E. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning should be avoided.

F. FGA shall be compacted using either a vibratory plate compactor weighing between 110 and 220 lbs. or tracked excavation equipment with a ground pressure between 600 and 1000 psf. A minimum of four passes is required for both compaction methods. Maximum FGA lift thickness is 12 inches if a plate compactor is used and 24 inches if tracked equipment is used.

G. Maximum lift thickness for Crushed Stone and Structural Fill is 8 inches if hand-operated compaction equipment (i.e., plate compactors and vibratory trench rollers) is used and 12 inches if a vibratory drum roller is used. Crushed Stone and Structural Fill should be subjected to a minimum of six passes with compaction equipment.

H. Only hand-operated compaction equipment should be allowed within 4 feet of the wall face.

I. Construction equipment, other than required for placement/compaction of the FGA, shall not operate on or travel over FGA.

J. The finished sloping surface on the toe side of the proposed retaining wall should be protected by loaming and seeding in accordance with project requirements.

3.07 DRAINAGE

A. Provide wall drains and weepholes at maximum 20-foot spacing as shown on project plans.

B. Maintain positive drainage during construction.

C. Drain pipes should daylight through the block units.

D. Install the perforated drainage pipes and lateral drainage pipes incrementally and concurrently with the installation of concrete units and placement of fill.

E. Drainage pipe shall be perforated or slotted PVC pipe manufactured in accordance with ASTM D-3034 or corrugated HDPE pipe manufactured in accordance with AASHTO M252.

F. Solid (unslotted/unperforated) pipe shall be used to daylight drains through face of wall.

END OF SECTION

END OF SECTION 32 32 00

SECTION 32 40 00
WOOD GUARDRAIL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. This section is only a portion of the Contract Documents. All of the Contract Documents, including Division 1 General Requirements, apply to this section.

1.2 SECTION INCLUDES

A. This Section specifies requirements for wood guardrail.

B. The work includes:

1. Furnishing required materials

2. Assembly and installation

C. Contractor is responsible for all health and safety.

1.3 REFERENCES

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. American Association of State Highway and Transportation Officials

1. AASHTO M 133 - Standard Specification for Preservatives and Pressure Treatment Processes for Timber.

2. AASHTO M 168 - Standard Specification for Wood Products.

1.4 SUBMITTALS

A. Submit to the Engineer for approval shop drawings for materials. No materials shall be fabricated or shipped prior to approval of the shop drawings by the Engineer.

B. A certificate of wood treatment shall be furnished to the Engineer upon delivery of the treated wood products. Treated wood shall bear the appropriate American Wood Preserves Bureau [AWPB] quality mark for the treatment employed. The certificate shall indicate acceptability of treated wood to receive field-applied stain.

C. Submit layout plan for single faced wood guardrail showing post locations, including end and closure posts.

D. Manufacturer’s warranties and associated warranty registration data in Owner’s name. Submit two (2) copies of each warranty to Engineer in the manufacture’s/supplier's standard form or if there is no standard form available, in a form specified by Engineer.

1.5 QUALITY ASSURANCE:

A. Posts and offset blocks that contain unsound knots and shakes, excessive checking or other defects that may be detrimental to the structural integrity of the posts and offset blocks will be rejected and shall not be used in the proposed work.

PART 2 PRODUCTS

2.1 MATERIALS:

A. Southern Yellow Pine rough sawn surface, AASHTO M 168. Components configured as indicated in the Drawings.

B. Rails shall be of the same timber species as the post, and shall be stress grade 1,000 psi or more, extreme fiber in bending.

C. Treatment: Pressure treated, Alkaline Copper Quaternary (ACQ-D), AASHTO M 133, 0.60 lbs./cubic foot minimum.

PART 3 EXECUTION

3.1 WOOD GUARDRAIL

A. Posts shall be set in excavated holes at the required spacing. Layout spacing of posts in the field prior to excavating post holes. End and closure posts at bends shall be spaced a maximum distance of eight feet and a minimum of four feet.

B. Furnish and install post required to accommodate the steel highway guard terminal section at end post. Field bore holes to insure proper attachment of steel terminal section to wood rail and post.

C. The bottom of post holes shall be tamped to grade. Post shall be set plumb at the required location.

D. Post holes shall be backfilled with suitable material placed in layers and compacted.

E. Wood rails shall be erected to form a smooth continuous rail conforming to the required line and grade. Butt adjoining rail sections with a maximum separation between adjoining rail sections of 1/16 inch.

F. Rails shall be butt jointed at alternate posts or as directed, and shall be securely attached with galvanized carriage bolts, at least two per rail per post, of sufficient length to secure with washer and nut. Hammering or other forceful method of inserting bolt shall not be used. Rail splices and terminal section connections shall occur only at posts.

G. Wood surfaces, cut or injured, and field boxed in wood posts or rails shall be brush treated with two application of wood preservative using material of the same specifications as that used in the preservative treatment.

3.2 CLEANUP AND PROTECTION

A. Upon completion of the work, remove all surplus materials and installation debris. Leave area of work in clean orderly condition

B. After completing installation, inspect all components. Repair any damaged finishes to match original finish or replace component.

C. Protect installed work until acceptance of project.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Provide all labor, materials, equipment, services, and perform all operations necessary to complete the work of this section as indicated within the drawings and specified herein which shall include, but is not limited to, the following:

1. Supplying Trees, Shrubs, Perennial, and Groundcover.
2. Landscape Edging.
3. Mulch.
4. Maintenance including watering.
5. Warranty.

B. Contractor is responsible for all health and safety.

1.2 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than sizes indicated; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than sizes indicated.

D. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of plant required.

E. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

F. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.

G. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

H. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

I. Planting Area: Areas to be planted.

J. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

K. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

L. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

1.3 SUBMITTALS

A. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.

1. Plant Photographs: Include color photographs in 3- by 5-inch print format of each required species and size of plant material as it will be furnished to the Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

B. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project.

1. Contractor shall follow all Connecticut DEEP regulations for pesticide and herbicide applications.

C. Qualification Data: For qualified landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

D. Product Data: For each type of product indicated, including soils.

E. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

1. Submit material specifications, manufacturer's literature and installation instructions where applicable attesting that the following materials meet the requirements specified:

a. Fertilizer

b. Anti-Desiccant

c. Mulch

d. Soil Amendments

e. Edging

f. Weed Control Barrier

2. Manufacturer's certified analysis of standard products.

3. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

F. Maintenance Manual

1. The landscape contractor shall submit a written manual, prepared for the Owner that outlines a schedule for proper maintenance of the plantings. This schedule should include timing and methods for watering, fertilization, mulching, pruning and other maintenance operations to be conducted after the three-month maintenance contract period.

G. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants including the preparation, mixing and installation of soil mixes to support planting.

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.

2. Experience: Five years' experience in landscape installation of size and scope similar to this project.

3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:

a. Certified Landscape Technician – Exterior, with installation maintenance specialty area(s), designated CLT-Exterior.

b. Certified Landscape Technician – Interior, designated CLT-Interior.

c. Certified Ornamental Landscape Professional, designated COLP.

5. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.

2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Landscape Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Landscape Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Landscape Architect of sources of planting materials seven days in advance of delivery to site.

E. Preinstallation Conference: Conduct conference at Project site.

F. Work to be done shall be coordinated with all other trades on site. Work includes furnishing all labor, materials, equipment and services required to complete all planting indicated on the Drawings specified in this Section.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

C. Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

E. Handle planting stock by root ball.

F. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.

G. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.

2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.

3. Do not remove container-grown stock from containers before time of planting.

4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of each service or utility.

2. Do not proceed with interruption of services or utilities without Construction Manager's written permission.

C. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring:

a. Deciduous materials: March 1 to May 15

b. Evergreen Materials: March 1 to June 1

2. Fall:

a. Deciduous materials: From September 1 until the ground freezes.

b. Evergreen Materials: August 15–October 15

D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

E. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.7 PLANT WARRANTY

A. Plant Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.

    b. Structural failures including plantings falling or blowing over.

    c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Periods from Date of Substantial Completion:

    a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months

    b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months

    c. Annuals: Three months

3. When the work is accepted in parts, the warranty periods shall extend from each of the partial Substantial Completion Acceptances to the terminal date of the last warranty period. Thus, all warranty periods for each class of plant warranty, shall terminate at one time.

4. Include the following remedial actions as a minimum:

    a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.

    b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

    c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.

    d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

5. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification. Make all necessary repairs due to plant replacements. Such repairs shall be done at no extra cost to the Owner.

1.8 MAINTENANCE SERVICE

A. Initial Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until substantial completion but for not less than maintenance period below if substantial complete comes earlier.

    1. Maintenance Period: Three months from date of planting completion.

B. Initial Maintenance Service for Ground Cover and Other Plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until substantial completion but for not less than maintenance period below if substantial completion comes earlier.

1. Maintenance Period: Three months from date of planting completion.

C. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.9 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

A. Submit all requests for substitutions of plant species, or size to the Owner's Representative, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Requests shall also include sources of plants found that may be of a smaller or larger size, or a different shape or habit than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution.

PART 2 PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated on the Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than ¾ inch in diameter; or with stem girdling roots will be rejected.

2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label at least one plant of each variety, size, and caliper in each planting bed with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

E. If formal arrangements or consecutive order of plants is shown on the Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

F. Annuals: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with

excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

G. Plant List: If there is any discrepancy between quantities shown on the Plant Schedule and work shown on the drawings, the Landscape Contractor shall supply the plants necessary to complete the work as intended on the drawings. Where the size of a plant on the Plant Schedule is a variation between a minimum and maximum dimension, the sizes of the plants furnished will be equal to the average of the two dimensions. Where a single dimension is given, this dimension represents the minimum size of the plants to be furnished.

2.2 PLANTING SOIL

A. See Specification Section 32 9100 – Planting Soil

2.3 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, perennials and groundcovers, consisting of one of the following:

1. Type: Aged double-shredded bark.

2. Size Range: 2 inches maximum, ½ inch minimum.

3. Color: Natural.

2.4 PESTICIDES

A. General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.5 WATERING BAGS

A. Plastic tree watering bags holding a minimum of 15 gallons of water and with a slow drip hole(s) water release system, specifically designed to water establishing trees. Water should release over a several day period, not within a few hours.

B. Watering bags shall be:

1. Treegator Irrigation Bags sized to the appropriate model for the requirements of the plant, manufactured by Spectrum Products, Inc., Youngsville, NC 27596.

2. Ooze Tube sized to the appropriate model for the requirements of the plant, manufactured by Engineered Water Solutions, Atlanta, GA.

3. Or approved equal.

C. Submit manufacturer's product data for approval.

2.6 LANDSCAPE EDGING

A. Heavy Duty Straight Profile Edging: 3/16″ x 6″ high, extruded aluminum, 6063 alloy, T-6 hardness, landscape edging for straight-line and curvilinear applications in corrugated straight profile.

B. Section shall have loops on side of section to receive stakes spaced approximately 2 to 3 feet apart along its length.

C. Thickness: 3/16 inch gage section at 0.116 inch minimum thick with 0.187 inch exposed top lip.

D. Connection Method: Section ends shall splice together with an interlocking stakeless snap-down design.

E. Stake: 12″ extruded aluminum stake. Stakes to interlock into section loops.

F. Finish: Mill Finish. Paint finish shall comply with AAMA 2603 for electrostatically baked on paint.

2.7 MISCELLANEOUS PRODUCTS

A. Wood Pressure-Preservative Treatment: AWPA C2, with waterborne preservative for soil and freshwater use, acceptable to authorities having jurisdiction, and containing no arsenic; including ammoniacal copper arsenate, ammoniacal copper zinc arsenate, and chromated copper arsenate.

B. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

C. Burlap: Non-synthetic, biodegradable.

D. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine the surface grades and soil conditions to confirm that the requirements of the Specification Section – Planting Soil – and the soil and drainage modifications indicated on the Planting Soil Plan and Details (if applicable) have been completed. Notify the Owner's Representative in writing of any unsatisfactory conditions.

B. Planting shall only be performed when weather and soil conditions are suitable for planting the materials specified in accordance with locally accepted practice. Install plants during the planting time as described below unless otherwise approved in writing by the Owner's Representative. In the event that the Contractor request planting outside the dates of the planting season, approval of the request does not change the requirements of the warranty.

3.2 LAYOUT AND PLANTING SEQUENCE

A. Relative positions of all plants and trees are subject to approval of the Owner's Representative.

B. Notify the Owner's Representative, one (1) week prior to layout. Layout all individual tree and shrub locations. Place plants above surface at planting location or place a labeled stake at planting location. Layout bed lines with paint for the Owner's Representative's approval. Secure the Owner's Representative's acceptance before digging and start of planting work.

C. When applicable, plant trees before other plants are installed.

D. It is understood that plants are not precise objects and that minor adjustments in the layout will be required as the planting plan is constructed. These adjustments may not be apparent until some or all of the plants are installed. Make adjustments as required by the Landscape Architect including relocating previously installed plants.

3.3 SOIL PROTECTION DURING PLANT DELIVERY AND INSTALLATION

A. Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.

1. Where possible deliver and plant trees that require the use of heavy mechanized equipment prior to final soil preparation and tilling. Where possible, restrict the driving lanes to one area instead of driving over and compacting a large area of soil.

2. Till to a depth of 6 inches, all soil that has been driven over during the installation of plants

3.4 SOIL MOISTURE

A. Volumetric soil moisture level, in both the Planting Soil and the root balls of all plants, prior to, during and after planting shall be above permanent wilt point and below field capacity for each type of soil texture within the following ranges.

Soil Texture	Permanent Wilting Point	Field Capacity
Sand, Loamy sand, Sandy loam	5–8%	12–18%
Loam, Sandy clay, Sandy clay loam	14–25%	27–36%
Clay loam, Silt loam	11–22%	31–36%
Silty clay, Silty clay loam	22–27%	38–41%

B. The Contractor shall confirm the soil moisture levels with a moisture meter (Digital Soil Moisture Meter, DSMM500 by General Specialty Tools and Instruments, or approved equivalent). If moisture is found to be too low, the planting holes shall be filled with water and allowed to drain before starting any planting operations. If the moisture is too high, suspend planting operations until the soil moisture drains to below field capacity.

3.5 INSTALLATION OF PLANTS – GENERAL

A. Observe each plant after delivery and prior to installation for damage of other characteristics that may cause rejection of the plant. Notify the Owner's Representative of any condition observed.

B. Excavation of the Planting Space: Using hand tools or tracked mini-excavator, excavate the planting hole into the Planting Soil to the depth of the root ball measured after any root ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated on the drawing or as noted below.

1. For trees and shrubs planted in soil areas that are NOT tilled or otherwise modified to a depth of at least 12 inches over a distance of more than 10 feet radius from each tree, or 5 feet radius from each shrub, the soil around the root ball shall be loosened as defined below or as indicated on the drawings.

a. The area of loosening shall be a minimum of 3 times the diameter of the root ball at the surface sloping to 2 times the diameter of the root ball at the depth of the root ball.

b. Loosening is defined as digging into the soil and turning the soil to reduce the compaction. The soil does not have to be removed from the hole, just dug, lifted and turned. Lifting and turning may be accomplished with a tracked mini excavator, or hand shovels.

C. If an auger is used to dig the initial planting hole, the soil around the auger hole shall be loosened as defined above for trees and shrubs planted in soil areas that are NOT tilled or otherwise modified.

D. The measuring point for root ball depth shall be the average height of the outer edge of the root ball after any required root ball modification.

E. If motorized equipment is used to deliver plants to the planting area over exposed planting beds, or used to loosen the soil or dig the planting holes, all soil that has been driven over shall be tilled to a depth of 6 inches.

F. For trees to be planted in prepared Planting Soil that is deeper than the root ball depth, compact the soil under the root ball using a mechanical tamper to assure a firm bedding for the root ball. If there is more than 12 inches of planting soil under the root ball excavate and tamp the planting soil in lifts not to exceed 12 inches.

G. Set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant plumb and upright in the center of the planting hole. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.

H. The Owner's Representative or Landscape Architect may request that plants orientation be rotated when planted based on the form of the plant.

I. Backfill the space around the root ball with the same planting soil or existing soil that was excavated for the planting space.

J. Brace root ball by tamping Planting Soil around the lower portion of the root ball. Place additional Planting Soil around base and sides of ball in six-inch (6″) lifts. Lightly tamp each lift using foot pressure or hand tools to settle backfill, support the tree and eliminate voids. DO NOT over compact the backfill or use mechanical or pneumatic tamping equipment. Over compaction shall be defined as greater than 85% of maximum dry density, standard proctor when the volumetric soil moisture is lower than field capacity.

1. When the planting hole has been backfilled to three quarters of its depth, water shall be poured around the root ball and allowed to soak into the soil to settle the soil. Do not flood

the planting space. If the soil is above field capacity, allow the soil to drain to below field capacity before finishing the planting. Air pockets shall be eliminated and backfill continued until the planting soil is brought to grade level.

K. Where indicated on the drawings, build a three-inch-high, level berm of Planting Soil around the outside of the root ball to retain water. Tamp the berm to reduce leaking and erosion of the saucer.

L. Thoroughly water the Planting Soil and root ball immediately after planting.

M. Remove all nursery plant identification tags and ribbons.

N. Remove corrugated cardboard trunk protection after planting.

3.6 TREE, SHRUB, AND VINE PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare flush with adjacent finish grades.

1. Use planting soil for backfill.

2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.

3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.

5. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare flush with adjacent finish grades.

1. Use planting soil for backfill.

2. Carefully remove root ball from container without damaging root ball or plant.

3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.

5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. Set and support bare-root stock in center of planting pit or trench with root flare flush with adjacent finish grade.

1. Use planting soil for backfill.

2. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots.

3. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside soil-covered roots about 1 inch from root tips; do not place tablets in bottom of the hole or touching the roots.

4. Continue backfilling process. Water again after placing and tamping final layer of soil.

F. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.7 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.8 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated in even rows with triangular spacing.

B. Use planting soil for backfill.

C. Dig holes large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes.

E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.9 PLANTING BED FINISHING

A. After planting, smooth out all grades between plants before mulching.

B. Separate the edges of planting beds and lawn areas with a smooth, formed edge cut into the turf with the bed mulch level slightly lower, 1 and 2 inches, than the adjacent turf sod or as directed by the Owner's Representative. Bed edge lines shall be as depicted on the Drawings.

3.10 LANDSCAPE EDGING INSTALLATION

A. Preparation: Ensure that all underground utility lines are located and will not interfere with the proposed edging installation before beginning work. Locate border line of edging with string or other means to assure border straightness and curves as designed. Bed edge lines shall be as depicted on the Drawings. Dig trench 1 inch deeper than set of edging bottom.

B. Set edging into trench with top at ½ inch above compacted finish grade on turf side with side having loops for stakes placed on opposite side of turf. Drive stakes through edging loops until locked in place. Requires 3 stakes evenly spaced for each 8 feet section with a total of 8 stake loops available in each 16 feet section if necessary. Provide additional stakes at approximately 24 inches apart, longer stakes, heavier gage stakes, or any combination of previously mentioned as necessary to firmly secure edging for permanent intended use.

C. Where edging sections turn at corners and at angled runs, cut edging partially up through its height from bottom and turn back to desired angle to form rounded exposed radius.

D. Backfilling and Cleanup: Backfill both sides of edging, confirm and adjust if necessary that sections are securely held together, and compact backfill material along edging to provide top of edging at 1 inch above turf finish grade. Cleanup and remove excess material from site.

3.11 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees in Turf Areas: Apply organic mulch ring of 3-inch average thickness, with four-foot radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.

2. Organic Mulch in Planting Areas: Apply 2-inch average thickness of organic mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.12 WATERING

A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Substantial Completion Acceptance. The Contractor shall adjust the automatic irrigation system, if available, and apply additional or adjust for less water using hoses as required.

B. Hand water root balls of all plants to assure that the root balls have moisture above wilt point and below field capacity. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.

C. The Contractor shall install 15 gallon watering bag for each tree to be maintained and used for tree watering during the warranty period.

D. The watering bags shall remain the property of the Owner at the completion of the work.

3.13 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

C. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

D. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

3.14 PLANT MAINTENANCE PRIOR TO SUBSTANTIAL COMPLETION

A. During the project work period and prior to Substantial Completion Acceptance, the Contractor shall maintain all plants.

B. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

C. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

D. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated past management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.15 SUBSTANTIAL COMPLETION ACCEPTANCE

A. Upon written notice from the Contractor, the Owners Representative shall review the work and make a determination if the work is substantially complete.

1. Notification shall be at least 7 days prior to the date the contractor is requesting the review.

B. The date of substantial completion of the planting shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.

C. The Plant Warranty period begins at date of written notification of substantial completion from the Owner's Representative. The date of substantial completion may be different than the date of substantial completion for the other sections of the project.

3.16 END OF WARRANTY FINAL ACCEPTANCE

A. At the end of the Warranty period the Owner's Representative shall observe the work and establish that all provisions of the contract are complete and the work is satisfactory.

B. If the work is satisfactory, the maintenance period will end on the date of the final observation.

C. If the work is deemed unsatisfactory, the maintenance period will continue at no additional expense to the Owner until the work has been completed, observed, and approved by the Owner's Representative.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Provide all labor, materials, equipment, services, and perform all operations necessary to complete the work of this section as indicated within the drawings and specified herein which shall include, but is not limited to, the following:

1. Screened loam.
2. Root zone mix.
3. Preparation and spreading stockpiled topsoil (if available).
4. Fine grading.
5. Fertilizers and additives as necessary.
6. Seeding.
7. Sodding.
8. Erosion Control Matting.
9. Maintenance including watering.

B. Contractor is responsible for all health and safety.

1.2 QUALITY ASSURANCE

A. Contractor must show previous evidence of having successfully installed and maintained landscape projects of similar scope to the subject project with regard to quantities of seeding involved, complexity and a minimum of five (5) years experience on projects similar to this one. The Owner's Representative shall have the right to review the qualifications and references of the Contractor for approval to work on this project.

B. Source Quality Control:

1. Analysis and standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

C. Within 30 days after award of Contract and before any seeding materials are delivered to the job site, submit to the Owner a complete list of all seeding and other items proposed to be installed. At least 10 days prior to shipment delivery of materials, the Contractor shall submit to the Owner a one (1) cubic foot representative sample, certifications, certified test results for materials as specified below. The Contractor shall provide a listing of the addresses (locations) identifying the origin of the soil to be delivered. If the origin is from multiple locations, test results must be provided for each source as well as the blended final product and all locations shall be provided at the time of submission of required information specified above. No material shall be ordered or delivered until the required submittals have been submitted and approved by the Owner. Delivered materials shall closely match the approved samples. Approval shall not

constitute final acceptance. The Owner reserves the right to reject, on or after delivery, any material that does not meet these specifications.

D. Existing Topsoil from Stockpile may be used providing it can be made to comply with the specifications for screened loam. The Contractor shall provide representative samples for testing and approval. Two (2) test samples of shall be taken and analyzed from each potential loam borrow pit and two each shall be taken and analyzed of existing topsoil stockpiled on site. Site of sample shall comply with testing lab requirements. Contractor shall deliver samples to testing laboratory, have testing report sent directly to the Owner's Representative and pay all costs. Report shall be submitted at least one (1) month before any loaming is to be done.

1. Mechanical and chemical analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current "Standards" of the Association of Official Agriculture Chemists and acceptable to the Landscape Architect.

2. Soil test report shall include a mechanical sieve analysis with soil classification. Organic content shall be reported. Chemical analysis shall include pH (1:1 soil-water ratio), buffer pH, Soluble Salts (1:2 soil-water ratio), Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Magnesium, Manganese, Ferric Iron and Sulfate.

3. Test report shall clearly recommend appropriate additives including limestone and fertilizer requirements.

1.3 SUBMITTALS

A. Submit the following under provisions of Section 01 3300—SUBMITTAL PROCEDURES:

1. Sod—statement of composition percentages of purity and germination of each variety.

2. Soil analysis in accordance with the current "Standards of the Association of OFFICIAL Agricultural Chemists".

3. Provide watering and fertilizing schedule to Landscape Architect for approval.

4. Provide two marked up prints to the Landscape Architect indicating square footages for all lawn areas with quantities of all soil additives and sod for each area prior to beginning work.

1.4 PROJECT CONDITIONS

A. All areas to be seeded shall be inspected by the Contractor before starting work and any defects, such as incorrect grading, etc., shall be reported to the Landscape Architect prior to beginning this work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be seeded, and he shall assume full responsibility for the work of this Section.

1.5 REFERENCES

A. The work shall conform to the codes and standards of the following agencies, publications as further cited herein:

B. AAN: American Association of Nurserymen, Inc., "Standards for Nursery Stock" ANSI Z60.1—1980, or current edition.

C. ASTM: ASTM International (ASTM), 1916 Race Street, Philadelphia, Pennsylvania, 19103, USA as Published in "Compilation of ASTM Standards in Building Codes".

D. BHCU: Bailey Hortorium of Cornell University, 1976, Hortus Third, A Concise Dictionary of Plants Cultivated in the United States and Canada (for nomenclature).

E. NAA: National Arborist Association, 3537 Stratford Road, Wantagh, New York, 11793, USA, as published in "Standards for Pruning Shade Trees...", 1979, or latest edition (for pruning standards).

F. USDA: United States Department of Agriculture, 1941 Yearbook, "Climate and Man" (for average last frost date at locality).

1.6 QUALITY CONTROL/QUALIFICATIONS

A. Provide affidavits from manufacturers major suppliers where required by these Specifications.

B. Fine grading and installation of sod shall be done under the supervision of a qualified foreman acceptable to the Landscape Architect.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver all items to the site in their original containers with all labels intact and legible at time of Owner's inspection.

B. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

C. Immediately remove from the site all seeding materials, which are not true to name, and all materials, which do not comply with the provisions of this Section of these Specifications.

D. Use all means necessary to protect seeding materials before, during, and after installation and to protect the installed work and materials of all other trades.

E. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

F. Protect fertilizer from the elements at all times.

PART 2 PRODUCTS

2.1 SCREENED LOAM

A. In accordance with CTDOT Form 819, Section M.13.01.

2.2 FERTILIZER

A. In accordance with CTDOT Form 819, Section M.13.03.

2.3 SEED

A. In accordance with CTDOT Form 819, Section M.13.04.

2.4 MULCHES

A. Wood fiber, hay or straw in accordance with CTDOT Form 819, Section M.13.05.

2.5 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Use of pesticides must be approved by the Owners Representative.

PART 3 EXECUTION

3.1 PREPARATION OF PLANTING SOIL

A. Mix specified soil amendments and fertilizers with topsoil and/or loam borrow at rates specified by testing agency. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.

B. Loam, organic material and bonemeal for plant backfill for both planting beds and individual plants shall be thoroughly premixed in the proportions of one (1) part of organic material with seven (7) parts of loam together with ten (10) pounds of bonemeal per cubic yard of mixture.

C. Maintain at all times during the planting operations one or more stockpiles of approved loam borrow or topsoil from stockpile.

3.2 BIORETENTION AND RAIN GARDEN AREA EXCAVATION

A. No heavy equipment shall operate within the perimeter of a bioretention or rain garden areas during excavation, backfilling, planting, or mulching of the areas.

B. The bioretention and rain garden facilities shall be excavated to the dimensions, side slopes, and elevations shown on the Contract Plans. The method of excavation shall minimize the compaction of the bottom of the bioretention and rain garden facilities. Excavators and backhoes, operating on the ground adjacent to the bioretention and rain garden facilities, shall be used to excavate the areas if possible. Low ground-contact pressure equipment may also be used for excavation. No heavy equipment shall be allowed on the bottom of the bioretention and rain garden facilities.

C. Excavated materials shall be removed from the bioretention and rain garden facilities.

3.3 FINE GRADING AND LOAMING

A. After the areas to be loamed have been brought to rough grade, and immediately prior to spreading the loam or topsoil, the subgrade shall be loosened by disking or rototilling to a depth of at least three inches to permit bonding of the loam to the subsoil. Remove all stones greater than one (1) inch in diameter and all debris or rubbish. Such material shall be removed from the site, at no additional cost to the Owner.

B. Provide a minimum depth of six (6) inches of planting soil in all areas indicated for seeding and all areas disturbed by excavation and construction operations.

C. Screened loam borrow or screened topsoil from stockpile shall be placed and spread over approved areas to a depth sufficiently greater than six inches so that after natural settlement and light rolling, the completed work will conform to the lines, grades, and elevations indicated. Supply additional loam, after testing and approval as may be needed, to give the specified depths and finished grades under the Contract without additional cost to the Owner.

D. Disturbed areas outside the limit of seeding shall be spread with six (6) inches of screened loam or screened topsoil to the finished grade as specified herein above.

E. No subsoil or loam shall be handled in any way if it is in a wet or frozen condition.

F. Sufficient grade stakes be set for checking the finished grades. Stakes must be set in the bottom of swales and at top of slopes. Grades shall be established which are accurate to one tenth of a foot either way. Connect contours and spot elevations with an even slope.

G. After loam has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, glass, roots, stumps, litter and other foreign matter, and stones over one inch in diameter shall be removed from the loam. Loam shall also be free of smaller stones in excessive quantities as determined by the Owner's Representative.

H. The whole surface shall then be rolled with a hand roller weighing not more than 100 pounds per foot of width. During the rolling, all depressions caused by settlements or rolling shall be filled with additional loam and the surface shall be regraded and rolled until it presents a smooth and even finish to the required grade.

I. Contractor shall obtain Owner's Representatives written approval of fine grading and bed preparation before doing any seeding or sodding.

3.4 SEEDING

A. All areas indicated on the plan shall be loamed and seeded only after written approval of the Owner's Representative of bed preparation. All disturbed areas outside the limit of seeding shall be seeded.

B. Immediately before seeding, the ground shall be restored, as necessary, to a loose friable condition by dicing or other approved method to a depth of not less than 2″. The surface shall be cleared of all debris and of all stones 1″ or more in diameter.

C. Seeding shall be done only during the period from April 1 to May 30 or August 15 to October 15. The actual planting of seed shall be done, however, only during periods within this season which are normal for such work as determined by weather conditions and by accepted practice in this locality. At his option, and on his responsibility, the Contractor may plant seed under unseasonable conditions at no increased cost to the Owner.

D. Seeding of lawns shall be done only by experienced workmen under the supervision of a qualified foreman.

E. Soil additives shall be spread and thoroughly incorporated into the layer of loam by harrowing or other methods approved by the Owner's Representative. The following soil additives shall be incorporated.

1. Spread ground limestone as required by soil analysis to achieve a pH of 6 to 6.5, but the maximum amount applied shall be one pound per square yard.

2. Spread fertilizer at the rate of forty (40) pounds per one thousand (1,000) square feet or more as required by soil analysis.

3. Spread Superphosphate at the rate of twenty (20) pounds per one thousand (1,000) square feet.

4. Incorporate humus in the soil as required by soil analysis prior to delivery to site. Contractor shall have loam retested with organic matter incorporated and shall obtain approval prior to brining any loam on the site.

F. Seed only when the bed is in a friable condition, not muddy or hard.

G. Seed all areas to be seeded with specified grass seed, sowing evenly with an approved mechanical seeder at the rate of 6 pounds per 1,000 square feet. Sow 3 pounds per 1,000 square feet in one direction and 3 pounds per 1,000 square feet at right angles to the first seeding. Spread seed when soil is moist. Cultipacker, or approved similar equipment, may be used to cover the seed and to firm the seedbed in one operation. In areas inaccessible to cultipacker, the seeded ground shall be lightly raked and rolled in two directions with a water ballast roller. Extreme care shall be taken during seeding and raking to insure that no change shall occur in the finished grades and that the seed is not raked from one spot to another. Hydroseeding is an acceptable manner of seeding, providing the Contractor certifies in writing that the hydro-seed fertilizer mix is as herein specified and applied at the equivalent rate of 6 pounds per 1,000 square feet.

H. If covering and rolling is not properly accomplished by the seeding machine, the seed shall be lightly raked into the ground, after which the ground shall be rolled with a five hundred pound roller and thoroughly and evenly watered with a fine spray to penetrate the soil to a depth of at least two (2) inches.

I. Promptly after seeding, wet the seedbed thoroughly, keeping all areas moist throughout the germination period.

J. Mulch shall be placed immediately after seeding. Straw or salt marsh hay that has been thoroughly fluffed shall be spread evenly and uniformly at the rate of two to three tons per acre. Lumps and thick mulch materials shall be thinned. All mulch anchor stakes, strings and matting shall be removed before final acceptance of lawns. In addition, following mulching, all slopes of 3:1 or greater shall be covered with jute, biodegradable tobacco netting or approved equal. Securely stapled in place. Overlap all joints in netting a minimum of 6″.

K. Hydroseed mix: All work shall be installed using an approved spraying machine specifically used for this purpose. Amounts of fertilizer used shall be as the testing agency recommendations prescribe and as directed by the Owner's Representative. The Contractor shall submit to the Owner's Representative for approval prior to the start of any seeding work, a certified statement as to the number of pounds and types of fertilizer, amounts and types of grass seed and processed fiber per one hundred (100) gallons of water.

1. Hydromulch shall be Terra-Sorb GB or approved equal

    a. Add Terra-Sorb to the hydroseed tank at the rate of sixty (60) pounds per acre.

3.5 EROSION CONTROL MATTING

A. Jute mesh shall be placed within 48 hours after finish grading or topsoiling of an area is completed. If seeding is specified, within 24 hours after seeding of an area is completed. The jute mesh shall be placed in a manner that will minimize disturbance of the underlying soil. All equipment and application processes shall be approved by the LANDSCAPE ARCHITECT prior to use.

B. The surface shall be smoothed and all gullies and potholes backfilled prior to applying jute mesh. All rocks or clods larger than two inches in size and all sticks and other foreign material that will prevent contact of the jute mesh with the surface shall be removed. If the surface is extremely dry, the ENNGINEER may require watering prior to placement.

C. Jute mesh shall be placed uniformly, in contact with the underlying soil, at the locations shown on the Drawings or directed by the LANDSCAPE ARCHITECT. The top edge of each strip shall be anchored by placing a tight fold of mesh vertically in a six inch deep slot or trench in the soil and tamping and stapling in place. Edges of adjacent strips shall be lapped six inches with a row of staples at a maximum interval of three feet in the lapped area. Bottom edges shall be lapped 12 inches over the next lower strip, if applicable, or buried as specified for top edges.

D. Check slots shall consist of separate four foot strips of jute mesh placed at right angles to the direction of water flow immediately prior to placing the general covering of jute mesh. Check slots shall be anchored by burying the top edge of the strip as described above.

E. Check slots shall be spaced so that one check slot, or junction slot of the jute mesh occurs every 75 feet on gradients of less than 4% and every 50 feet on gradients of more than four percent. On slope drains, a check slot or an end slot shall occur every 25 feet unless otherwise specified.

F. Edges of jute mesh shall be buried around the edges of catch basins and other structures.

G. Jute mesh shall be held in place by wire staples driven vertically into the soil. The mesh shall be fastened at intervals not more than three feet apart in three rows for each strip of mesh, with one row along each edge and one row alternately spaced in the middle. All ends of the mesh and check slots shall be fastened at six inch intervals across their width.

H. The Contractor shall maintain the areas covered by jute mesh until final acceptance of the project. Prior to final acceptance, any damaged areas shall be reshaped as necessary, reseeded, if applicable; and the jute mesh satisfactorily repaired or replaced.

3.6 MAINTENANCE FOR SEEDED AREAS

A. Maintenance shall begin immediately after any area is seeded and shall continue until final acceptance, but in no case, less than the following period.

1. Sixty (60) days after substantial completion of seeding.

a. Maintenance may continue until the next growing season if in the opinion of the Owner's Representative the season enters a winter dormancy and no maintenance should continue.

b. Seeded lawns shall be maintained until all areas have a close stand of grass which has received a minimum of three mowings, has no bare spots greater than two

inches in diameter, and at least 90% of the grass established shall be permanent grass species.

B. Maintenance shall include reseeding, mowing, watering, weeding and fertilizing.

C. Watering of Seeded Areas:

1. First Week: The Contractor shall provide all labor and arrange for all watering necessary to establish an acceptable lawn. In the absence of an adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least two inches.

2. Second and Subsequent Weeks: Water seeded areas as necessary to supplement natural rain to the equivalent of one (1) inch rainfall per week The Contractor shall water the lawn as required to maintain adequate moisture, in the upper two inches of soil, necessary for the promotion of deep root growth.

3. Watering shall be done in a manner, which will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment. The Contractor shall furnish sufficient watering equipment to apply one complete coverage to the seeded areas in an eight (8) hour period.

D. Protection:

1. Seeded areas shall be protected by stakes and caution tape or snowfence as directed by the Landscape Architect. Wire shall not be used.

2. Barriers must be raised immediately after seeding and shall be maintained until acceptance.

E. Reseeding: After the grass in seeded areas has appeared, all areas and parts of areas which, in the opinion of the Owner's Representative, fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas and parts of areas shall be seeded repeatedly until all areas are covered with a satisfactory growth of grass. Reseeding together with necessary grading, fertilizing, and trimming shall be done at the expense of the Contractor.

F. Mowing:

1. At the time of the first cutting, there shall be a uniform stand between 3″ and 3½″ high, and mower blades shall be set between 2½″ and 3″ high.

2. Mowing shall include removal of clippings.

G. Fertilizing: A second application of fertilizer, as specified herein, shall be applied after one (1) season of growth of a minimum of two (2) months duration, but only during the months of April, May, August or September. Fertilizer shall be applied at the rate of thirty (30) pounds per one thousand (1,000) square feet.

H. Liming: If more than one initial application of limestone is required by the soils analysis to bring the pH of the stockpiled topsoil/loam borrow to a specified range, the Contractor shall be responsible for all additional required lime applications.

3.7 CLEANUP AND PROTECTION

A. During seeding work, keep pavements clean and work area in an orderly condition.

B. Protect seeding work and materials from damage due to landscape operations, operations by other Contractors or trades, and trespassers.

1. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

C. After completion of all planting operations, dispose of all debris and excess material to the satisfaction of the Owner. All pavements shall be swept and hosed clean.

3.8 ACCEPTANCE

A. Owner shall inspect all work for Acceptance upon written request of Contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the Owner, he shall certify in writing to the Contractor as to the Acceptance of the work.

3.9 ACCEPTANCE IN PART

A. The work may be accepted in parts when it is deemed to be in the Owner's best interest to do so and when approval is given to the Contractor in writing to complete the work in parts. Acceptance and use of such areas by the Owner shall not waive any other provisions of this Contract.

3.10 FINAL INSPECTION AND ACCEPTANCE

A. At the end of the guarantee period, the Owner will inspect all guaranteed work for the Final Acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.

B. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the Owner at that time, he shall certify in writing to the Contractor as to the Final Acceptance of the project.

END OF SECTION

SECTION 33 40 00

STORM DRAINAGE SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation of new storm drain pipe, manholes and catch basins.

2. Relocation and/or replacement of existing storm drain pipe and catch basins.

3. Installation of under-drains.

4. Installation of stormwater treatment and detention units.

B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

C. Contractor is responsible for all health and safety.

D. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied. Notify and obtain such permits or approvals from all agencies having jurisdiction prior to starting work.

1.2 REFERENCE STANDARDS

A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.

B. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Safety and Health Regulations for Construction.

C. ASTM International (ASTM)

1. ASTM A36—Standard Specification for Carbon Structural Steel.

2. ASTM A48—Standard Specification for Gray Iron Castings.

3. ASTM A123—Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

4. ASTM A307—Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

5. ASTM A536—Standard Specification for Ductile Iron Castings.

6. ASTM A615—Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

7. ASTM C14—Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.

8. ASTM C55—Standard Specification for Concrete Building Brick.

9. ASTM C76—Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

10. ASTM C94—Standard Specification for Ready-Mixed Concrete.

11. ASTM C139—Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.

12. ASTM C150—Standard Specification for Portland Cement.

13. ASTM C207—Standard Specification for Hydrated Lime for Masonry Purposes.

14. ASTM C270—Standard Specification for Mortar for Unit Masonry.

15. ASTM C387—Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.

16. ASTM C443—Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

17. ASTM C443—Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

18. ASTM C478—Standard Specification for Precast Reinforced Concrete Manhole Sections.

19. ASTM F493—Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.

20. ASTM C507—Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.

21. ASTM F656—Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

22. ASTM C877—Standard Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections.

23. ASTM C890—Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

24. ASTM C913—Standard Specification for Precast Concrete Water and Wastewater Structures.

25. ASTM C923—Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.

26. ASTM C990—Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants.

27. ASTM C1479—Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations

28. ASTM C 1628—Standard Specification for Joints for Concrete Gravity Flow Sewer Pipe, Using Rubber Gaskets.

29. ASTM D2321—Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

30. ASTM D2412—Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

31. ASTM D2855—Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

32. ASTM D3212—Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

33. ASTM D3350—Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

34. ASTM F405—Corrugated Polyethylene (PE) Tubing and Fittings.

35. ASTM F477—Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

36. ASTM F894—Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe.

37. ASTM F1803—Standard Specification for Poly (Vinyl Chloride)(PVC) Closed Profile Gravity Pipe and Fittings Based on Controlled Inside Diameter.

38. ASTM F2306—Standard Specification for 12 to 60 inch [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.

39. ASTM F2648—Standard Specification for 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications.

D. American Concrete Pipe Association (ACPA).

1. ACPA 01-103—Concrete Pipe and Box Culvert Installation (latest revision and applicable supplements thereto).

E. American Association of State High and Transportation Officials (AASHTO).

1. AASHTO H20—Standard Specifications for HS-20, Highway Loading.

2. AASHTO M105—Standard Specification for Gray Iron Castings.

3. AASHTO M198—Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.

4. AASHTO M252—Standard Specification for Corrugated Polyethylene Drainage Pipe.

5. AASHTO M294—Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter.

F. Corrugated Polyethylene Pipe Association (CPPA), division of the Plastics Pipe Institute (PPI).

1. Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings (latest revision and applicable supplements thereto).

G. State of Connecticut Department of Transportation (CTDOT)

1. Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction, Form 819, 2024 and any supplements.

1.3 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings, descriptive literature, or both, showing pipe materials and appurtenances to be furnished. Shop drawings shall be submitted to Engineer for approval prior to ordering materials.

2. Shop drawings showing the configuration, dimensions, layout, and spacing of major and minor components such as pipe, joints, couplings, restraints, and other proposed details of assembly. Show in large-scale details any unique assembly, pipe/pipe transitions, pipe/structure transitions, and/or installation requirements.

B. Copies of manufacturer-provided installation instructions, operation instructions, and maintenance material for all products or equipment furnished under this Section.

C. Manufacturer's warranties and associated warranty registration data in Owner's name. Submit two (2) copies of each warranty to Engineer in the manufacture/supplier standard form or if there is no standard form available, in a form specified by Engineer.

D. As-Built Drawings.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a timely manner.

B. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

C. Sample pipe for testing, when requested by Engineer, shall be furnished by Contractor in sufficient numbers. The Contractor and/or the pipe manufacturer shall make the facilities and services for making the load tests available.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage

1. Manufacturer shall package the pipe and other drainage materials in a manner designed to deliver the pipe to the Project Site neatly, intact, and without physical damage. Transportation carrier shall use an appropriate method to ensure the pipe is properly

supported, stacked, and restrained during transport. Inspect materials delivered to site for damage; store with minimum of handling.

2. Unloading of the pipe and other drainage materials should be controlled so as not to collide with the other pipe sections or fittings, and care should be taken to avoid chipping or spalling, especially to the spigots and bells. For manhole sections, cone sections, bases, fittings and other precast appurtenances, utilize lifting holes or lifting eyes provided.

3. In cold weather conditions, use caution to prevent impact damage. Handling methods considered acceptable for warm weather may be unacceptable during cold weather.

4. Storage:

   a. Store materials on site in enclosures or under protective coverings. Do not store materials directly on the ground. Keep inside of pipes and fittings free of dirt and debris.

   b. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging.

   c. Store solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials under cover out of direct sunlight. Provide additional storage measures in accordance with the manufacturer's recommendations. Discard materials if storage period exceeds the recommended shelf life. Solvents in use shall be discarded when the recommended pot life is exceeded.

   d. Metal Items: Check upon arrival; identify and segregate as to types, functions, and sizes. Store off the ground in a manner affording easy accessibility and not causing excessive rusting or coating with grease or other objectionable materials.

   e. Cement, Aggregate, and Reinforcement: As specified in Section 033200—Site Cast-in-Place Concrete.

   f. Store manhole units in an upright position.

PART 2 MATERIALS

2.1 GENERAL

A. Products furnished under this Section which are damaged or found defective in any way prior to being set in place and final acceptance, may be rejected. Engineer may reject an entire lot of pipe should the sample pipe from such lot fail to meet requirements.

2.2 CORRUGATED POLYETHYLENE PIPE

A. Pipe: High density polyethylene, corrugated, smooth interior, ASTM D3350, Cell Classification 424420C.

   1. Four (4) inch through 10-inch diameter pipe: AASHTO M252, Type S.

   2. 12 inch through 60-inch diameter pipe: AASHTO M294, Type S or ASTM F2306.

B. Joints: Bell-and-spigot joint, AASHTO M252, AASHTO M294, or ASTM F2306. Bell shall be an integral part of the pipe and provide a minimum pull-apart strength of 400 pounds. Bell-and-

spigot joint shall incorporate a gasket making it silt-tight. Gaskets shall be installed in the bell, or on the pipe by the pipe manufacturer.

1. Four-inch (4″) through 60-inch (60″) diameter pipe joint, watertight, ASTM D3212. Gaskets: polyisoprene, ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

2. 12-inch (12″) through 60-inch (60″) diameter pipe shall have a reinforced bell with a bell tolerance device. The bell tolerance device shall be installed by the manufacturer.

3. Coupling bands shall conform to the manufacturer's specifications. Couplers shall cover not less than one corrugation on each section of pipe.

C. Fittings: AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.

D. Saddle Tee

1. Saddle tees shall be manufactured saddle tees designed to connect to the corrugated polyethylene pipe.

2. Fittings shall conform to AASHTO M 294. Fabricated fittings shall be welded on the interior and exterior of all junctions.

3. A soil-tight seal shall be obtained with the coupling at the saddle tee stub to the storm service pipe.

2.3 DETENTION SYSTEM UNDERDRAIN

A. Pipe: Corrugated Polyethylene Pipe: AASHTO M252 Type SP (Double Wall).

1. Perforations: Class 2 slotted perforations per AASHTO M252. Perforations shall be uniformly spaced along the length and circumference of the pipe.

2. Joints: Silt-tight, ASTM D3212.

2.4 CATCH BASINS

A. Reinforced precast concrete base, sump, transition, riser, corbel, and top: ASTM C913 for precast rectangular catch basins, ASTM C478 for precast circular catch basins. Type, construction, and dimensions as indicated on the Drawings.

1. Concrete: 4,000 psi minimum, 4%–7% entrained air.

2. Reinforcement: ASTM C890. Steel bars, ASTM A615. Welded-wire fabric, ASTM A185. Additional reinforcing at openings.

3. Precast sections shall consist of smooth sections in standard nominal inside diameters. All precast concrete sections shall be free from cracks, damaged joints, exposed reinforcing, aggregate pockets, spalls, and dimensional distortions or other irregularities. Lifting holes shall be filled with mortar, or other approved material.

4. Openings or "knockouts" in precast units shall be located as shown on the Drawings and to accommodate the inflow and outflow pipe orientation required. Openings shall be sized sufficiently to permit passage of the largest outside dimension of pipe or fittings. Prior to ordering precast manhole bases, all angles between incoming pipes are to be field checked to incorporate possible line changes required in the field layout.

B. Gaskets for joints between sections: Butyl rubber, ASTM C443.

C. Grade Rings: ASTM C478, precast reinforced concrete, 1-inch to 4-inch thickness, dimensions to match basin and top section.

D. Frame and Grate.

1. Cast iron shall meet the requirements of AASHTO M 306 "Standard Specification for Drainage, Sewer, Utility and Related Castings," and must be certified to the loading standard of H-25 or HS-25 as detailed in AASHTO M306, Section 6 "Proof-Load Testing." Cast iron material shall be Class 35B Gray Iron or Ductile Iron, minimum 50 ksi yield strength.

2. Gray Iron Castings shall meet the requirements of ASTM A48 and AASHTO M 105, Class 35B, and must meet all minimum requirements of AASHTO M 306. All covers, grates and frames must be rated H- 25 in accordance with AASHTO M 306, Section 6 "Proof-Load Testing."

3. Ductile Iron Castings shall meet the requirements of ASTM A536, 80-55-06 or 70-50-05, and must meet all minimum requirements of AASHTO M 306. All covers, grates and frames must be rated H-25 in accordance with AASHTO M 306, Section 6 "Proof-Load Testing."

4. Structural Steel shall meet the requirements of ASTM A36, or A283, Grade B or better, as to quality and details of fabrication, except that in the chemical composition of the steel, the 2/10 of 1% of copper may be omitted.

5. Malleable iron shall meet the requirements of ASTM A47, Grade 22010.

6. Grate type: CTDOT "Type A" unless otherwise specified.

7. Covers and gratings shall bear uniformly on their supports.

8. Frame and grate shall be galvanized, CTDOT Form 819 M.06.03. Cast Iron frames and grates shall not be galvanized.

2.5 CONCRETE MANHOLE

A. Precast concrete manhole risers, base sections, and tops: ASTM C478. Precast manhole sections shall consist of smooth circular sections in standard nominal inside diameters. All precast concrete manhole sections shall be free from cracks, damaged joints, exposed reinforcing, aggregate pockets, spalls, and dimensional distortions or other irregularities. Lifting holes, when provided, shall be filled with mortar, or other approved material.

1. Concrete: 4,000 psi minimum, 4%–7% entrained air.

2. Diameter: 48 inches unless otherwise indicated.

3. Base and first riser: Monolithic and built to the dimensions and requirements indicated on the Drawings.

    a. Bottoms shall be integrally cast unless specialty bases at points of connection to existing piping ("Dog-House") is indicated on the Drawings or otherwise proposed for use. Unless indicated on the Drawings, any special bases or riser used must be detailed in shop drawings and submitted for approval.

4. Riser sections: As required to provide depths indicated.

5. Top Section: Concentric-cone type, unless eccentric-cone or flat-slab-top type is indicated. Cones shall have the same wall thickness and reinforcement as riser sections. If required or called-for, flat slab shall be a minimum of 8 inches thick designed to carry AASHTO H-20 loading with one foot cover and conform to ASTM C478.

6. Openings or "knockouts" in precast units shall be located as shown on the Drawings and to accommodate the inflow and outflow pipe orientation required. Openings shall be sized sufficiently to permit passage of the largest outside dimension of pipe or fittings. Prior to ordering precast manhole bases, all angles between incoming pipes are to be field checked to incorporate possible line changes required in the field layout.

B. Gaskets for joints between manhole sections: Butyl rubber, ASTM C443.

C. Grade Rings: ASTM C478, precast reinforced concrete, 1 inch to 4 inch thickness, diameter to match manhole and frame.

D. Mortar: Packaged, ASTM C387 or as Specified in Section 033200—Site Cast-in-Place Concrete.

E. Frame and Cover: Ductile Cast Iron, ASTM A536, Grade 60-40-18.

F. Frame and Cover: Grey Cast Iron, ASTM A48, Class 25B (Frame) and Class 30B (Covers), uncoated.

1. Cover: 26-inch diameter, non-vented with non-penetrating pickholes. Unless otherwise detailed or indicated, covers shall be cast with 1½ inch wide, raised letters, indicating "STORM SEWER" unless other lettering is called-for.

2. Frame and cover shall be supplied as a pair from the same manufacturer. Castings shall be of tough, even-grained iron, free from scale, lumps, blisters, sand-holes and other injurious defects, and of the size and type shown on the Drawings. Frames and covers shall have machined bearing surfaces to seat firmly and prevent rocking and rattling under traffic loads. Before leaving the foundry, castings shall be thoroughly cleaned, subjected to hammer tests for soundness and given two coats of coal tar pitch varnish.

G. Resilient connectors for joints between manhole and pipes entering manhole: Continuous boot of ⅜ inch minimum thickness neoprene, ASTM C923 or ASTM C990. Boots shall be either cast into the manhole wall or installed into a cored opening using internal compression rings. Installed boot shall result in a water-tight connection meeting the performance requirements of ASTM C443.

H. Manhole Steps: ASTM C478 and OSHA 29 CFR 1910.27, drop front or equivalent. Steps shall be nine inches in depth and at least twelve inches in width with an abrasive step surface.

1. Cast Aluminum Alloy: Aluminum alloy, 6061-T6, tensile 38,000 psi, yield 35,000 psi. Drop front design with upturned embedded ends. All parts of aluminum steps to be embedded in concrete or masonry shall be coated with bituminous paint or zinc chromate primer.

2. Composite Plastic-Steel: One-half (½) inch deformed steel reinforcing rod, ASTM A615, Grade 60, encapsulated in a co-polymer polypropylene plastic, ASTM D2146, Type II, Grade 16906.

3. Steps shall be placed in vertical alignment as indicated on the Drawings. Steps shall be uniformly spaced not more than sixteen inches (16″) on center, including the spacing between the top step and the manhole cover. Steps shall be embedded in the wall a minimum distance of 4 inches in either cast or drilled holes. Steps shall not be driven or vibrated into fresh concrete and shall withstand a pullout resistance of 2000 lbs when tested in accordance with ASTM C497. Each step shall project a minimum of 5 inches from the wall measured from the point of embedment.

2.6 MASONRY UNITS

A. Concrete block: Solid block, ASTM C139.

2.7 MORTAR

A. Mortar: ASTM C387.

1. Portland Cement: ASTM C150, Type I.

2. Sand: ASTM C144.

3. Hydrated Lime: ASTM C207.

4. Water: Potable.

5. Mix proportions for manhole rims and covers: 1 part portland cement, 2 parts sand, and ¼ part hydrated lime by dry volume. Hydrated lime shall not exceed 10 percent by weight of the total dry mix. Quantity of water in mixture shall be sufficient to produce a stiff, workable mortar, but in no case shall exceed 5½ gallons of water per sack of cement.

6. Mix Proportions for invert construction: 1 part portland cement and 2 parts sand by volume. Quantity of water in mixture shall be sufficient to produce a stiff, workable mortar, but in no case shall exceed 5½ gallons of water per sack of cement.

2.8 STORMWATER TREATMENT UNIT

A. Precast concrete stormwater treatment unit as indicated on the Drawings or Engineer approved equal.

B. Loading requirements: H-20.

2.9 STORMWATER DETENTION AND INFILTRATION UNITS

A. Detention and infiltration units as indicated on the Drawings or Engineer approved equal.

B. Units: Prefabricated units/chambers, high density polyethylene.

C. Loading requirements: H-20.

2.10 BEDDING

A. Pipes: Bedding, Haunching and Initial Backfill shall consist of ConnDOT No. 6, No. 67, or No. 8 aggregate, or other materials meeting the requirements of ASTM D2321 for Class IA, Class IB, Class II, or Class III unless otherwise specified by the pipe manufacturer.

B. Bedding for Catch Basins: Screened Gravel or Crushed Stone, well graded in size from ¾ inch to ⅜ inch consisting of clean, hard, and durable fragments. No limestone shall be permitted.

PART 3 EXECUTION

3.1 PIPE INSTALLATION

A. As soon as the excavation is completed to the normal grade of the bottom of the trench, the Contractor shall immediately place the bedding material in the trench. Then the pipe shall be firmly bedded in the compacted bedding material to conform accurately to the lines and grade indicated on the Drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions.

1. Concrete pipe shall be installed per ASTM C1479, as may be modified by the pipe manufacturer's instructions.

2. HDPE pipe shall be installed per ASTM D2321, as may be modified by the pipe manufacturer's instructions.

C. Notch under pipe bells and joints, where applicable to provide for uniform bearing under entire length of pipe.

D. Excavation, backfilling and compaction shall be as specified in Section 312310—Earthwork of these Specifications.

E. Maintain optimum moisture content of bedding material to attain required compaction density.

3.2 MANHOLES AND CATCH BASINS

A. Manholes and Catch Basins shall be constructed at the locations and to the lines, grades and dimensions noted on the Drawings, or as required.

B. Precast concrete construction shall be done in a manner to insure watertight construction and all leaks in precast concrete shall be sealed. If required, precast concrete shall be repaired or replaced to obtain watertight construction.

C. Concrete barrels and cones shall be precast concrete sections.

1. Bases shall be either precast with a barrel integrally cast with the base, or poured concrete suitably shaped by means of accurate bell-rung forms to receive the barrel sections. Manhole invert channels in manholes shall be formed in concrete.

2. Precast manholes shall have an adjustment ring at the top of the cone to permit the frame and cover to meet the finished surface. This shall consist of courses of brick or reinforced grading rings not to exceed 11 inches.

D. Stubs shall be short pieces cut from the bell ends of the appropriate size and class of pipe. Concrete stubs shall be plugged with brick masonry unless otherwise directed.

E. Manhole inverts shall conform accurately to the size of the adjoining pipes.

1. Manhole inverts shall be constructed of concrete developing 3,500 psi with the concrete being placed to the spring line of the pipe form.

2. Smooth plastic pipe, matching the dimension of the outlet pipe, shall be used to form the invert.

3. Side inverts and main inverts, where the direction changes, shall be laid out in smooth curves of the longest possible radius, which is tangent, within the manhole, to the centerline of adjoining pipelines.

4. Invert shelves shall be graded to provide a 1-inch per 1-foot wash from the manhole walls.

F. Manhole sections shall contain manhole steps accurately positioned and embedded in the concrete when the section is cast. Precast-reinforced concrete manhole sections shall be set so as to be vertical and with sections and steps in true alignment.

G. All holes in sections used for their handling shall be thoroughly plugged with rubber plugs, made specifically for this purpose, or with mortar. The mortar shall be one part cement to 1½ parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

H. The Contractor may, as an alternate to suitable nonshrink mortar joints, use premolded elastomeric-sealed joints for pipe into precast manhole bases.

1. All materials, accessories and construction methods used in making the joints shall be supplied or approved by the manufacturer of the premolded elastomeric-sealed joint.

I. Openings for pipe and materials to be embedded in the walls of the base for these joints shall be cast in the base at the required locations during the manufacturer of the base. Incorrectly cast and patched pipe openings will be rejected.

J. Manhole risers and tops shall be installed using approved "o-ring" type, neoprene gaskets for sealing joints. Units shall be installed level and plumb. Water shall not be permitted to rise over newly made joints nor until after inspection as to their acceptability. All jointing shall be done in a manner to insure water tightness.

K. Openings shall be provided in the risers to receive entering pipes. These openings may be made at the place of manufacture. The openings shall be sized to provide a uniform 1 inch maximum annular space between the outside of the pipe wall and the opening in the riser. After the pipe is in position, the annular space shall be solidly filled with nonshrink mortar. Care shall be taken to assure that the openings are located to permit setting of the entering pipe at its correct elevation as indicated.

L. Openings, which are cut in the risers in the field, shall be carefully made by coring so as not to damage the riser. Damaged risers will be rejected and shall be replaced at no additional expense to the Owner.

M. Where required by the Drawings, a slot and opening shall be cast in the catch basin wall suitable for mounting the cast iron hood and discharge pipe. The hood hinge may be furnished to the precast supplier by the Contractor for incorporation into the casting during manufacture.

3.3 CMU BRICK MASONRY

A. CMU brick masonry construction shall be done in a manner to insure watertight construction and all leaks in brick masonry shall be sealed. All workmanship shall conform to the best standard practice and all brick masonry shall be laid by skilled workmen.

B. Concrete Masonry unit construction shall be soaked in water before laying. As circular concrete block walls are laid-up, the horizontal joints and keyways shall be flushed full with mortar. As rectangular blocks are laid-up, all horizontal and vertical joints shall be flushed full with mortar. Plastering of the outside of block structures will not be required. The joints in precast units shall be wetted and completely mortared immediately prior to setting a section. No structure shall be backfilled until all mortar has completely set.

C. All beds on which masonry is to be laid shall be cleaned and wetted properly. Brick shall be wetted as required and shall be damp but free of any surface water when placed in the Work. Bed joints shall be formed of a thick layer of mortar, which shall be smoothed or furrowed slightly. Head joints shall be formed by applying to the brick to be laid a full coast of mortar on the entire end, or on the entire side as the case requires, and then shoving the mortar covered end or side of the brick tightly against the bricks laid previously. The practice of buttering at the corners of the brick and then throwing the mortar or crappings in the empty joints will not be permitted. Dry or butt joints will not be permitted. Joints shall be uniform in thickness and shall be approximately 1¼ inch thick.

D. Brickwork shall be constructed accurately to dimensions and brickwork at top of manholes shall be to the dimensions of the flanges of the cast-iron frames.

E. Joints on the inside face of walls shall be tooled slightly concave with an approved jointer when the mortar is thumbprint hard. The mortar shall be compressed with complete contact along the edges to seal the surface of the joints.

F. All castings to be embedded in the brickwork shall be accurately set and built-in as the Work progresses. Cast-iron frames and manhole covers shall be well bedded in mortar and accurately set to finished graded indicated or as directed.

G. Water shall not be allowed to flow against brickwork or to rise on the masonry for 60 hours after it has been laid, and any brick masonry damaged in this manner shall be replaced as directed at no additional expense to the Owner. Adequate precautions shall be taken in freezing weather to protect the masonry from damage by frost.

3.4 MANHOLE STEPS

A. Placement of steps into the precast walls shall be by a proven method as recommended by the supplier of the precast manhole sections. Details of the steps and method of placement shall be submitted for approval.

B. Plastic steps shall be placed into the wet concrete wall during manufacture or if designed for press fit installation shall be driven into a wall opening according to the manufacturer's specifications. Steps shall not be mortared into place after the concrete has set.

C. All manholes, catch basins, lawn inlets, etc., which are in excess of five feet in depth, shall be constructed with standard aluminum steps, spaced at 12-inch on center.

3.5 CASTINGS

A. Cast-iron frames for grates and covers shall be well bedded in cement mortar and accurately set to the grades indicated or as directed. The frames shall be encased with a thick cement-mortar collar around the entire perimeter of the frames.

B. All voids between the bottom flange shall be completely filled to make a watertight fit. A ring of mortar, at least one inch thick and pitched to shed water away from the frame shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.

C. Structures within the limits of bituminous concrete pavement shall be temporarily set at the elevation of the bottom of the binder course or as ordered. After the binder course has been compacted, these structures shall be set at their final grade. Backfill necessary around such structures after the binder course has been completed shall be made with Class A concrete unless otherwise ordered.

3.6 STORMWATER TREATMENT AND DETENTION UNITS

A. Stormwater Treatment Units shall be installed in accordance with the manufacturer's instructions.

B. Vaults shall be placed on a minimum foundation of 12 inches of gravel material. If groundwater is encountered, the foundation base shall be a minimum of 12 inches of crushed stone.

C. If precast sections are to be field assembled, adequate waterproofing shall be used at the joints.

D. Stormwater Treatment Units installed on interior floor drain discharges from parking garages shall have gasoline trapping capabilities in accordance with local and state regulations.

3.7 CLEANING

A. At the completion of the Work, clean all piping, structures and open drainage courses, through and to which water from this construction is directed, to the satisfaction of Engineer.

3.8 AS-BUILT DRAWINGS

A. Contractor shall be solely responsible for complying with the requirements of local permitting authorities for preparation and submittal of as-built drawings. The requirements for the preparation of as-built drawings as defined herein shall be considered the minimum requirements of Engineer, but shall in no way relive Contractor from satisfying the requirements of local permitting authorities.

B. As work progresses, record the following on two (2) sets of Drawings:

1. All changes and deviations from the design in location, grade, size, material, or other feature as appropriate.

2. Any uncharted locations of utilities or other subsurface feature encountered during installation, including the characteristics of such uncharted utility or subsurface feature such as utility type, size, depth, material of construction, etc.

C. Recording of changes shall be clearly and neatly marked in red pen or pencil. All changes shall be noted on the appropriate Drawing sheets.

D. Make measurements from fixed, permanent points on the Project Site to accurately locate the work completed. Such measurements shall consist of at least three (3) ties showing the distance of each item relative to each of the fixed, permanent points.

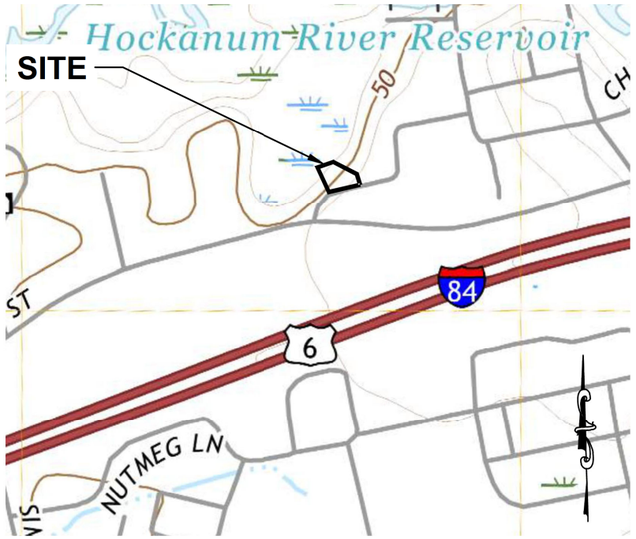
E. As-Built drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new construction. As-Built drawings shall also contain any additional information required by Engineer.

END OF SECTION

GREATER HARTFORD TRANSIT DISTRICT PARATRANSIT EMPLOYEE PARKING LOT - RETAINING WALL REPAIR - MECHANICALLY STABILIZED EARTH (MSE) WALL

148 ROBERTS STREET, EAST HARTFORD, CONNECTICUT

GEODESIGN PROJECT NO. 4542-001.02



SITE LOCUS

SCALE: 1" = 1,000'

NOTE:
SITE LOCUS REFERENCED FROM THE MANCHESTER, CONNECTICUT (2021) USGS 7.5 MINUTE QUADRANGLE.

INDEX OF DRAWINGS	
SHEET NO.	TITLE
1	COVER SHEET
2	NOTES AND SPECIFICATIONS
3	NOTES AND SPECIFICATIONS (CONTD.)
4	ORIGINAL CONSTRUCTION CONDITIONS PLAN
5	RETAINING WALL SOUTH ELEVATION AND SECTION - EXISTING CONDITIONS
6	EXPLORATION LOCATION PLAN
7	SUBSURFACE PROFILE A-A'
8	PROPOSED WALL REPAIR - PLAN VIEW - GEOGRIDS
9	PROPOSED WALL REPAIR - PLAN VIEW - EXCAVATION
10	PROPOSED WALL REPAIR - SOUTH ELEVATION VIEW - GEOGRIDS
11	PROPOSED WALL REPAIR - SOUTH ELEVATION VIEW - RETAINING WALL BACKFILL
12	PROPOSED WALL REPAIR - SECTION 1-1
13	TYPICAL DETAILS
14	EXISTING CONDITIONS SURVEY
15	NOTES AND LEGEND
16	SITE PREPARATION AND DEMOLITION PLAN
17	SITE LAYOUT PLAN
18	GRADING, DRAINAGE AND UTILITY PLAN
19	EROSION AND SEDIMENT CONTROL PLAN
20	LANDSCAPING PLAN
21	SITE DETAILS
22	DRAINAGE DETAILS
23	STORMWATER MANAGEMENT DETAILS
24	STORMWATER MANAGEMENT DETAILS
25	EROSION AND SEDIMENT CONTROL DETAILS

STATE OF CONNECTICUT
TIMOTHY L. COVILL
No. 34807
LICENSED
PROFESSIONAL ENGINEER

DESIGNED BY DNC							
DRAWN BY TLC							
CHECKED BY TvR	NO.	DATE	REVISIONS	DRWN	CHKD	APPVD	
APPROVED BY TvR							

Loureiro
Engineering • Construction • EH&S • Energy
Waste • Facility Services • Laboratory
Loureiro Engineering Associates, Inc.

SCALE: AS NOTED

GEO DESIGN
984 SOUTHFORD ROAD
MIDDLEBURY, CT 06762
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PROJECT
GREATER HARTFORD TRANSIT DISTRICT PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
COVER SHEET

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 1

M:\CL\4542 Greater Hartford Transit District\001.02 Roberts St FD & Constr\16 Drawings\4542–002.01 Final Drawings – MSE Wall Option.dwg Dylan Carlson 2/21/2025 2:14 PM GD–STD.ctb

PART 1 - GENERAL

NOTES:

1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF THE 2021 INTERNATIONAL BUILDING CODE (IBC).
2. COORDINATE THESE PLANS WITH PLANS PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC. (LEA).
3. ALL ELEVATIONS SHOWN REFER TO NAVD88 DATUM.
4. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
5. REFER TO ADDITIONAL *SUBSURFACE EXPLORATIONS DATA MEMORANDUM* PREPARED BY GEODESIGN AND DATED DECEMBER 13, 2023 FOR SUBSURFACE INFORMATION.
6. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES AND VAULTS PRIOR TO THE START OF WORK. CONTRACTOR SHALL NOTIFY CALL-BEFORE-YOU-DIG AS REQUIRED BY LAW.
7. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY AND PROVIDE A SAFETY PLAN CONFORMING TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS.
9. ANY PROPOSED REVISION/MODIFICATION TO THESE PLANS SHALL BE SUBMITTED TO GEODESIGN FOR REVIEW AND APPROVAL.
10. A 250 PSF UNIFORM SURCHARGE HAS BEEN INCLUDED BEHIND THE MODULAR BLOCK RETAINING WALL. CONSTRUCTION SURCHARGE SHALL NOT EXCEED THESE VALUES. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHALL BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.

DELIVERY, STORAGE AND HANDLING

1. CONTRACTOR SHALL CHECK THE MATERIALS UPON DELIVERY TO ENSURE THAT PROPER MATERIAL HAS BEEN RECEIVED.
2. CONTRACTOR SHALL PREVENT EXCESSIVE MUD, WET CEMENT, EPOXY, AND LIKE MATERIALS WHICH MAY AFFIX THEMSELVES, FROM COMING IN CONTACT WITH THE MATERIALS.
3. GEOGRIDS SHALL BE STORED ABOVE -20° F.
4. CONTRACTOR SHALL PROTECT THE MATERIALS FROM DAMAGE. DAMAGED MATERIAL SHALL NOT BE INCORPORATED INTO THE REINFORCED RETAINING WALL.

CONSTRUCTION OBSERVATION AND TESTING

OWNER WILL PROVIDE CONSTRUCTION OBSERVATION SERVICES AND SPECIAL INSPECTIONS.

DESIGN ASSUMPTIONS

MATERIAL	FRICTION ANGLE (DEG)	UNIT WEIGHT (PCF)
CRUSHED STONE	36	130
LIGHTWEIGHT FILL	38	25
STRUCTURAL FILL	34	130

PART 2 - SEQUENCE OF CONSTRUCTION:

1. CONTRACTOR TO VERIFY ALL THE LOCATIONS OF ALL UNDERGROUND UTILITIES, VAULTS, MANHOLES, AND OTHER STRUCTURES PRIOR TO THE START OF WORK.
2. INSTALL EROSION CONTROL MEASURES PER PLANS PROVIDED BY LEA.
3. REMOVE ENTIRE UNDERGROUND STORMWATER STORAGE/INFILTRATION SYSTEM, INCLUDING ALL PIPING AND MANHOLES, PER LEA PLANS. PIPES EXTENDING BENEATH EXISTING RETAINING WALL MAY BE CAPPED AND FILLED WITH FLOWABLE FILL HAVING A MINIMUM COMPRESSIVE STRENGTH OF 300 PSI AND ABANDONED IN PLACE.
4. COMPLETELY REMOVE RETAINING WALL BACKFILL, GEOGRIDS, AND BLOCK UNITS. EXCAVATION SIDEWALLS SHALL BE SLOPED IN ACCORDANCE WITH OSHA REQUIREMENTS.
5. EXCAVATE AS REQUIRED TO PLACE PROPOSED LEVELING PAD, GEOGRID, AND WALL BACKFILL.
6. PLACE LEVELING PAD AS SHOWN ON THE PLANS.
7. PLACE NONWOVEN GEOTEXTILE OVER THE SUBGRADE BEHIND PROPOSED RETAINING WALL AND ON EXCAVATION SIDE AND BACK SLOPES AS SHOWN ON THE PLANS.
8. NOTE THAT LIGHTWEIGHT FILL IS LIGHTER THAN WATER AND WILL FLOAT IF THERE IS NOT ENOUGH WEIGHT PLACED ABOVE IT TO COUNTERACT HYDROSTATIC UPLIFT FROM TEMPORARY CONDITIONS INCLUDING FLOOD WATERS. CONTRACTOR MUST CONTROL WATER LEVEL BEHIND WALL DURING CONSTRUCTION TO PREVENT FLOTATION OF FILL. CONTRACTOR SHALL SUBMIT DEWATERING PLAN TO THE ENGINEER PRIOR TO CONSTRUCTION.
9. INSTALL CONCRETE WALL UNITS AS SHOWN ON THE PLANS. BACKFILL EACH COURSE OF WALL UNITS AFTER IT IS PLACED. BACKFILL TO CONSIST OF:
   - CRUSHED STONE TO 2 FEET OF ABOVE PROPOSED GRADES AT BOTTOM OF RETAINING WALL.
   - LIGHTWEIGHT FILL TO EL. 52.
   - STRUCTURAL FILL TO PAVEMENT SUBGRADE.
9. PLACE DRAINAGE BEHIND CONCRETE BLOCK UNITS AND DAYLIGHT THROUGH PROPOSED RETAINING WALL AS SHOWN ON THE PLANS.
10. PLACE GEOGRID AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE PLANS AS WALL IS BACKFILLED.
11. BACKFILL TO BE PLACED AND COMPACTED AS SHOWN ON THE PLANS. NONWOVEN GEOTEXTILE SHALL BE PLACED BETWEEN CRUSHED STONE, LIGHTWEIGHT FILL, AND STRUCTURAL FILL.
12. INSTALL STORMWATER DETENTION SYSTEM.
13. INSTALL PAVEMENT, CURBING, STRIPING, FENCING/TRAFFIC BARRIERS, ETC. PER LEA PLANS.

PART 3 - PRODUCTS

MATERIALS:

THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S CATALOG AND SAMPLES OF THE PROPOSED WALL SYSTEM AND MATERIALS FOR APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER A MINIMUM OF 14 DAYS BEFORE THE START OF CONSTRUCTION. MATERIALS SHALL BE TRANSPORTED TO THE SITE ONLY AFTER APPROVAL OF THE PROPOSED MATERIALS BY THE PROJECT GEOTECHNICAL ENGINEER.

1. CONCRETE UNITS

   A. CONCRETE UNITS SHALL BE MODULAR BLOCK RETAINING WALL UNITS OF A WELL-ESTABLISHED, PROPRIETARY DESIGN. BLOCK UNITS SHALL HAVE THE FOLLOWING NOMINAL DIMENSIONS:
      - 8 IN. HIGH
      - 18 IN. WIDE (AT FACE OF BLOCK)
      - 12 IN. DEEP.

      SUBSTITUTION OF OTHER CONCRETE UNITS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

   B. CONCRETE WALL UNITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI, IN ACCORDANCE WITH ASTM C-90. THE CONCRETE SHALL HAVE ADEQUATE FREEZE/THAW PROTECTION WITH A MAXIMUM MOISTURE ABSORPTION OF 6 PERCENT.

   C. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

   D. THE UNITS SHALL PASS 100 FREEZE/THAW CYCLES IN WATER WITH LESS THAN 1% WEIGHT LOSS IN ACCORDANCE WITH ASTM C 1372.

   E. UNITS SHALL HAVE ANGLED SIDES AND BE CAPABLE OF ATTAINING CONCAVE AND CONVEX ALIGNMENT CURVES. UNITS SHALL BE INTERLOCKED WITH GLASS-REINFORCED NYLON PINS.

   F. UNITS SHALL BE INTERLOCKED AS TO PROVIDE A MAXIMUM OF 1/4 INCH OF SETBACK PER BLOCK.

2. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHALL CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF CONNDOT FORM 818, ARTICLE M.05.01, OR ARTICLE M.0.01 (SIZES NO. 6 OR NO. 67). A MINIMUM OF 6 INCHES DEEP AND 24 INCHES WIDE COMPACTED LEVELING PAD IS REQUIRED.

3. GEOGRID

GEOGRID SHALL BE SUBMITTED AND APPROVED BY THE GEOTECHNICAL ENGINEER. THE GEOGRID SHALL HAVE AN ALLOWABLE STRENGTH OF 2904 POUNDS PER FOOT. THE ALLOWABLE STRENGTH IS DEFINED AS THE ULTIMATE STRENGTH DIVIDED BY REDUCTION FACTORS FOR CREEP, DURABILITY, AND INSTALLATION DAMAGE AND SHALL HAVE AN OVERALL FACTOR OF SAFETY OF 1.5 OR GREATER.

4. CONNECTING PINS

   A. CONCRETE UNITS SHALL BE INTERLOCKED WITH CONNECTION PINS. THE PINS SHALL CONSIST OF GLASS-REINFORCED NYLON MADE FOR EXPRESS USE WITH THE CONCRETE UNITS SUPPLIED. THE CONNECTING PINS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

   B. FOR SUBSTITUTE CONCRETE UNITS, USE OF OTHER COMPATIBLE CONNECTOR SYSTEMS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

5. GEOTEXTILE

GEOTEXTILE SHALL CONSIST OF NONWOVEN MIRAFI S800, MANUFACTURED BY TENCATE GEOSYNTHETICS AMERICAS, OR EQUIVALENT APPROVED BY GEODESIGN.

6. DRAINAGE PIPE

DRAINAGE PIPES SHALL BE PERFORATED OR SLOTTED PVC PIPE MANUFACTURED IN ACCORDANCE WITH ASTM D-3034.

7. BACKFILL

BACKFILL SHALL BE ENVIRONMENTALLY CLEAN AND FREE OF ASH, REFUSE, TRASH, ICE, SNOW, STUMPS, ROOTS, ORGANIC MATERIALS AND OTHER DELETERIOUS MATERIALS. BACKFILL SHALL BE PLACED TO THE LIMITS AND ELEVATIONS SHOWN ON THESE PLANS. BACKFILL SHALL BE AS FOLLOWS:

   A. CRUSHED STONE SHALL CONSIST OF MATERIALS MEETING THE REQUIREMENTS OF CONNDOT FORM 818, ARTICLE M.0.01 FOR SIZES NO. 6 OR NO. 67.

   B. LIGHTWEIGHT FILL SHALL CONSIST OF G-15 FOAMED GLASS AGGREGATE (FGA) MANUFACTURED BY AERO AGGREGATES, OR EQUIVALENT APPROVED BY GEODESIGN.

   C. STRUCTURAL FILL SHALL CONSIST OF MATERIAL MEETING THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
6 INCH	100
NO. 10	30 - 95
NO. 40	10 - 70
NO. 200	0 - 15

STATE OF CONNECTICUT
TIMOTHY L. COVIELLO
No. 34807
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	DRWN	CHKD	APPVD

DESIGNED BY DNC
DRAWN BY TLC
CHECKED BY TvR
APPROVED BY TvR

Loureiro
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PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
NOTES AND SPECIFICATIONS

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 2

M:\CL\4542 Greater Hartford Transit District\001.02 Roberts St FD & Constr\16 Drawings\4542–002.01 Final Drawings – MSE Wall Option.dwg Dylan Carlson 2/21/2025 2:22 PM GD–STD.ctb

PART 4 - EXECUTION

1. EXCAVATION
   A. THE CONTRACTOR SHALL PROTECT THE EXCAVATION SUBGRADE FROM PRECIPITATION AND DISTURBANCE BY CONSTRUCTION EQUIPMENT OR OTHER TRAFFIC.
   D. EXCAVATIONS SHALL BE SLOPED OR OTHERWISE SUPPORTED IN ACCORDANCE WITH OSHA AND OTHER LOCAL AND STATE REGULATIONS.

2. FOUNDATION SUBGRADE PREPARATION
   A. FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, GEOGRID, AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
   B. FOUNDATION SOIL SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO VERIFY THAT THE ACTUAL FOUNDATION SOIL CONDITIONS ARE SUITABLE AND MEET DESIGN CRITERIA. UNSUITABLE SOILS SHALL BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
   C. OVEREXCAVATED AREAS SHALL BE FILLED WITH APPROVED MATERIAL AND COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE MODIFIED PROCTOR, ASTM D-1557.
   D. THE EXPOSED FOUNDATION SUBGRADE SHALL BE PROOF COMPACTED WITH A WALK BEHIND DOUBLE DRUM VIBRATORY ROLLER OR OTHER APPROVED EQUIPMENT UNDER THE OBSERVATION OF THE PROJECT GEOTECHNICAL ENGINEER OR THEIR QUALIFIED REPRESENTATIVE. ANY SOFT OR UNSTABLE AREAS IDENTIFIED DURING PROOF COMPACTION SHALL BE OVEREXCAVATED AND BACKFILLED WITH STRUCTURAL FILL. IF THE EXPOSED FOUNDATION SUBGRADE CONSISTS OF CLAY, IT SHOULD BE CAREFULLY PREPARED WITH A SMOOTH-EDGED BUCKET TO REMOVE ANY DISTURBED MATERIAL. NO VIBRATORY PROOF COMPACTION SHALL BE PERFORMED ON EXPOSED CLAY SUBGRADE.
   E. ANY FILLS REQUIRED TO ESTABLISH SLOPING SURFACES IN FRONT OF THE WALLS SHALL CONSIST OF STRUCTURAL FILL AND SHALL BE PLACED, COMPACTED AND FIELD TESTED IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED HEREIN.

3. LEVELING PAD
   A. THE LEVELING PAD SHALL BE PLACED AS SHOWN ON THE CONSTRUCTION DRAWINGS WITH A MINIMUM THICKNESS OF 6 INCHES.
   B. LEVELING PAD MATERIALS SHALL BE INSTALLED UPON UNDISTURBED IN SITU SOILS OR CONTROLLED, COMPACTED BACKFILL.
   C. LEVELING PAD SHALL BE PREPARED TO ENSURE IT IS LEVEL AND IN COMPLETE CONTACT WITH RETAINING WALL UNITS. GAPS BETWEEN LEVELING PAD AND CONCRETE BLOCK UNITS SHALL NOT BE ALLOWED.

4. UNIT INSTALLATION
   A. FIRST COURSE OF CONCRETE WALL UNITS SHALL BE PLACED ON THE LEVELING PAD. THE UNITS SHALL BE CHECKED FOR LEVEL AND ALIGNMENT. THE FIRST COURSE IS THE MOST IMPORTANT TO PROVIDE ACCURATE AND ACCEPTABLE RESULTS.
   B. ENSURE THAT UNITS ARE IN FULL CONTACT WITH BASE.
   C. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM BASE LINE.
   D. INSTALL CONNECTING PIN.
   E. LAY UP EACH COURSE ENSURING THAT THE CONNECTING PINS ARE PROPERTLY INSERTED INTO THE BLOCK UNITS. REPEAT PROCEDURE TO THE EXTENT OF WALL HEIGHT.
   F. AT THE END OF EACH COURSE WHERE THE WALL CHANGES ELEVATION, UNITS SHALL BE TURNED INTO THE BACKFILL. UNITS SHALL BE LAID AS TO CREATE THE MINIMUM RADIUS POSSIBLE. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, A MINIMUM OF ONE UNIT SHALL BE INSTALLED INTO THE GRADE. ONLY THE FRONT FACE OF THE UNITS SHALL BE VISIBLE FROM THE SIDE OF THE WALL.
   G. CONVEX AND CONCAVE CURVES SHALL BE MADE USING COMPACT UNITS OR BY TRIMMING THE CONCRETE BLOCK UNITS UNITS AS REQUIRED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
   H. INSTALL 4" PERFORATED DRAINAGE PIPES CONCURRENTLY WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL WHERE SHOWN ON THESE PLANS.
   I. CAP UNITS SHALL BE INSTALLED AS REQUIRED BY MANUFACTURER.

5. GEOGRID INSTALLATION
   A. THE GEOGRID SOIL REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL, CONNECTED TO THE CONCRETE WALL UNITS. HOOK GRID OVER THE CONNECTING PIN, PULL TAUT, AND ANCHOR BEFORE BACKFILL IS PLACED ON THE GEOGRID.
   B. SLACK IN THE GEOGRID AT THE WALL UNIT CONNECTIONS SHALL BE REMOVED IN A MANNER, AND TO SUCH A DEGREE, AS REQUIRED BY THE ENGINEER.
   C. GEOGRID SHALL BE LAID AT THE PROPER ELEVATION AND ORIENTATION AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER.
   D. CORRECT ORIENTATION (ROLL DIRECTION) OF THE GEOGRID SHALL BE VERIFIED BY THE CONTRACTOR.
   E. GEOGRID SHALL BE SECURED IN-PLACE WITH STAPLES, PINS, SAND BAGS, OR BACKFILL AS REQUIRED BY FILL PROPERTIES, FILL PLACEMENT PROCEDURES, OR WEATHER CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
   F. OVERLAPS.
      - UNIAXIAL GEOGRID DOES NOT NEED TO BE OVERLAPPED IN THE ACROSS THE ROLL DIRECTION.
      - UNIAXIAL GEOGRID SHALL BE PLACED IN CONTINUOUS LENGTHS IN THE ROLLED DIRECTION. OVERLAPS/SPLICES SHALL NOT BE PERMITTED IN THE ROLLED DIRECTION.

6. FILL PLACEMENT AND COMPACTION:
   A. STRUCTURAL FILL PLACED AS WALL BACKFILL SHALL BE COMPACTED TO 95 PERCENT OF THE MODIFIED PROCTOR (ASTM D-1557).
   B. CRUSHED STONE PLACED AS WALL BACKFILL SHALL BE SUBJECTED TO A MINIMUM OF SIX PASSES WITH COMPACTION EQUIPMENT TO ENSURE THAT IT IS TIGHT, WELL-CHINKED, FIRM, AND STABLE.
   C. BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF WRINKLES IN AND/OR MOVEMENT OF THE GEOGRID.
   D. BACKFILL SHALL BE PLACED FROM THE WALL OUTWARD TO ENSURE THAT THE GEOGRID REMAINS TAUT.
   E. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRIDS. A MINIMUM BACKFILL THICKNESS OF 6 INCHES IS REQUIRED PRIOR TO OPERATION OF TRACKED EQUIPMENT OVER THE GEOGRIDS. TURNING OF TRACKED VEHICLES SHALL BE KEPT TO A MINIMUM TO PREVENT DISPLACING THE FILL AND DAMAGING OR MOVING THE GEOGRIDS. ANY DAMAGED OR DISTURBED GEOGRIDS MUST BE PROMPTLY REPAIRED OR REPLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
   F. RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.
   G. FGA SHALL BE COMPACTED USING EITHER A VIBRATORY PLATE COMPACTOR WEIGHING BETWEEN 110 AND 220 LBS. OR TRACKED EXCAVATION EQUIPMENT WITH A GROUND PRESSURE BETWEEN 600 AND 1000 PSF. A MINIMUM OF FOUR PASSES IS REQUIRED FOR BOTH COMPACTION METHODS. MAXIMUM FGA LIFT THICKNESS IS 12 INCHES IF A PLATE COMPACTOR IS USED AND 24 INCHES IF TRACKED EQUIPMENT IS USED.
   H. MAXIMUM LIFT THICKNESS FOR CRUSHED STONE AND STRUCTURAL FILL IS 8 INCHES IF HAND-OPERATED COMPACTION EQUIPMENT (I.E., PLATE COMPACTORS AND VIBRATORY TRENCH ROLLERS) IS USED AND 12 INCHES IF A VIBRATORY DRUM ROLLER IS USED.
   I. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHALL BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.
   J. CONSTRUCTION EQUIPMENT, OTHER THAN REQUIRED FOR PLACEMENT/COMPACTION OF THE FGA, SHALL NOT OPERATE ON OR TRAVEL OVER FGA.
   K. THE FINISHED SLOPING SURFACE ON THE TOE SIDE OF THE PROPOSED RETAINING WALL SHALL BE PROTECTED BY LOAMING AND SEEDING IN ACCORDANCE WITH PROJECT REQUIREMENTS.
   L. WHERE FILL LIFTS ARE PLACED ADJACENT TO A SLOPE, THE LIFTS SHALL BE KEYED INTO THE SLOPE BY CUTTING A BENCH. THE SURFACE OF BENCHES SHALL BE PREPARED AS DESCRIBED IN SECTION 2, PART 4 ("FOUNDATION SUBGRADE PREPARATION", THIS SHEET).

6. DRAINAGE :
   A. PROVIDE WALL DRAINS AND WEEPHOLES AT MAXIMUM 20-FOOT SPACING AS SHOWN ON THESE PLANS.
   B. MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION.
   C. DRAIN PIPES SHALL DAYLIGHT THROUGH THE BLOCK UNITS.
   D. INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES INCREMENTALLY AND CONCURRENTLY WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.

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PROJECT
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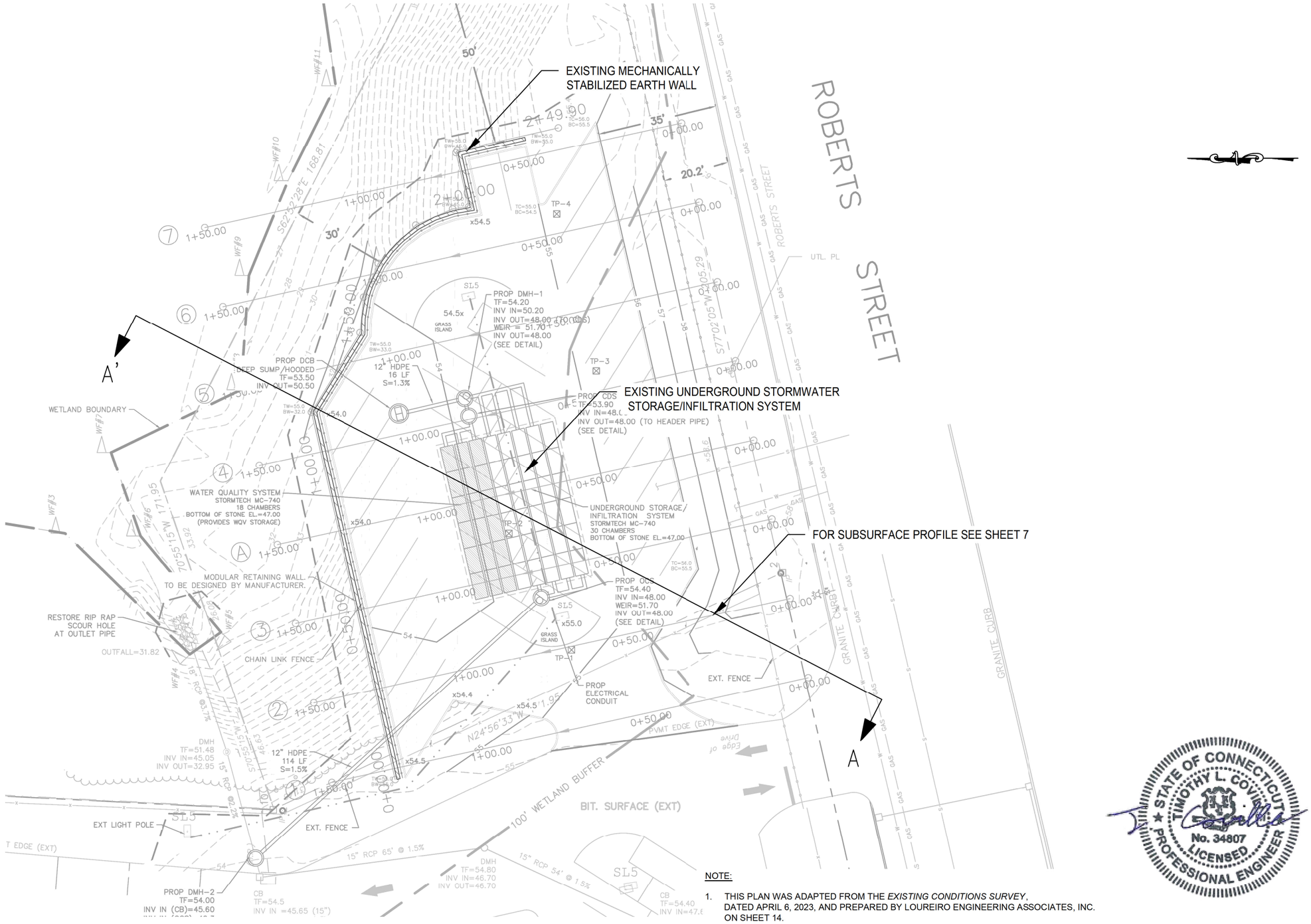
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
NOTES AND SPECIFICATIONS (CONTD.)

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 3



NOTE:

1. THIS PLAN WAS ADAPTED FROM THE *EXISTING CONDITIONS SURVEY*, DATED APRIL 6, 2023, AND PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC. ON SHEET 14.

STATE OF CONNECTICUT
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SCALE 1" = 30'
30' 15' 0' 30'

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PROJECT	GREATER HARTFORD TRANSIT DISTRICT PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL
DWG. TITLE	ORIGINAL CONSTRUCTION CONDITIONS PLAN
GEODESIGN PROJECT NO.	4542–001.02
SCALE	AS NOTED
DATE	02–19–2025
SHEET NO.	4

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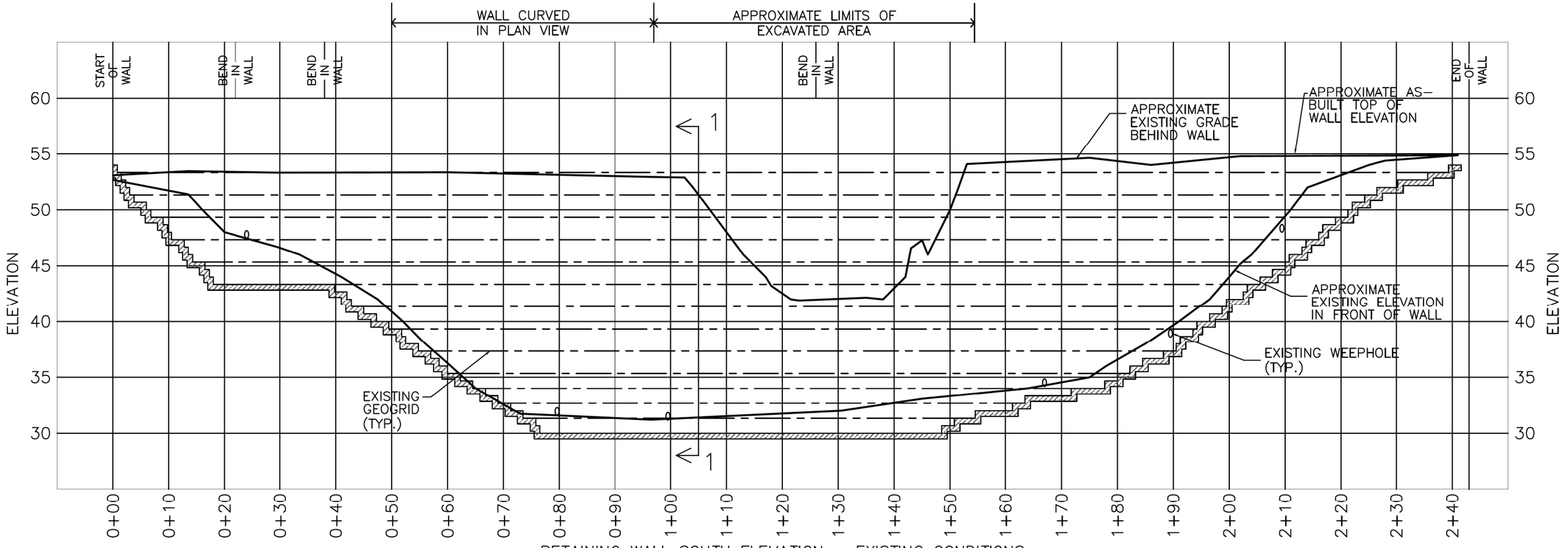
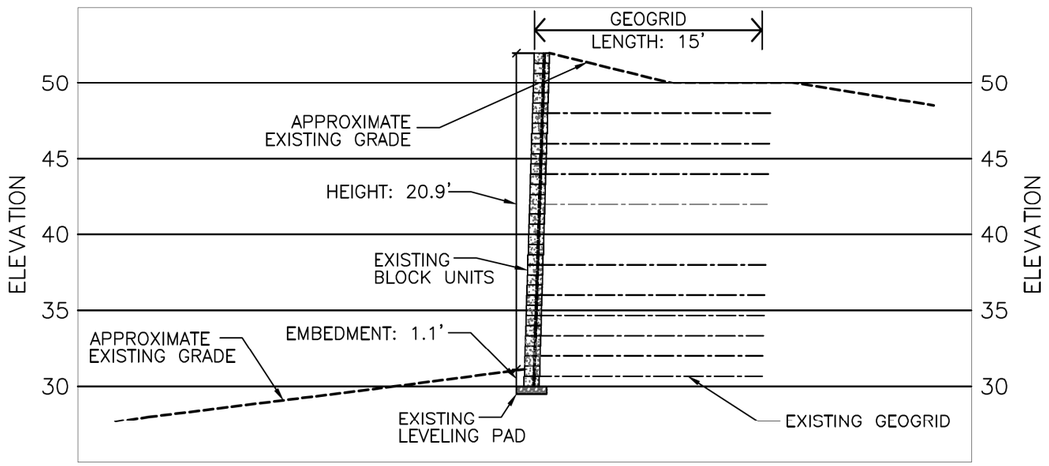


RETAINING WALL SOUTH ELEVATION – EXISTING CONDITIONS

HORIZONTAL SCALE: 1" = 20'

VERTICAL SCALE: 1" = 10'



SECTION 1–1 – EXISTING CONDITIONS

SCALE: 1" = 10'

NOTES:

1. EXISTING GRADES AND WEEPHOLE LOCATIONS WERE REFERENCED FROM THE *EXISTING CONDITIONS SURVEY*, DATED APRIL 6, 2023 AND PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC. ON SHEET 14.
2. GEOGRID ELEVATIONS/LENGTHS, AS-BUILT TOP-OF WALL ELEVATION, AND OTHER DETAILS PERTAINING TO THE EXISTING RETAINING WALL WERE REFERENCED FROM THE *VERSA-LOK RETAINING WALL* PLANS, DATED OCTOBER 6, 2021 AND PREPARED BY CIVIL CONNECTION, LLC.

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PROJECT
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PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
RETAINING WALL SOUTH ELEVATION AND SECTION – EXISTING CONDITIONS

GEODESIGN PROJECT NO. 4542–001.02

SCALE AS NOTED

DATE 02–19–2025

SHEET NO. 5

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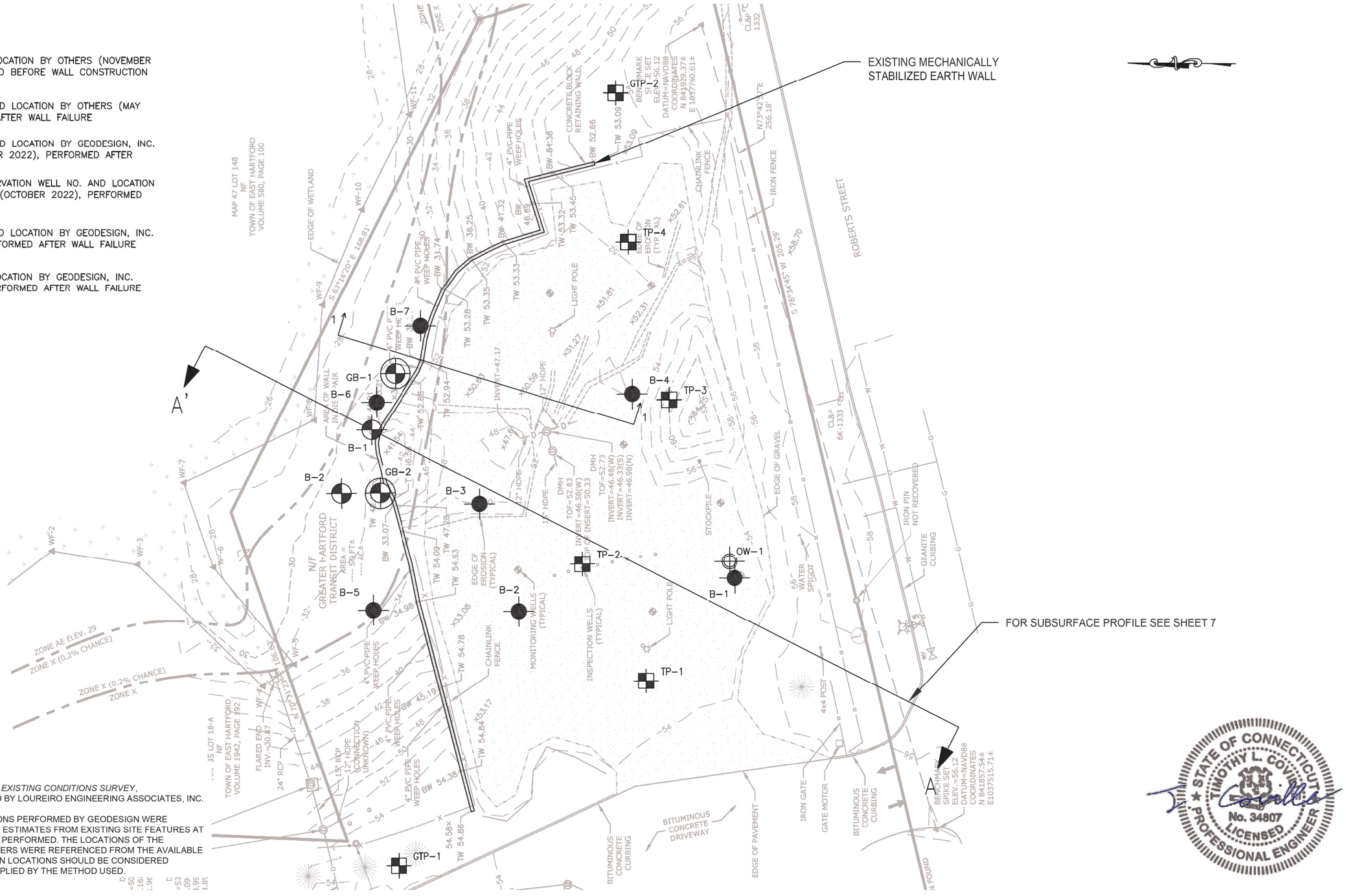
LEGEND

- TP-1 — TEST PIT NO. AND LOCATION BY OTHERS (NOVEMBER 2, 2020), PERFORMED BEFORE WALL CONSTRUCTION
- B-1 — TEST BORING NO. AND LOCATION BY OTHERS (MAY 2022), PERFORMED AFTER WALL FAILURE
- B-1 — TEST BORING NO. AND LOCATION BY GEODESIGN, INC. (SEPTEMBER/OCTOBER 2022), PERFORMED AFTER WALL FAILURE
- OW-1 — GROUNDWATER OBSERVATION WELL NO. AND LOCATION BY GEODESIGN, INC. (OCTOBER 2022), PERFORMED AFTER WALL FAILURE
- GB-1 — TEST BORING NO. AND LOCATION BY GEODESIGN, INC. (AUGUST 2023), PERFORMED AFTER WALL FAILURE
- GTP-1 — TEST PIT NO. AND LOCATION BY GEODESIGN, INC. (APRIL 5, 2024), PERFORMED AFTER WALL FAILURE



NOTES:

1. THIS PLAN WAS ADAPTED FROM THE *EXISTING CONDITIONS SURVEY*, DATED APRIL 6, 2023, AND PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC. ON SHEET 14.
2. THE LOCATIONS OF THE EXPLORATIONS PERFORMED BY GEODESIGN WERE DETERMINED BY TAPING AND VISUAL ESTIMATES FROM EXISTING SITE FEATURES AT THE TIME THE EXPLORATIONS WERE PERFORMED. THE LOCATIONS OF THE EXPLORATIONS PERFORMED BY OTHERS WERE REFERENCED FROM THE AVAILABLE PROJECT DOCUMENTS. EXPLORATION LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

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PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
EXPLORATION LOCATION PLAN

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 6

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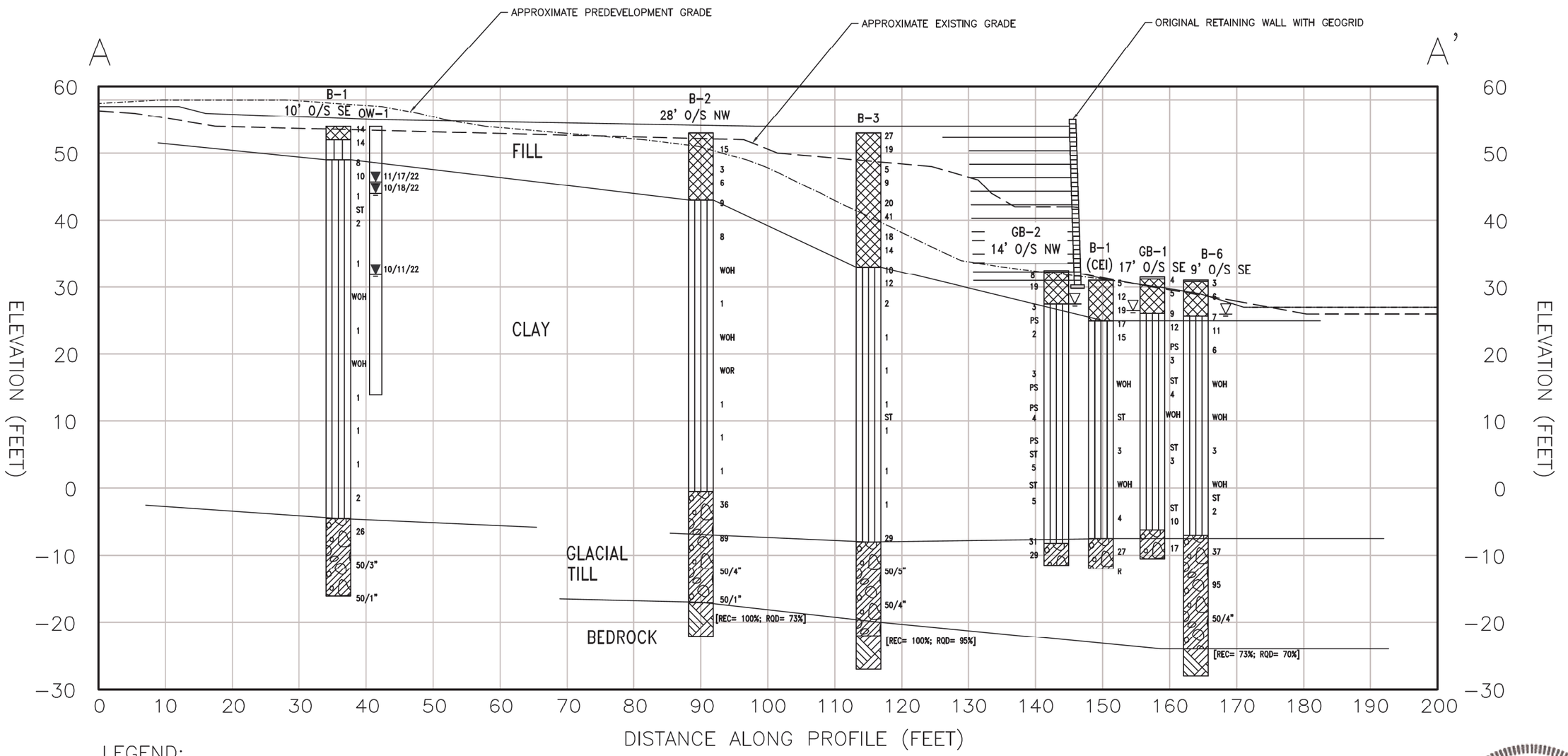

LEGEND:

FILL | CLAY | BEDROCK | GROUNDWATER OBSERVATION AFTER COMPLETION OF DRILLING

SAND | GLACIAL TILL | GROUNDWATER OBSERVATION DURING DRILLING

NOTES:

1. SEE SHEETS 4 AND 6 FOR LOCATION OF SUBSURFACE PROFILE
2. DATA CONCERNING THE VARIOUS STRATA HAVE BEEN INTERPRETED AT BORING LOCATIONS ONLY. THE STRATIGRAPHY BETWEEN BORINGS MAY VARY FROM THAT SHOWN.
3. NUMBERS DISPLAYED BESIDE BORING(S) REPRESENT SPT "N" VALUES, CORRESPONDING TO THEIR RESPECTIVE SAMPLING INTERVAL, WHERE CORING WAS PERFORMED, NUMBERS REPRESENT RECOVERY AND RQD VALUES. "R" REPRESENTS AUGER REFUSAL.
4. PROFILE BORINGS MAY BE OFFSET AND ARE PROJECTED ON THE PROFILE. REFER TO SHEET 6 FOR ACTUAL LOCATIONS OF EXPLORATIONS.

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16' 8' 0' 16'

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PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
SUBSURFACE PROFILE A–A'

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 7

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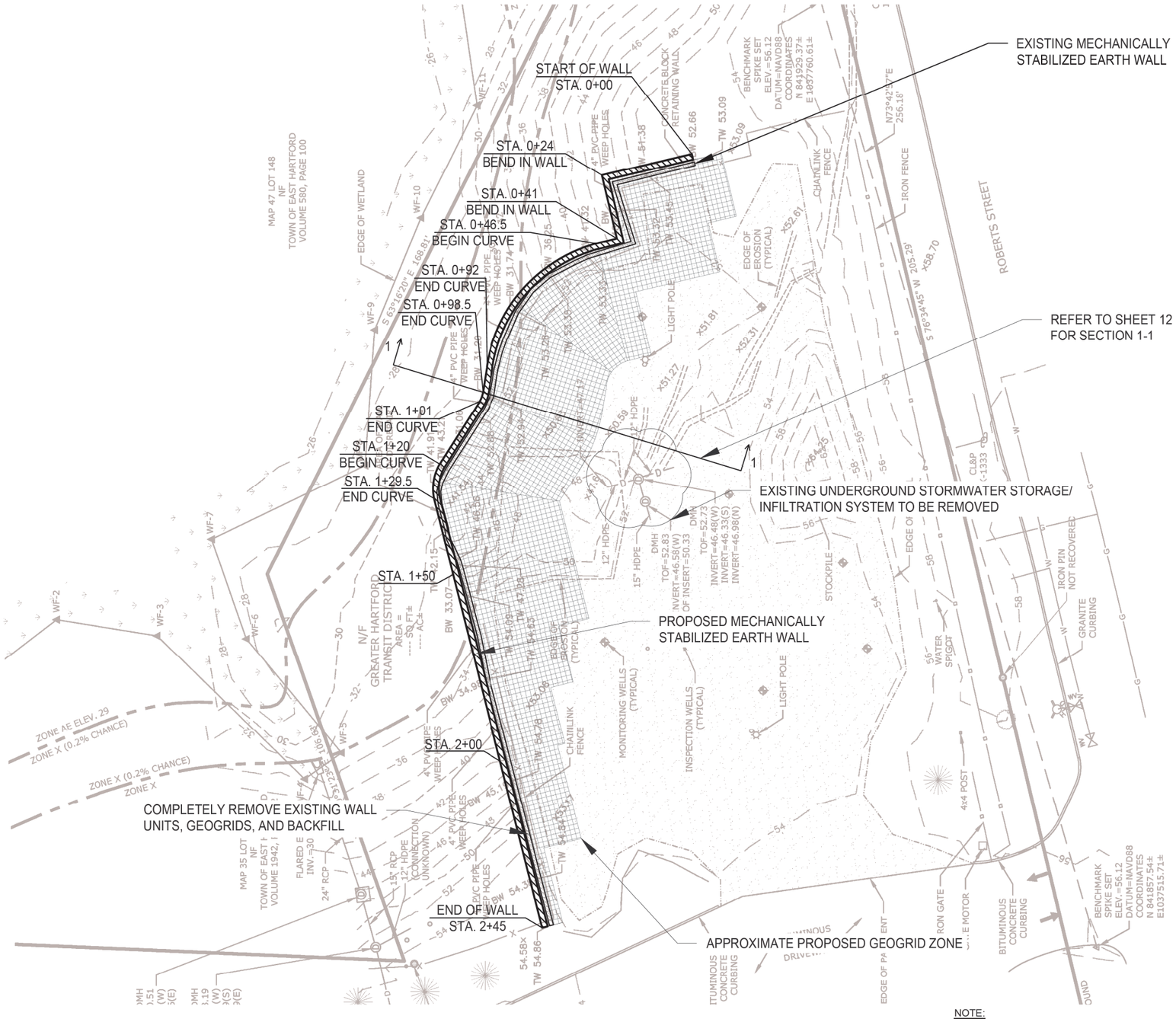

NOTE:

1. THIS PLAN WAS ADAPTED FROM THE *EXISTING CONDITIONS SURVEY*, DATED APRIL 6, 2023, AND PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC. ON SHEET 14.

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PROJECT
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PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
PROPOSED WALL REPAIR – PLAN VIEW – GEOGRIDS

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 8

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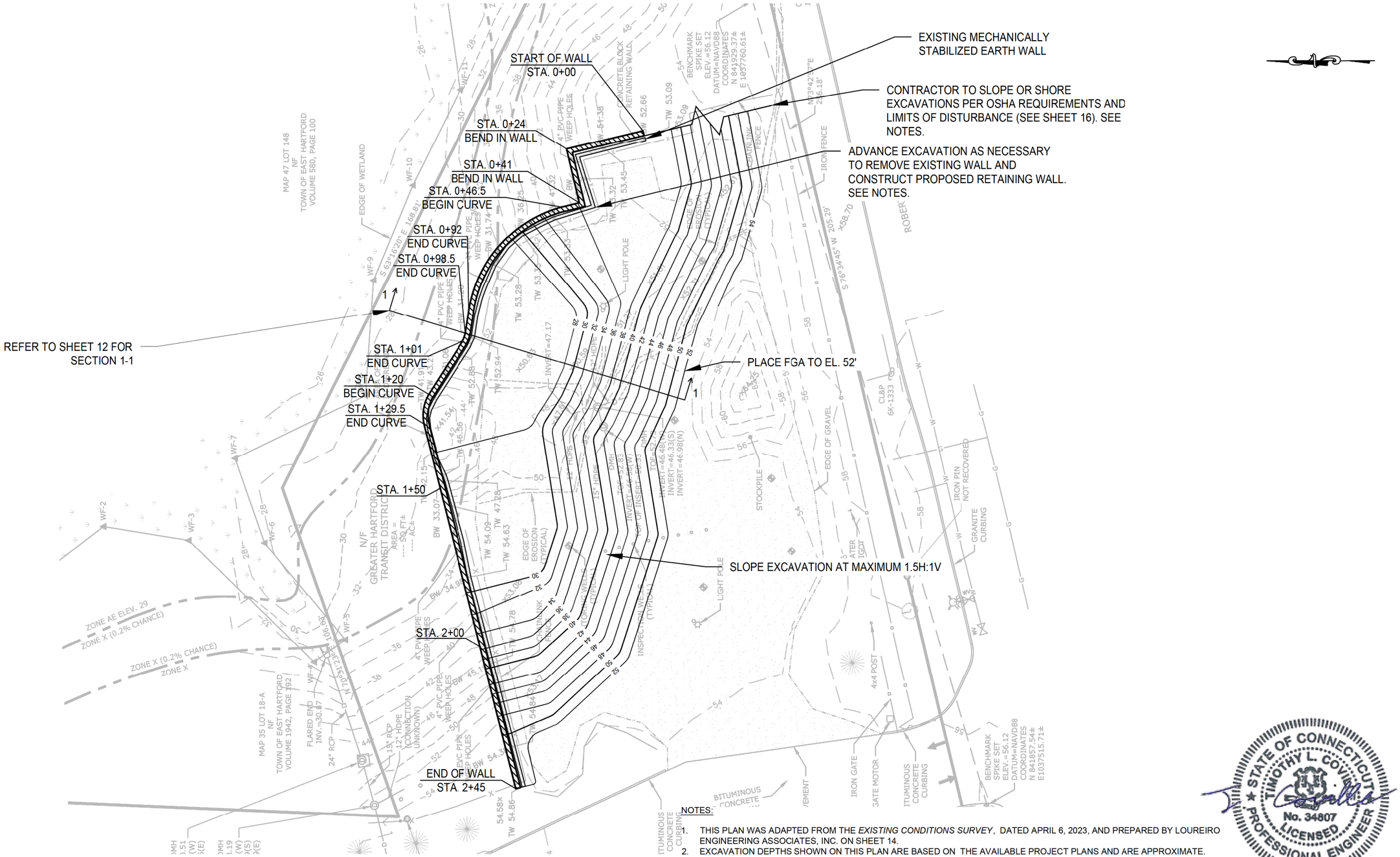

NOTES:

1. THIS PLAN WAS ADAPTED FROM THE *EXISTING CONDITIONS SURVEY*, DATED APRIL 6, 2023, AND PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC. ON SHEET 14.
2. EXCAVATION DEPTHS SHOWN ON THIS PLAN ARE BASED ON THE AVAILABLE PROJECT PLANS AND ARE APPROXIMATE. EXCAVATIONS SHALL BE ADVANCED AS NECESSARY TO DEMOLISH EXISTING RETAINING WALL AND CONSTRUCT PROPOSED RETAINING WALL. ADDITIONAL EXCAVATION MAY BE REQUIRED FOR REMOVAL OF UNSUITABLE MATERIAL, SLOPING EXCAVATIONS PER OSHA REQUIREMENTS, OR OTHER REASONS. AS SUCH, EXCAVATION DEPTHS MAY VARY FROM THOSE SHOWN HERE.

STATE OF CONNECTICUT
TIMOTHY L. COVELLA
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LICENSED PROFESSIONAL ENGINEER

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PROJECT
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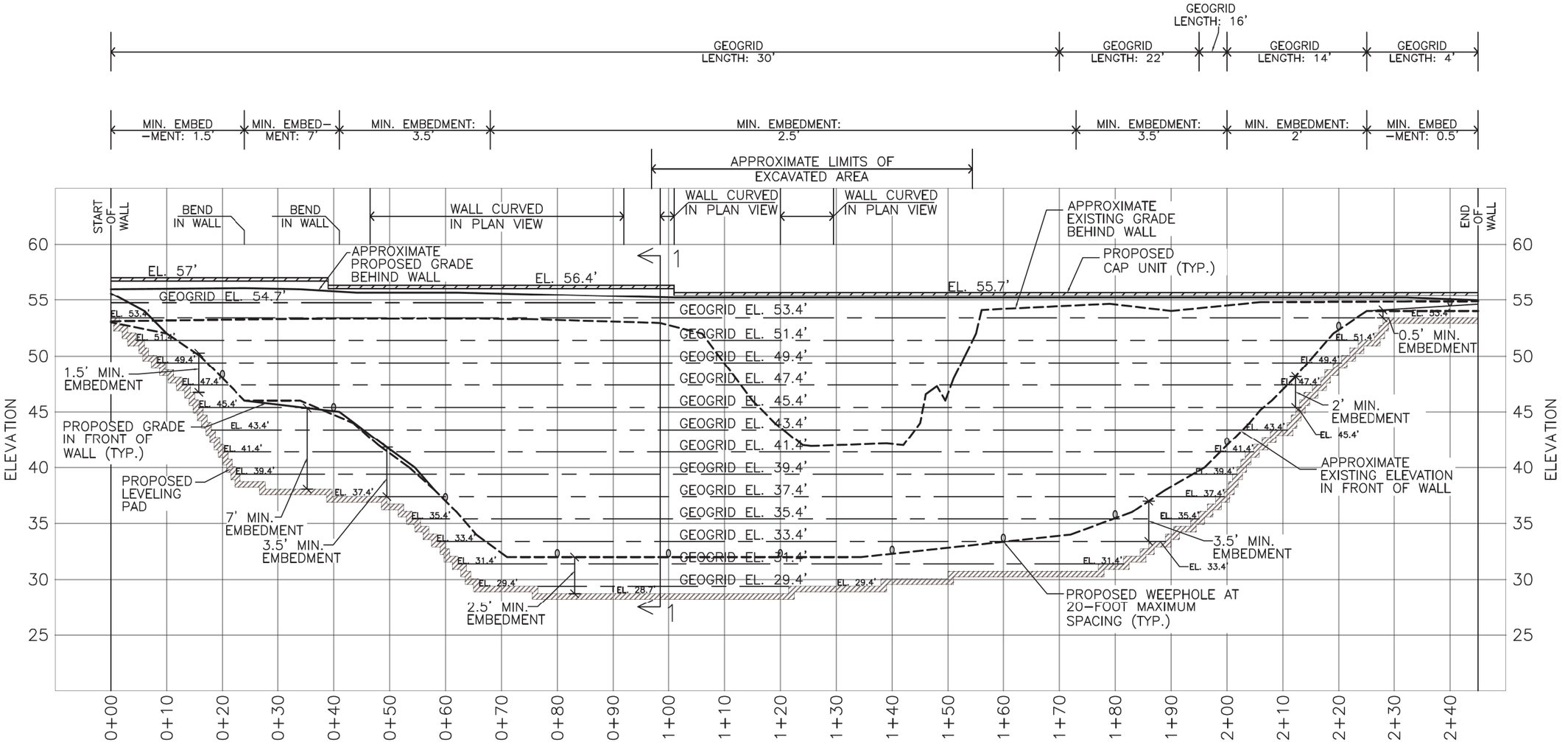
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
PROPOSED WALL REPAIR – PLAN VIEW – EXCAVATION

GEODESIGN PROJECT NO. 4542-001.02
SCALE AS NOTED
DATE 02-19-2025
SHEET NO. 9



RETAINING WALL SOUTH ELEVATION – PROPOSED WALL REPAIR – GEOGRID VIEW

HORIZONTAL SCALE: 1" = 20'

VERTICAL SCALE: 1" = 10'

NOTES:

1. REFER TO SHEET NO. 11 FOR BACKFILL REQUIREMENTS.
2. "EMBEDMENT" IS DEFINED AS THE VERTICAL DISTANCE BETWEEN PROPOSED GRADE AT THE TOE OF THE WALL AND THE TOP OF THE LEVELING PAD.

STATE OF CONNECTICUT
TIMOTHY L. COVELLA
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LICENSED PROFESSIONAL ENGINEER

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APPROVED BY TvR						

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VERTICAL SCALE 1" = 10'
10' 5' 0' 10'

HORIZONTAL SCALE 1" = 20'
20' 10' 0' 20'

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PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
PROPOSED WALL REPAIR – SOUTH ELEVATION VIEW – GEOGRIDS

GEODESIGN PROJECT NO. 4542-001.02
SCALE AS NOTED
DATE 02-19-2025
SHEET NO. 10

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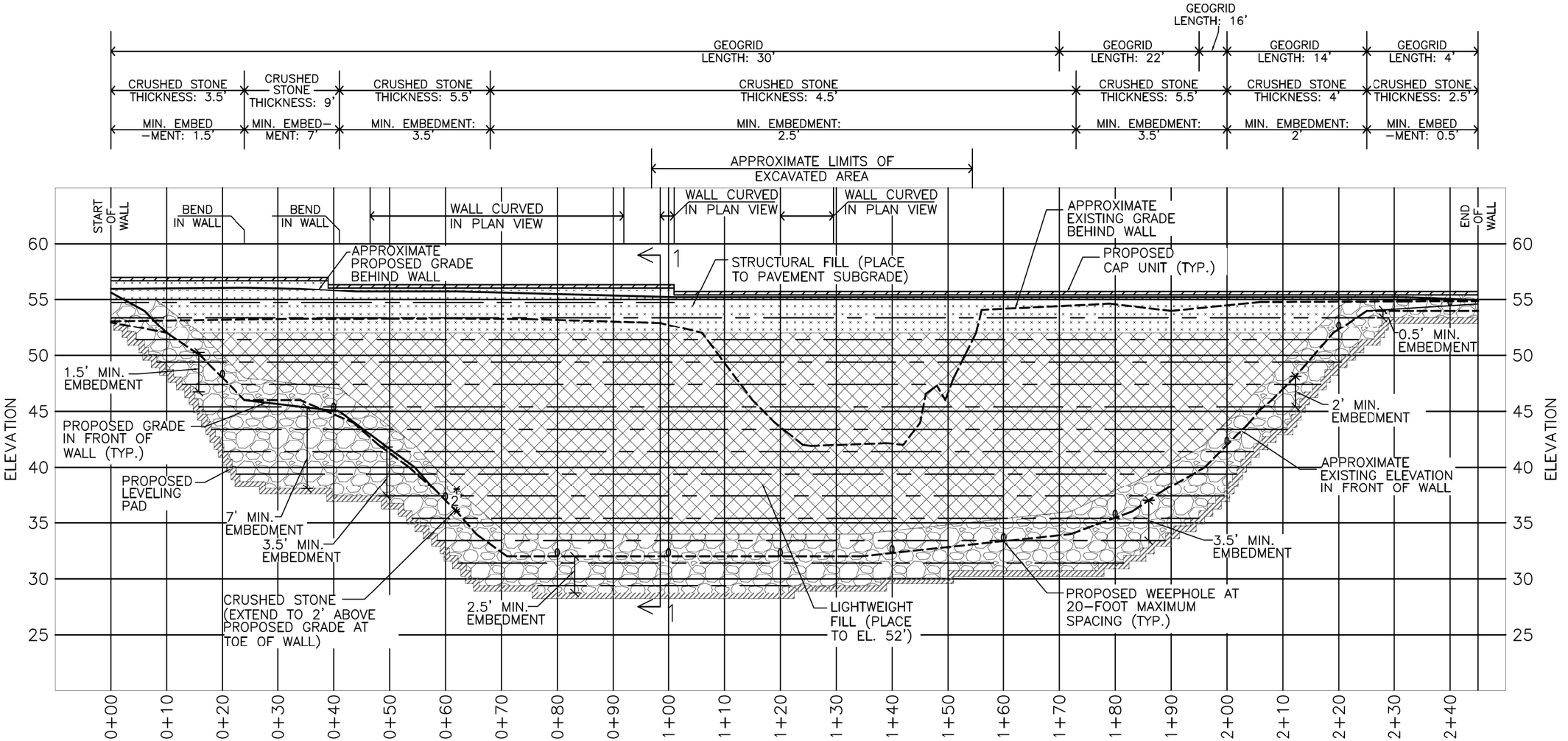

WALL BACKFILL LEGEND:

- STRUCTURAL FILL
- LIGHTWEIGHT FILL
- CRUSHED STONE

NOTE:
CRUSHED STONE SHALL BE PLACED TO 2' ABOVE PROPOSED GRADE AT TOE OF WALL

RETAINING WALL SOUTH ELEVATION – PROPOSED WALL REPAIR – BACKFILL VIEW

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'

STATE OF CONNECTICUT · TIMOTHY L. COVELL · No. 34807 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY DNC						
DRAWN BY TLC						
CHECKED BY TvR	NO.	DATE	REVISIONS	DRWN	CHKD	APPVD
APPROVED BY TvR						

Loureiro Engineering • Construction • EH&S • Energy
Waste • Facility Services • Laboratory
Loureiro Engineering Associates, Inc.

VERTICAL SCALE 1" = 10'
10' 5' 0' 10'

HORIZONTAL SCALE 1" = 20'
20' 10' 0' 20'

GEO DESIGN
984 SOUTHFORD ROAD
MIDDLEBURY, CT 06762
203.758.8836
geocompanies.com

PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
PROPOSED WALL REPAIR – SOUTH ELEVATION VIEW – RETAINING WALL BACKFILL

GEODESIGN PROJECT NO. 4542-001.02
SCALE AS NOTED
DATE 02-19-2025
SHEET NO. 11

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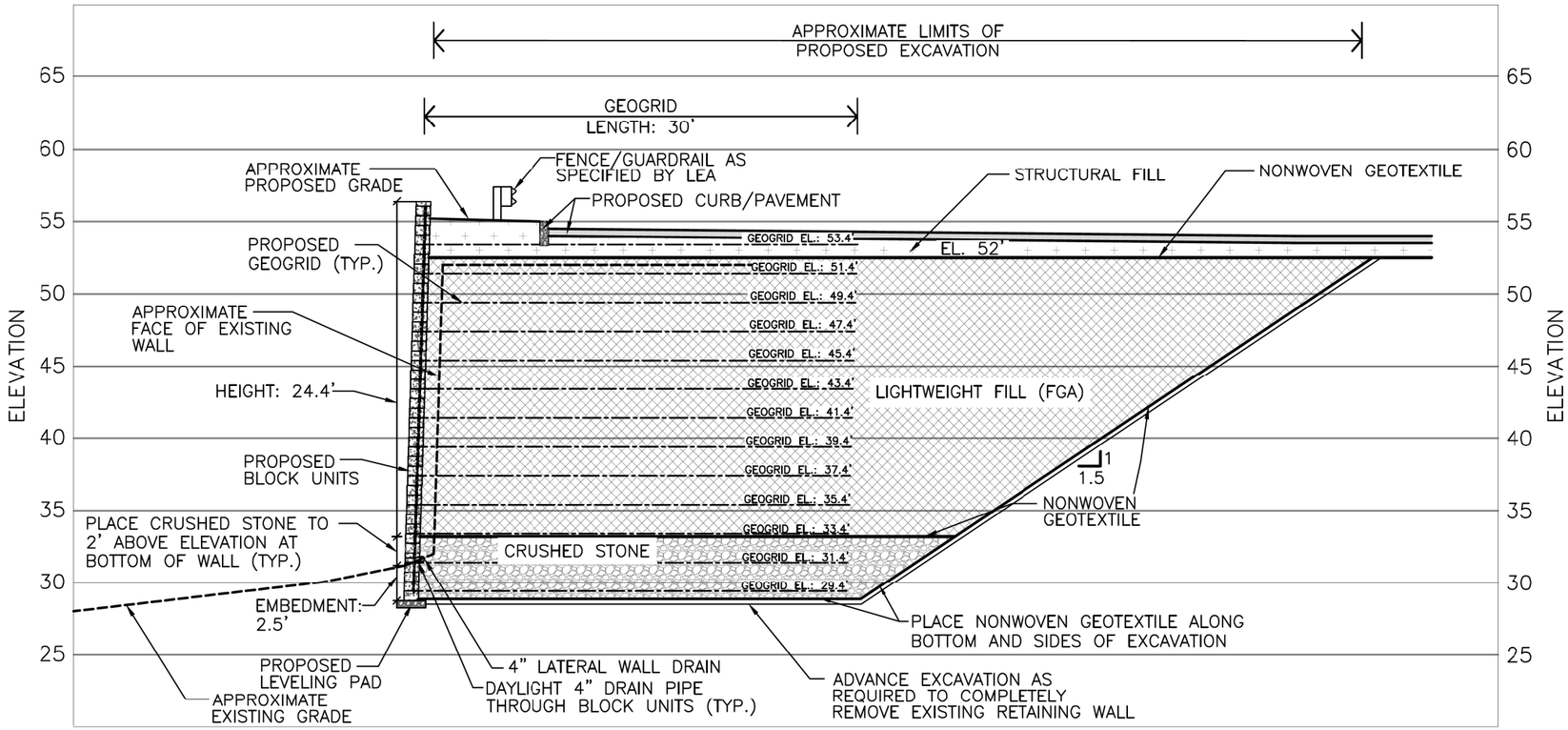

SECTION 1–1 – PROPOSED MSE WALL

SCALE: 1" = 10'

STATE OF CONNECTICUT
TIMOTHY L. COVIL
No. 34807
LICENSED
PROFESSIONAL ENGINEER

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SCALE 1" = 10'
10' 5' 0' 10'

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PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
PROPOSED WALL REPAIR – SECTION 1–1

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 12

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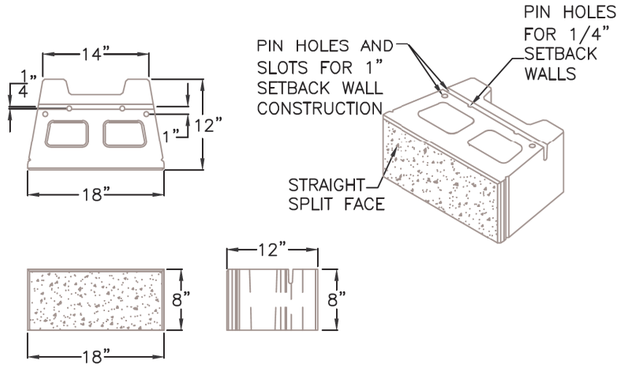
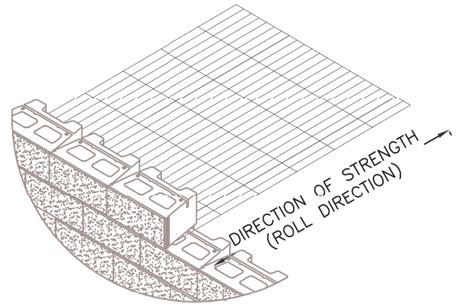


MODULAR BLOCK UNIT

NOT TO SCALE

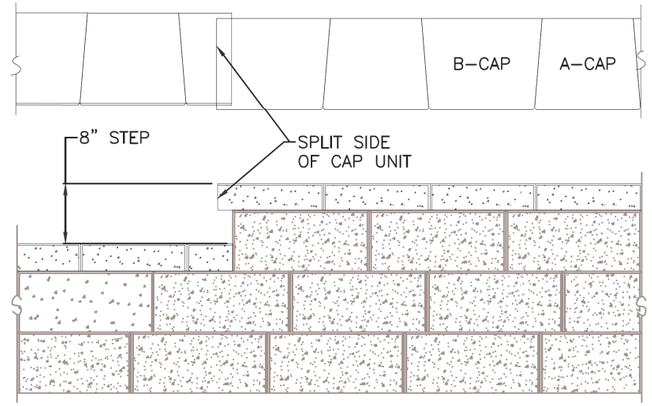


NOTES:

- FOLLOW GEOSYNTHETIC GRID MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SPECIFICATIONS
- GEOGRID LENGTH AND ELEVATION PLACEMENT SHALL BE DETERMINED BY WALL DESIGN ENGINEER

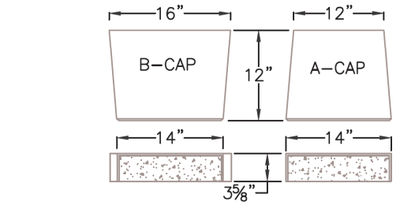
GEOSYNTHETIC INSTALLATION DETAIL

NOT TO SCALE



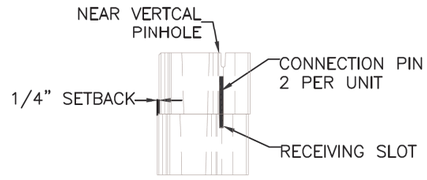
CAPPING DETAIL–PROFILE

NOT TO SCALE



MODULAR BLOCK CAP UNITS

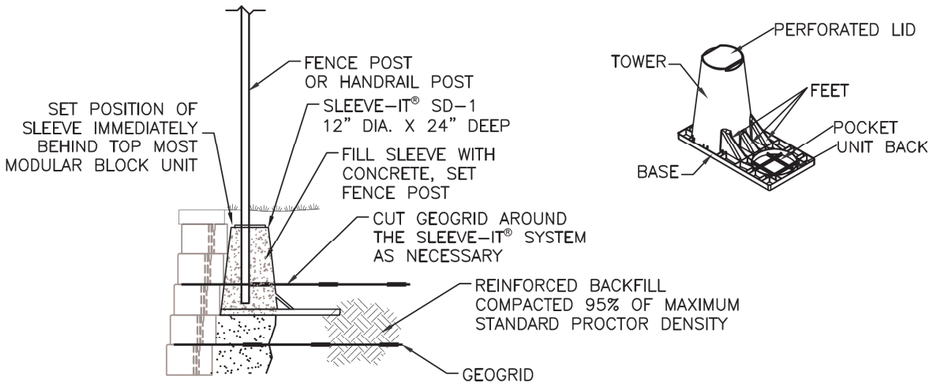
NOT TO SCALE



PINNING DETAIL

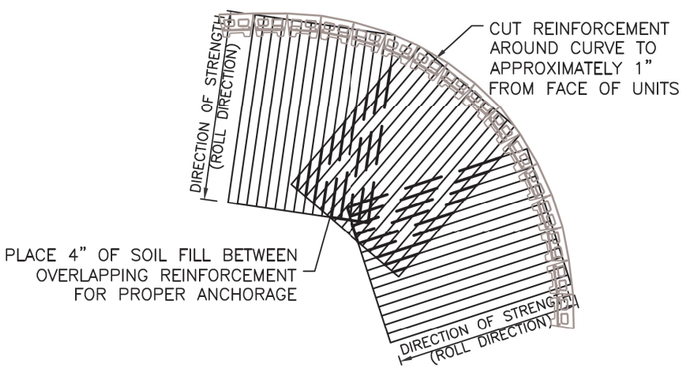
NOT TO SCALE

*SEE SLEEVE–IT® MANUFACTURER, STRATA SYSTEMS PREFERRED SPECIFICATION DOCUMENT FOR APPROPRIATE APPLICATIONS. NOT SUITABLE FOR SOLID BOARD PRIVACY FENCES, PRIVACY CLOTH, OR SCREENING.



FENCE POST DETAIL W/ SLEEVE-IT

NOT TO SCALE



GEOSYNTHETIC PLACEMENT

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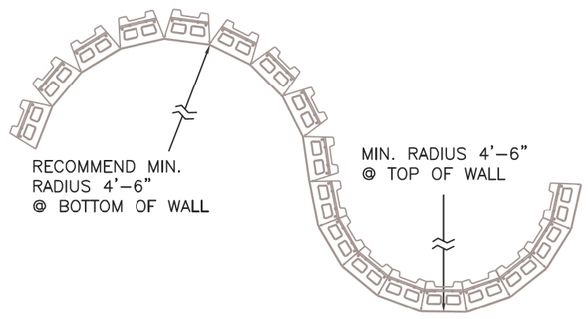

CURVE DETAIL

NOT TO SCALE

STATE OF CONNECTICUT
TIMOTHY L. COVELL
No. 34807
LICENSED PROFESSIONAL ENGINEER

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PROJECT
GREATER HARTFORD TRANSIT DISTRICT
PARATRANSIT EMPLOYEE PARKING LOT – RETAINING WALL REPAIR – MSE WALL

DWG. TITLE
PROPOSED WALL REPAIR – TYPICAL DETAILS

GEODESIGN PROJECT NO. 4542–001.02
SCALE AS NOTED
DATE 02–19–2025
SHEET NO. 13

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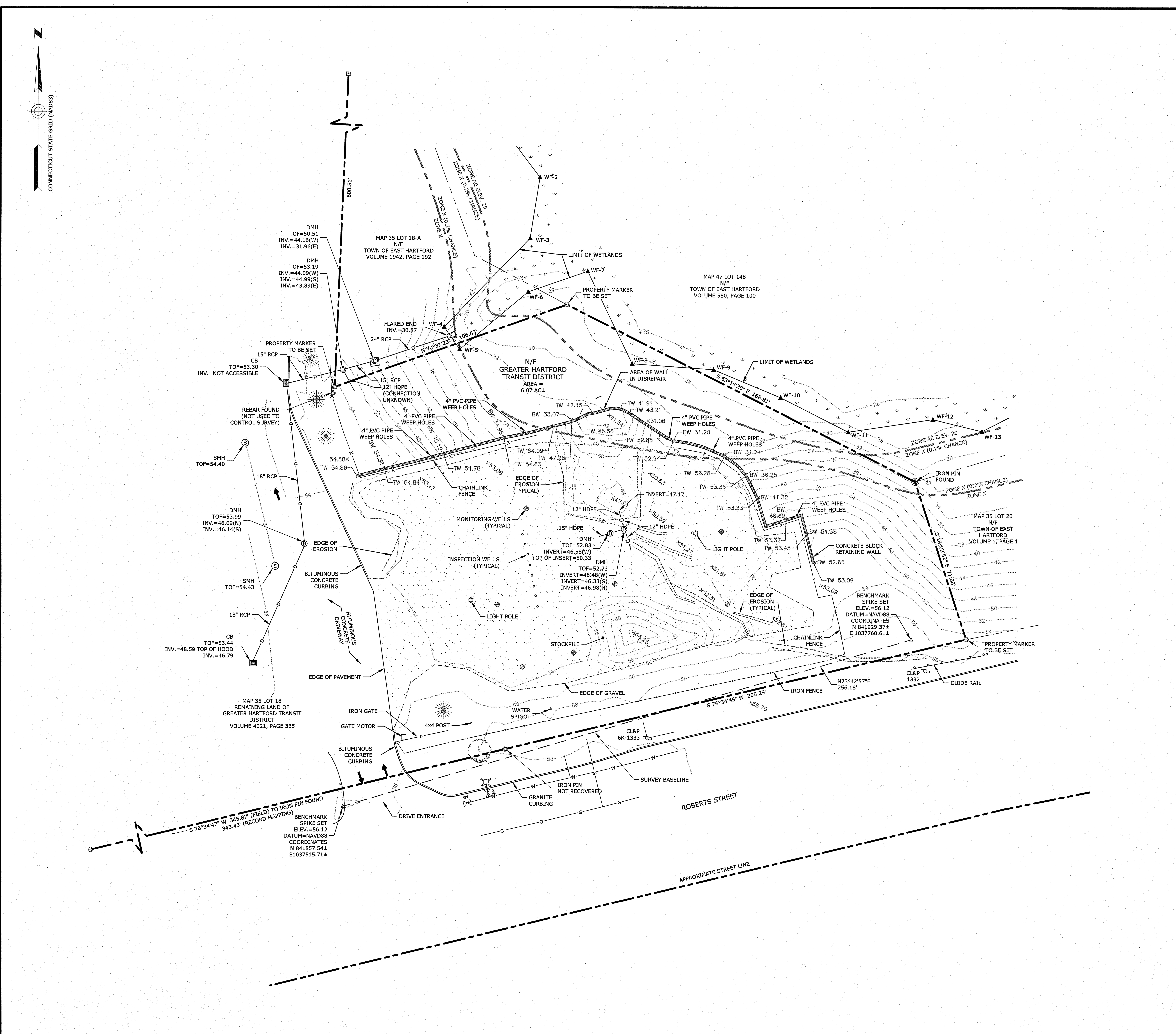

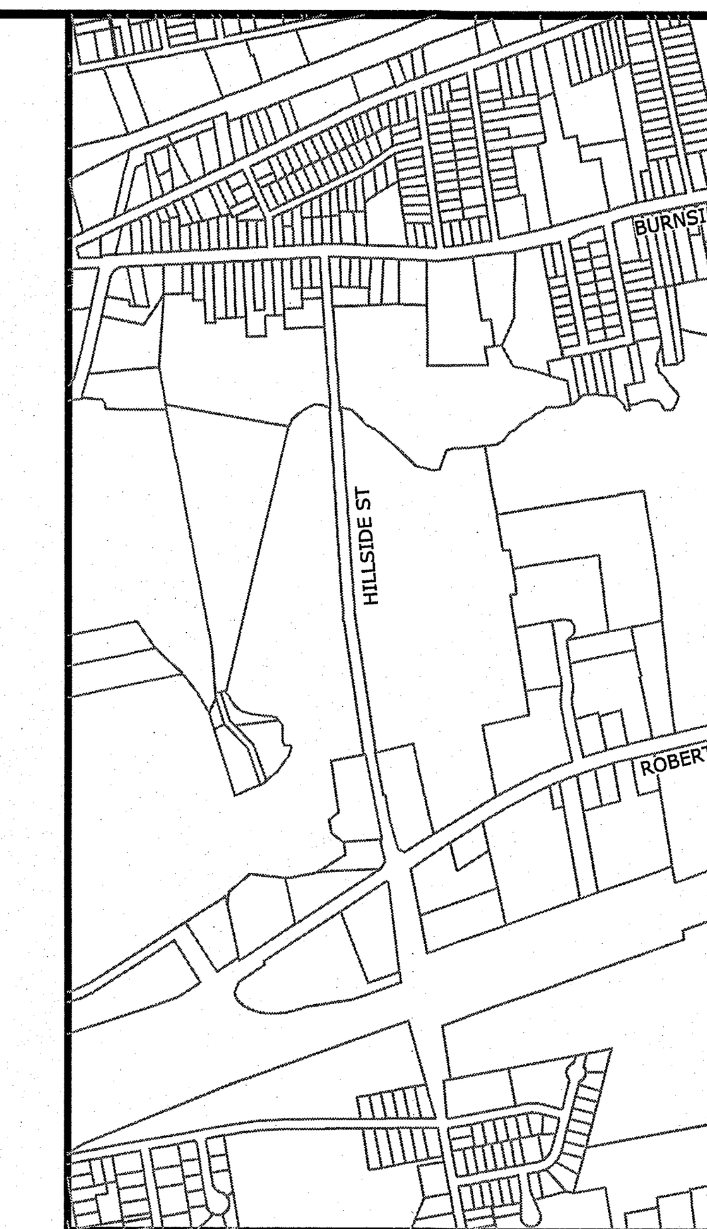

LOCATION MAP
SCALE: 1" = 1000'

NOTES:

1. THIS PLAN AND THE SURVEY IT IS BASED ON HAVE BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300B-1 THROUGH 20-300B-20, "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. THE TYPE OF SURVEY IS A LIMITED IMPROVEMENT LOCATION SURVEY AND LIMITED BOUNDARY SURVEY, THE DETERMINATION CATEGORY IS A DEPENDENT RESURVEY AND THE HORIZONTAL ACCURACY CONFORMS TO CLASS A-2. TOPOGRAPHIC SURVEY IS CLASS T-2 AND THE VERTICAL ACCURACY CONFORMS TO CLASS V-5.

   THE SURVEY HEREON IS LIMITED TO THE SOUTHEAST CORNER OF THE LAND OWNED BY GREATER HARTFORD TRANSIT DISTRICT.

2. REFERENCE IS MADE TO SUBJECT PROPERTY FOUND IN **THE TOWN OF EAST HARTFORD** LAND EVIDENCE RECORDS **VOLUME 4021 AT PAGE 335 FOR A DEED DATED 08/11/2021**. (SEE LOT CONSOLIDATION DEED BOOK VOLUME 4021 AT PAGE 335 & VOLUME 3962 AT PAGE 73 REGARDING A BOUNDARY LINE AGREEMENT.)

3. THE PROPERTY SHOWN HEREON MAY BE SUBJECT TO OR BENEFIT BY EASEMENTS, RIGHTS OF WAY AND/OR AGREEMENTS AS MAY APPEAR ON RECORD.

4. THE SUBJECT PROPERTY IS SHOWN BY THE MUNICIPALITY AS BEING ZONED I-2 ZONING DISTRICT.

5. "NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP, HARTFORD COUNTY, CONNECTICUT, ALL JURISDICTIONS, PANEL 388 OF 675, COMMUNITY: EAST HARTFORD, TOWN OF, NUMBER: 090026, PANEL: 388, SUFFIX: F, MAP NUMBER: 09003C0388F*, MAP REVISED: SEPTEMBER 26, 2008 FEDERAL EMERGENCY MANAGEMENT AGENCY" INDICATES THE SUBJECT PROPERTY IS LOCATED WITHIN FLOOD HAZARD ZONE X, (X WITHIN 0.2% ANNUAL CHANCE FLOOD AND X OUTSIDE 0.2% ANNUAL FLOOD) AND AE ELEVATION 29. (FLOOD LINES SHOWN ARE FROM DIGITAL FILES OBTAINED FROM THE FEMA FLOOD MAP SERVICE CENTER)

6. THE SUBJECT PROPERTY IS SHOWN ON THE **TOWN EAST HARTFORD** TAX ASSESSOR MAP 35 AS LOT **18** AND HAS AN ASSIGNED STREET ADDRESS OF 148 ROBERTS STREET, EAST HARTFORD, CT 06108.

7. THE BASIS FOR BEARINGS AND COORDINATES IS **CONNECTICUT/RHODE ISLAND** COORDINATE SYSTEM OF **NAD 1983, U.S. FEET**.

   ELEVATIONS ARE REFERENCED TO **NAVD88**.

8. THIS PLAN REPRESENTS THE LOCATION OF THE SITE CONDITIONS DETERMINED BY FIELD SURVEY AND OR OTHER SOURCES ON **APRIL 2023**. THE ABUTTING NAMES AND INFORMATION WAS OBTAINED FROM TOWN RECORDS.

9. WETLAND LINE TAKEN FROM MAP REFERENCE A.

10. THE UTILITIES SHOWN WERE MARKED AND LOCATED BY LOUREIRO ENGINEERING ASSOCIATES, INC.

MAP REFERENCES

A. "BOUNDARY LINE AGREEMENT PLAN", 144 ROBERTS STREET, EAST HARTFORD, CT 06108, PREPARED FOR COMPREHENSIVE ENVIRONMENTAL INC., BY MARTINEZ COUCH & ASSOCIATES, SCALE 1" = 20', DATED 8-6-2020, SHEET 1 OF 1.

B. "BOUNDARY SURVEY, LOT CONSOLIDATION PLAN, LAND OF GREATER HARTFORD TRANSIT DISTRICT, ROBERTS STREET, EAST HARTFORD, CONNECTICUT, PREPARED FOR: COMPREHENSIVE ENVIRONMENTAL INC. BY MARTINEZ COUCH & ASSOCIATES, LLC, ROCKY HILL, CT." AS FILED IN THE EAST HARTFORD TOWN CLERKS OFFICE, DATED: AUGUST 11, 2021, MAP NUMBER 3378.

LEGEND

SUBJECT PARCEL PROPERTY LINE	FLARED END
ADJOINER PROPERTY LINE	DRAINAGE MANHOLE
FEMA FLOOD LINE	TYPE C CATCH BASIN
WATERLINE	TYPE CL CATCH BASIN
DRAINAGE LINE	WETLAND FLAG
GAS LINE	DECIDUOUS TREE
CHAINLINK FENCE	EVERGREEN TREE
IRON FENCE	LIGHT POST
TREELINE	UTILITY POLE
MONUMENT	BENCHMARK
IRON PIPE OR IRON PIN	AC ACRES
DRILL HOLE	SQ FT SQUARE FEET
WATER VALVE	FT FEET
HYDRANT	N/F NOW OR FORMERLY
SEWER MANHOLE	TOF TOP OF FRAME
MONITORING WELL	DMH DRAINAGE MANHOLE
INSPECTION WELL	CB CATCH BASIN
TRAFFIC FLOW ARROW	SMH SEWER MANHOLE

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ARTHUR H. HAYWARD JR., PLS LICENSE No. 12,052 — 2-8-2024 DATE

REV.	DESCRIPTION OF REVISION	DATE	APPR.
1	Revised Title Block, Notes, & Map References	2/8/2024	A.H.H.

Loureiro
Engineering • Construction • EH&S • Energy
Waste • Facility Services • Laboratory
Loureiro Engineering Associates, Inc.
An Employee Owned Company

SCALE 1" = 20' | COMM. NO. 033GD2.03 | DRAWN BY CAC 04/06/2023 | APPROVED BY AHH 04/06/2023

EXISTING CONDITIONS SURVEY
PROPERTY OF GREATER HARTFORD TRANSIT DISTRICT

148 ROBERTS STREET
EAST HARTFORD, CONNECTICUT
PREPARED FOR:
GEODESIGN, INC.
984 SOUTHFORD RD, MIDDLEBURY, CT 06762

DRAWING 23000087.01

SHEET NO. 14 NO. OF SHEETS 25

LEGEND & ABBREVIATIONS

BC	BOTTOM OF CURB
BCLC	BITUMINOUS CONCRETE LIP CURB
BIT	BITUMINOUS
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONC	CONCRETE
CL	CURBLESS
DIA	DIAMETER
EXIST	EXISTING
HDPE	HIGH DENSITY POLYETHYLENE
IN	INCHES
INV	INVERT
LF	LINEAR FEET
MH	MANHOLE
N/F	NOW OR FORMERLY
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
SF	SQUARE FEET
TC	TOP OF CURB
TF	TOP OF FRAME
TW	TOP OF WALL
TYP	TYPICAL
WT	WATER TIGHT
WV	WATER VALVE
W/	WITH

PROPERTY LINE
LIMIT OF WETLANDS
LIMIT OF UPLAND REVIEW AREA
EXISTING CONTOUR — 176
NEW CONTOUR — 176
EXISTING WALL
SAWCUT LINE
NEW CURB
NEW BITUMINOUS PAVEMENT
NEW CONCRETE SIDEWALK
BITUMINOUS PAVEMENT TO BE REMOVED/REPLACED
EXCAVATION TO SUBGRADE
CONSTRUCTION ENTRANCE PAD
EXISTING STOCKPILE TO BE REMOVED
SILT FENCE
EXISTING FENCE TO BE REMOVED
LIMIT OF DISTURBANCE
TREE PROTECTION
TEMPORARY SOIL STOCKPILE
EROSION MATTING
INLET PROTECTION
CONCRETE WASHOUT
EXISTING LIGHT POLE, LIGHT POLE BASE OR STRUCTURE TO BE REMOVED
TEST PIT — TP-2

SITE PLAN

1. SURVEY BASE INFORMATION IS BASED ON TOPOGRAPHICAL SURVEY PERFORMED BY LOUREIRO ENGINEERING ASSOCIATES INC. TITLED "EXISTING CONDITIONS SURVEY PROPERTY OF GREATER HARTFORD TRANSIT DISTRICT", SCALE 1"=20', DATE APRIL 6, 2023.
2. ALL BUILDINGS AND SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990, AS AMENDED.
3. WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF EAST HARTFORD AND THE STATE OF CONNECTICUT.
5. ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE STANDARD CONSTRUCTION DRAWINGS AS SUPPLIED BY THE OWNER.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY LOUREIRO ENGINEERING ASSOCIATES, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
7. EXISTING LIGHTING TO BE SALVAGED AND RE-USED ON SITE. SITE WILL MEET PREVIOUSLY APPROVED PHOTOMETRIC REQUIREMENTS AS APPROVED ON THE JULY 15, 2021 SITE LIGHTING PHOTOMETRIC CALCULATION.

SITE PREPARATION AND DEMOLITION PLAN

1. PRIOR TO ANY CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL ESTABLISH ADEQUATE GRADING INFORMATION FOR PROPOSED WORK TO ALLOW FOR THE EVALUATION OF ITS RELATIONSHIP TO EXISTING SITE FEATURES AND VEGETATION. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE IF ANY SURVEY INFORMATION IS INCORRECT. IF REQUIRED, FIELD MODIFICATIONS AS AUTHORIZED BY THE OWNER'S REPRESENTATIVE SHALL BE MADE TO SAVE EXISTING SITE FEATURES OR VEGETATION.
2. THE SITE CONTRACTOR SHALL REVIEW THE SITE GRADES AND FEATURES TO ENSURE THAT THE PROPOSED WORK IS CONSISTENT WITH THE EXISTING CONDITIONS AS PRESENTED ON THE PLANS. IT WILL BE ASSUMED THAT PRIOR TO THE SUBMISSION OF THE BIDS THIS WILL HAVE BEEN DONE AND THAT THE BIDS ACCOUNT FOR ANY DISCREPANCIES. NO CHANGE ORDERS WILL BE PERMITTED FOR VARIATIONS IN EXISTING SITE CONDITIONS AS RELATES TO THIS NOTE AFTER THE BID IS AWARDED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL SERVICES AND COORDINATE WITH THE UTILITY COMPANIES AND LOCAL OFFICIALS AS MAY BE REQUIRED TO REMOVE, RELOCATE, OR ABANDON UTILITIES TO MEET THE REQUIREMENTS OF ALL PROPOSED CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES IN THE FIELD BEFORE BEGINNING ANY EXCAVATION. CALL 72 HOURS IN ADVANCE FROM ANYWHERE IN THE STATE OF CONNECTICUT, "CALL BEFORE YOU DIG": 1-800-922-4455.
5. ALL UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
6. SITE LAYOUT IS TO BE STAKED IN THE FIELD AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO THE BEGINNING OF CONSTRUCTION OPERATIONS.
7. REMOVE AND DISPOSE OF ALL EXISTING TRASH, DEBRIS, & EXCESS CONSTRUCTION MATERIALS WITHIN WORK AREA; COORDINATE W/ OWNER FOR SALVAGE OF MATERIALS FOR POTENTIAL RE-USE.
8. PLACE EROSION CONTROLS WHERE REQUIRED. MAKE ADJUSTMENTS TO LOCATIONS AS REQUIRED BY FIELD CONDITIONS AND AS AUTHORIZED BY THE OWNER'S REPRESENTATIVE OR BY LOCAL AUTHORITIES.
9. MAINTAIN EROSION CONTROLS BY RESTAKING, RETYING, ADJUSTING OR REPLACEMENT AS REQUIRED AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE. REMOVE EXCESSIVE BUILDUP OF SILT.
10. FINISH TOP ELEVATIONS SHOWN FOR CATCH BASINS, MANHOLES, ETC. SHALL BE SET AS REQUIRED IN ORDER THAT ALL SURFACE DRAINAGE IS INTERCEPTED.
11. CATCH BASIN TOPS TO BE REMOVED/REPLACED/ADJUSTED TO ACCOMMODATE NEW DRAINAGE SYSTEM AND MEET PROPOSED GRADES.
12. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE INSIDE AND OUTSIDE THE CONTRACT LIMIT LINE DUE TO CONSTRUCTION OPERATIONS.
13. THE CONTRACTOR SHALL MAINTAIN ACCESS TO FIRE HYDRANTS AT ALL TIMES.
14. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, LOCAL AND FEDERAL REGULATIONS.
15. THE CONTRACTOR SHALL MAINTAIN ACCESS TO THE MAIN DRIVEWAY AND BUILDINGS AT ALL TIMES.
16. FENCING SHALL BE INSTALLED AND MAINTAINED IN PLACE DURING CONSTRUCTION OPERATIONS. IT SHALL BE REMOVED ONLY WHEN CONSTRUCTION OPERATIONS ARE COMPLETE.

GRADING & DRAINAGE PLAN

1. CONTRACTOR SHALL CLEAN ALL EXISTING AND NEW STRUCTURES AND PIPES UPON COMPLETION OF CONSTRUCTION.
2. CONTRACTOR TO MAINTAIN ANY UNIDENTIFIED STRUCTURES OR PIPES WITHIN THE EXISTING DRAINAGE SYSTEM. NOTICE SHOULD BE GIVEN TO OWNER AND THE ENGINEER UPON DISCOVERY.
3. CONTRACTOR TO VERIFY ALL EXISTING PIPE CONNECTIONS AND INVERTS. ANY CONFLICTS SHOULD BE EXPRESSED TO OWNER AND THE ENGINEER.
7. ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
4. ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY AND LOCAL DEPARTMENT OF PUBLIC WORKS.
5. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.

GRADING & DRAINAGE

1. ALL SITE DRAINAGE PIPES SHALL BE CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) PIPE WITH STANDARD JOINTS, DUAL-WALL, SMOOTH INTERIOR, AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON THE PLAN. THE UNDERGROUND DETENTION SYSTEM SHALL HAVE WATER TIGHT (WT) JOINTS MEETING ASTM D3212 SPECIFICATIONS.
2. ALL PIPE DATA IS CALCULATED TO THE CENTER OF STRUCTURE, TYP.
3. CONTRACTOR SHALL INSTALL RISER STRUCTURES AT EACH CORNER OF UNDERGROUND DETENTION SYSTEMS AND CLEANOUTS AT EACH END OF EACH ROW TO PROVIDE ACCESS POINTS FOR CLEANING AND MAINTENANCE.
4. ALL NEW PAVEMENT AREAS CANNOT BE LESS THAN 1.5% RUNNING SLOPE AND CROSS SLOPE. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.
5. ALL PIPE SLOPES CANNOT BE LESS THAN 0.5%. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.
6. ELEVATIONS BASED ON NAVD88 DATUM.

STORMWATER MANAGEMENT SYSTEM MAINTENANCE PROGRAM

THERE SHALL BE PERIODIC MAINTENANCE OF THE STORMWATER SYSTEMS ON THE PROPERTY AFTER INSTALLATION. IN ORDER TO ENSURE EFFECTIVE PERFORMANCE OF THE SYSTEM, THE FOLLOWING STORMWATER MAINTENANCE PROGRAM HAS BEEN ESTABLISHED. THE PROPERTY OWNER WILL BE RESPONSIBLE FOR IMPLEMENTATION OF THIS PROGRAM. A LOG AND SCHEDULE OF ALL INSPECTIONS, CLEANINGS, AND REPAIRS SHALL BE MAINTAINED BY THE PROPERTY OWNER. ALL MAINTENANCE DOCUMENTS SHALL BE TRANSFERRED TO ANY FUTURE OWNERS UPON SALE OR TRANSFER OF THE PROPERTY.

A. CATCH BASINS/MANHOLES

CATCH BASINS ARE DESIGNED WITH SUMPS FOR THE PURPOSE OF COLLECTING COARSE SEDIMENT. ALL CATCH BASINS SHOULD BE INSPECTED TWO TIMES PER YEAR, SPECIFICALLY DURING TIMES FOR HIGH LEVELS OF MAINTENANCE AROUND THE SITE. SEDIMENT SHOULD BE REMOVED WHEN IT EXTENDS TO WITHIN 6 INCHES OF THE OUTLET PIPE INVERT OR NOT LESS THAN ONCE PER YEAR. CLEANOUT SHOULD BE FACILITATED VIA VACUUM TRUCK OR OTHER MEANS THAT ACCOMPLISH SEDIMENT REMOVAL. THE SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED OFF-SITE LOCATION IN ACCORDANCE WITH CITY AND STATE REQUIREMENTS.

B. ASPHALT

ASPHALT AREAS SHOULD BE SWEPT ANNUALLY. IDEAL SWEEPING TIMEFRAME IS IN THE SPRING AFTER WINTER SANDING OR SALTING FOR DEICING. DEICING CHEMICALS SHOULD BE KEPT TO A MINIMUM DURING THE WINTER MONTHS.

C. SUBSURFACE INFILTRATION AND DETENTION SYSTEMS

UNDERGROUND INFILTRATION AND DETENTION SYSTEMS SHALL BE INSPECTED THROUGH THE SURFACE OPENINGS QUARTERLY AND SEDIMENT/DEBRIS SHALL BE REMOVED AS NEEDED TO ENSURE PROPER FUNCTIONING OF STRUCTURES AND INLETS/OUTLETS. AREAS OF DISTURBANCE THAT MAY BE AS A RESULT OF CLEANING SHALL BE SEEDED AND PLANTED IN ACCORDANCE WITH THE ORIGINAL PLANTING PLAN. ASSOCIATED STRUCTURES SHALL BE MAINTAINED YEARLY, OR MORE FREQUENTLY, AS REQUIRED, BY THE CONDITION OF THE SITE AND SYSTEM. WASTE MATERIAL WILL BE PROPERLY DISPOSED OF OFF-SITE.

D. LAWN AND VEGETATED AREAS

VEGETATED COVER SHALL BE MAINTAINED ON ALL EARTH SURFACES TO MINIMIZE SOIL EROSION. FERTILIZER USE SHOULD BE MINIMIZED AND APPLIED USING CAREFUL APPLICATION PROCESSES.

E. OUTLET CONTROL STRUCTURES

THE OUTLET CONTROL STRUCTURES SHALL BE INSPECTED AND MAINTAINED DURING CATCH BASIN INSPECTIONS AND CLEANING. MAINTENANCE IS REQUIRED WHEN ANY SEDIMENT ACCUMULATION IS OBSERVED AT THE BOTTOM OF THE STRUCTURE. MINIMUM INSPECTION IS RECOMMENDED TWICE A YEAR TO MAINTAIN OPERATION AND FUNCTION OF THE UNIT. SEE STORMWATER MANAGEMENT SYSTEM MAINTENANCE CHECKLIST FOR OUTLET CONTROL STRUCTURE INSTRUCTIONS.

F. HYDRODYNAMIC SEPARATOR

THE HYDRODYNAMIC SEPARATOR SHALL BE INSPECTED AND MAINTAINED DURING CATCH BASIN INSPECTIONS AND CLEANING. AN INSPECTION IS MADE BY CHECKING THE DEPTH OF SEDIMENT IN EACH MANHOLE WITH A GRADE STICK OR SIMILAR DEVICE. MAINTENANCE IS REQUIRED WHEN THE SEDIMENT DEPTH EXCEEDS 20 INCHES. MINIMUM INSPECTION IS RECOMMENDED TWICE A YEAR TO MAINTAIN OPERATION AND FUNCTION OF THE UNIT.

MAINTENANCE INSTRUCTIONS:

1. REMOVE THE MANHOLE COVER TO PROVIDE ACCESS TO THE POLLUTANT STORAGE. POLLUTANTS ARE STORED IN THE SUMP, BELOW THE BOWL ASSEMBLY VISIBLE FROM THE SURFACE. ACCESS THIS AREA THROUGH THE 10" DIAMETER ACCESS CYLINDER.
2. USE A VACUUM TRUCK OR OTHER SIMILAR EQUIPMENT TO REMOVE ALL WATER, DEBRIS, OILS AND SEDIMENT.
3. USE A HIGH-PRESSURE HOSE TO CLEAN THE MANHOLE OF ALL THE REMAINING SEDIMENT AND DEBRIS. THEN, USE THE VACUUM TRUCK TO REMOVE THE WATER.
4. FILL THE CLEANED MANHOLE WITH WATER UNTIL THE LEVEL REACHES THE INVERT OF THE OUTLET PIPE.
5. REPLACE THE MANHOLE COVER.
6. DISPOSE OF THE POLLUTED WATER, OILS, SEDIMENT AND TRASH AT AN APPROVED FACILITY. CHECK WITH THE LOCAL SEWER AUTHORITY FOR AUTHORITY TO DISCHARGE THE LIQUID.

SOIL EROSION AND SEDIMENT CONTROL PLAN

ALL APPLICABLE REGULATIONS AND REQUIREMENTS OF THE STATE OF CONNECTICUT DEPARTMENT OF ENVIRONMENTAL SERVICES (NES) AND THE LOCAL LAND USE REQUIREMENTS SHALL BE ADHERED TO INCLUDING THE PLACEMENT OF THE PROPOSED SE&SC BARRIERS AS SPECIFIED HEREIN. WHEN THE CONSTRUCTION WORK IS COMPLETED, THE CONTRACTOR SHALL CLEAN THE SE&SC BARRIERS AND RESTORE THE NATURAL DRAINAGE AREAS AFFECTED BY THEIR OPERATIONS TO THEIR ORIGINAL CONDITION UNLESS OTHERWISE NOTED.

PRIOR TO CONSTRUCTION, ALL SE&SC BARRIERS SHALL BE PLACED TO CONFINE SEDIMENT AS SHOWN ON DRAWINGS AND WHERE OTHERWISE REQUIRED BASED ON THE CONTRACTOR'S MEANS/METHODS AND CONSTRUCTION SEQUENCING. ALL SE&SC BARRIERS SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL THE WORK HAS BEEN COMPLETED AND SURFACES STABILIZED.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MONITOR THE CONDITION OF THE SE&SC STRUCTURES. IF THE EFFECTIVENESS OR INTEGRITY OF ANY STRUCTURES IS FOUND TO BE INSUFFICIENT OR IF THE STRUCTURES ARE DAMAGED IN ANY WAY, THE CONTRACTOR SHALL MAKE WHATEVER REPAIRS ARE NECESSARY TO ENSURE THAT PROPER EROSION CONTROL IS MAINTAINED. MONITORING OF THE EROSION CONTROL STRUCTURES IS PARTICULARLY IMPORTANT FOLLOWING PERIODS OF RAINFALL. ALL REPAIRS OF EROSION CONTROL STRUCTURES SHALL BE MADE BY THE CONTRACTOR AS SOON AS THE DAMAGE IS DISCOVERED.

IF ADDITIONAL SE&SC CONTROL STRUCTURES ARE NECESSARY TO MINIMIZE EROSION AND SEDIMENTATION, AS DETERMINED IN THE FIELD, THE CONTRACTOR SHALL INSTALL SAID ADDITIONAL STRUCTURES AS REQUIRED.

IN ADDITION TO THE ABOVE GENERAL PROVISIONS, THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING SPECIAL REQUIREMENTS:

1. LAND DISTURBANCE SHALL BE KEPT TO A MINIMUM; RESTABILIZATION SHALL BE SCHEDULED AS SOON AS PRACTICABLE FOLLOWING CONSTRUCTION. PROJECT SEQUENCING WILL BE NECESSARY TO MINIMIZE SE&SC CONTROL LIABILITIES. THE CONTRACTOR SHALL SEQUENCE HIS OPERATIONS SO AS TO PROVIDE MANAGEABLE WORK AREAS WITH LIMITED OPPORTUNITY FOR SOIL EROSION TO OCCUR.
2. ALL OTHER AREAS AFFECTED BY CONSTRUCTION AND NOT TO BE FILLED ARE TO BE RESTORED TO ORIGINAL GRADE AS SHOWN ON THE DRAWINGS.
3. FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
4. STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SEDIMENT CONTROL FENCING AND/OR MULCH SOCKS (WATTLES) AND SEEDED TO PREVENT EROSIONS. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFFSITE.
5. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
6. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4" OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN 1 POUND OF SEED PER 50 SQ. YARDS.
7. SEED MIX SHALL BE EQUAL PARTS OF RED FESCUE (CREEPING), KENTUCKY BLUE GRASS, REDTOP, PERENNIAL RYEGRASS.
8. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED.
9. ALL CATCH BASIN INLETS WILL BE PROTECTED WITH INLET PROTECTION.
10. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEANED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
11. FOR SPECIFIC DETAILS ON THE DESIGN, APPLICATION AND INSTALLATION OF THE EROSION AND SEDIMENTATION CONTROL STRUCTURES THE CONTRACTOR SHALL REFER TO THE 2023 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
12. SEDIMENT REMOVED FROM STRUCTURES SHALL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THE PLAN.
13. TO PREVENT TRACKING OF SEDIMENT ONTO THE EXISTING ROADS, ALL CONSTRUCTION TRAFFIC CAN ONLY EXIT THE SITE OVER THE CONSTRUCTION ENTRANCE PAD.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH LOCAL REQUIREMENTS. THE CONTRACTOR'S RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF ALL REQUIRED SE&SC CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE LOCAL LAND USE OFFICES OF ANY TRANSFERS OF THIS RESPONSIBILITY.
15. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE LOCAL LAND USE AGENCY AND OTHER APPROPRIATE AUTHORITIES AT LEAST 72 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.
16. THE CONTRACTOR SHALL USE APPROVED METHODS AND MATERIALS FOR PREVENTION OF DISPERSION OF DUST INCLUDING MISTING, CHEMICAL APPLICATION AND/OR MULCH SURFACING.
17. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES DAILY DURING CONSTRUCTION AND AFTER EACH SIGNIFICANT RAIN STORM EVENT. DAMAGE SHALL BE REPAIRED IMMEDIATELY.
18. ANY REQUIRED DEWATERING SHALL INCORPORATE THE USE OF FILTER BAGS ON DISCHARGE ENDS.

SILT FENCES:

A. INSPECT GEOTEXTILE SILT FENCE AT LEAST ONCE A WEEK AND WITHIN 24 HOURS AFTER THE END OF A STORM WITH A RAINFALL AMOUNT OF 1/2" OR GREATER TO DETERMINE MAINTENANCE NEEDS.
B. REMOVE SEDIMENT DEPOSITS OR INSTALL A SECONDARY FENCE WHEN SEDIMENT DEPOSITS REACH APPROXIMATELY ONE HALF HEIGHT OF THE FENCE.
C. REPLACE OR REPAIR THE FENCE WITHIN 24 HOURS OF OBSERVED FAILURE. IF REPETITIVE FAILURE OCCURS, CONSULT 2023 GUIDELINES FOR TROUBLESHOOTING FAILURES.
D. MAINTAIN THE SILT FENCE UNTIL THE CONTRIBUTING AREA IS STABILIZED.

CONSTRUCTION ENTRANCES AND ROADWAYS:

A. MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING AND WASHING OF SEDIMENTS ONTO PAVED SURFACES.
B. PROVIDE PERIODIC TOP DRESSING AND ADDITIONAL STONE OR LENGTH AS NECESSARY.
C. IMMEDIATELY REMOVE ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PAVED SURFACES. ROADS ADJACENT TO THE CONSTRUCTION SITE SHALL BE LEFT CLEAN EVERY DAY.

CONCRETE WASHOUT AREA:

A. WASHOUT AREA(S) ARE TO BE INSPECTED AT LEAST ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS, OR OVERFLOWS. CHECK AFTER HEAVY RAINS.
B. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUT'S DEPTH. THE WASTE CAN BE STORED AT AN UPLAND LOCATION, AS APPROVED BY ENGINEER. ALL CONCRETE WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH ALL APPLICABLE LAWS, REGULATIONS, AND GUIDELINES.

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR OWNERSHIP OF ALL SOIL EROSION AND SEDIMENT CONTROLS AS NECESSARY TO PROTECT THIS SITE. DURING THE PROGRESS OF CONSTRUCTION, INTERIM EROSION CONTROLS MAY BE NECESSARY BASED ON THE CONTRACTOR'S MEANS, METHODS AND SEQUENCING. THE EROSION CONTROL MEASURES PRESENTED ON THESE PLANS REPRESENT THE MINIMUM CONTROLS DEEMED NECESSARY BASED ON THE EXPECTED FINAL PROJECT GRADES AND FEATURES. INTERIM MEASURES REQUIRED TO STABILIZE THE SITE DURING CONSTRUCTION SHALL BE INSTALLED BY THE CONTRACTOR AS NEEDED BASED UPON HIS ASSESSMENT OF THE SITE THROUGH HIS OWN SITE INSPECTIONS AND OBSERVATIONS. ALL CONTRACTOR-PROVIDED SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE 2023 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

IN THE EVENT THAT A RAIN EVENT OCCURS AND THE CONTRACTOR PROVIDED SE&SC CONTROLS FAIL TO MAINTAIN THE SITE IN A STABILIZED CONDITION, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL REMEDIATION, MITIGATION OR OTHER DAMAGE THAT MAY OCCUR.

SOIL EROSION & CONTROL CONTACT

NAME: MARY BUJEAUD, DEPUTY EXECUTIVE DIRECTOR

PHONE: (860) 380-2024

LANDSCAPING PLAN

1. AS CONSTRUCTION PROGRESSES, FINE GRADE AND SEED OR SOD AS SOON AS POSSIBLE TO REDUCE RUN OFF.
2. ALL PLANTING BEDS TO BE TOPSOILED TO A DEPTH OF 12".
3. IN ALL SHRUB BEDS TO RECEIVE MASS PLANTING, PROVIDE PINE BARK MULCH AS DETAILED. ESTABLISH A NEAT, SMOOTH EDGE BETWEEN MULCH AND LAWN.
4. ADJUSTMENTS IN THE LOCATIONS OF PLANT MATERIALS MAY BE NECESSARY DUE TO LOCATIONS OF UTILITIES. ADJUSTMENTS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE.
5. PROVIDE AND INSTALL ALL PLANTS SHOWN ON THE PLANTING PLAN DRAWING; THE QUANTITIES IN THE PLANT LIST ARE PROVIDED FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF DISCREPANCIES OCCUR, THE DRAWING SYMBOLS PREVAIL OVER THE PLANT LIST QUANTITIES.
6. WEEDS TO BE MANAGED WITHOUT THE USE OF HERBICIDES OR PESTICIDES. LANDSCAPE FABRIC AND HAND MAINTENANCE TO BE USED FOR WEED CONTROL.

DEEP TEST PIT DATA

DATE: 4/5/2024
EXCAVATED BY: GRIFFIN BROTHERS EXCAVATION, LLC
WITNESSED BY: GEODESIGN, TOWN OF EAST HARTFORD
RECORDED BY: ALEX HEALY (LOUREIRO ENGINEERING ASSOCIATES)

TP-1

0-48"
TOPSOIL, MISC. FRAGMENTS OF ASPHALT, BRICK. FILL

48"-60"
ORANGE-BROWN FINE SAND, SOME CONSTRUCTION DEBRIS. FILL

60"-96"
LIGHT GRAY FINE SAND

96"-122"
GRAY SILT CLAY

NO GROUNDWATER
NO MOTTLING OBSERVED
NO REFUSAL
ROOTS TO 36"

TP-2

0-60"
BROWN SANDY SILT, SOME BRICKS AND CINDER BLOCKS MIXED. FILL

60"-108"
DARK GRAY SILTY CLAY, TRACE SAND

NO GROUNDWATER
NO MOTTLING OBSERVED
NO REFUSAL
ROOTS TO 54"

REV. | DESCRIPTION OF REVISION | DATE | APPR.

STAMP

Loureiro
Engineering • Construction • EH&S • Energy
Waste • Facility Services • Laboratory
Loureiro Engineering Associates, Inc.
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SCALE: NOT TO SCALE
COMM. NO.: 033GD2.03
DRAWN BY: TCG | DATE: 2/19/2025
APPROVED BY: KAP | DATE: 2/19/2025

NOTES AND LEGEND

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108
PREPARED FOR:
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING C1

SHEET NO. 15 | NO. OF SHEETS 25

LIMIT OF EXISTING CHAIN LINK FENCE REMOVAL AT NEAREST EXISTING POST; PROTECT TO THE NORTH & REMOVE TO THE SOUTH

PROTECT EXISTING PROPERTY MARKER PIN TO FULLEST EXTENT PRACTICABLE; IF PIN IS DISTURBED/MOVED AS A RESULT OF WORK IT SHALL BE RESET BY A LICENSED SURVEYOR UPON COMPLETION OF WORK

EXISTING STORM MANHOLE & CONNECTED RCP STORM PIPES TO REMAIN

EXISTING 12" HDPE PIPE STUB TO BE REMOVED (FIELD-VERIFY EXTENTS OF STUB & REMOVE HDPE PIPE IN ITS ENTIRETY)

CATCH BASIN INLET PROTECTION (TYP)

REMOVE EXISTING EVERGREEN TREE

FIELD-VERIFY PURPOSE OF EXISTING WOOD POSTS; REMOVE POSTS IF NOT SERVING ANY CRITICAL PURPOSE; NOTIFY ENGINEER IF ANY REASON IS IDENTIFIED FOR POSTS TO POTENTIALLY REMAIN

REMOVE EXISTING EVERGREEN TREE

HATCHED AREA REPRESENTS APPROXIMATE LIMITS OF VARIABLY-SLOPED TRANSITION BETWEEN EXISTING GRADE AND EXCAVATION TO BOTTOM OF EXISTING WALL TO ALLOW FOR PLACEMENT OF NEW FILL MATERIALS; EXCAVATED MATERIAL TO BE LIVE-LOADED FOR OFF-SITE DISPOSAL; REFER TO GEOTECHNICAL DRAWINGS FOR DEPTH AND EXTENTS OF EXCAVATION (TYP)

REMOVE EXISTING BITUMINOUS CONCRETE CURB SEGMENT

SAWCUT EXISTING BITUMINOUS CONCRETE PAVEMENT & CURB AT LIMITS OF REMOVAL (TYP)

NEW TEMPORARY CHAIN LINK CONSTRUCTION FENCING W DOUBLE LEAF SWING GATE

CONSTRUCTION ENTRANCE ANTI-TRACKING PAD

REMOVE EXISTING BITUMINOUS CONCRETE PAVEMENT

PROVIDE REQUIRED TRAFFIC & PEDESTRIAN CONTROLS AS NEEDED

TREE PROTECTION FENCING (TYP)

EXISTING LIGHT POLE & LIGHT POLE BASE TO BE REMOVED & SALVAGED; AVOID DAMAGE & RETAIN ON-SITE FOR RE-USE

EXISTING SETTLEMENT POINT TO BE REMOVED

EXISTING MONITORING WELL TO BE FILLED W/ GROUT AND ABANDONED BY A LICENSED WELL DRILLER

PROTECT EXISTING WATER SPIGOT & CONNECTED WATER SERVICE

EXISTING SUBSURFACE INFILTRATION SYSTEM, CONNECTED HEADER PIPES, INSPECTION PORTS, & APPURTENANCES TO BE REMOVED

EXISTING SETTLEMENT POINT TO BE REMOVED

EXISTING SOIL STOCKPILE TO BE REMOVED

PROJECT LIMITS / LIMITS OF DISTURBANCE (TYP)

EXISTING SETTLEMENT POINT TO BE REMOVED

EXISTING LIGHT POLE & LIGHT POLE BASE TO BE REMOVED & SALVAGED; AVOID DAMAGE & RETAIN ON-SITE FOR RE-USE

EXISTING SETTLEMENT POINT TO BE REMOVED

REMOVE AND DISPOSE OF ALL EXISTING TRASH, DEBRIS, & EXCESS CONSTRUCTION MATERIALS WITHIN WORK AREA; COORDINATE W/ OWNER FOR POTENTIAL SALVAGE OF MATERIALS FOR POTENTIAL RE-USE

LIMIT OF 100' UPLAND REVIEW AREA FOR WETLANDS (TYP)

EXISTING SEGMENTAL BLOCK RETAINING WALL TO BE REMOVED; REFER TO WALL DESIGN DRAWINGS FOR ASSOCIATED EXCAVATION

EXISTING CHAIN LINK FENCE TO BE REMOVED

REMOVE EXISTING VEGETATION AND PREPARE AREA FOR INSTALLATION OF NEW RIPRAP; REFER TO SITE PLAN FOR NEW RIPRAP EXTENTS

EXISTING SETTLEMENT MONITORING POINT TO BE REMOVED

WORK TO BE PERFORMED WITHIN EXTENTS OF EXISTING / PAST CLEARING LIMITS TO FULLEST EXTENT PRACTICABLE

CROSS-HATCHED AREA REPRESENTS APPROXIMATE LIMITS OF EXCAVATION TO BOTTOM OF EXISTING WALL TO ALLOW FOR PLACEMENT OF NEW FILL MATERIALS; EXCAVATED MATERIAL TO BE LIVE-LOADED FOR OFF-SITE DISPOSAL; REFER TO GEOTECHNICAL DRAWINGS FOR DEPTH AND EXTENTS OF EXCAVATION (TYP)

APPROXIMATE LOCATION OF DEAD 8" CHERRY TREE TO BE REMOVED

APPROXIMATE LOCATION OF LOW-HANGING 8" ELM TREE TO BE REMOVED

APPROXIMATE LOCATION OF 36" DAMAGED LOCUST TREE TO BE REMOVED

DOUBLE ROW OF SILT FENCE

ALL EXISTING STORM STRUCTURES & HDPE PIPES TO BE REMOVED (FIELD-VERIFY EXTENTS OF ALL PIPES & REMOVE IN THEIR ENTIRETY)

EXISTING CHAIN LINK FENCE TO BE REMOVED

EXISTING SETTLEMENT POINT TO BE REMOVED

LIMIT OF EXISTING CHAIN LINK FENCE REMOVAL AT EXISTING CORNER POST; PROTECT TO THE SOUTH & REMOVE TO THE WEST

PORTION OF EXISTING CHAIN LINK FENCE TO REMAIN

N/F GREATER HARTFORD TRANSIT DISTRICT AREA = 6.07 AC±

MAP 47 LOT 148 N/F TOWN OF EAST HARTFORD VOLUME 580, PAGE 100

MAP 35 LOT 18 REMAINING LAND OF GREATER HARTFORD TRANSIT DISTRICT VOLUME 4021, PAGE 335

ROBERTS STREET

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES IN THE FIELD BEFORE BEGINNING ANY EXCAVATION. CALL AT LEAST 72 HOURS IN ADVANCE FROM ANYWHERE IN THE STATE OF CONNECTICUT, "CALL BEFORE YOU DIG": 1-800-922-4455.

SCALE IN FEET

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northfield Street, Greenwich, CT 06830
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SCALE: 1"=10'
COMM. NO.: 033602.03
DRAWN BY: TCG — DATE: 2/19/2025
APPROVED BY: KAP — DATE: 2/19/2025

SITE PREPARATION AND DEMOLITION PLAN

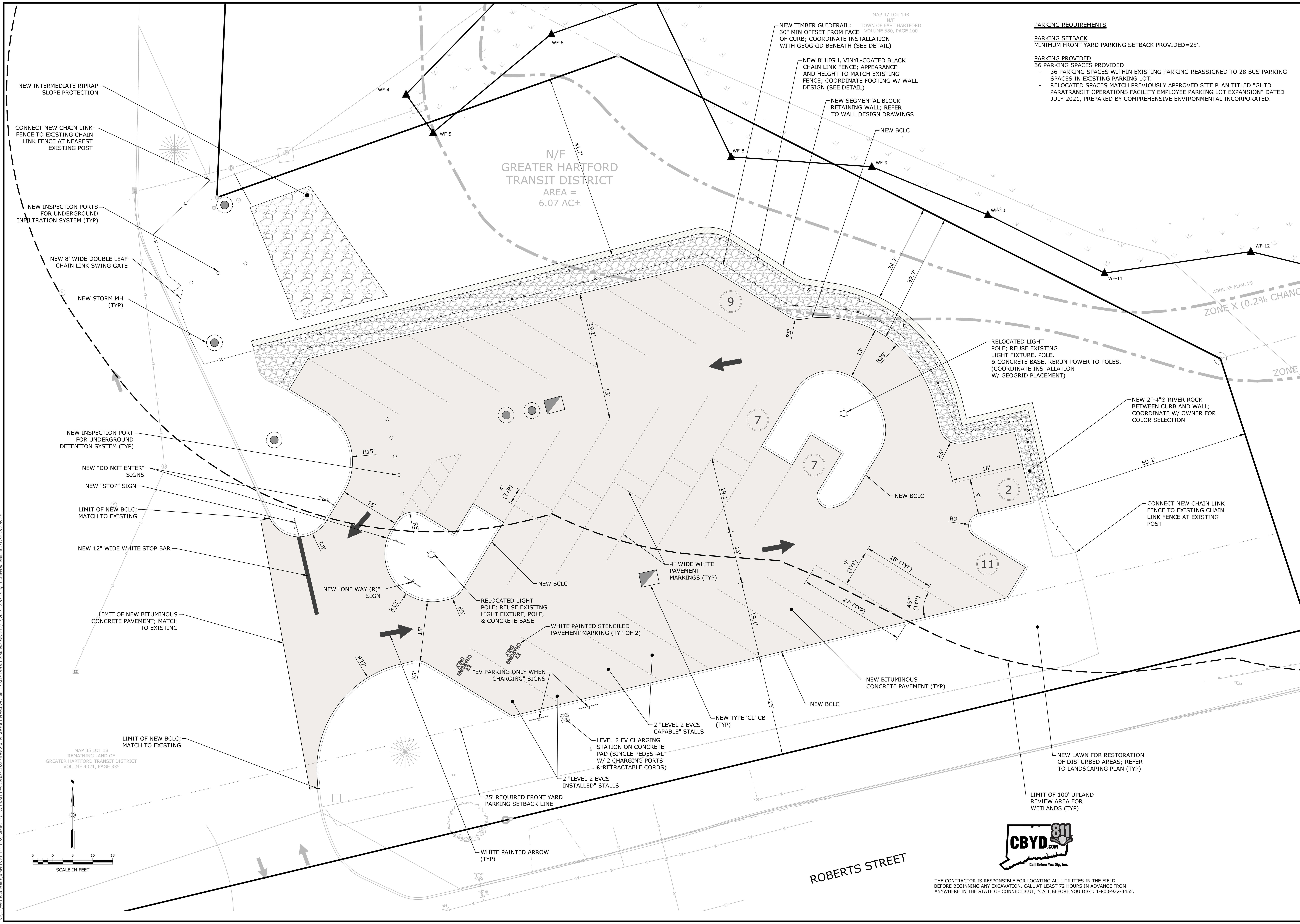
PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108

PREPARED FOR
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING: C2

SHEET NO. 16 — NO. OF SHEETS 25

V:\CT\EAST HARTFORD\ROBERTS ST-144-148\PARKING LOT AND WALL DESIGN 033602.03\DWGS\CIVIL\SITE PREPARATION AND DEMOLITION.DWG Tab: 16 SITE PREPARATION AND DEMOLITION PLAN PRZ Saved: 2/21/2025 2:28 PM by TCG#FFTING Plotted: 2/21/2025 2:29 PM


NEW TIMBER GUIDERAIL; 30" MIN OFFSET FROM FACE OF CURB; COORDINATE INSTALLATION WITH GEOGRID BENEATH (SEE DETAIL)
NEW 8' HIGH, VINYL-COATED BLACK CHAIN LINK FENCE; APPEARANCE AND HEIGHT TO MATCH EXISTING FENCE; COORDINATE FOOTING W/ WALL DESIGN (SEE DETAIL)
NEW SEGMENTAL BLOCK RETAINING WALL; REFER TO WALL DESIGN DRAWINGS
NEW BCLC
NEW INTERMEDIATE RIPRAP SLOPE PROTECTION
CONNECT NEW CHAIN LINK FENCE TO EXISTING CHAIN LINK FENCE AT NEAREST EXISTING POST
NEW INSPECTION PORTS FOR UNDERGROUND INFILTRATION SYSTEM (TYP)
NEW 8' WIDE DOUBLE LEAF CHAIN LINK SWING GATE
NEW STORM MH (TYP)
N/F
GREATER HARTFORD TRANSIT DISTRICT
AREA = 6.07 AC±
RELOCATED LIGHT POLE; REUSE EXISTING LIGHT FIXTURE, POLE, & CONCRETE BASE. RERUN POWER TO POLES. (COORDINATE INSTALLATION W/ GEOGRID PLACEMENT)
NEW 2"-4"Ø RIVER ROCK BETWEEN CURB AND WALL; COORDINATE W/ OWNER FOR COLOR SELECTION
NEW INSPECTION PORT FOR UNDERGROUND DETENTION SYSTEM (TYP)
NEW "DO NOT ENTER" SIGNS
NEW "STOP" SIGN
LIMIT OF NEW BCLC; MATCH TO EXISTING
NEW 12" WIDE WHITE STOP BAR
NEW "ONE WAY (R)" SIGN
RELOCATED LIGHT POLE; REUSE EXISTING LIGHT FIXTURE, POLE, & CONCRETE BASE
NEW BCLC
4" WIDE WHITE PAVEMENT MARKINGS (TYP)
NEW BCLC
CONNECT NEW CHAIN LINK FENCE TO EXISTING CHAIN LINK FENCE AT EXISTING POST
LIMIT OF NEW BITUMINOUS CONCRETE PAVEMENT; MATCH TO EXISTING
WHITE PAINTED STENCILED PAVEMENT MARKING (TYP OF 2)
"EV PARKING ONLY WHEN CHARGING" SIGNS
NEW BITUMINOUS CONCRETE PAVEMENT (TYP)
NEW BCLC
NEW TYPE 'CL' CB (TYP)
2 "LEVEL 2 EVCS CAPABLE" STALLS
LEVEL 2 EV CHARGING STATION ON CONCRETE PAD (SINGLE PEDESTAL W/ 2 CHARGING PORTS & RETRACTABLE CORDS)
2 "LEVEL 2 EVCS INSTALLED" STALLS
LIMIT OF NEW BCLC; MATCH TO EXISTING
25' REQUIRED FRONT YARD PARKING SETBACK LINE
WHITE PAINTED ARROW (TYP)
NEW LAWN FOR RESTORATION OF DISTURBED AREAS; REFER TO LANDSCAPING PLAN (TYP)
LIMIT OF 100' UPLAND REVIEW AREA FOR WETLANDS (TYP)
ZONE X (0.2% CHANCE)
ZONE X
ROBERTS STREET
SCALE IN FEET
EV CHARGING ONLY

PARKING REQUIREMENTS

PARKING SETBACK
MINIMUM FRONT YARD PARKING SETBACK PROVIDED=25'.

PARKING PROVIDED
36 PARKING SPACES PROVIDED
- 36 PARKING SPACES WITHIN EXISTING PARKING REASSIGNED TO 28 BUS PARKING SPACES IN EXISTING PARKING LOT.
- RELOCATED SPACES MATCH PREVIOUSLY APPROVED SITE PLAN TITLED "GHTD PARATRANSIT OPERATIONS FACILITY EMPLOYEE PARKING LOT EXPANSION" DATED JULY 2021, PREPARED BY COMPREHENSIVE ENVIRONMENTAL INCORPORATED.

CBYD.COM 811 Call Before You Dig, Inc.

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REV.	DESCRIPTION OF REVISION	DATE	APPR.

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SCALE	1"=10'
COMM. NO.	033GD2.03
DRAWN BY	TCG
DATE	2/19/2025
APPROVED BY	KAP
DATE	2/19/2025

SITE LAYOUT PLAN

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108

PREPARED FOR:

GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING C3

SHEET NO. 17 NO. OF SHEETS 25

DMH
TOF=50.51
INV.=44.16(W)
INV.=31.96(E)

DMH
TOF=53.19
INV.=44.09(W)
INV.=44.99(S)
INV.=43.89(E)

FLARED END
INV.=30.87

24" RCP

15" RCP

CB
TOF=53.30
INV.=NOT ACCESSIBLE

WF-4

WF-5

WF-6

WF-8

WF-9

WF-10

WF-11

WF-12

8" HDPE OUTLET PIPE;
INV=48.82

NEW 8" HDPE CONNECTION
TO EXISTING STORM MH
NEW INV IN=50.25

7.0 LF - 8" HDPE @ 14.6%

NEW STORM MH 5
T.F.=54.20
INV.=48.82 (S)
INV.=51.25(N)

CONTRACTOR TO ENSURE STRUCTURE IS
WITHIN PROPERTY BOUNDARY

NEW STORMWATER INFILTRATION SYSTEM
(9) ADS STORMTECH MC-3500 CHAMBERS
TOP OF STONE= 53.50
TOP OF UNITS=52.50
BOTTOM OF UNITS=48.75
BOTTOM OF STONE= 47.75

SMH
TOF=54.40

12" HDPE HIGH-LEVEL
MANIFOLD CONNECTION;
INV=50.95 (TYP)

8" HDPE INLET PIPE;
INV 48.82

1.5 LF - 8" HDPE @ 0.0%

NEW STORM MH 4
T.F.=54.71
INV.=50.95 (E)
INV.=48.82(N)
INV.=48.82(SE)

DMH
TOF=53.99
INV.=46.09(N)
INV.=46.14(S)

24.6 LF - 8" HDPE @ 0.5%

NEW STORM MH 2
(OUTLET CONTROL STRUCTURE)
T.F.=55.10
INV=49.50(E)
UNDERDRAIN INV=48.95(NE)
UNDERDRAIN INV=48.95 (SE)
INV=48.95(NW)
(PROVIDE BAFFLE WALL BETWEEN INLET & OUTLET PIPES)
4" DIAMETER ORIFICE INV THRU WALL=48.95
TOP OF WALL=51.80
(SEE DETAIL)

8" HDPE OUTLET PIPE;
INV=49.50

COORDINATE CONNECTION OF
NEW UNDERGROUND ELECTRICAL
SERVICE FOR SITE LIGHTING TO
EXISTING POWER SOURCE

COORDINATE CONNECTION OF
NEW UNDERGROUND ELECTRICAL
SERVICES FOR EV CHARGING
STATIONS TO EXISTING POWER
SOURCE

TC 55.00
BC 54.50

SMH
TOF=54.43

18" RCP

NEW STORMWATER DETENTION SYSTEM (35)
ADS STORMTECH SC-740 CHAMBERS
(5 ROWS X 7 UNITS PER ROW)
(ENTIRE STONE ENVELOPE TO
BE WRAPPED WITH IMPERMEABLE
THERMOPLASTIC LINER - SEE DETAIL)
TOP OF STONE= 52.45
TOP OF UNITS=51.95
BOTTOM OF UNITS=49.45
BOTTOM OF STONE= 48.95

CB
TOF=53.44
48.59 TOP OF HOOD
INV.=46.79

INSPECTION PORT (TYP)

6" PERFORATED HDPE
UNDERDRAIN (TYP)

12" HDPE HIGH-LEVEL
MANIFOLD CONNECTION;
INV=50.49 (TYP)

24" HDPE INLET PIPE;
INV 49.45

1.6 LF - 24" HDPE @ 0.6%

NEW STORM MH 3
T.F.=53.68
INV.=50.49 (N)
INV.=50.49 (S)
INV=49.47(W)
INV=50.00(E)

2.5 LF - 12" HDPE @ 0.6%

NEW STORMWATER TREATMENT UNIT 1
(CONTECH STC 450i HYDRODYNAMIC SEPARATOR)
T.F.=53.60
INV=50.29(E)
INV=50.04(W)

TW 55.70
BW 32.80

APPROXIMATE LIMIT OF NEW GEOGRID ZONE;
REFER TO GEOTECHNICAL DRAWINGS FOR
ELEVATIONS AND EXTENTS OF GEOGRID
BEHIND NEW WALL (TYP)

55.20

TW 55.70
BW 54.60

TW 55.70
BW 54.40

TC 55.00
BC 54.50

2.3 LF - 12" HDPE @ 0.5%

NEW CB TYPE 'CL' 1
T.F.=53.58
INV=50.31(SE)
INV=50.31(W)
(PROVIDE TRAP HOOD
ON OUTLET PIPE)

TC 54.70
BC 54.20

45.3 LF - 12" HDPE @ 0.5%

ISOLATOR ROW PLUS

TC 54.85
BC 54.35

RIDGE
54.20

RIDGE
TC 54.70
BC 54.20

TC 55.10
BC 54.60

RIDGE
55.30

NEW CB TYPE 'CL' 2
T.F.=53.58
INV=50.58(NW)
(PROVIDE TRAP HOOD
ON OUTLET PIPE)

NEW UNDERGROUND ELECTRICAL
SERVICE FOR SITE LIGHTING (TYP)

TW 55.70
BW 31.20

TW 56.20
BW 31.50

TW STEPS FROM 55.70 TO 56.20
BW 31.20

TC 54.90
BC 54.40

TC 55.20
BC 54.70

RIDGE
TC 55.40
BC 54.90

RIDGE
TC 55.60
BC 55.10

TC 55.50
BC 55.00

TW 56.20
BW 40.00

TW STEPS FROM 56.20 TO 56.70
BW 45.00

TW 56.70
BW 46.00

TC 55.60
BC 55.10

TC 55.90
BC 55.40

TW 56.70
BW 55.60

TC 55.80
BC 55.30

TC 55.0
BC 54.5

HP
TC 56.10
BC 55.60

TC 56.00
BC 55.60

NEW UNDERGROUND ELECTRICAL
SERVICES TO NEW LEVEL 2 EV
CHARGING STATIONS AND FOR
FUTURE LEVEL 2 EV CHARGING
STATIONS

NEW LEVEL 2 EV
CHARGING STATION
(SINGLE PEDESTAL
W/ 2 CHARGING PORTS
& RETRACTABLE CORDS)

STUB & CAP CONDUIT FOR
FUTURE CONNECTION AT
EVCS CAPABLE STALLS

LIMIT OF 100' UPLAND
REVIEW AREA FOR
WETLANDS (TYP)

ROBERTS STREET

N

5 0 5 10 15

SCALE IN FEET

CBYD.811.com
Call Before You Dig, Inc.

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES IN THE FIELD BEFORE BEGINNING ANY EXCAVATION. CALL AT LEAST 72 HOURS IN ADVANCE FROM ANYWHERE IN THE STATE OF CONNECTICUT, "CALL BEFORE YOU DIG": 1-800-922-4455.

REV.	DESCRIPTION OF REVISION	DATE	APPR.

STAMP

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100 Northwood Road, West Hartford, CT 06107
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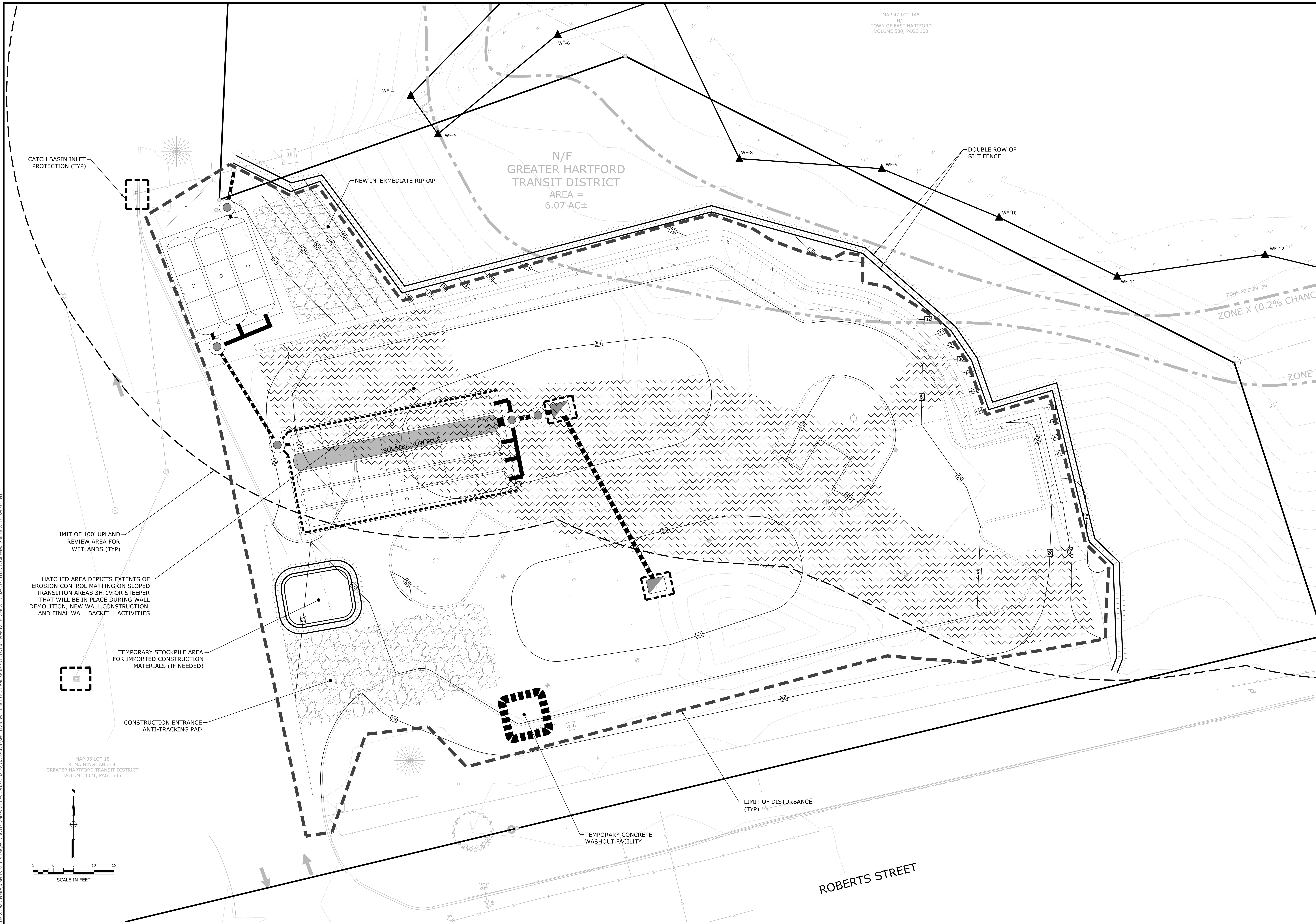
SCALE: 1"=10'
COMM. NO.: 03302.03
DATE: 2/19/2025
DRAWN BY: TCG
DATE: 2/19/2025
APPROVED BY: KAP

GRADING, DRAINAGE, AND UTILITY PLAN

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108
PREPARED FOR
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING
C4

SHEET NO. 18 NO. OF SHEETS 25



MAP 47 LOT 148
N/F
TOWN OF EAST HARTFORD
VOLUME 580, PAGE 100
N/F
GREATER HARTFORD
TRANSIT DISTRICT
AREA =
6.07 AC±
WF-4
WF-5
WF-6
WF-8
WF-9
WF-10
WF-11
WF-12
CATCH BASIN INLET
PROTECTION (TYP)
NEW INTERMEDIATE RIPRAP
DOUBLE ROW OF
SILT FENCE
ZONE X (0.2% CHANCE)
ZONE X
ISOLATOR ROW PLUS
LIMIT OF 100' UPLAND
REVIEW AREA FOR
WETLANDS (TYP)
HATCHED AREA DEPICTS EXTENTS OF
EROSION CONTROL MATTING ON SLOPED
TRANSITION AREAS 3H:1V OR STEEPER
THAT WILL BE IN PLACE DURING WALL
DEMOLITION, NEW WALL CONSTRUCTION,
AND FINAL WALL BACKFILL ACTIVITIES
TEMPORARY STOCKPILE AREA
FOR IMPORTED CONSTRUCTION
MATERIALS (IF NEEDED)
CONSTRUCTION ENTRANCE
ANTI-TRACKING PAD
LIMIT OF DISTURBANCE
(TYP)
TEMPORARY CONCRETE
WASHOUT FACILITY
MAP 35 LOT 18
REMAINING LAND OF
GREATER HARTFORD TRANSIT DISTRICT
VOLUME 4021, PAGE 335
ROBERTS STREET
SCALE IN FEET

STAMP

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SCALE	1"=10'
COMM. NO.	033GD2.03
DRAWN BY	TCG
DATE	2/19/2025
APPROVED BY	KAP
DATE	2/19/2025

EROSION AND SEDIMENT CONTROL PLAN

PARATRANSIT EMPLOYEE PARKING LOT

148 ROBERTS STREET, EAST HARTFORD, CT 06108

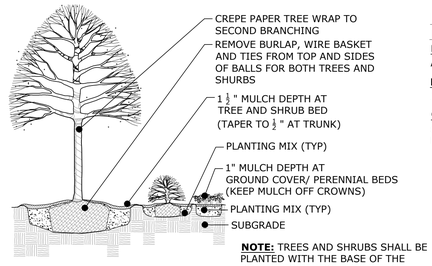
PREPARED FOR:

GREATER HARTFORD TRANSIT DISTRICT

1 UNION PLACE, HARTFORD, CT 06103

DRAWING C5

SHEET NO. 19 NO. OF SHEETS 25



NOTE: TREES AND SHRUBS SHALL BE PLANTED WITH THE BASE OF THE BOLE 2" TO 3" ABOVE EXISTING GRADE TO ALLOW FOR SETTLEMENT

PLANTING DETAIL (TYP)
NOT TO SCALE

PLANT SCHEDULE

KEY	QTY.	TECHNICAL NAME	COMMON NAME	SIZE	COND.
DECIDUOUS TREE					
AOG	3	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3"-3.5" CAL.	B&B
EVERGREEN SHRUB					
JSG	14	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	5 GAL.	COND.
GRASSES					
CAF	55	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	1 GAL.	COND.
PAH	33	PENNISETUM ALOPECUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	5 PNT.	COND.

N/F
GREATER HARTFORD
TRANSIT DISTRICT
AREA =
6.07 AC±

MAP 35 LOT 18
REMAINING LAND OF
GREATER HARTFORD TRANSIT DISTRICT
VOLUME 4021, PAGE 335

WF-4 WF-5 WF-6 WF-10 WF-11 WF-12

INTERMEDIATE RIPRAP EROSION PROTECTION
TYPE 44 SLOPE SEED MIX
2-4"Ø RIVER ROCK TO BE UNDERLINED WITH LANDSCAPE FABRIC
RETAINING WALL
NEW FENCE
LOAM AND SEED TO RESTORE ALL DISTURBED AREAS (TYP)
LIMIT OF 100' UPLAND REVIEW AREA FOR WETLANDS (TYP)
LOAM AND SEED IN ISLAND
EXIST. TREES AND SHRUBS
EXIST. FENCE
EXIST. EVERGREEN TREE
EXIST. TREE
LAWN
PROPERTY LINE
ROBERTS STREET
ZONE AE ELEV. 29
ZONE X (0.2% CHANCE
ZONE X

1 CAF	2 JSG	13 CAF
4 JSG	6 CAF	1 AOG
19 PAH	14 PAH	11 CAF

5 0 5 10 15
SCALE IN FEET

APPR.	DATE	DESCRIPTION OF REVISION	REV.

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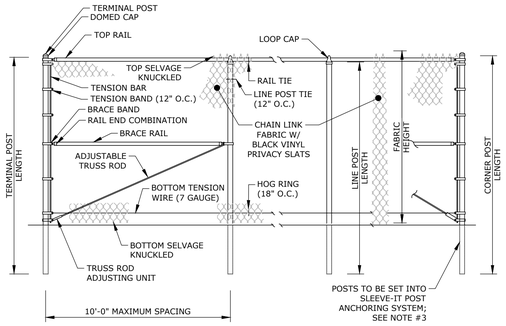
SCALE: 1" = 10'
COMM. NO.: 033GD2.03
DRAWN BY: JGS — DATE: 2/19/2025
APPROVED BY: JGS — DATE: 2/19/2025

LANDSCAPING PLAN

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108
PREPARED FOR
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING
C6

SHEET NO. 20 — NO. OF SHEETS 25



NOTES:
1. FENCE HARDWARE AND FABRIC SHALL BE VINYL-COATED BLACK, AND SHALL MATCH THE APPEARANCE OF EXISTING CHAIN LINK FENCE TO REMAIN.
2. FENCE HEIGHT SHALL MATCH HEIGHT OF EXISTING CHAIN LINK FENCE TO REMAIN.
3. REFER TO "FENCE POST DETAIL W/ SLEEVE-IT" DETAIL ON TYPICAL WALL DETAILS SHEET FOR ADDITIONAL INFORMATION ON POST INSTALLATION.

SCREENED CHAIN LINK FENCE DETAIL
NOT TO SCALE

STOP SIGN:
MUTCD R1-1; 24"

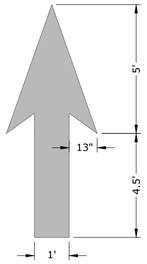
DO NOT ENTER SIGN:
MUTCD R5-1; 24"

EV PARKING SIGN:
12" x 18"

ONE WAY SIGN:
MUTCD R6-1R; 36" x 12"

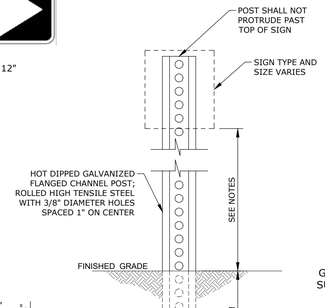
NOTE:
1) ALL SIGNS SHALL BE OF THE INDICATED GRAPHICS, COLORS, AND DIMENSIONS WITH REFLECTIVE BACKGROUNDS.

SIGN DETAILS
NOT TO SCALE



NOTES:
1) USE STENCIL OR OTHER APPROPRIATE MEANS TO PROVIDE UNIFORM MARKINGS OF THE INDICATED SHAPE AND DIMENSIONS.
2) MARKINGS SHALL BE CENTERED WIDTH-WISE IN THE CORRESPONDING TRAVEL LANE WHERE APPROPRIATE.
3) REFER TO SITE LAYOUT PLAN FOR LOCATIONS AND ORIENTATIONS OF DIRECTIONAL ARROWS.

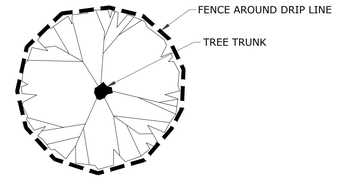
PAINTED ARROW DETAIL
NOT TO SCALE



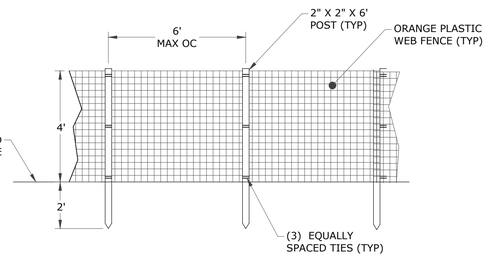
CROSS SECTION ELEVATION

NOTES:
1. SIGN MOUNTING HEIGHT: STOP, DO NOT ENTER, AND ONE-WAY SIGNS 7' TO BOTTOM OF SIGN.
2. SIGN MOUNTING HEIGHT: ACCESSIBLE PARKING AND EV PARKING/CHARGING SIGNS 5' TO BOTTOM OF SIGN.

SIGN POST DETAIL
NOT TO SCALE



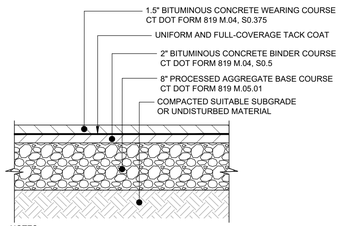
PLAN



ELEVATION

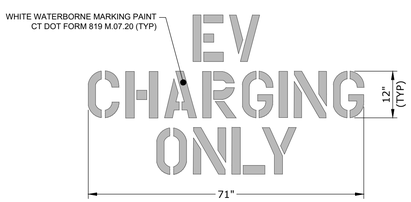
NOTES:
1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN (AS INDICATED ON PLANS).
2. FENCING MAY BE INSTALLED CONTINUOUSLY AROUND GROUPS OF TREES TO REMAIN.
3. THERE SHALL BE NO STORAGE OF MATERIALS OR EQUIPMENT WITHIN THE DRIP LINE OF TREES TO REMAIN OR PROTECTED EXCEPT WITHOUT APPROVAL OF LANDSCAPE ARCHITECT.

TREE PROTECTIVE FENCE DETAIL
NOT TO SCALE



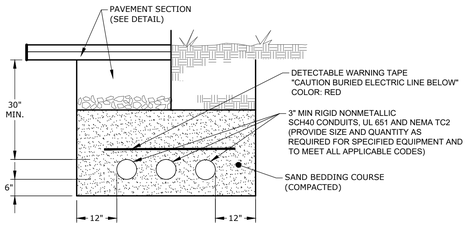
NOTES:
1) PROCESS AGGREGATE BASE COURSE SHALL BE PLACED IN 2 EQUAL LIFTS AND ACHIEVE 95% MINIMUM COMPACTION.
2) EACH BITUMINOUS CONCRETE PAVEMENT COURSE SHALL ACHIEVE 92% MINIMUM AND 96% MAXIMUM COMPACTION.
3) APPLY TACK COAT TO ALL VERTICAL EDGES OF SITE FEATURES ABUTTING PERIMETER OF NEW PAVEMENT SECTION.
4) APPLY BITUMINOUS SEALANT ALONG ALL INTERFACES OF EXISTING AND NEW PAVEMENT.
5) INDICATED PAVEMENT SECTION THICKNESS REPRESENTS THE FINISHED, COMPACTED THICKNESS.

BITUMINOUS CONCRETE PAVEMENT DETAIL
NOT TO SCALE



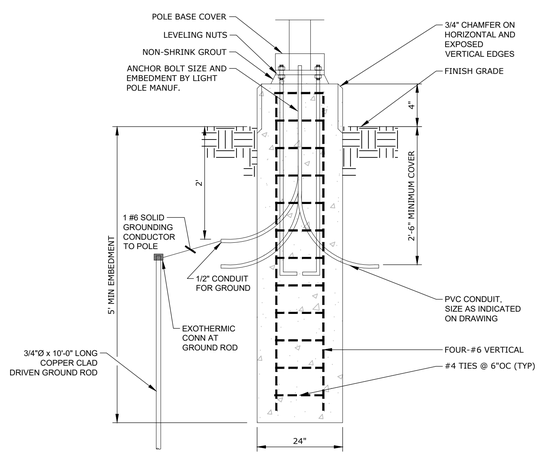
NOTES:
1) USE STENCIL TO PROVIDE UNIFORM MARKINGS OF THE INDICATED SHAPE AND DIMENSIONS.
2) MARKINGS SHALL BE CENTERED WIDTH-WISE IN THE CORRESPONDING PARKING STALL.
3) REFER TO SITE LAYOUT PLAN FOR LOCATIONS OF EV CHARGING STALL MARKINGS.

EV CHARGING ONLY MARKING DETAIL
NOT TO SCALE



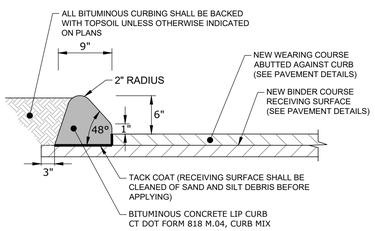
NOTE:
1) CONTRACTOR IS RESPONSIBLE FOR EXCAVATION, BEDDING, CONDUIT & BACKFILL.

TYPICAL P/C UTILITY TRENCH
NOT TO SCALE



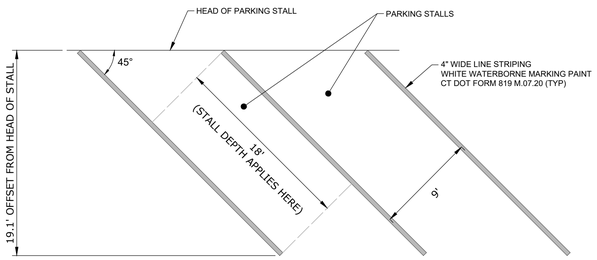
NOTES:
1. EXISTING CONCRETE BASES ON-SITE TO BE SALVAGED AND REUSED. NOTIFY ENGINEER IF EXISTING BASES ARE IN POOR CONDITION, ARE DAMAGED, AND/OR DO NOT ALLOW FOR THE INDICATED EMBEDMENT DEPTH BELOW GRADE AND REVEAL ABOVE GRADE.
2. COORDINATE INSTALLATION WITH GEOGRID WALL REINFORCEMENT INSTALLATION SO THAT POLE BASE CAN BE PLACED AND BACKFILLED SIMULTANEOUSLY AS GEOGRID INSTALLATION PROGRESSES.

LIGHT POLE BASE
NOT TO SCALE



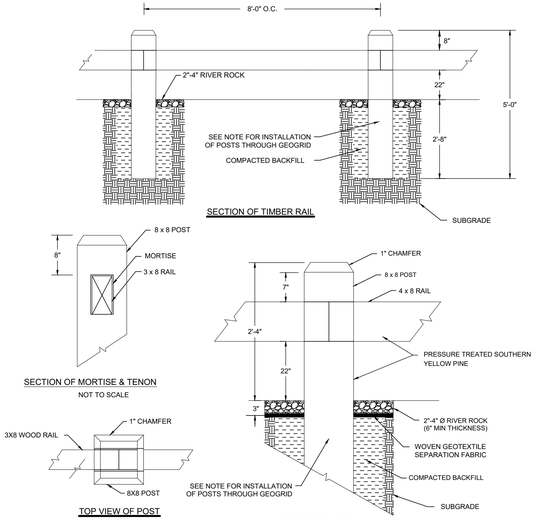
NOTES:
1) CURBING SHALL BE MACHINE-FORMED TO FULLEST EXTENT PRACTICABLE.
2) APPROPRIATE MOLD SHALL BE USED ON CURB MACHINE TO ACCOUNT FOR WEARING COURSE THICKNESS AND TO PROVIDE INDICATED REVEAL UPON INSTALLATION OF WEARING COURSE.
3) APPLY TACK COAT TO ALL VERTICAL EDGES OF SITE FEATURES ABUTTING TRANSVERSE LIMITS OF NEW CURBING.

BITUMINOUS CONCRETE LIP CURB DETAIL
NOT TO SCALE



NOTES:
1) REFER TO SITE LAYOUT PLAN FOR DIMENSIONS AND CONFIGURATION OF ALL ANGLED PARKING STALLS.
2) WIDTHS OF STALLS INDICATED ON SITE LAYOUT PLAN ARE MEASURED BETWEEN CENTERLINE OF PAVEMENT MARKINGS.

TYPICAL ANGLED PARKING STRIPING DETAIL
NOT TO SCALE



NOTE:
INSTALLATION OF POSTS MUST BE DONE IN A MANNER THAT MINIMIZES DISTURBANCE TO GEOGRID WALL REINFORCEMENT BENEATH. IN PREPARATION FOR POST INSTALLATION, HAND-EXCAVATION SHALL OCCUR AT THE POST LOCATIONS TO EXPOSE THE GEOGRID, WITHOUT DAMAGING IT. OPENINGS SHOULD THEN BE CLEANLY CUT INTO THE GEOGRID TO ACCOMMODATE THE POSTS, WITH THE DIMENSIONS OF THE CUTS THE MINIMUM AMOUNT POSSIBLE TO ALLOW FOR DRIVING OF THE POSTS THROUGH THE GEOGRID WITHOUT CAUSING DAMAGE. REFER TO GRADING PLAN AND WALL DESIGN PLANS TO IDENTIFY ANTICIPATED GEOGRID BURIAL DEPTHS.

TIMBER POST AND RAIL W/ RIVER ROCK BORDER
NOT TO SCALE

REV.	DESCRIPTION OF REVISION	DATE	APPR.

STAMP

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SCALE: NOT TO SCALE
CORR. NO. 033022.03
DRAWN BY: TCG
DATE: 2/19/2025
APPROVED BY: KAP
DATE: 2/19/2025

SITE DETAILS

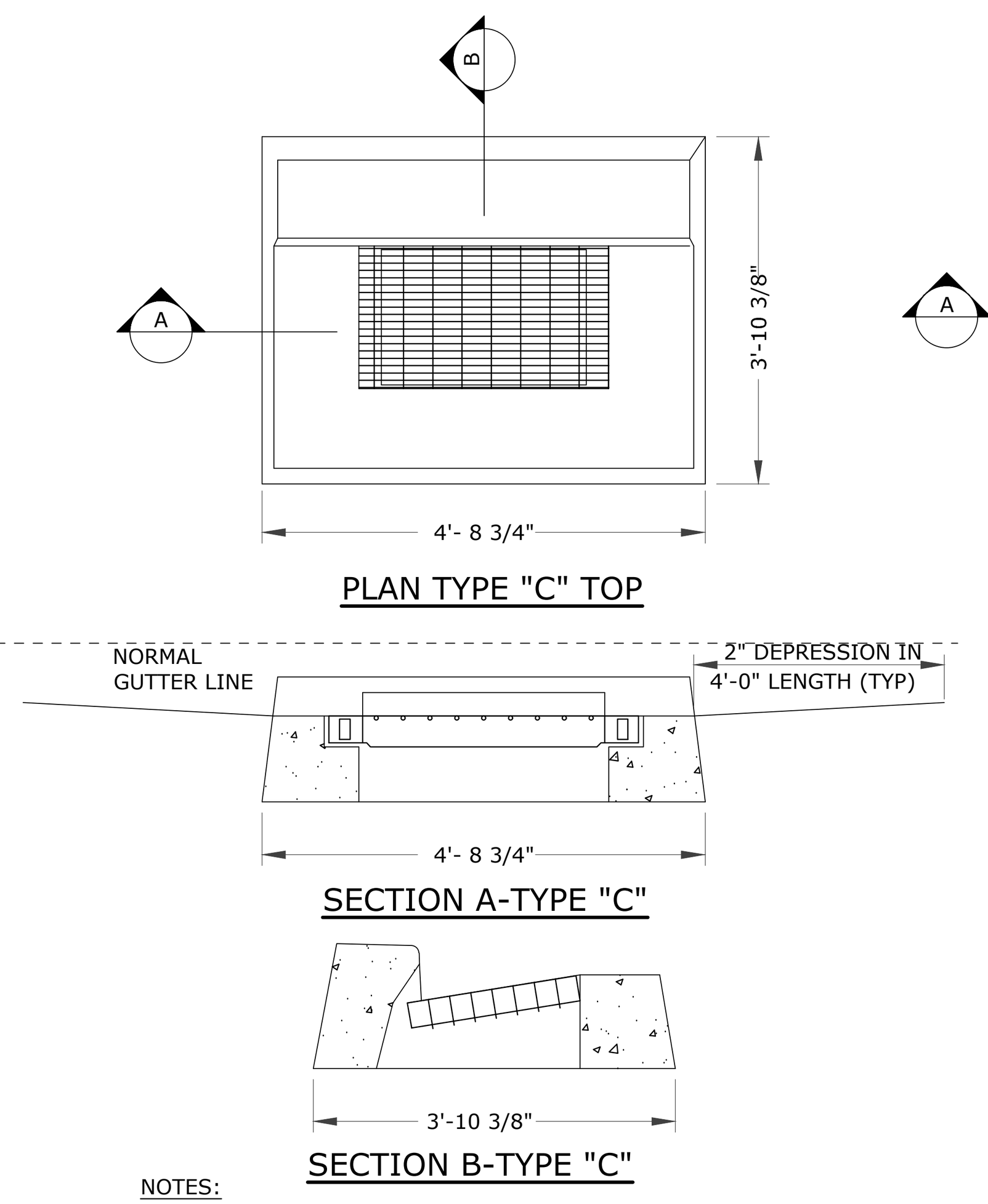
PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

PREPARED FOR

DRAWING C7

SHEET NO. 21 NO. OF SHEETS 25

V:\CT\EAST HARTFORD\ROBERTS ST-144-148\PARKING LOT AND WALL DESIGN (033022.03)\DWGS\CIVIL\DETAILS.DWG Tab: 21 SITE DETAILS Saved: 2/17/2025 5:15 PM by TCG\KJFTING Plotted: 2/17/2025 5:22 PM

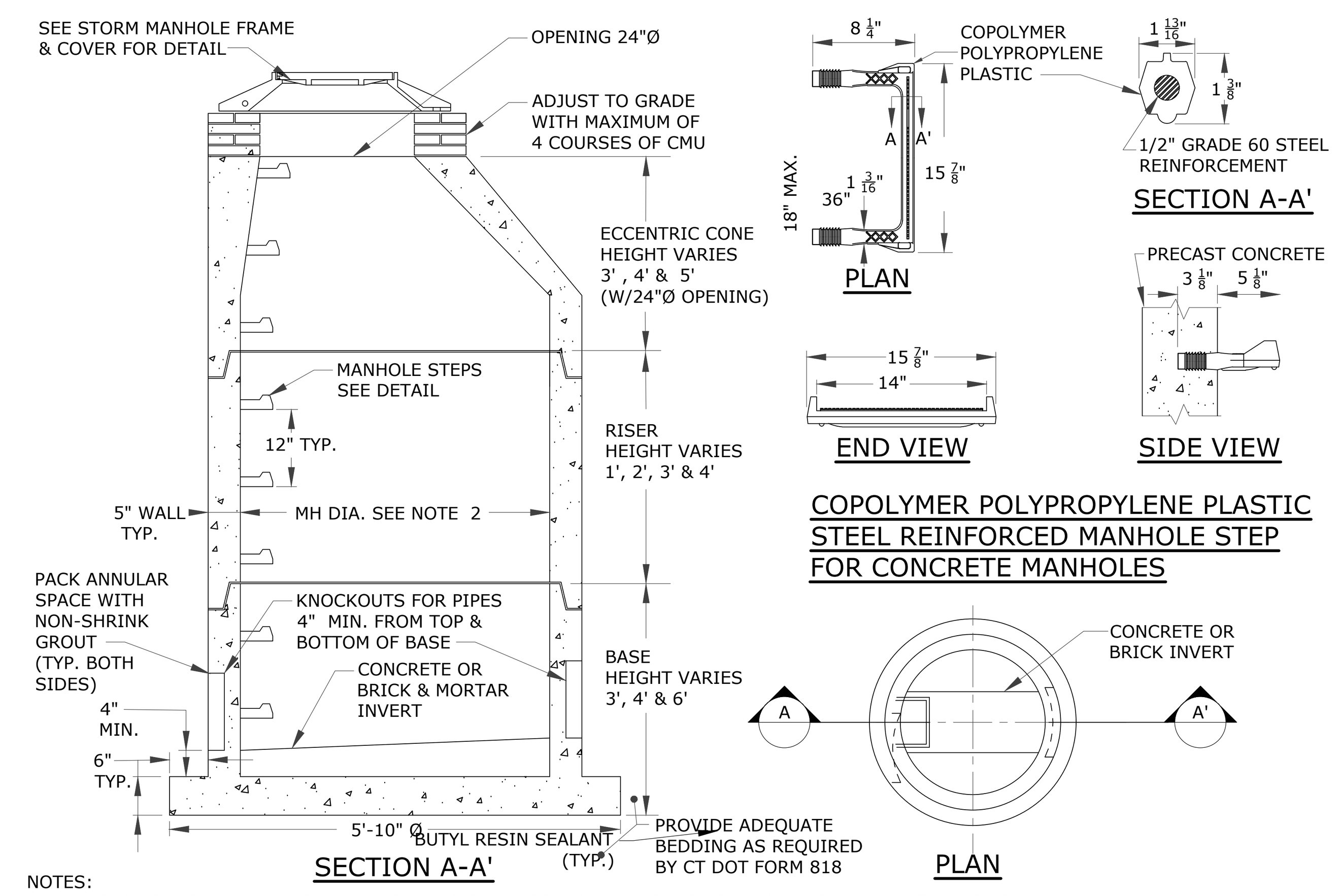


NOTES:

1. CATCH BASIN TOPS, CURBS AND GRATE COMPONENTS SHALL CONFORM TO CTDOT FORM 816 STANDARD SPECIFICATION FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION AND CTDOT HIGHWAY STANDARD SHEETS HW-507_07 AND HW-507_08, AS AMENDED.
2. REINFORCING STEEL DEFORMED BARS ARE NOT SHOWN AND SHALL CONFORM TO LATEST CTDOT STANDARDS & SUPPLEMENTAL AND ASTM SPECIFICATION A615, GRADE 60, MINIMUM COVER 2" UNLESS OTHERWISE NOTED.
3. ALL STEEL, EXCEPT REINFORCING BARS, SHALL BE GALVANIZED IN CONFORMANCE WITH SECTION M06.03 OF CONNECTICUT STANDARD SPECIFICATIONS.
4. TYPE "C" CATCH BASIN DEPRESSED GUTTER STRIPS SHALL CONFORM TO CTDOT STANDARD SHEET HW-507_01, APPROVED 07-21-2013.

TYPE "C" & "CL" CATCH BASIN TOP DETAIL

NOT TO SCALE

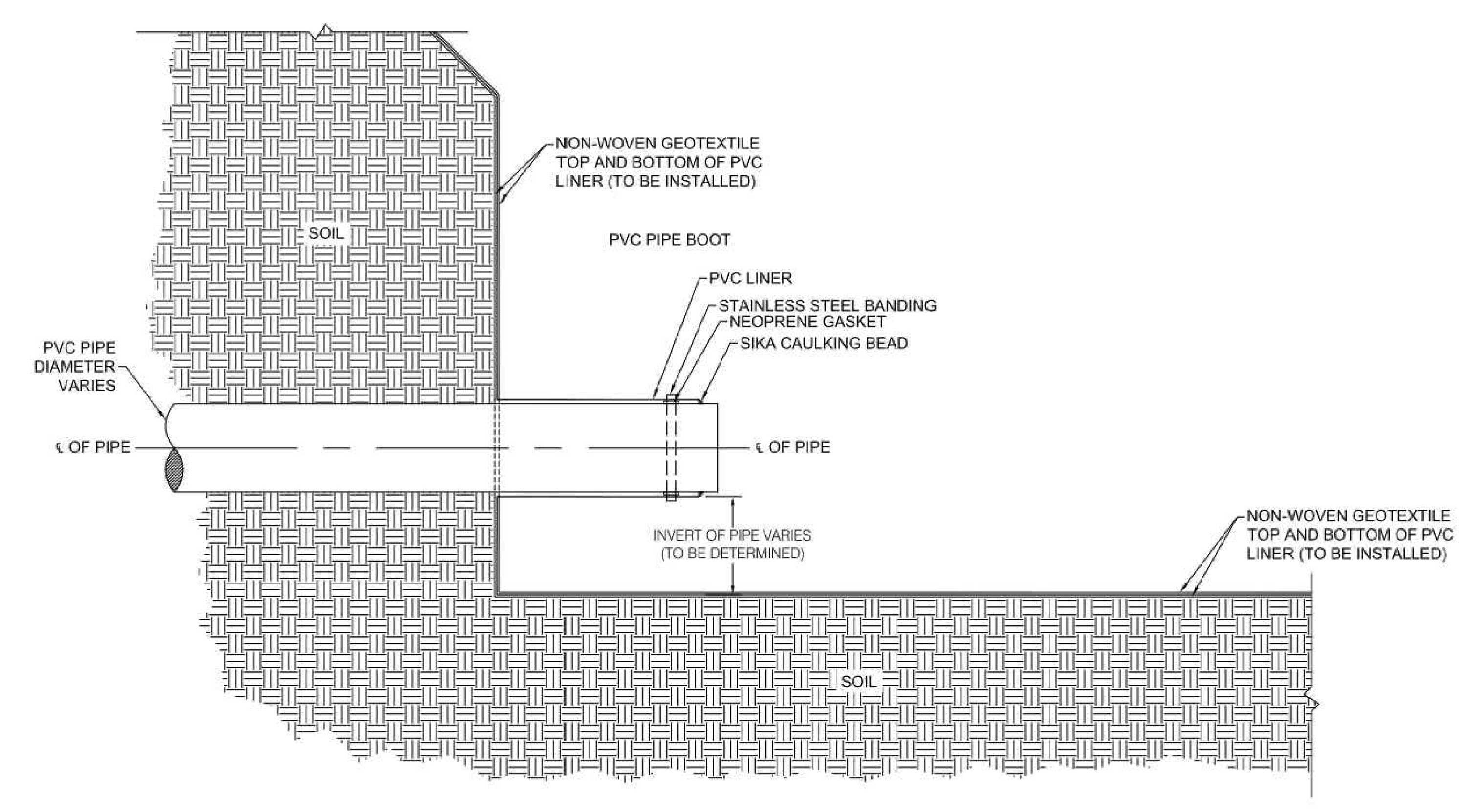


NOTES:

1. PRECAST CONCRETE MANHOLE COMPONENTS SHALL CONFORM TO CTDOT STANDARD SHEET HW-507_10 AS AMENDED.
2. 4', 5' OR 6' PRECAST CONCRETE BASE DIAMETERS MAY BE USED WHEN REQUIRED DUE TO SIZE OR NUMER OF PIPES AT THE MANHOLE. PRECAST REDUCERS WILL BE PLACED ABOVE THE 5' AND 6' BASES AS DIRECTED BY THE ENGINEER. WALL THICKNESS SHALL INCREASE 1" FOR EACH 1' OF INSIDE DIAMETER INCREASE.
3. JOINT SEALANT SHALL BE BUTYL RUBBER MASTIC TYPE SEAL THAT CONFORMS TO LATEST AASHTO SPECIFICATION M-198 & MEETS FEDERAL SPECIFICATION SS-S-0021(210-A).
4. REINFORCING STEEL DEFORMED BARS ARE NOT SHOWN AND SHALL CONFORM TO LATEST CTDOT STANDARDS & SUPPLEMENTALS AND ASTM SPECIFICATION A615, GRADE 60, MINIMUM COVER 2", UNLESS OTHERWISE NOTED.
5. ALL PIPE OPENINGS SHALL BE CLOSED USING MATERIALS WHICH CONFORM TO STATE OF CT STANDARD SPECIFICATIONS SECTION M.08.02.
6. REINFORCING STEEL WELDED WIRE FABRIC SHALL CONFORM TO LATEST ASTM SPECIFICATION A185.
7. CONCRETE COMPRESSIVE STRENGTH SHALL BE MINIMUM 4000 PSI AT 28 DAYS, SELF COMPACTING CONCRETE MIX.
8. MANHOLE STEPS SHALL MEET LATEST OSHA REGULATIONS, (29 CFR 1910.27), SECTION 16 OF ASTM SPECIFICATION C478 AND SECTION 10 OF ASTM SPECIFICATION C497.
9. WHEN SPECIFIED, MANHOLES ARE TO BE COATED WITH BAY OIL, "EBONY".
10. METHOD OF MANUFACTURE SHALL BE WET CAST.
11. BASE SECTION IS MONOLITHIC.
12. MANHOLE INTERIOR DIAMETER:
    4'-0" FOR 8" TO 36" PIPE DIAMETERS
    5'-0" FOR 42" PIPE DIAMETER
    6'-0" FOR 48" PIPE DIAMETER.

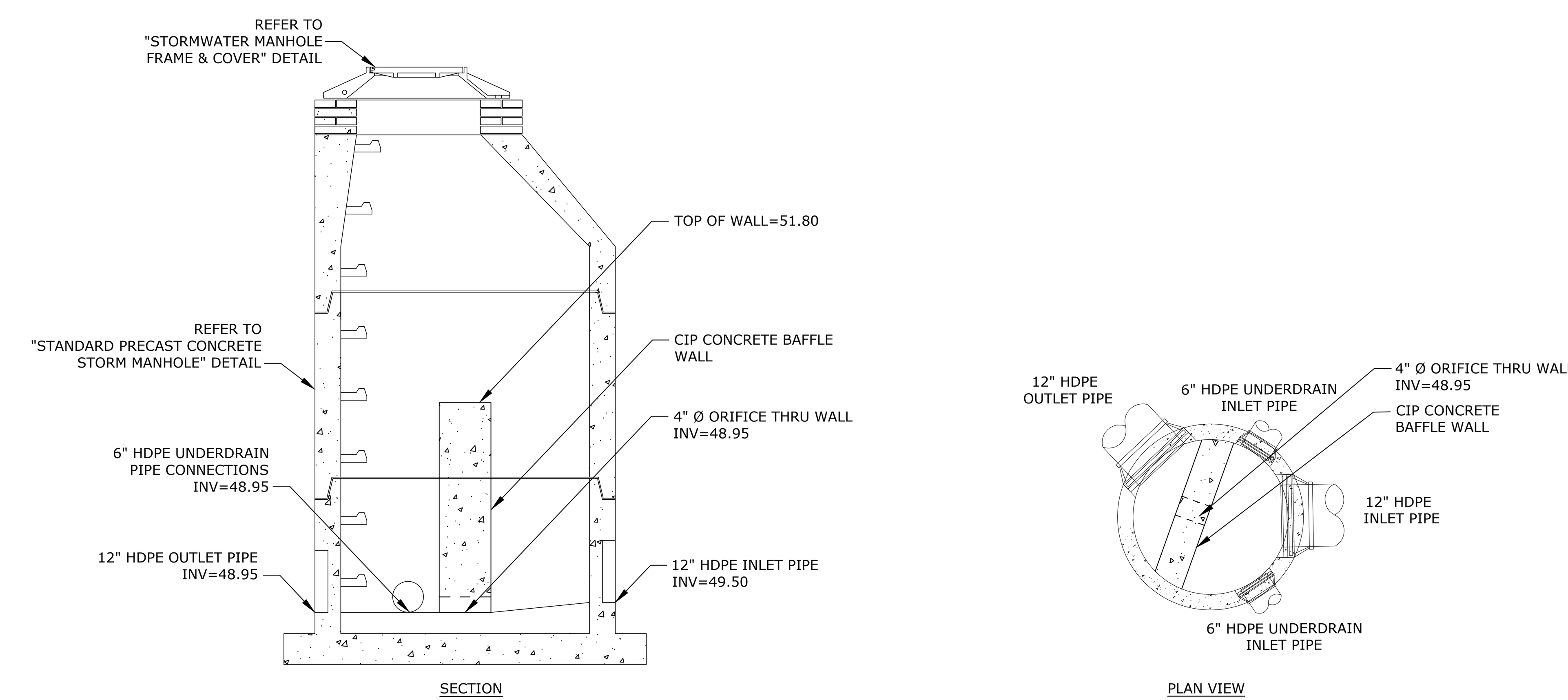
STANDARD PRECAST CONCRETE STORM MANHOLE DETAIL

NOT TO SCALE



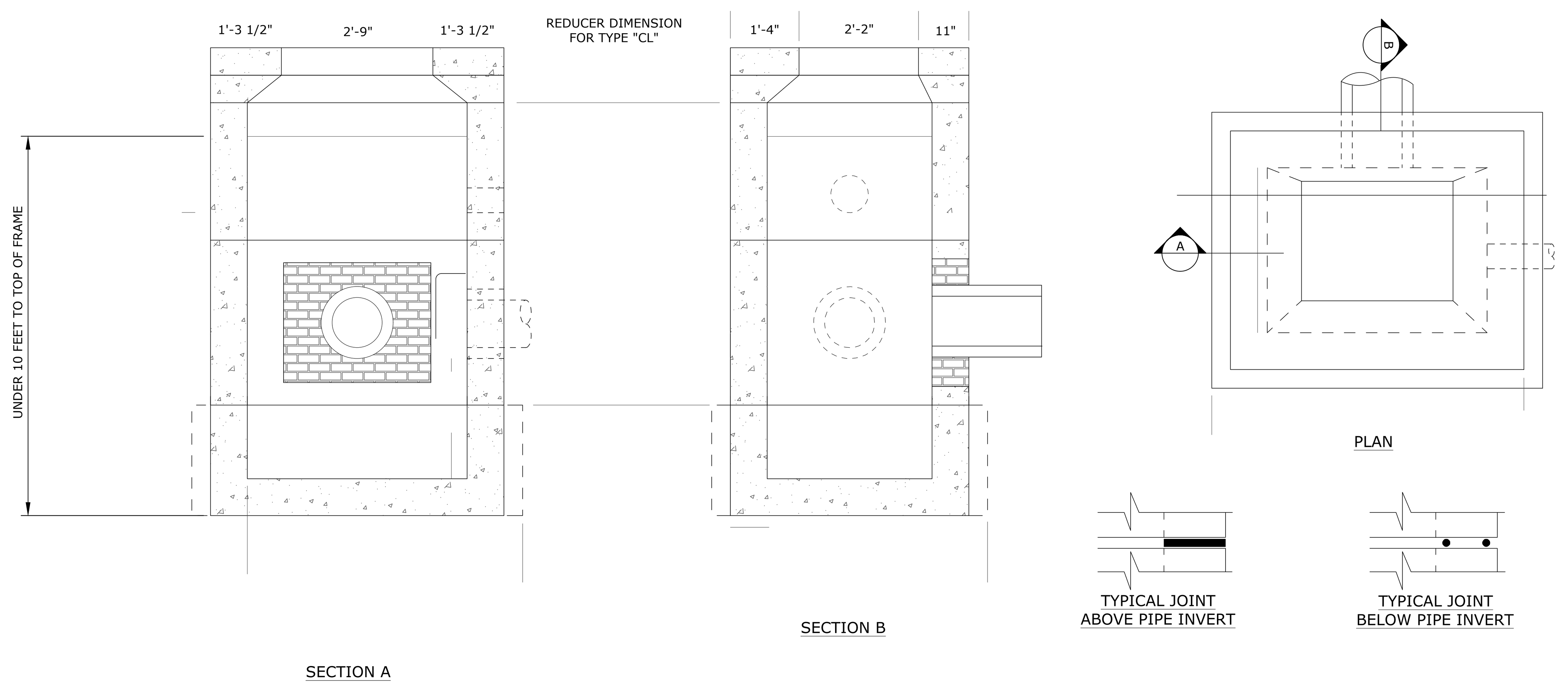
PIPE PENETRATION THROUGH DETENTION SYSTEM LINER DETAIL

NOT TO SCALE



DETENTION SYSTEM OUTLET CONTROL STRUCTURE DETAIL

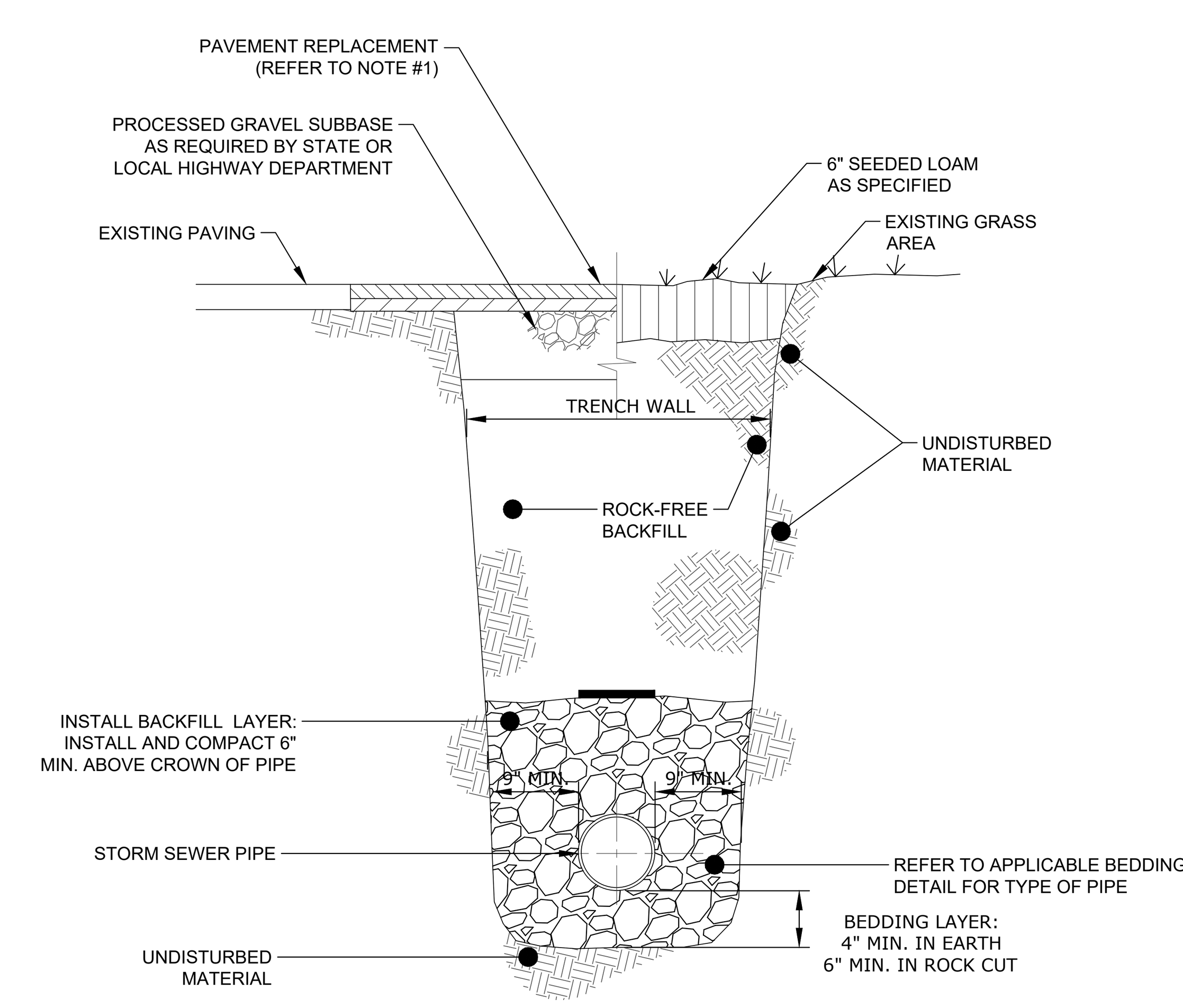
NOT TO SCALE



NOTES:
1. PRECAST CONCRETE CATCH BASIN COMPONENTS SHALL CONFORM TO CTDOT FORM 818 STANDARD SPECIFICATION FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION AND CTDOT HIGHWAY STANDARD.
2. THIS DETAIL IS BASED ON CTDOT PRECAST CONCRETE TYPE "C" & "CL" CATCH BASIN COMPONENTS, (UNDER 10' DEEP SHOWN).
3. REINFORCING STEEL DEFORMED BARS ARE NOT SHOWN AND SHALL CONFORM TO LATEST CTDOT STANDARDS & SUPPLEMENTALS AND ASTM SPECIFICATION A615, GRADE 60, MINIMUM COVER 2" UNLESS OTHERWISE NOTED.
4. METHOD OF MANUFACTURE SHALL BE WET CAST.
5. SUMP SECTION SHALL BE MONOLITHIC.
6. DESIGN LOAD SHALL BE AASHTO H-20.

TYPE "C" & "C-L" PRECAST CONCRETE CATCH BASIN DETAILS

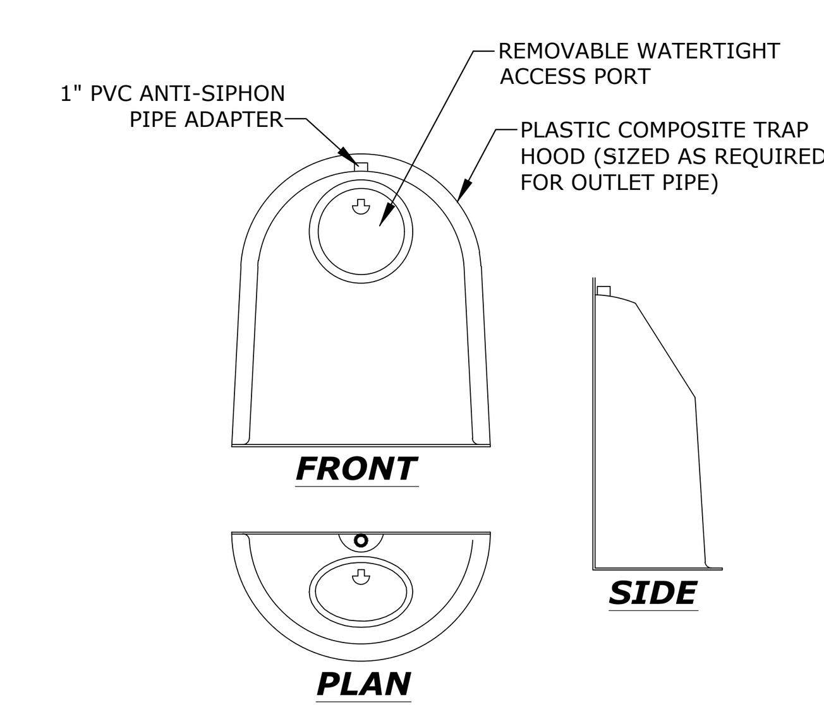
NOT TO SCALE



NOTES:
1. REFER TO STATE AND/OR LOCAL HIGHWAY DEPARTMENT SPECIFICATIONS FOR SPECIFIC PAVING REQUIREMENTS WHERE APPLICABLE.
2. MATERIAL USED IN BEDDING, HAUNCHING, AND BACKFILL SHALL BE AS SPECIFIED IN THE ARTICLE M.02.01 OF CT DOT FORM 818 STANDARD.
3. DEEP FOUNDATIONS: WHERE SPECIAL DEEP FOUNDATIONS ARE REQUIRED, BECAUSE OF VERY SOFT SOIL FOUNDATION, CRUSHED STONE OR PROCESSED GRAVEL SHALL BE USED TO A POINT 24" DEEPER THAN FLOW LINE OF PIPE. ADDITIONAL FOUNDATION DEPTH BELOW THIS POINT MAY BE OTHER SELECTED MATERIAL, AS SPECIFIED AND AS REQUIRED BY THE ENGINEER IN THE FIELD.
4. SEE TYPICAL PIPE TRENCH BEDDING DETAILS FOR ADDITIONAL INFORMATION.

TYPICAL STORM SEWER TRENCH DETAIL

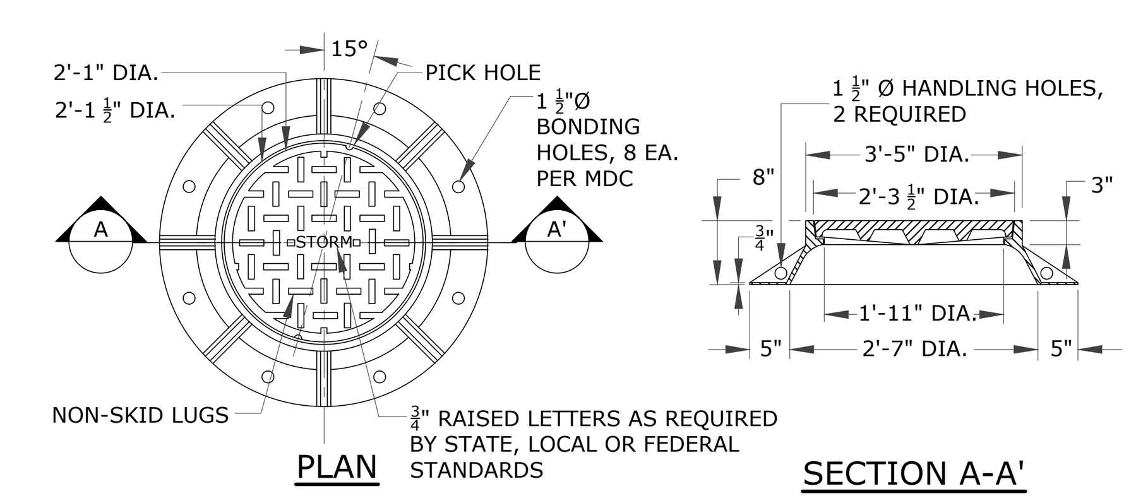
NOT TO SCALE



NOTE:
SNOUT PRODUCT LINE BY BMP, INC. (OR APPROVED EQUAL)

CATCH BASIN TRAP HOOD

NOT TO SCALE



NOTES:
1. STORM MANHOLE FRAMES AND COVERS SHALL CONFORM TO CTDOT FORM 817 STANDARD SPECIFICATION FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION AND CT DOT HIGHWAY STANDARD SHEETS HW-507_10, AS AMENDED.
2. CHANNELS MAY BE SHAPED IN CONCRETE BASE OF MANHOLE OR FORMED USING BRICK OR MASONRY, UNLESS OTHERWISE DIRECTED.
2. A FRAME OF 3'-3" WITH 4" FLANGE SHALL BE USED WHEN THE TOP DIAMETER OF A PRECAST CONE IS LESS THAN 3'-6". ALL OTHER FRAME DIMENSIONS SHALL REMAIN THE SAME.
3. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES.

STORMWATER MANHOLE FRAME & COVER DETAIL

NOT TO SCALE

REV.	DESCRIPTION OF REVISION	DATE	APPR.

STAMP

Loureiro Engineering Associates, Inc.

SCALE: NOT TO SCALE | COMM. NO. 033GD2.03 | DRAWN BY TCG | DATE 2/19/2025 | APPROVED BY KAP | DATE 2/19/2025

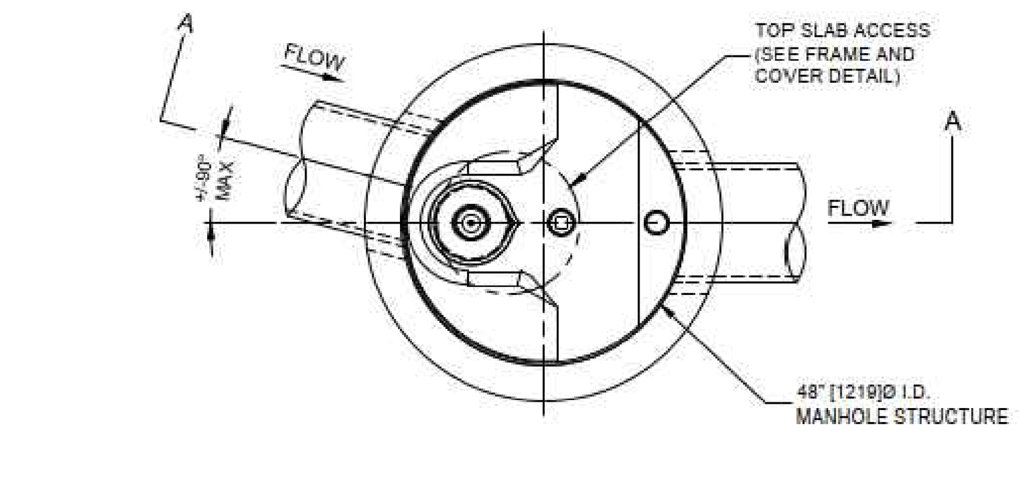
DRAINAGE DETAILS

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108

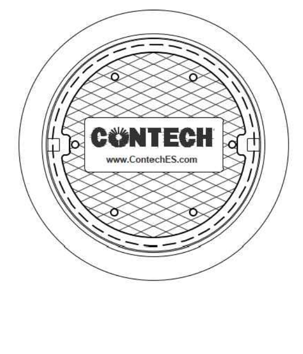
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING C8

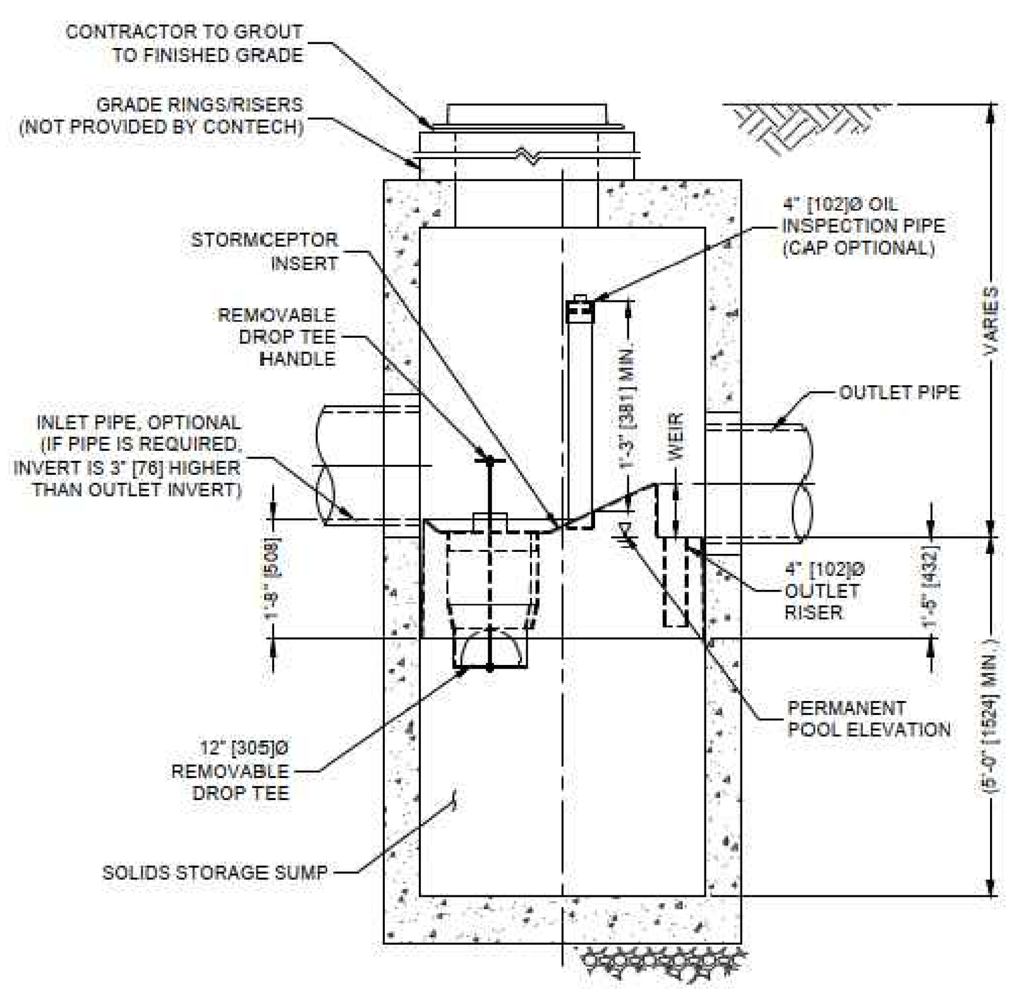
SHEET NO. 22 | NO. OF SHEETS 25



PLAN VIEW
TOP SLAB NOT SHOWN



FRAME AND COVER
(MAY VARY)
NOT TO SCALE



SECTION A-A

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

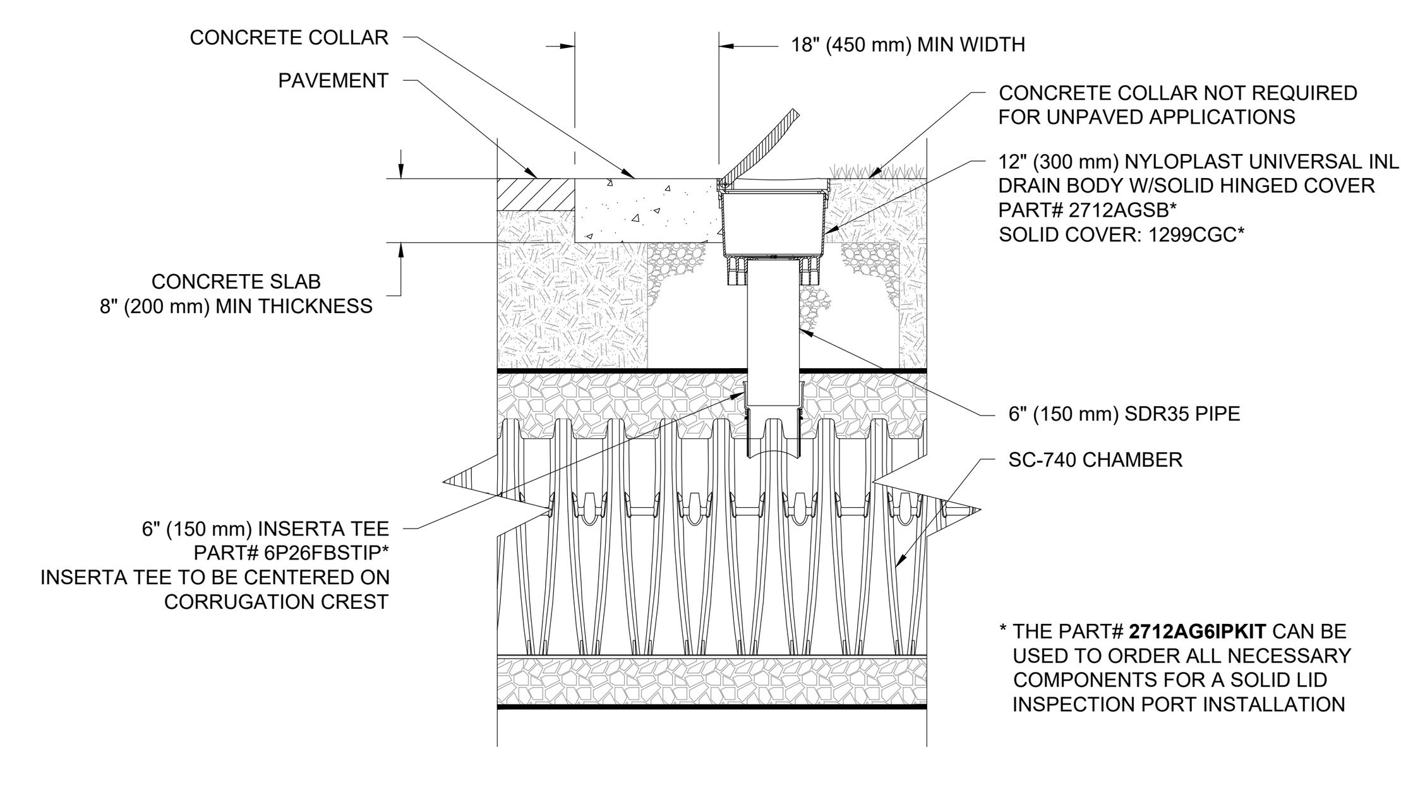
GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMCEPTOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STORMCEPTOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. STORMCEPTOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMCEPTOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

NOTES:
1) MINIMUM WATER QUALITY FLOW TREATMENT CAPACITY=0.32 CFS.
2) MINIMUM OVERFLOW BYPASS CAPACITY=3.87 CFS.
3) OR APPROVED EQUAL.

STORMCEPTOR STC450i STORMWATER TREATMENT UNIT

SCALE: NOT TO SCALE

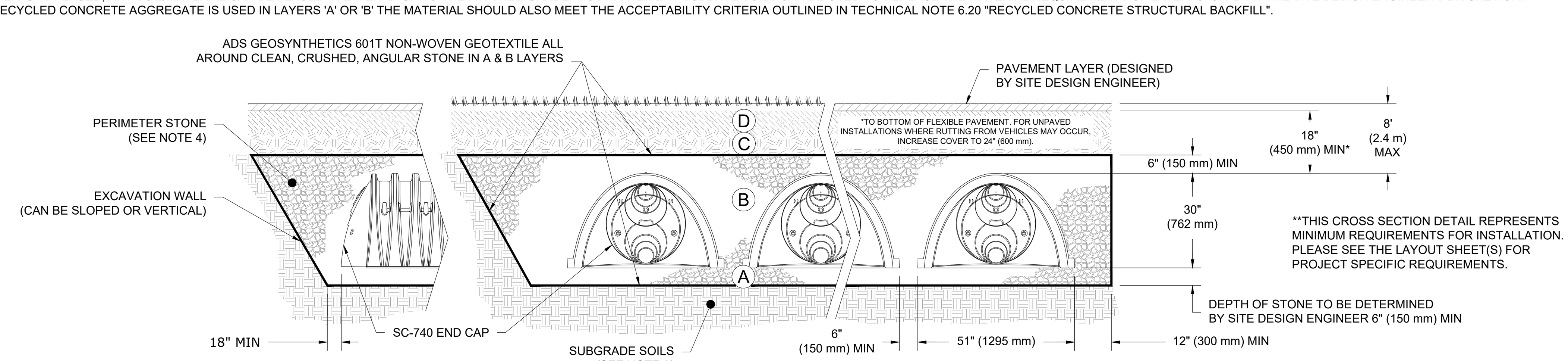


SC-740 6" (150 mm) INSPECTION PORT DETAIL
NTS

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

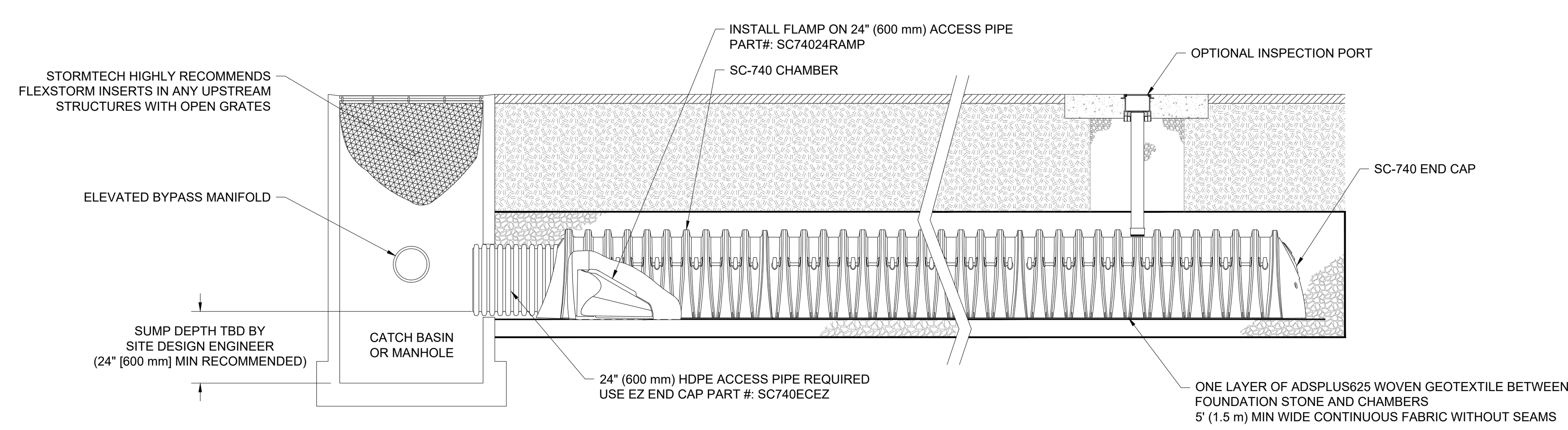
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

ADS SiteAssist
FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR APP



SC-740 ISOLATOR ROW PLUS DETAIL
NTS

REV. | DESCRIPTION OF REVISION | DATE | APPR.

STAMP

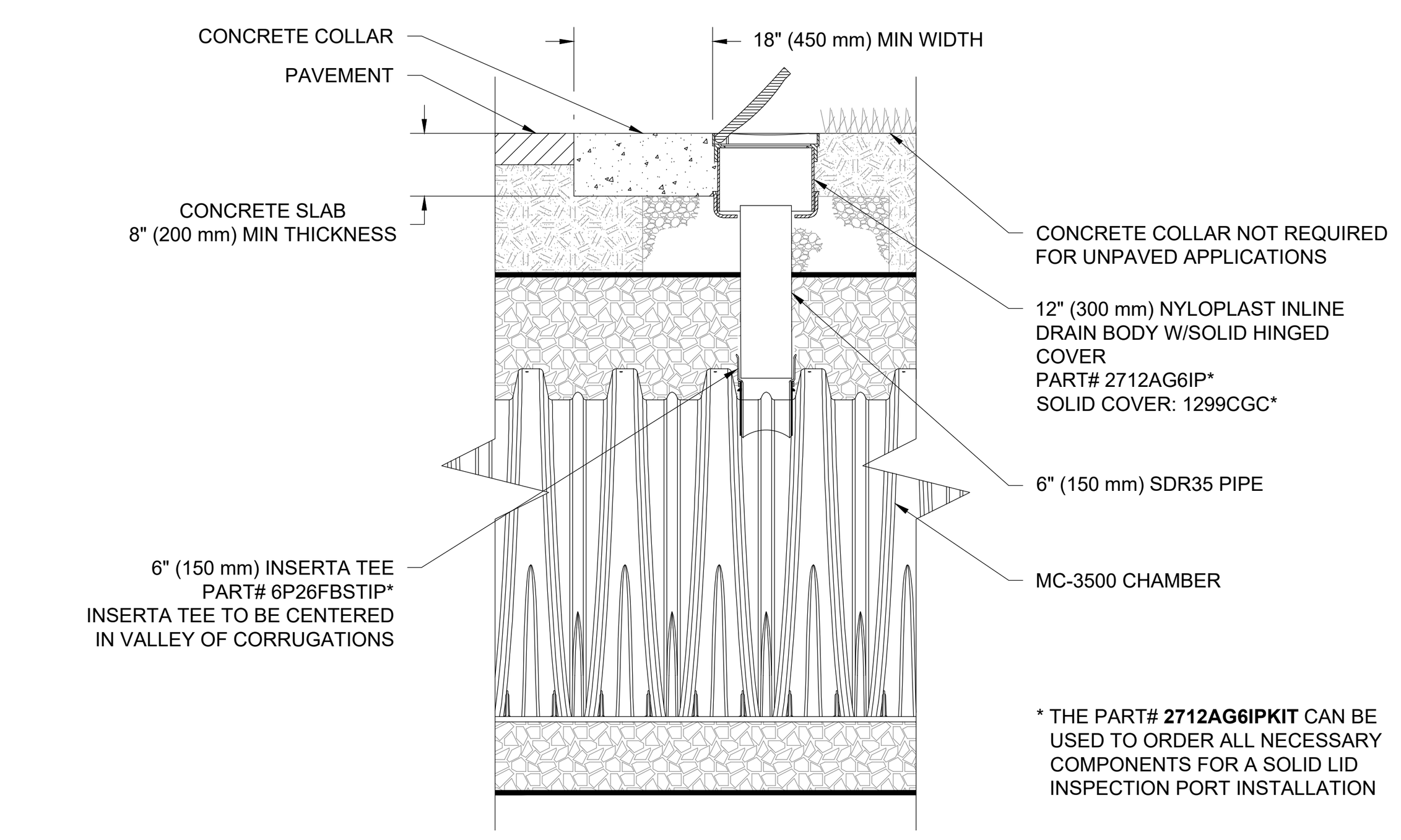
Loureiro
Engineering • Construction • EH&S • Energy
Waste • Facility Services • Laboratory
Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
Phone: 860-747-6181 • Fax: 860-747-8822
An Employee Owned Company • www.Loureiro.com

SCALE: NOT TO SCALE
COMM. NO.: 033GD2.03
DRAWN BY: TCG DATE: 2/19/2025
APPROVED BY: KAP DATE: 2/19/2025

STORMWATER MANAGEMENT DETAILS

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108
PREPARED FOR:
GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING C9
SHEET NO. 23 NO. OF SHEETS 25



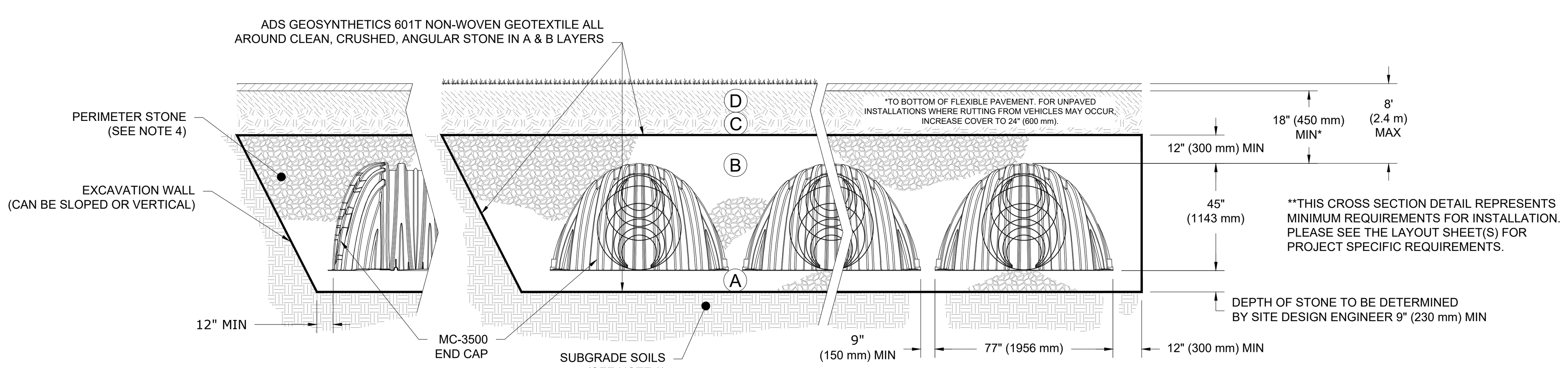
MC-3500 6" (150 mm) INSPECTION PORT DETAIL

NTS

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 18" (450 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

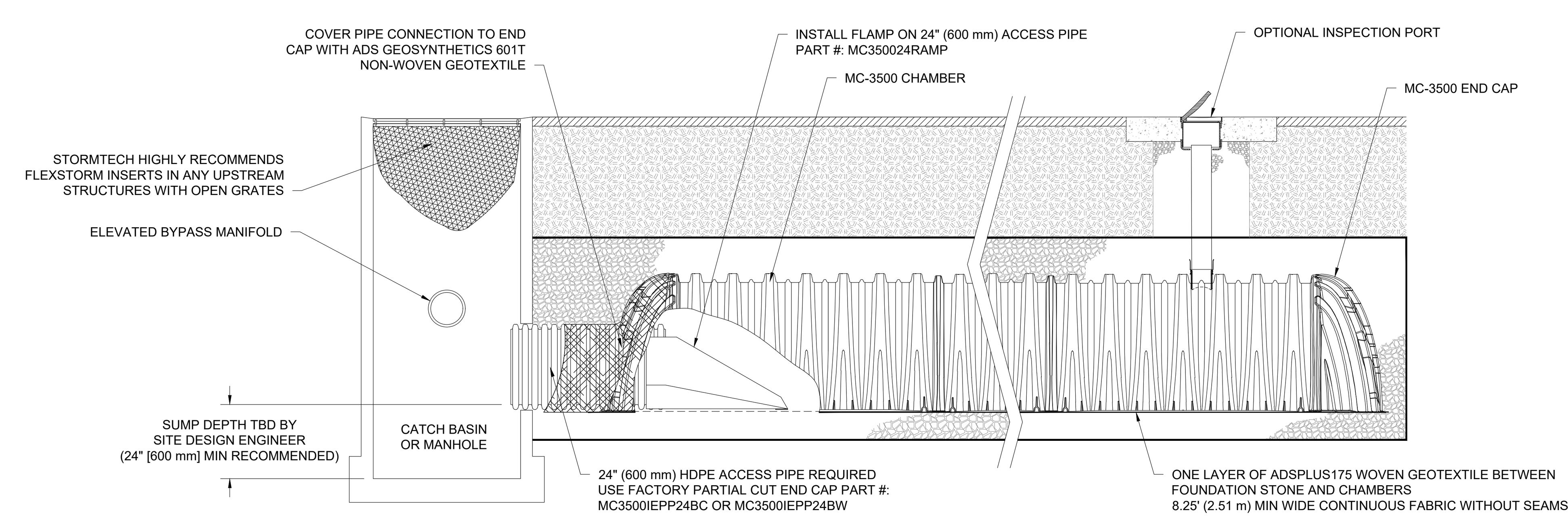
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

SiteAssist™
FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR APP



MC-3500 ISOLATOR ROW PLUS DETAIL

NTS

REV.	DESCRIPTION OF REVISION	DATE	APPR.

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SCALE: NOT TO SCALE
COMM. NO.: 033GD2.03
DRAWN BY: TCG — DATE: 2/19/2025
APPROVED BY: KAP — DATE: 2/19/2025

STORMWATER MANAGEMENT DETAILS

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108

PREPARED FOR:

GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING: **C10**

SHEET NO. 24 — NO. OF SHEETS 25

SOIL EROSION AND SEDIMENT CONTROL PLAN

ALL APPLICABLE REGULATIONS AND REQUIREMENTS OF THE STATE OF CONNECTICUT DEPARTMENT OF ENVIRONMENTAL SERVICES (NES) AND THE LOCAL LAND USE REQUIREMENTS SHALL BE ADHERED TO INCLUDING THE PLACEMENT OF THE PROPOSED SE&SC BARRIERS AS SPECIFIED HEREIN. WHEN THE CONSTRUCTION WORK IS COMPLETED, THE CONTRACTOR SHALL CLEAN THE SE&SC BARRIERS AND RESTORE THE NATURAL DRAINAGE AREAS AFFECTED BY THEIR OPERATIONS TO THEIR ORIGINAL CONDITION UNLESS OTHERWISE NOTED.

PRIOR TO CONSTRUCTION, ALL SE&SC BARRIERS SHALL BE PLACED TO CONFINE SEDIMENT AS SHOWN ON DRAWINGS AND WHERE OTHERWISE REQUIRED BASED ON THE CONTRACTOR'S MEANS/METHODS AND CONSTRUCTION SEQUENCING. ALL SE&SC BARRIERS SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL THE WORK HAS BEEN COMPLETED AND SURFACES STABILIZED.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MONITOR THE CONDITION OF THE SE&SC STRUCTURES. IF THE EFFECTIVENESS OR INTEGRITY OF ANY STRUCTURES IS FOUND TO BE INSUFFICIENT OR IF THE STRUCTURES ARE DAMAGED IN ANY WAY, THE CONTRACTOR SHALL MAKE WHATEVER REPAIRS ARE NECESSARY TO ENSURE THAT PROPER EROSION CONTROL IS MAINTAINED. MONITORING OF THE EROSION CONTROL STRUCTURES IS PARTICULARLY IMPORTANT FOLLOWING PERIODS OF RAINFALL. ALL REPAIRS OF EROSION CONTROL STRUCTURES SHALL BE MADE BY THE CONTRACTOR AS SOON AS THE DAMAGE IS DISCOVERED.

IF ADDITIONAL SE&SC CONTROL STRUCTURES ARE NECESSARY TO MINIMIZE EROSION AND SEDIMENTATION, AS DETERMINED IN THE FIELD, THE CONTRACTOR SHALL INSTALL SAID ADDITIONAL STRUCTURES AS REQUIRED.

IN ADDITION TO THE ABOVE GENERAL PROVISIONS, THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING SPECIAL REQUIREMENTS:

1. LAND DISTURBANCE SHALL BE KEPT TO A MINIMUM; RESTABILIZATION SHALL BE SCHEDULED AS SOON AS PRACTICABLE FOLLOWING CONSTRUCTION. PROJECT SEQUENCING WILL BE NECESSARY TO MINIMIZE SE&SC CONTROL LIABILITIES. THE CONTRACTOR SHALL SEQUENCE HIS OPERATIONS SO AS TO PROVIDE MANAGEABLE WORK AREAS WITH LIMITED OPPORTUNITY FOR SOIL EROSION TO OCCUR.
2. ALL OTHER AREAS AFFECTED BY CONSTRUCTION AND NOT TO BE FILLED ARE TO BE RESTORED TO ORIGINAL GRADE AS SHOWN ON THE DRAWINGS.
3. FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
4. STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SEDIMENT CONTROL FENCING AND/OR HAYBALES AND SEEDED TO PREVENT EROSIONS. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFFSITE.
5. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
6. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4" OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN 1 POUND OF SEED PER 50 SQ. YARDS.
7. SEED MIX SHALL BE EQUAL PARTS OF RED FESCUE (CREEPING), KENTUCKY BLUE GRASS, REDTOP, PERENNIAL RYEGRASS.
8. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED.
9. ALL CATCH BASIN INLETS WILL BE PROTECTED WITH INLET PROTECTION.
10. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEANED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
11. FOR SPECIFIC DETAILS ON THE DESIGN, APPLICATION AND INSTALLATION OF THE EROSION AND SEDIMENTATION CONTROL STRUCTURES THE CONTRACTOR SHALL REFER TO THE 2023 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
12. SEDIMENT REMOVED FROM STRUCTURES SHALL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THE PLAN.
13. TO PREVENT TRACKING OF SEDIMENT ONTO THE EXISTING ROADS, ALL CONSTRUCTION TRAFFIC CAN ONLY EXIT THE SITE OVER THE CONSTRUCTION ENTRANCE PAD.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH LOCAL REQUIREMENTS. THE CONTRACTOR'S RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF ALL REQUIRED SE&SC CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE LOCAL LAND USE OFFICES OF ANY TRANSFERS OF THIS RESPONSIBILITY.
15. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE LOCAL LAND USE AGENCY AND OTHER APPROPRIATE AUTHORITIES AT LEAST 72 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.
16. THE CONTRACTOR SHALL USE APPROVED METHODS AND MATERIALS FOR PREVENTION OF DISPERSION OF DUST INCLUDING MISTING, CHEMICAL APPLICATION AND/OR MULCH SURFACING.
17. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES DAILY DURING CONSTRUCTION AND AFTER EACH SIGNIFICANT RAIN STORM EVENT. DAMAGE SHALL BE REPAIRED IMMEDIATELY.
18. ANY REQUIRED DEWATERING SHALL INCORPORATE THE USE OF FILTER BAGS ON DISCHARGE ENDS.

SILT FENCES:

A. INSPECT GEOTEXTILE SILT FENCE AT LEAST ONCE A WEEK AND WITHIN 24 HOURS AFTER THE END OF A STORM WITH A RAINFALL AMOUNT OF 1/2" OR GREATER TO DETERMINE MAINTENANCE NEEDS.
B. REMOVE SEDIMENT DEPOSITS OR INSTALL A SECONDARY FENCE WHEN SEDIMENT DEPOSITS REACH APPROXIMATELY ONE HALF HEIGHT OF THE FENCE.
C. REPLACE OR REPAIR THE FENCE WITHIN 24 HOURS OF OBSERVED FAILURE. IF REPETITIVE FAILURE OCCURS, CONSULT 2023 GUIDELINES FOR TROUBLESHOOTING FAILURES.
D. MAINTAIN THE SILT FENCE UNTIL THE CONTRIBUTING AREA IS STABILIZED.

CONSTRUCTION ENTRANCES AND ROADWAYS:

A. MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING AND WASHING OF SEDIMENTS ONTO PAVED SURFACES.
B. PROVIDE PERIODIC TOP DRESSING AND ADDITIONAL STONE OR LENGTH AS NECESSARY.
C. IMMEDIATELY REMOVE ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PAVED SURFACES. ROADS ADJACENT TO THE CONSTRUCTION SITE SHALL BE LEFT CLEAN EVERY DAY.

TEMPORARY SEDIMENT TRAPS:

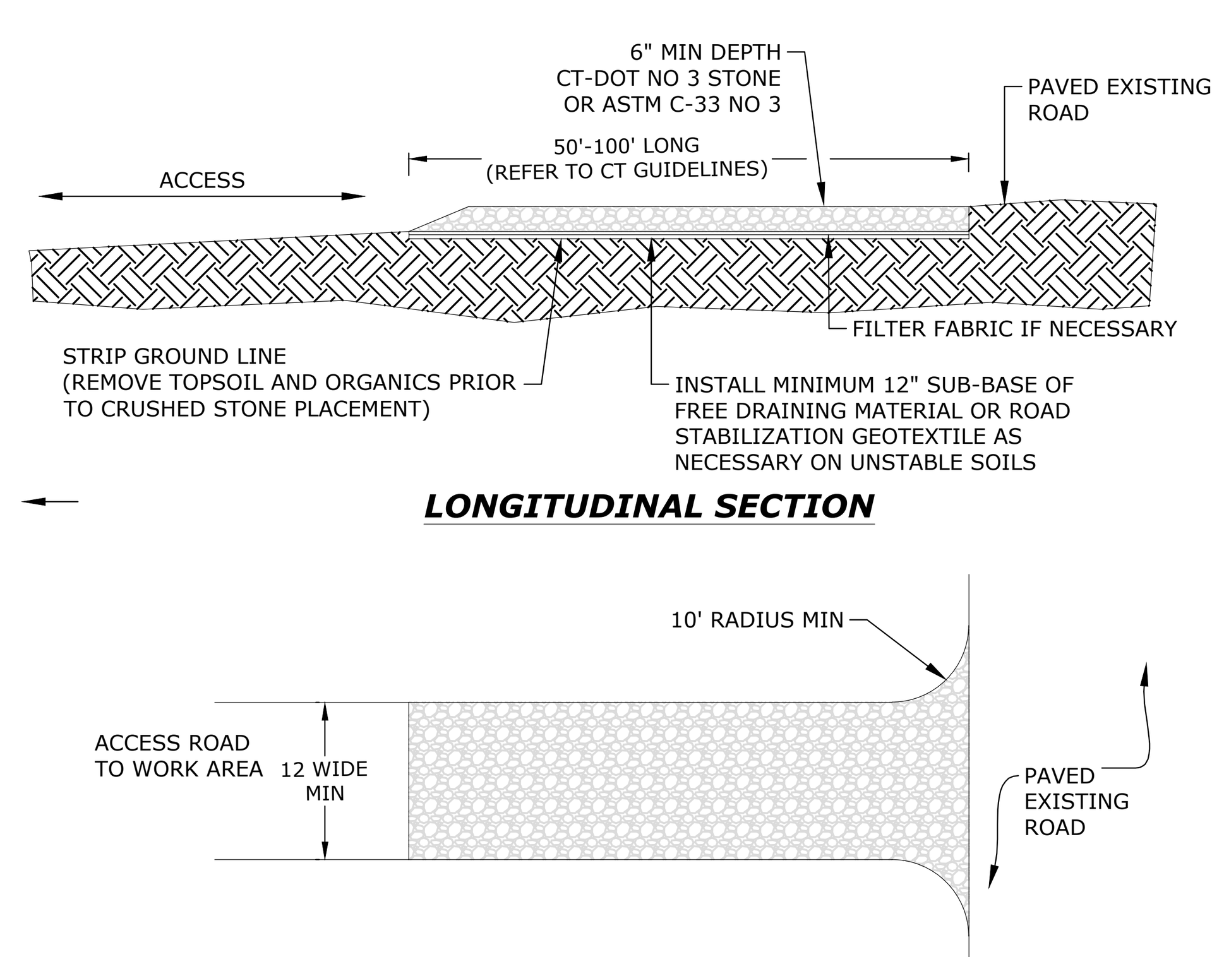
A. INSPECTIONS SHALL BE AT SAME INTERVALS AS ABOVE.
B. OUTLET SHALL BE CHECKED FOR INTEGRITY; HEIGHT OF THE STONE OUTLET SHALL BE MAINTAINED AT ONE FOOT BELOW CREST OF EMBANKMENT. SEDIMENT ACCUMULATION AND FILTRATION PERFORMANCE SHOULD BE OBSERVED.
C. WHEN SEDIMENTS HAVE ACCUMULATED TO ONE HALF OF THE MINIMUM REQUIRED STORAGE VOLUME, DE-WATER BASIN, REMOVE SEDIMENTS, RESTORE TRAP TO ORIGINAL DIMENSIONS AND DISPOSE OF SEDIMENT AT A LOCATION AND MANNER THAT WILL NOT RESULT IN EROSION OR SEDIMENTATION.
D. AFTER CONTRIBUTING AREA IS STABILIZED, REMOVE BASIN, AND RE-GRADE AND STABILIZE AREA.

CONCRETE WASHOUT AREA:

A. WASHOUT AREA(S) ARE TO BE INSPECTED AT LEAST ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS, OR OVERFLOWS. CHECK AFTER HEAVY RAINS.
B. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUT'S DEPTH. THE WASTE CAN BE STORED AT AN UPLAND LOCATION, AS APPROVED BY ENGINEER. ALL CONCRETE WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH ALL APPLICABLE LAWS, REGULATIONS, AND GUIDELINES.

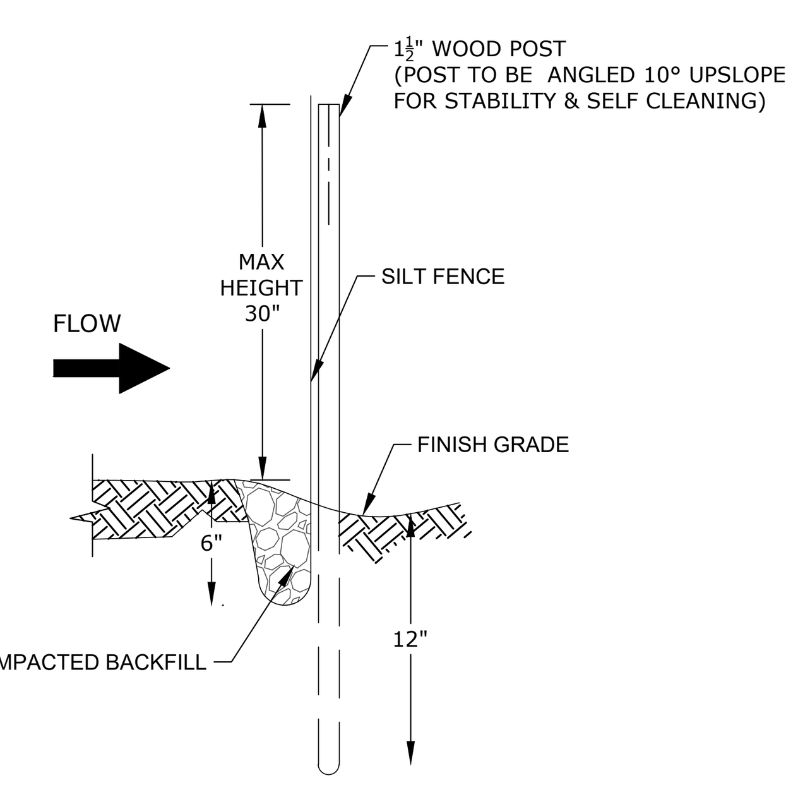
THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR OWNERSHIP OF ALL SOIL EROSION AND SEDIMENT CONTROLS AS NECESSARY TO PROTECT THIS SITE. DURING THE PROGRESS OF CONSTRUCTION, INTERIM EROSION CONTROLS MAY BE NECESSARY BASED ON THE CONTRACTOR'S MEANS, METHODS AND SEQUENCING. THE EROSION CONTROL MEASURES PRESENTED ON THESE PLANS REPRESENT THE MINIMUM CONTROLS DEEMED NECESSARY BASED ON THE EXPECTED FINAL PROJECT GRADES AND FEATURES. INTERIM MEASURES REQUIRED TO STABILIZE THE SITE DURING CONSTRUCTION SHALL BE INSTALLED BY THE CONTRACTOR AS NEEDED BASED UPON HIS ASSESSMENT OF THE SITE THROUGH HIS OWN SITE INSPECTIONS AND OBSERVATIONS. ALL CONTRACTOR-PROVIDED SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE 2023 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

IN THE EVENT THAT A RAIN EVENT OCCURS AND THE CONTRACTOR PROVIDED SE&SC CONTROLS FAIL TO MAINTAIN THE SITE IN A STABILIZED CONDITION, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL REMEDIATION, MITIGATION OR OTHER DAMAGE THAT MAY OCCUR.



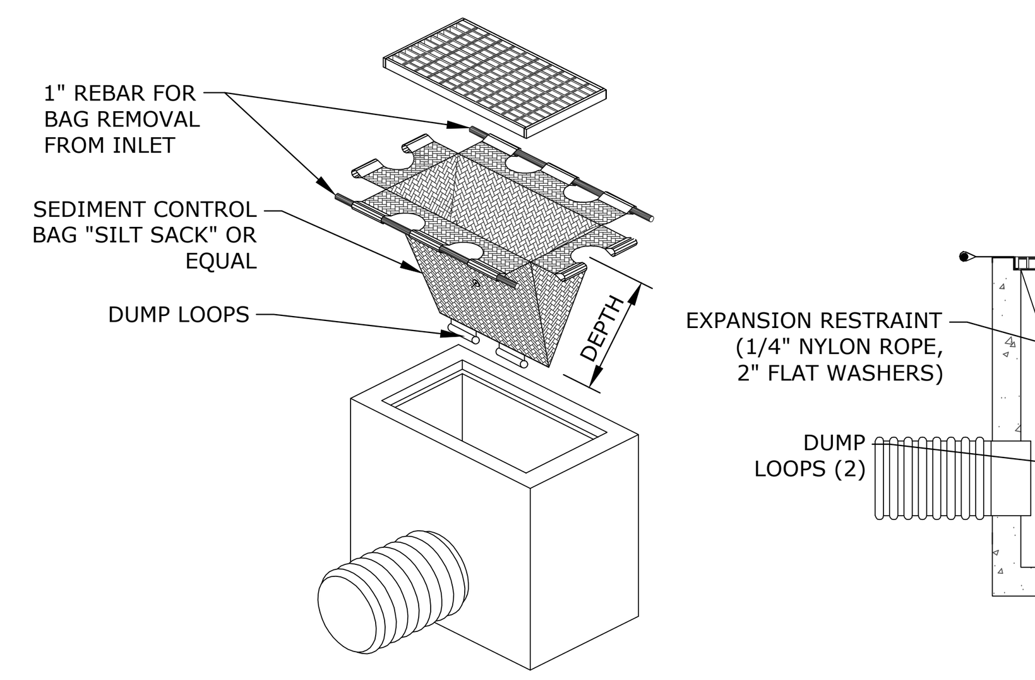
NOTE:
ALL ANTI-TRACKING PADS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH 2023 CT GUIDELINES FOR SOIL EROSION & SEDIMENT CONTROL, AS AMENDED.

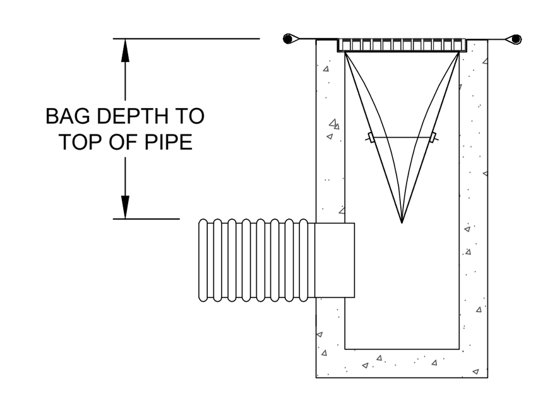
ANTI-TRACKING PAD DETAIL
NOT TO SCALE

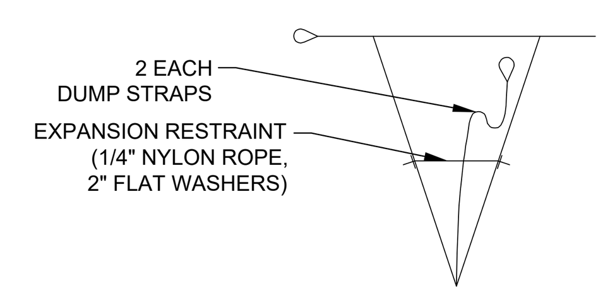


NOTES:
1. ALL SILT FENCES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND CLEANED & MAINTAINED A MINIMUM OF ONCE PER MONTH OR WITHIN 48 HOURS OF A SIGNIFICANT STORM EVENT.
2. THE FILTER CLOTH SHALL BE CLEANED IN A MANNER WHICH ENSURES THAT ALL SEDIMENT COLLECTED REMAINS ON-SITE.
3. ALL SILT FENCING & ALTERNATIVE FILTERS SHALL BE FURNISHED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH 2023 CT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROLS, AS AMENDED AND PER MANUFACTURERS INSTRUCTIONS.

SILT FENCE DETAIL
NOT TO SCALE







NOTES:
1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE CORRECT SIZE DEVICE FOR EACH INLET. FOR NON-STANDARD CATCH BASINS AND INLETS, THE CONTRACTOR SHALL MEASURE DIMENSIONS IN THE FIELD AND ORDER THE APPROPRIATE SIZE(S).
2. THE INLET SEDIMENT CONTROL DEVICE SHALL BE OF HIGH FLOW DESIGN (200 GAL/MIN/FT), AS PER THE MANUFACTURER'S SPECS.
3. THE SEDIMENT CONTROL DEVICE SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND CLEANED AND MAINTAINED A MINIMUM ONCE PER MONTH OR WITHIN THE 48 HOURS FOLLOWING A STORM EVENT. THE FILTER SHALL BE REPLACED OR CLEANED WHEN THE BAG BECOMES HALF FULL. THE FILTER SHALL BE CLEANED IN A MANNER WHICH ENSURES THAT ALL SEDIMENT REMAINS ON SITE.
4. SUBSTITUTION OF A SHEET OF FILTER FABRIC PLACED OVER THE OPENING OF THE INLET IS NOT APPROVED.
5. RECESSED CURB INLET CATCH BASINS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS, SIZE OF FILTER INLET SACK TO BE DETERMINED BY MANUFACTURER.
6. THE FILTER DEVICE SHALL BE MANUFACTURED BY ACF ENVIRONMENTAL OR APPROVED EQUAL.

CATCH BASIN FILTER (SILT SACK) DETAIL
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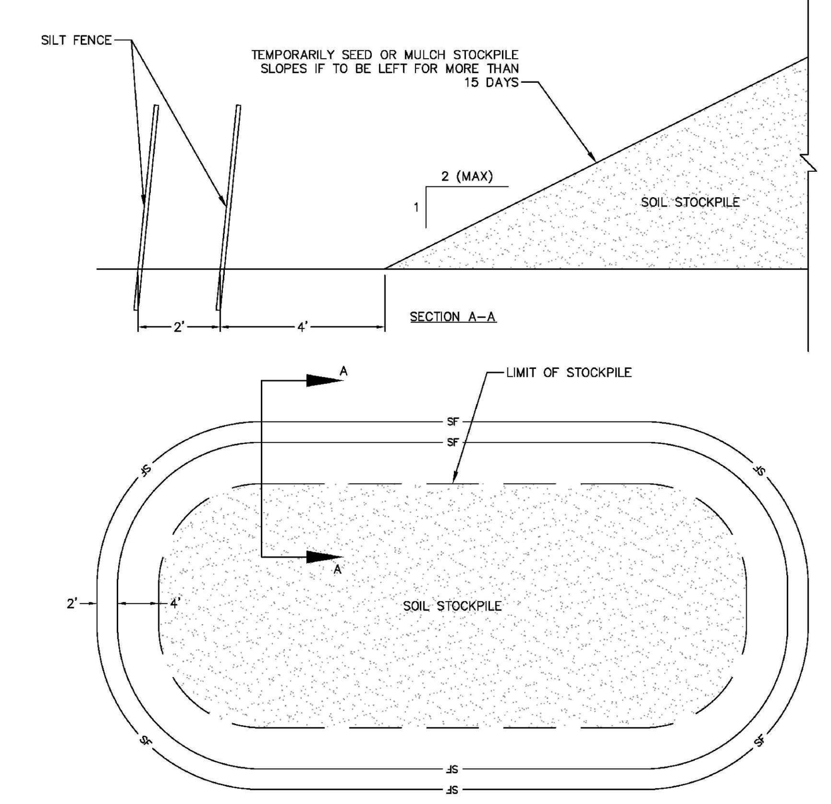

TEMPORARY SOIL STOCKPILE DETAIL
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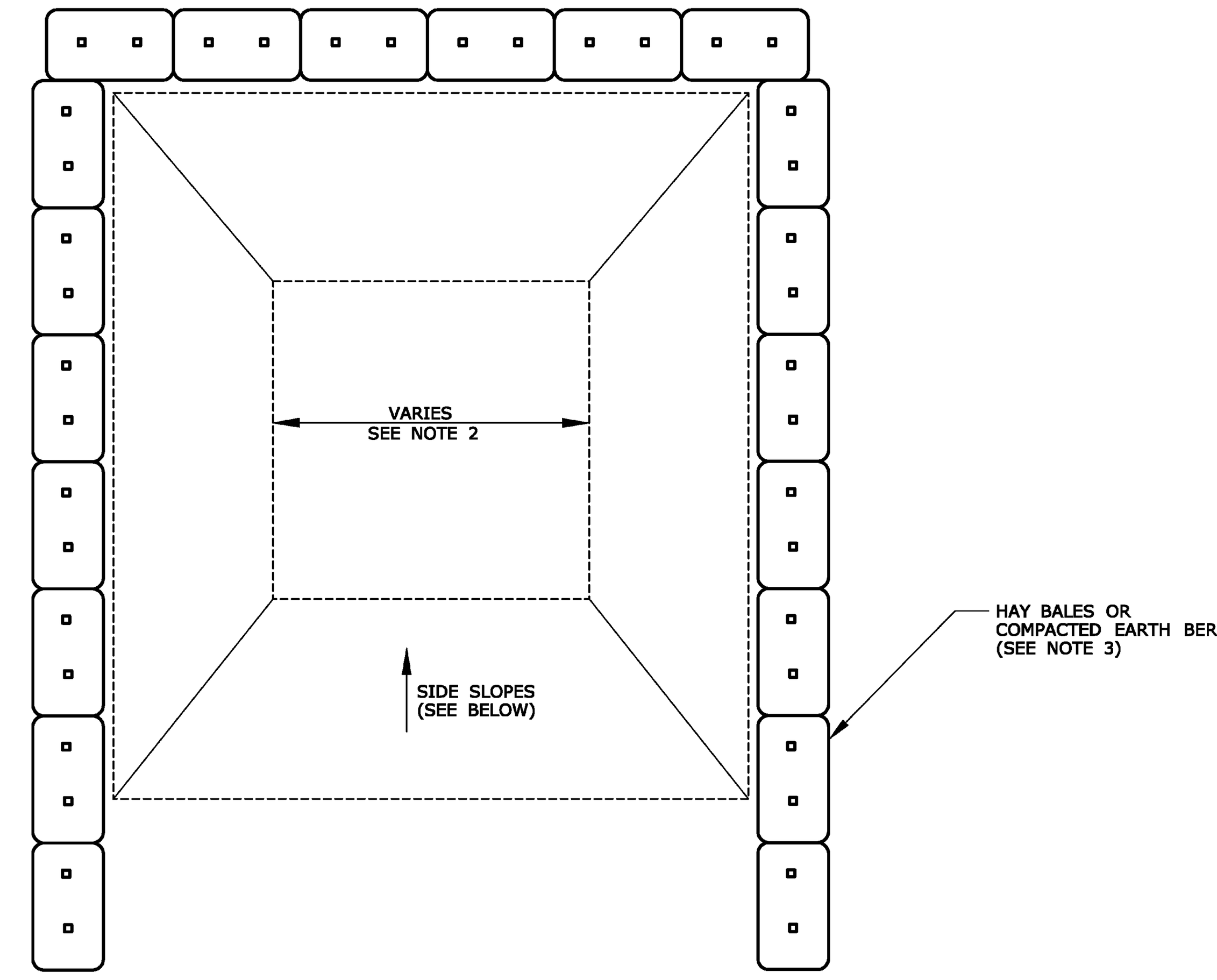
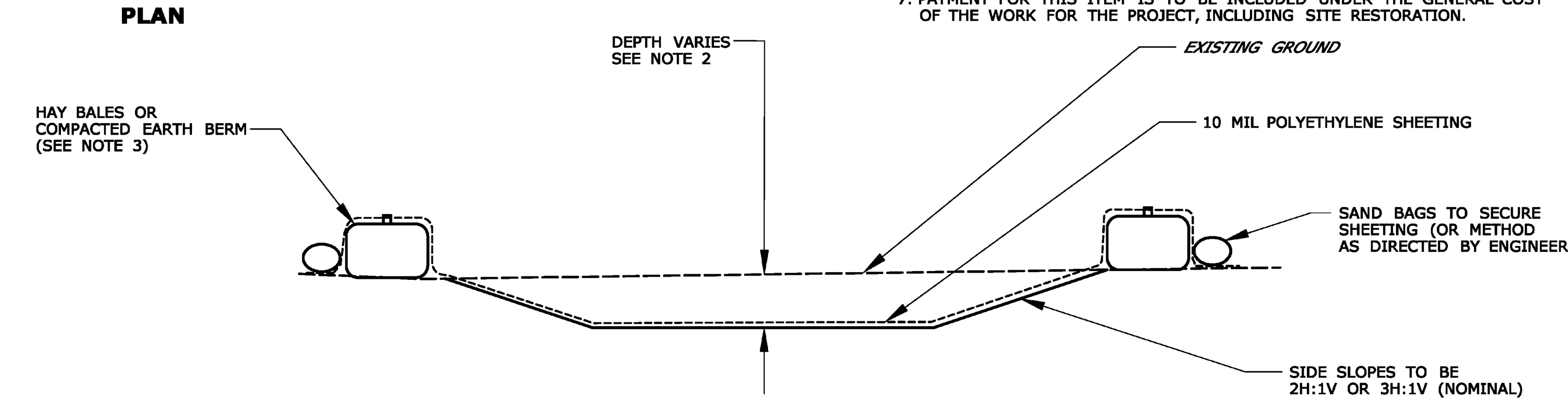


GENERAL NOTES:

1. CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. THE CONCRETE WASHOUT AREA SHALL BE ENTIRELY SELF-CONTAINED.
2. THE CONTRACTOR SHALL SUBMIT THE DESIGN, LOCATION AND SIZING OF THE CONCRETE WASHOUT AREA(S) WITH THE PROJECT'S EROSION AND SEDIMENTATION CONTROL PLAN AND SHALL BE APPROVED BY THE ENGINEER.

   LOCATION: WASHOUT AREA(S) ARE TO BE LOCATED AT LEAST 50 FEET FROM ANY STREAM, WETLAND, STORM DRAINS, OR OTHER SENSITIVE RESOURCE. THE FLOOD CONTINGENCY PLAN MUST ADDRESS THE CONCRETE WASHOUT IF THE WASHOUT IS TO BE LOCATED WITHIN THE FLOODPLAIN.

   SIZE: THE WASHOUT MUST HAVE SUFFICIENT VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS INCLUDING, BUT NOT LIMITED TO, OPERATIONS ASSOCIATED WITH GROUT AND MORTAR.
3. SURFACE DISCHARGE IS UNACCEPTABLE. THEREFORE, HAY BALES OR OTHER CONTROL MEASURES, AS APPROVED BY THE ENGINEER, SHOULD BE USED AROUND THE PERIMETER OF THE CONCRETE WASHOUT AREA FOR CONTAINMENT
4. SIGNS SHOULD BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CONCRETE AREA(S) AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS. WASHOUT AREA(S) SHOULD BE FLAGGED WITH SAFETY FENCING OR OTHER APPROVED METHOD.
5. WASHOUT AREA(S) ARE TO BE INSPECTED AT LEAST ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS, OR OVERFLOWS. (AS REQUIRED BY THE CONSTRUCTION SITE ENVIRONMENTAL INSPECTION REPORT) WASHOUT AREA(S) SHOULD BE CHECKED AFTER HEAVY RAINS.
6. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUT'S DEPTH. THE WASTE CAN BE STORED AT AN UPLAND LOCATION, AS APPROVED BY THE ENGINEER. ALL CONCRETE WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH ALL APPLICABLE LAWS, REGULATIONS, AND GUIDELINES.
7. PAYMENT FOR THIS ITEM IS TO BE INCLUDED UNDER THE GENERAL COST OF THE WORK FOR THE PROJECT, INCLUDING SITE RESTORATION.



CONCRETE WASHOUT AREA DETAIL
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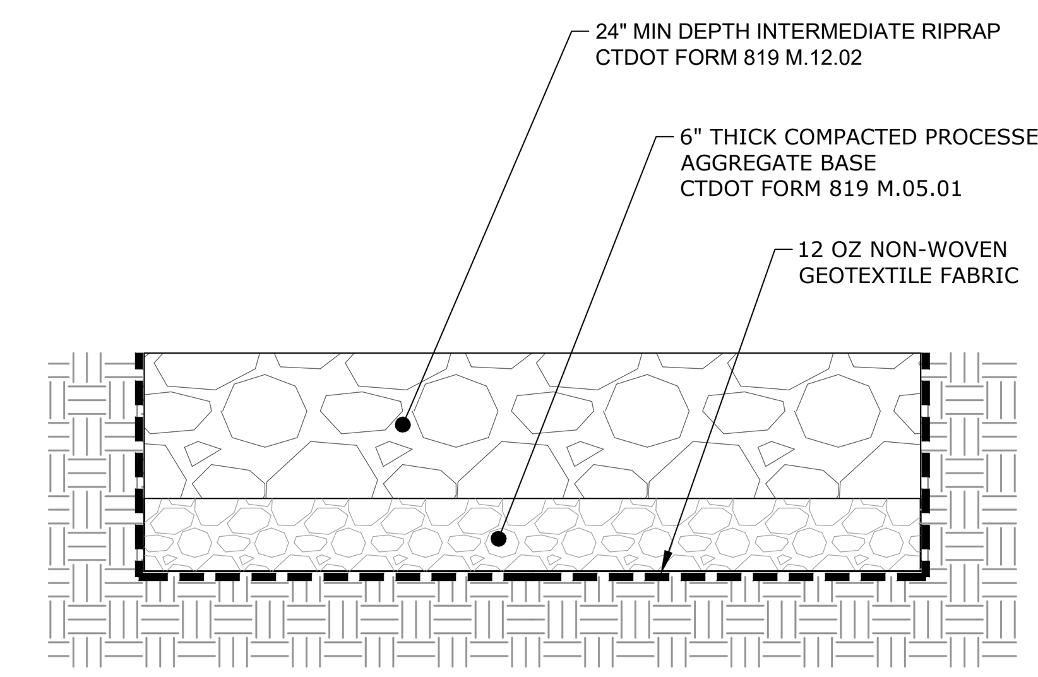

RIPRAP EROSION PROTECTION DETAIL
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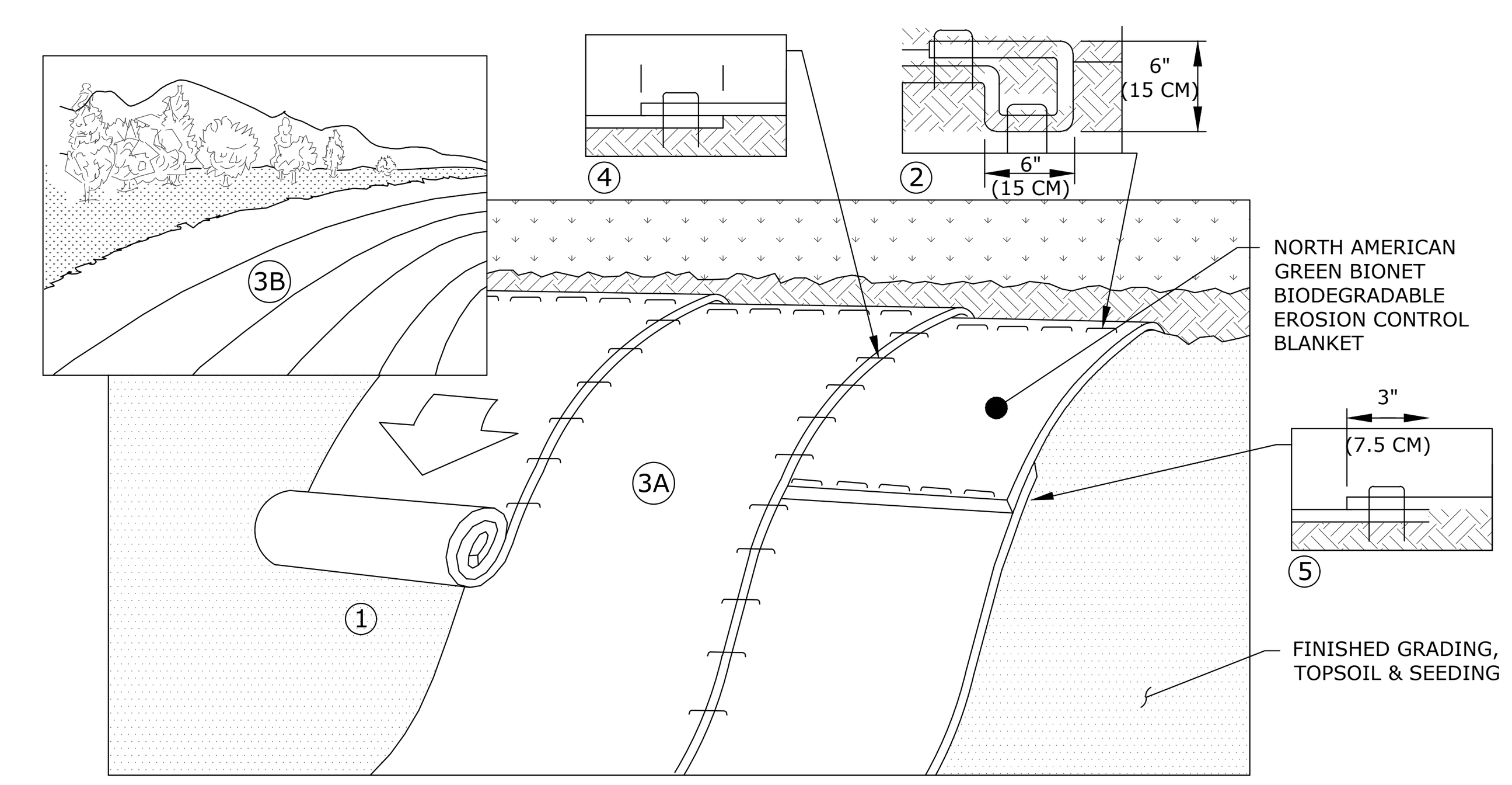

NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6",(15CM), DEEP X 6", (15CM), WIDE TRENCH WITH APPROXIMATELY 12", (30CM), OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12", (30CM), APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12", (30CM), PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12", (30CM), APART ACROSS THE WIDTH OF THE BLANKET. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6", (15 CM), MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM ™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" ,(5CM-12.5CM), OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ™ ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3", (7.5CM), OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12", (30CM), APART ACROSS ENTIRE BLANKET WIDTH.

EROSION CONTROL BLANKET DETAIL
NOT TO SCALE

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COMM. NO.	033GD2.03	
DRAWN BY	TCG	DATE 2/19/2025
APPROVED BY	KAP	DATE 2/19/2025

EROSION AND SEDIMENT CONTROL DETAILS

PARATRANSIT EMPLOYEE PARKING LOT
148 ROBERTS STREET, EAST HARTFORD, CT 06108

PREPARED FOR:

GREATER HARTFORD TRANSIT DISTRICT
1 UNION PLACE, HARTFORD, CT 06103

DRAWING C11

SHEET NO. 25 NO. OF SHEETS 25