TOWN OF GLASTONBURY
ENGINEERING DIVISION
PW-1213

CONTRACT DOCUMENTS

FOR

MAIN STREET SIDEWALKS
PHASE 3A AND 3B

BID # GL-2021-06

ADVERTISED ON: AUGUST 20, 2020

BID DUE DATE: SEPTEMBER 10, 2020

TOWN OF GLASTONBURY

INVITATION TO BID

BID #	ITEM	DATE & TIME REQUIRED
GL-2021-06	Main Street Sidewalks Phase 3A and 3B	September 10, 2020 at 11:00 A.M.

The Town of Glastonbury will receive Online Bids for construction of a total of approximately 2,800 linear feet of 4-foot-wide concrete sidewalk along the west side of State Route 17 / Main Street in Glastonbury. These projects also include construction of two segmental retaining walls, installation of a 60-foot prefabricated steel pedestrian bridge with cast-in-place abutments, as well as various drainage and associated miscellaneous improvements.

Bidders wishing to submit a bid proposal for this solicitation are directed to respond online through a secure e-Procurement portal. Responses can be submitted at the following link: https://app.negometrix.com/buyer/2832, under the bid title "GL-2021-06 Main Street Sidewalks Phase 3A and 3B".

Bidders will be required to create a profile before submitting their bid. Step-by-step instructions on how to register as a vendor are available at this website:
https://help.negometrix.com/en/support/solutions/articles/9000177626-register-on-negometrix4

Due to the bid collection being performed through a secure online platform, multiple copies of the bid are not required. Please upload one copy of ALL required bid documentation. Including a copy of the required bid bond. Bidders shall be required to mail the original bid bond to the Town of Glastonbury, Purchasing Department immediately following the bid opening at the following address:

Town of Glastonbury
Purchasing Department
P O Box 6523
Glastonbury, CT 06033-6523

All bids will be publicly opened and read aloud. No late bids will be accepted. The Town reserves the right to waive informalities or reject any or all bids when said action is deemed to be in the best interests of the Town.

Bid Forms, Plans, and Specifications may be obtained at no cost from the Town's website at www.glastonbury-ct.gov or the State's website at www.das.state.ct.us.

Prevailing Wages: The contractor must comply with Section 31-53 of the Connecticut General Statutes as amended, including annual adjustments in prevailing wages.

This contract is subject to State set-aside and contract compliance requirements.

The Town of Glastonbury is an Affirmative Action/Equal Opportunity Employer. Minority / Women / Disadvantaged Business Enterprises are encouraged to bid.

Mary F. Visone
Purchasing Agent

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1. Bidders submitting a response for this solicitation are directed to respond online through a secure e-Procurement portal. Bids can be submitted at the following link: https://app.negometrix.com/buyer/2832 under the BID title **"GL-2021-06 Main Street Sidewalk Phase 3A and 3B"**. Bidders will be required to create a profile before submitting their bid. Step-by-step instructions on how to register as a vendor are available at this website: https://help.negometrix.com/en/support/solutions/articles/9000177626-register-on-negometrix4

2. Whenever it is deemed to be in the best interest of the Town, the Town Manager, Purchasing Agent or designated representative shall waive informalities in any and all bids. The right is reserved to reject any bid when such action is deemed to be in the best interest of the Town of Glastonbury.

3. The basis of award will be on the basis of bid total cost of the lowest qualified, responsible and responsive bidder meeting the specifications herein. The bid total cost shall be arrived at by the mathematical calculation of the unit price multiplied times the number of units specified for each line item, and the total sum of all line items in the bid. In the event that the Town finds computational errors in a respondent's bid proposal, the bid total cost shall be recalculated by the Town based on the unit prices contained in the bid proposal.

4. Bids will be carefully evaluated as to conformance with stated specifications.

5. Specifications must be submitted complete in every detail and, when requested, samples shall be provided. If a bid involves any exception from stated specifications, they must be clearly noted as exceptions, underlined, and attached to the bid.

6. The Bid Documents contain the provisions required for the requested item. Information obtained from an officer, agent, or employee of the Town or any other person shall not affect the risks or obligations assumed by the Bidder or relieve him/her from fulfilling any of the conditions of the bid.

7. Each Bidder is held responsible for the examination and/or to have acquainted themselves with any conditions at the job site which would affect their work before submitting a bid. Failure to meet this criteria shall not relieve the Bidder of the responsibility of completing the bid without extra cost to the Town of Glastonbury.

8. Any bid may be withdrawn prior to the above-scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No Bidder may withdraw a bid within sixty (60) days after the actual date of the opening thereof. Should there be reasons why a bid cannot be awarded within the specified period, the time may be extended by mutual agreement between the Town and the Bidder.

9. Each electronic bid submission must be accompanied by a copy of the bid bond payable to the Town for ten percent (10%) of the total amount of the bid. Original bid bonds from all respondents must be mailed to the attention of the Purchasing Agent immediately following the virtual bid opening at the following address: Town of Glastonbury, PO Box 6523, Glastonbury, CT 06033-6523, Attn: Mary F. Visone, Purchasing Agent. The bid bond of the successful Bidder will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned.

10. A 100% Performance and a 100% Payment bond are required of the successful bidder. This bond shall cover all aspects of the specification and shall be delivered to the Purchasing Agent prior to the issuance of a purchase order. The Performance and Payment Bond will be returned upon the delivery and acceptance of the bid items.

11. The Bidder agrees and warrants that in the submission of this sealed Bid, they will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religion, national origin, sex, or physical disability including, but not limited to blindness, unless it is shown by such Bidder that such disability prevents performance of that which must be done to successfully fulfill the terms of this sealed Bid or in any manner which is prohibited by the laws of the United States or the State of Connecticut: and further agrees to provide the Human Relations Commission with such information requested by the Commission concerning the employment practices and procedures of the Bidder. An Affirmative Action Statement will be required by the successful Bidder.

12. Bidder agrees to comply with all of the latest Federal and State Safety Standards and Regulations and certifies that all work required in this bid will conform to and comply with said standards and regulations. Bidder further agrees to indemnify and hold harmless the Town for all damages assessed against the Town as a result of Bidder's failure to comply with said standards and/or regulations.

13. All correspondence regarding any purchase made by the Town of Glastonbury shall reference the Town's purchase order number. Each shipping container shall clearly indicate both Town purchase order number and item number.

14. Bidder is required to review the Town of Glastonbury Code of Ethics adopted July 8, 2003 and effective August 1, 2003 and revised October 29, 2013 and effective November 28, 2013. Bidder shall acknowledge that they have reviewed the document in the area provided on the bid/proposal response page (BP). The selected Bidder will also be required to complete and sign an Acknowledgement Form prior to award. The Code of Ethics and the Acknowledgement Form can be accessed at the Town of Glastonbury website at **www.glastonbury-ct.gov**. Upon entering the website scroll down to click on **Bids & Proposals Icon** which will bring you to the links for the **Code of Ethics** and the **Acknowledgement Form**.

15. **Non-Resident Contractors:** (if applicable)
Upon award the Town is required to report names of nonresident (out of state) Contractors to the State of Connecticut, Department of Revenue Services (DRS) to ensure that Employment Taxes and other applicable taxes are being paid by Contractors. **A single surety bond for 5% of the entire contract price is required to be filed with DRS by any unverified nonresident prime or general contractor (if awarded) where the contract price for the project is $250,000 or more.** The contractor will be required to promptly furnish to the Town a copy of the **Form AU-968 - Certificate of Compliance** issued by the State of Connecticut, DRS. See State of Connecticut **Notice SN 2012 (2).**

16. Bidder shall include on a sheet(s) attached to its proposal a complete disclosure of all past and pending mediation, arbitration and litigation cases that the bidder or its principals (regardless of their place of employment) have been involved in for the most recent five years. Please include a statement of the issues in dispute and their resolution. Acceptability of Bidder based upon this disclosure shall lie solely with the Town.

17. Bidder or its principals, regardless of their place of employment, shall not have been convicted of, nor entered any plea of guilty, or nolo contendere, or otherwise have been found civilly liable or criminally responsible for any criminal offense or civil action. Bidder shall not be in violation of any State or local ethics standards or other offenses arising out of the submission of bids or proposals, or performance of work on public works projects or contracts.

18. It is the responsibility of the bidder to check the Town's website before submitting bid for addendums posted prior to bid opening.

19. **State Prevailing Wage Rates:**

Respondents shall comply with State Statutes concerning Employment and Labor Practices, if applicable, and Section 31-53 of the Connecticut General Statutes, as amended (Prevailing Wages). Wage Rate Determination for this project from the State of Connecticut is included in the Bid Documents. Certified payrolls for site labor shall be submitted weekly to the Town's Representative or his designee on the correct State of Connecticut form (see RFP). The Town reserves the right to, without prior notice, audit payroll checks given to workers on site in order to ascertain that wages and fringe benefits are being paid as required by the State of Connecticut. Please make special note of the State requirement to adjust wage and fringe benefit rates on each July 1st following the original published rates.

NOTE that respondent is to include in its proposal all costs required by such annual increases in the PREVAILING RATES. NO escalation clauses are to be included in the respondent's proposal and NO escalation clauses will be in the Contract Agreement. Respondent is to anticipate any future increases and include these costs in the proposal response.

Contractor's invoices will not be paid if certified payrolls are incomplete, incorrect or not received in a timely manner.

All Apprentices must be registered with the State of Connecticut and their number shall not exceed the number allowed by law. Otherwise, all workers must be paid at least the Journeyman rate listed including benefits.

OSHA SAFETY AND HEALTH CERTIFICATION

Effective July 1, 2009: Any Mechanic, Laborer, or Worker, who performs work in a classification listed on the prevailing wage rate schedule on any public works project covered under C.G.S. Section 31-53, both on site and on or in the public building, must have completed a federal OSHA Safety and Health course within the last 5 years.

20. Each bid shall also include a description of three similar (3) projects completed by the bidder with references to demonstrate successful experience with similar projects. Please provide project name, contact information and contract value.

21. Commission on Human Rights and Opportunities (CHRO) Requirements:
The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5.

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

For municipal public works contracts and quasi-public agency projects, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at:
http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806

As stated above, the work for this project falls under the provisions of CONN. GEN. STAT. Sections 46a-68c and 46a-68d which require that prior to the award of this contract, you must have your company affirmative action plan approved by CHRO. A copy of your plan must be submitted to the CHRO within 30 days of your receipt of award. Should you have any questions

regarding the preparation of your plan, please contact the Contract Compliance Unit at the Commission on Human Rights and Opportunities at (860) 541-4709.

Affirmative action plans can be sent to:
Commission on Human Rights and Opportunities
25 Sigourney Street Hartford, CT 06106
Attn: Contract Compliance Unit

22. Completion of a certificate of compliance per CGS Section 31-57B is **REQUIRED** as part of this bid response. Certificate can be found at the beginning of ATTACHMENT A.

23. **Compliance with Town Ordinance Prohibiting Natural Gas Waste & Oil Waste From Natural Gas Extraction Activities or Oil Extraction Activities:** If this bid is for the construction, repair or maintenance of Town owned and/or maintained roads or real property within the Town related to either (a) the purchase or acquisition of materials by the Town to be used to construct, repair or maintain any Town owned and/or maintained road or real property within the Town or (b) the performance of services for the Town to construct, repair or maintain any Town owned and/or maintained road or real property within the Town, the Bidder shall provide the following signed statement to the Town in its bid response, which shall be a certification under penalty of perjury by the Bidder:

*"The undersigned Bidder, _____, hereby submits a bid for materials, equipment and/or services for the Town of Glastonbury. The bid is for bid documents titled **"MAIN STREET SIDEWALKS PHASE 3A AND 3B Bid# GL-2021-06".***
The undersigned Bidder hereby certifies under penalty of perjury that in connection with the bid and, if it is awarded the purchase order or contract by the Town, in connection with any purchase order or contract: (1) no materials containing natural gas waste or oil waste from natural gas extraction activities or oil extraction activities shall be provided to the Town or shall be used in providing any services to the Town by the undersigned Bidder or any contractor, sub-contractor or agent of the undersigned Bidder; (b) nor will the undersigned Bidder or any contractor, subcontractor or agent of the undersigned Bidder apply any natural gas waste or oil waste from natural gas extraction activities or oil extraction activities to any publicly owned and/or maintained road or real property within the Town of Glastonbury in performing its obligations under the purchase order or contract.
The undersigned Bidder hereby agrees and acknowledges that this requirement shall be a term of the purchase order or contract, if it awarded the purchase order or contract by the Town, and any breach of this provision shall be a breach of the purchase order or contract."

24. All Bidders are hereby made aware that, as per the Form 818, the selected contractor shall self-perform a minimum of 50% of the total contract value with its own organization.

IMPORTANT:

- **Failure to comply with general rules may result in disqualification of the Bidder.**
- Municipal projects are exempt from Federal Excise Taxes, as well as, State of Connecticut Sales, Use and Service Taxes and should not be include in the Bidder's proposal.

NOTE: Any technical questions regarding this bid shall be made in writing (email acceptable) and directed to Stephen Braun, Assistant Town Engineer, 2155 Main Street, PO Box 6523, Glastonbury, CT 06033; stephen.braun@glastonbury-ct.gov. Telephone (860) 652-7743 between the hours of 8:00 a.m. – 4:30 p.m. For administrative questions concerning this bid/proposal, please contact Mary F. Visone, Purchasing Agent, by emailling the Purchasing Department at purchasing@glastonbury-ct.gov. All questions, answers, and/or addenda, as applicable, will be posted on the Town's website at www.glastonbury-ct.gov (Upon entering the website scroll down to click on Bids & Proposals Icon, then scroll down page to see the active bid table. You must click the Bid Title to view all bid details and document links). The request must be received at least five (5) business days prior to the advertised response deadline**. It is the respondent's responsibility to check the website for addenda prior to submission of any bid/proposal.**

01.00 WORKMANSHIP, MATERIALS AND EMPLOYEES

01.01 Wherever in this contract the word "Engineer" is used, it shall be understood as referring to the Town Engineer/Manager of Physical Services of the Town of Glastonbury acting personally or through any assistants duly authorized.

01.02 The entire work described herein shall be completed in accordance with the plans and specifications to the full intent and meaning of the same. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and material shall be of good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

01.03 The wording "furnish", "install", "construct", "furnish and install", or any similar terms, unless specifically noted to the contrary, shall include all labor, materials, water, tools, equipment, light, power, transportation, and any other services required for the completion of the work.

01.04 The Contractor shall at all times enforce strict discipline and good order among his employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned to him.

02.00 SUPERINTENDENT

02.01 The Contractor shall keep on the work during its progress, in the absence of the Contractor, a competent Superintendent. The Superintendent shall be acceptable to the Engineer and shall fully represent the Contractor. All directions given to the Superintendent shall be binding as if given to the Contractor.

03.00 PRECONSTRUCTION MEETING

03.01 A Preconstruction Meeting will be held with the Engineer, Contractor, and any private utility company prior to commencing any work. The Engineer shall arrange the meeting based on a mutually convenient time.

04.00 PERMITS

04.01 Other than local permits, all permits, licenses, and fees required for the performance of the Contract work shall be secured and paid for by the Contractor.

04.02 A Highway Encroachment Permit issued by Connecticut Department of Transportation District 1 is required for this project. Contractor is responsible for all costs associated with this permit as well as adherence to all requirements and conditions.

05.00 PROPERTY ACCESS

05.01 The Contractor shall take all proper precautions to protect from injury or unnecessary interference, and provide proper means of access to abutting property where the existing access is cut off by the Contractor.

05.02 The Contractor shall take all proper precautions to protect persons from injury or unnecessary inconvenience and leave an unobstructed way along the public and private places for travelers, vehicles, and access to hydrants.

05.03 The Contractor shall make arrangements with the adjacent property owners for such trespass as he may reasonably anticipate in the performance of the work. All such arrangements shall be reported, in writing, to the Engineer.

06.00 PROTECTION OF THE PUBLIC AND OF WORK AND PROPERTY

06.01 The Contractor shall continuously maintain adequate protection of all work from damage, and shall take all reasonable precautions to protect the Town from injury or loss arising in connection with the Contract. Such barriers including temporary construction fence as directed by the Engineer, shall not be measured for payment, but rather included in the general cost of the work. Temporary signage shall be measured for payment under the Construction Signs pay item.

06.02 The Contractor shall adequately protect adjacent private and public property as provided by law and the Contract Documents.

06.03 The Contractor shall make good any damage, injury, or loss of his work and to the property of the Town resulting from lack of reasonable protective precautions.

07.00 EXISTING IMPROVEMENTS

07.01 The Contractor shall conduct his work so as to minimize damage to existing improvements. Except where specifically stated otherwise in the specifications, drawings, or as directed by the Engineer, it will be the responsibility of the Contractor to restore to their original condition, as near as practical, all improvements on public or private property. This shall include:

a. Property within and adjacent to the side of installation such as shrubs, walks, driveways, fences, etc.

b. Utility mains, ducts, poles, and services. The Contractor is hereby notified that utilities, if/where shown on the plans, are at approximate locations. These locations are subject to possible errors in the source of information and errors in transcription. The Contractor shall make certain of the exact location of all mains, ducts, poles, and services prior to excavation.

08.00 SEPARATE CONTRACTS

08.01 The Engineer reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. Wherever work being done by the Town of Glastonbury forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Engineer to secure the completion of the various portions of the work.

09.00 INSPECTION OF WORK

09.01 The Town shall provide sufficient personnel for the inspection of the work.

09.02 The Engineer shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and for inspection.

09.03 If the specifications or the Engineer's instructions require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection and, if the inspection is by another authority other than the Engineer, of the date fixed for such inspection. Inspections by the Engineer shall be made promptly. If any work should be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination and properly restored at the Contractor's expense.

09.04 Reinspection of any work may be ordered by the Engineer. If such work is found to be in accordance with the Contract Documents, the Town shall pay the cost of reinspection and replacement. If such work is not in accordance with the Contract Documents, the Contractor shall pay such cost.

10.00 RIGHT TO INCREASE OR DECREASE WORK

10.01 The Town shall have the right to increase or decrease the amount of work herein specified as may be required.

11.00 RIGHT OF ENGINEER TO STOP WORK FOR WEATHER CONDITIONS

11.01 Should the work, in the opinion of the Engineer, be in danger by reason of inclemency of weather, or could not be finished in time to prevent such danger, the Contractor shall cease operations upon order of the Engineer, and shall not resume them until ordered to do so by the Engineer when the weather conditions are favorable. The Contractor shall, upon such orders, discontinue work, remove all materials or appliances for or in use upon the work, and place the streets in proper condition for use by the public during the time the work is suspended as herein provided, without cost to the Town.

12.00 CONTRACTOR TO BE RESPONSIBLE FOR IMPERFECT WORK OR MATERIALS

12.01 Any faithful work or imperfect material that may be discovered before the acceptance and the payment of the work shall be corrected upon the order of the Engineer. The acceptance and payment of the work does not in any manner relieve the Contractor of his obligation to construct work in the proper manner and the use of materials herein specified.

13.00 TOWN MAY NOTIFY CONTRACTOR IF WORK IS NOT CARRIED ON SATISFACTORILY

13.01 If, in the opinion of the Engineer, the Contractor is not proceeding with the work at a sufficient rate of progress so as to finish in the time specified, or has abandoned said work, or is not complying with the terms and stipulations or the Contract and specifications, the Engineer may serve notice on the Contractor to adopt such methods as will ensure the completion of the work in the time specified.

13.02 If, within five days after the Engineer has notified the Contractor that his work is not being carried on satisfactorily as before mentioned, the Engineer shall have the right to annul the Contract and manage the work under the direction of the Engineer, or re-let, for the very best interest of the Town as a new contract, the work under said new Contract shall be considered the responsibility of the defaulting Contractor.

13.03 Additional costs incurred over and above the original Contract shall be borne by the Contractor.

14.00 DEDUCTIONS FOR UNCORRECTED WORK

14.01 If the Engineer deems it inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made therefor.

14.02 The Contractor shall promptly remove from the premises all materials condemned by the Engineer as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Town, and shall bear the expense of making good all work by other contractors destroyed or damaged by such removal or replacement.

14.03 If the Contractor does not remove such condemned work and materials as promptly as possible after written notice, the Engineer may remove them and store the materials at the expense of the Contractor.

15.00 CLEANING UP

15.01 The Contractor must remove all debris of every description as the work progresses and leave the surroundings in a neat and orderly condition to the satisfaction of the Engineer.

15.02 Upon completion, and before acceptance and final payment, the Contractor shall remove from the site all equipment, forms, surplus material, rubbish and miscellaneous debris and leave the site in a neat and presentable condition.

16.00 ROYALTIES AND PATENTS

16.01 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Town of Glastonbury harmless from loss on account thereof, except that the Town of Glastonbury shall be responsible for all such loss when a particular manufacturer, product, or process is specified by the Town of Glastonbury.

01.00 NOTICE TO CONTRACTOR

01.01 Intent of Contract: The intent of the Contract is to prescribe a complete work or improvement that the Contractor undertakes to do, in full compliance with the specifications, plans, special provisions, proposal, and Contract. The Contractor shall perform all work in close conformity with the lines, grades, typical cross-sections, dimensions, and other data shown on the plans or as modified by written orders, including the furnishing of all materials, implements, machinery, equipment, tools, supplies, transportation, labor, and all other things necessary to the satisfactory prosecution and completion of the project.

Much time and effort has gone into this project in an effort to minimize impact on trees and adjacent properties. Extreme care shall be taken by the Contractor to honor commitments made by the Town. Prior to doing any work, the Contractor should meet with the Engineer to become familiar with the conditions encountered and commitments made.

01.02 The Contractor is hereby alerted to the fact that the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818 (Form 818) latest edition including supplements thereto dated January 2020, are the governing specifications and are to be considered part of the Contract Documents. The Form 818 shall not be provided by the Town and any cost associated therewith shall be the responsibility of the Contractor. In case of any discrepancy between the Contract Drawings or Specifications and the Form 818, the matter shall immediately be submitted to the Engineer. The Engineer shall have sole authority in resolving any discrepancies.

01.03 Phase 3A, located between Red Hill Drive and Stockade Road, is being funded under the Community Connectivity Grant Program (C.C.G.P.) administered by the State of Connecticut Department of Transportation. Phase 3B, located between #1287 Main Street and Mallard Drive, is being funded by the Town. Separate purchase orders for each project area and funding source will be issued to the selected contractor to allow all costs associated with each project area to be tracked separately.

01.04 Superpave Design Level Information: Hot-Mix Asphalt (HMA) constructed according to the Superpave mix-design system is required to attain a Superpave Design Level and is required to use a Performance Graded (PG) binder. **All HMA Mix Designations included in the contract shall use Superpave Design Level 2 using PG 64S-22 Binder.**

01.04 Limitations on work hours are described in Special Conditions Section 17.02. The Contractor shall understand and strictly comply with these limitations.

01.05 Gravel Borrow is available from the Town of Glastonbury Bulky Waste Facility located on Tryon Street. Hours are limited for this facility and the contractor must provide his own equipment for loading trucks to haul fill from this facility as described in the Special Provision for the Gravel Borrow item. Stumps, brush, and other debris can also be dumped at this facility at no cost to the contractor as described in Section 7.00 of the Special Conditions.

02.00 COMMUNICATIONS

02.01 All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.

02.02 Any notice to, or demand upon, the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Agreement (or at such other office as the Contractor may, from time to time, designate) in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

02.03 All papers required to be delivered to the Town shall, unless otherwise specified in writing to the Contractor, be delivered to the Town Engineer/Manager of Physical Services, 2155 Main Street, Glastonbury, CT 06033, and any notice to, or demand upon, the Town shall be delivered at the above address in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office or to such other representatives of the Town, or to such other address as the Town may subsequently specify in writing to the Contractor for such purpose.

02.04 Any such notice shall be deemed to have been given as of the time of actual delivery or, in case of mailing, when the same should have been received in due course of post or, in the case of telegrams, at the time of actual receipt, as the case may be.

03.00 PARTIAL USE OF IMPROVEMENTS

03.01 The Town may, at its election, give notice to the Contractor and place in use those sections of the work that have been completed, inspected and can be accepted as complying with the Contractor Documents and if, in its opinion, each such section is reasonably safe and fit for the use and accommodation for which it was intended, provided:

a. The use of such sections of the work shall not materially impede the completion of the remainder of the work by the Contractor.

b. The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.

c. The use of such sections shall in no way relieve the Contractor of his liability due to having used defective materials or to poor workmanship.

d. The period of guarantee shall not begin until the date of the final acceptance of all work required under this Contract.

04.00 INSURANCE

04.01 The Bidder shall, at its own expense and cost, obtain and keep in force during the entire duration of the Project or Work the following insurance coverage covering the Bidder and all of its agents, employees and sub-contractors and other providers of services and shall name the **Town of Glastonbury and the State of Connecticut and their employees and agents as an Additional Insured** on a primary and non-contributory basis to the Bidders Commercial General Liability and Automobile Liability policies. **These requirements shall be clearly stated in the remarks section on the Bidders Certificate of Insurance.** Insurance shall be written with insurance carriers approved in the State of Connecticut and with a minimum Best's Rating of A-VIII. In addition, all carriers are subject to approval by the Town. Minimum Limits and requirements are stated below:

a. Worker's Compensation Insurance:

- Statutory Coverage
- Employer's Liability
- $1,000,000 each accident/$1,000,000 disease-policy limit/$1,000,000 each employee
- A Waiver of Subrogation shall be provided

b. Commercial General Liability:

- Including Premises and Operations, Products and Completed Operations, Personal and Advertising Injury, Contractual Liability and Independent Contractors
- Limits of Liability for Bodily Injury and Property Damage
  Each Occurrence: $1,000,000
  Aggregate: $2,000,000
  (The Aggregate Limit shall apply separately to each job.)
- A Waiver of Subrogation shall be provided

c. Automobile Insurance:

- Including all owned, hired, borrowed, and non-owned vehicle
- Limit of Liability for Bodily Injury and Property Damage
  Per Accident: $1,000,000
- A Waiver of Subrogation shall be provided

d. Umbrella of Excess Liability:

- State in the Remarks Section that coverage is follow form.
- Limit of Liability Each Occurrence $1,000,000
  Aggregate $1,000,000

e. Owner's and Contractor's Protective Liability Insurance:

With respect to the Contractor's Project operations and also those of its subcontractors, the Contractor shall carry, for and on behalf of the State and the Town of Glastonbury, insurance which shall provide coverage of at least $1,000,000 for each accident or occurrence resulting in damages from (1) bodily injury to or death of persons and/or (2) injury to or destruction of property. Subject to that limit per accident or occurrence, the policy shall provide an aggregate coverage of at least $2,000,000 for all pertinent damages arising during the policy period

04.02 The Bidder shall direct its Insurer to provide a Certificate of Insurance to the Town before any work is performed. The Contractor shall be responsible to notify the Town **60 days** in advance with written notice of cancellation or non-renewal. The Certificate shall evidence all required coverage. The Bidder shall provide the Town copies of any such insurance policies upon request.

04.03 INDEMNIFICATION: To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Town and the State of Connecticut and its consultants, agents, and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, attorneys and other professionals and court and arbitration costs) to the extent arising out of or resulting from the performance of the Contractor's work, provided that such claim, damage, loss or expense is caused in whole or in part by any negligent act or omission by the Contractor, or breach of its obligations herein or by any person or organization

directly or indirectly employed or engaged by the Contractor to perform or furnish either of the services, or anyone for whose acts the Contractor may be liable.

05.00 WORK BY OTHERS

05.01 Private utilities, contractors, developers or other parties may be expected to be working within the Contract area during this Contract. It shall be the responsibility of the Contractor to coordinate his work with the work being done by others in order that the construction shall proceed in an efficient and logical manner. The Contractor shall have no claim or claims whatever against the Town, the Engineer, or other parties due to delays or other reasons caused by the work by others or his failure to coordinate such work.

06.00 CONTRACTOR'S WORK AND STORAGE AREA

06.01 The Contractor shall contact the Town to determine if any specific locations will be designated, or gain its approval prior to using any area for storage of equipment, materials and trailers during the period of this Contract. The Contractor shall confine his work/storage area to the limits as designated or approved and shall be responsible for the security of the work/storage area. Upon completion of the Contract, the Contractor shall remove all equipment and materials, except as otherwise specified, and restore the site to its original condition as approved by the Engineer and at no cost to the Town.

07.00 DISPOSAL AREA

07.01 The Tryon Street Bulky Waste Facility will be available to the Contractor, at no charge, for disposal of materials that are accepted at that facility. Waste disposal guidelines for the Bulky Waste facility are published on the Town web site at the address shown below. Each bidder shall have reviewed and understand these guidelines prior to submitting a bid for the project.

http://38.106.4.108/departments/department-directory-l-z/refuse-disposal/bulky-waste-facility

Acceptable materials generally include such materials as brush, stumps, demolition materials, and excess excavated earth materials. Unacceptable materials generally include such items as carpet, appliances, upholstered furniture; hazardous wastes such as pesticides, oil based paints and thinners; or other wastes as designated by the State Department of Energy and Environmental Protection. Demolition material cannot contain asbestos or other hazardous materials.

The Contractor shall obtain a disposal area for all other unsuitable or surplus materials at no cost to the Town.

08.00 DUST CONTROL

08.01 During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use water or calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed, without additional compensation.

09.00 MAINTENANCE / GUARANTEE PERIOD

09.01 The Contractor shall be held responsible to the Town for maintenance with respect to defects, settlements, etc. for a minimum period of one-year following the date of final acceptance of the project by the Town.

10.00 PROTECTION OF EXISTING UTILITIES

10.01 Prior to opening an excavation, effort shall be made to determine whether underground installations, (i.e., sewer, water, fuel, electric lines, etc.) will be encountered and, if so, where such underground installations are located. Before starting any excavation, the Contractor shall submit to the Engineer plans or details showing the proposed method the Contractor will use to support and protect all existing utilities during construction. The furnishing of such plans and details shall not serve to relieve the Contractor of any responsibility for the proper conduct of the work.

10.02 When the excavation approaches the estimated location of such an installation, the exact location shall be determined by careful probing or hand digging, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

10.03 There will be no extra payment for submitting plans or details or for any work related to supporting and protecting all existing utilities during construction.

11.00 TIME FOR COMPLETION/NOTICE TO PROCEED

11.01 The work under this Contract shall commence on the date ordered by the Engineer in the Notice to Proceed. After the work has begun, it shall continue in an orderly fashion such that all contract work is substantially completed within sixty (60) calendar days of the commencement date indicated in the Notice to Proceed.

Delivery and installation of the pedestrian bridge may be completed after the 60 calendar days if required due to bridge supplier schedule subject to review and approval of the Engineer.

An additional 30 days of contract time will also be allowed starting in April, 2021 to allow for final topsoiling and seeding work for restoration work that cannot be completed within the contract time allotted due to time of year restrictions.

Within five (5) business days after the date of the Notice of Award, the Contractor must provide the appropriate bond and insurance certificates to the Town Purchasing Agent and must be issued a Notice to Proceed and Purchase Order for the Project prior to initiating any work.

11.02 When the Contract time is stated on a calendar-day basis, that time shall be the number of consecutive calendar days contained in the Contract period, excluding the time period from each December 1 through the following March 31 (the “winter shutdown period”). The time will be computed as herein provided on a consecutive-day basis, including all Saturdays, Sundays, holidays, and non-work days from April 1 through November 30 of each included year. Time will not be charged for days in the winter shutdown period. If the Engineer so approves, the Contractor may work on certain tasks of the Project during the winter shutdown period with no charge being made against the Contract time. **If work during winter shut down is approved by the Town, approval may be granted**

with the condition that work under the items Trafficperson (Municipal Police Officer) or Trafficperson (Uniformed Flagger) will not be measured for payment, at the discretion of the Town.

12.00 LIQUIDATED DAMAGES

12.01 As actual damages for any delay in completion of the work that the Contractor is required to perform under this Contract are impossible to determine, the Contractor and the Sureties shall be liable for and shall pay to the Town the sum of $500.00 as fixed, agreed and liquidated damages for each calendar day of delay from the above-stipulated completion, or completion as modified in writing by both parties, until such work is satisfactorily completed and accepted.

13.00 SCHEDULE OF DRAWINGS

13.01 The Contractor is hereby alerted that the plan set entitled “Plan Depicting Main Street Sidewalk Phase 3A and 3B from Stockade Road to Red Hill Drive and Cider Mill Property to Mallard Drive Glastonbury, Connecticut”, including fifteen (15) sheets prepared by the Town of Glastonbury Engineering Division and three (3) sheets prepared by GM2 is to be considered part of these specifications.

14.00 CHANGES IN THE WORK

14.01 The Town reserves the right to perform portions of the work in connection with these plans and specifications. The reduction in the work to be performed by the Contractor shall be made without invalidating the Contract. Whenever work is done by the Town contiguous to other work covered by this Contract, the Contractor shall provide reasonable opportunity for the execution of the work and shall properly coordinate his work with that of the Town.

15.00 LAYOUT OF WORK

15.01 The Contractor is responsible to provide stake-out of the work in accordance with the plans and specification under the item for “Construction Staking”. The Contractor shall protect all stakes from damage or destruction and shall be responsible to assure that the grade stakes have not been altered prior to actual construction.

16.00 REMOVAL AND STORAGE OF MATERIALS AND STRUCTURES FOUND ON THE WORK

16.01 All salvable materials, including traffic signal equipment, topsoil, gravel, fill materials, etc. and structures, including drainage pipes, catch basins and manhole frames and covers, guide railing, etc. that are not to remain in place or that are not designated for use in the work, shall be carefully removed by the Contractor and delivered to the Town Highway Garage located at 2380 New London Turnpike. All salvable materials removed and stored shall remain the property of the Town. The Engineer shall determine the materials or structures to be salvaged.

17.00 PROSECUTION AND PROGRESS

17.01 ADVANCE NOTICE: The Contractor shall give the Engineer a seven-day advance written notice of construction activities that will alter traffic patterns that result in lane shifts, detours, temporary closures of lane(s), permanent closure of lane(s), or lane reductions. This advance notification will allow the Town to publish news releases and/or provide public radio announcements to inform the public of revised traffic patterns or possible traffic delays. Failure of the Contractor to provide such timely notice shall be considered a breach of Contract and will subject the Contractor to stop work orders until such time as the seven-day notice has been satisfied.

17.02 ALLOWABLE HOURS OF OPERATION (WORK PERIOD):

Allowable hours of operation are Monday through Friday, 7:00 AM to 5:00 PM. Work on weekends or during time periods other than those described above will not be permitted. No work will be allowed on designated Town Holidays unless permission is granted by the Town.

18.00 EXTRA WORK AND RETAINAGE

18.01 Extra and cost plus work shall be governed by Article 1.04.05 and Article 1.09.04 of the Form 818.

18.02 Article 1.09.06, Part A, Item 1 of the Form 818 is hereby modified as follows: Retainage shall be withheld in the amount of five (5) percent. Release of retainage shall be made upon final acceptance of the project by the Town.

19.00 SUBMITTALS AND MATERIALS TESTING

19.01 Contractor shall provide shop drawings, materials certificates, material samples, and other submittals for material testing in conformance with these specifications and as required per the “SUGGESTED MINIMUM SCHEDULE ACCEPTANCE TESTING (LOTCIP)” dated April 2, 2019 included as Attachment E of these Specifications.

TOWN OF GLASTONBURY			
BID / PROPOSAL	**GL # 2021-06**		
DATE ADVERTISED	**8/20/2020**	**DATE / TIME DUE**	**9/10/2020 at 11:00 A.M.**
NAME OF PROJECT	**MAIN STREET SIDEWALKS PHASE 3A AND 3B**		

It is the responsibility of the Bidder to clearly mark the outside of the bid envelope with the Bid Number, Date and Time of Bid Opening, and it also **THE RESPONSIBILITY OF THE BIDDER TO CHECK THE TOWN'S WEBSITE BEFORE SUBMITTING BID FOR ADDENDA POSTED PRIOR TO BID OPENING.**

The Bidder acknowledges receipt of the following Addenda:

Addendum #1 _____ (Initial & Date)

Addendum #2 _____ (Initial & Date)

Addendum #3 _____ (Initial & Date)

OTHER ITEMS REQUIRED WITH SUBMISSION OF BID PROPOSAL:

The following bid checklist describes items required for inclusion with the above-referenced bid proposal package. It is provided for the convenience of the bidders and, therefore, should not be assumed to be a complete list.

_____ 1. Included a copy of the Bid Bond as per Section 9 of the Information for Bidders. Original Bond to be mailed as specified herein.

_____ 2. Included Disclosure of Past and Pending Mediation, Arbitration, and Litigation cases against the Bidder or its Principals as per Section 16 of the Information for Bidders.

_____ 3. Included Qualifications Statement as per Section 20 of the Information for Bidders.

_____ 4. Included Required CHRO documentation as per Section 21 of the Information for Bidders.

_____ 5. Included Certificate of Compliance with CGS 31-57B as per Section 22 of the Information for Bidders.

_____ 6. Provided certification for Compliance with Town Ordinance Prohibiting Natural Gas Waste & Oil Waste From Natural Gas Extraction Activities or Oil Extraction Activities as per Section 23 of the Information for Bidders

_____ 7. Checked Town web site for Addenda and acknowledged Addenda on page BP-1.

_____ 8. Acknowledged Code of Ethics on page BP-6.

BIDDER NAME:_____

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY PH 3A	QUANTITY PH 3B	**TOTAL**	UNIT PRICE	EXT
1	0201001A	CLEARING AND GRUBBING	LS	0.34	0.66	1		
2	0202000A	EARTH EXCAVATION	CY	0	378	378		
3	0202566	CONCRETE MONUMENT COVER	EA	0	2	2		
4	0203000	STRUCTURE EXCAVATION-EARTH (COMPLETE)	CY	0	80	80		
5	0207001A	GRAVEL BORROW	CY	0	880	880		
6	0210100A	CONSTRUCTION ENTRANCE	EA	0	1	1		
7	0210116A	STONE CHECK DAM	EA	0	1	1		
8	0213100	GRANULAR FILL (OUTLET PROTECTION)	CY	0	4	4		
9	0216000	PERVIOUS STRUCTURAL BACKFILL	CY	0	15	15		
10	0219002	SEDIMENTATION CONTROL HAYBALE SYSTEM	LF	0	400	400		
11	0219003	SEDIMENTATION CONTROL FILTER FABRIC FENCE SYSTEM	LF	0	150	150		
12	0219011A	SEDIMENTATION CONTROL SYSTEM AT CATCH BASIN	EA	2	2	4		
13	0506002A	CONCRETE FOR ENDWALLS	CY	0	4	4		
14	0507601	MANHOLE	EA	0	2	2		
15	0507651	MANHOLE OVER 10' DEEP	EA	0	2	2		
16	0586651A	RESET MANHOLE (STORM)	EA	0	1	1		
17	0601062	FOOTING CONCRETE	CY	0	5	5		

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY PH 3A	QUANTITY PH 3B	QUANTITY **TOTAL**	UNIT PRICE	EXT
18	0601064	ABUTMENT AND WALL CONCRETE	CY	0	7	7		
19	0601445A	EMBANKMENT WALL (SITE NO. 1)	LS	1	0	1		
20	0601446A	EMBANKMENT WALL WITH INTEGRATED STAIRS (SITE NO. 2)	LS	1	0	1		
21	0602030	DEFORMED STEEL BARS-GALVANIZED	LB	0	1,360	1,360		
22	0604301A	PEDESTRIAN BRIDGE SUPERSTRUCTURE (SITE 1)	LS	0	1	1		
23	0651012A	15" R.C. PIPE	LF	0	16	16		
24	0651015A	24" R.C. PIPE	LF	0	272	272		
25	0652013A	24" R.C. CULVERT END	EA	0	1	1		
26	0702000A	HELICAL PILES	EA	0	8	8		
27	0703012A	MODIFIED RIPRAP	CY	0	7	7		
28	0716000	TEMPORARY EARTH RETAINING SYSTEM	SF	0	530	530		
29	0815001	BITUMINOUS CONCRETE LIP CURBING	LF	40	0	40		
30	0910001A	METAL BEAM RAIL (TYPE R-B)	LF	0	40	40		
31	0911924	R-B 350 END ANCHORAGE-TYPE II	EA	0	2	2		
32	0912503	REMOVE METAL BEAM RAIL	LF	0	40	40		
33	0912533	REMOVE EXISTING END ANCHORAGE	EA	0	2	2		
34	0912534	MODIFY EXISTING METAL BEAM RAIL	LF	0	15	15		

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY PH 3A	QUANTITY PH 3B	**TOTAL**	UNIT PRICE	EXT
35	0915001A	TREE PROTECTION TRENCH	LF	164	0	164		
36	0921001A	CONCRETE SIDEWALK	SF	5,003	6,258	11,261		
37	0921005A	CONCRETE SIDEWALK RAMP	SF	83	0	83		
38	0922001	BITUMINOUS CONCRETE SIDEWALK	SY	0	5	5		
39	0922500A	BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)	SY	791	150	941		
40	0922501A	BITUMINOUS CONCRETE DRIVEWAY	SY	645	164	809		
41	0944000A	FURNISH AND PLACING OF TOPSOIL	SY	1,391	2,886	4,277		
42	0949000A	WOOD CHIP MULCH	SY	0	790	790		
43	0950005A	TURF ESTABLISHMENT	SY	1,391	1,320	2,711		
44	0950006A	TURF ESTABLISHMENT-CONSERVATION MIX	SY	0	305	305		
45	0970006A	TRAFFICPERSON-(10 WEEKS) 1 OFFICER	EST	0.5	0.5	1	$32,000.00	$32,000.00
46	0970007A	TRAFFICPERSON-(2)UNIFORMED FLAGGERS-4 WEEKS	HR	80	80	160		
47	0971001A	MAINTENANCE AND PROTECTION OF TRAFFIC	LS	0.34	0.66	1		
48	0975002	MOBILIZATION	LS	0.34	0.66	1		
49	0977001	TRAFFIC CONE 42"	EA	0	25	25		
50	0978002	TRAFFIC DRUM	EA	0	25	25		
51	0980001	CONSTRUCTION STAKING	LS	0.34	0.66	1		

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY PH 3A	QUANTITY PH 3B	**TOTAL**	UNIT PRICE	EXT
52	1131001	CHANGEABLE MESSAGE SIGN	DAY	70	70	140		
53	1206023A	REMOVAL AND RELOCATION OF EXISTING SIGNS	LS	1	0	1		
54	1206091A	RELOCATE BUSINESS SIGN AND LIGHTING	LS	0	1	1		
55	1206095A	GRANT FUNDING SIGN	SF	32	0	32		
56	1220013A	CONSTRUCTION SIGNS BRIGHT FLUORESCENT SHEETING	SF	36	36	72		
57	1302060A	ADJUST GATE BOX (WATER)	EA	2	1	3		
58	1302062A	ADJUST GATE BOX (GAS)	EA	0	2	2		
59	1303189	RESET EXISTING FIRE HYDRANT (BY OTHERS)	EA	0	1	1		
60	1403501A	RESET MANHOLE (SANITARY SEWER)	EA	0	1	1		

TOTAL BID AMOUNT: $_____
(Numeric)

WRITTEN TOTAL BID AMOUNT:_____

Note:
In the event that the Town finds computational errors in a respondent's bid proposal, the bid total cost shall be recalculated by the Town based on the **unit prices** contained in the bid proposal.

CODE OF ETHICS:
I/We have reviewed a copy of the Town of Glastonbury's Code of Ethics and agree to submit a Consultant Acknowledgement Form if I/We are selected. Yes_____ No_____ *

***Bidder is advised that effective August 1, 2003, the Town of Glastonbury cannot consider any bid or proposal where the Bidder has not agreed to the above statement.**

Respectfully submitted:

Type or Print Name of Individual	**Doing Business as (Trade Name)**
Signature of Individual	**Street Address**
Title	**City, State, Zip Code**
Date	**Telephone Number/Fax Number**
E-Mail Address	**SS# or TIN#**

(Seal – If bid is by a Corporation)

Attest

SPECIAL PROVISIONS

SPECIAL PROVISIONS
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SECTION 1.06 CONTROL OF MATERIALS

Article 1.06.01 - Source of Supply and Quality:

Add the following:

For the following items the contractor shall submit a complete description of the item, working drawings, catalog cuts and other descriptive literature which completely illustrates such items presented for formal approval. Such approval shall not change the requirements for a certified test report and materials certificate as may be called for. All shop drawings shall be submitted at one time, unless otherwise approved by the Engineer.

1. Gravel Borrow
2. Processed Stone Base
3. Granular Fill (Outlet Protection)
4. Bituminous Concrete Pavement - Driveways
5. Concrete Monument Cover
6. Crushed ¾" Stone-Washed-Retaining Wall Drainage
7. No. 3 Crushed Stone (Construction Entrance)
8. Pedestrian Bridge Superstructure (Design Calculations, Working Drawings, and Specifications)
9. Helical Piles (Design Calculations, Working Drawings, and Specifications)
10. Temporary Earth Retaining System
11. Sign Posts
12. Sediment Control System at Catch Basin
13. Pipe Bedding Material
14. Reinforced Concrete Pipe (15" and 24" RCP)
15. Reinforced Concrete Culvert End (24" RCP)
16. Manhole-Storm
17. Manhole Frame and Cover-Storm
18. Modified Riprap
19. Concrete Mix Designs for Sidewalks, Ramps, Endwalls, Abutments and Guard Rail End Anchors
20. Expansion Joint Material
21. Smooth Metal Dowel
22. Speed Dowel Sleeves
23. Detectable Warning Tile-Replaceable
24. Concrete Sealer with water/salt guard
25. Embankment Wall Sites 1 and 2 (Design Calculations, Working Drawings, and Specifications)
26. Topsoil

27. Turf Seed Mixture
28. Conservation Seed Mixture
29. Metal Beam Rail (Type R-B 350)
30. Sign Face Sheet Aluminum
31. Grant Funding Sign and Sign Supports

SECTION 1.07 LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.07 – Safety and Public Convenience

Add the following:
The Contractor shall provide the necessary access for emergency vehicles through the work zones to abutting properties at all times.

Sweeping and cleaning of surfaces beyond the limits of construction required for dust control or to clean up material caused by spillage or vehicular tracking during various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.

The Contractor shall notify all public safety agencies at least 48 hours prior to beginning any construction operation which will provide less than a 12 foot travel lane along any project roadway.

Article 1.07.13 - Contractor's Responsibility for Adjacent Property, Facilities and Services

Supplemented as follows:
The Contractor, in constructing or installing facilities alongside or near sewers, drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults, or other structures shall sustain them securely in place. The Contractor shall coordinate with the officers and agents of the various utility companies and municipal departments to assure that the services of these structures are maintained. The Contractor shall also be responsible for the repair or replacement, at no additional cost to the Town, of any damage to such structures caused by construction operations. The Contractor is responsible to leave them in the same condition as they existed prior to commencement of the work. In case of damage to utilities, the Contractor shall promptly notify the utility owner and shall, if requested by the Engineer, furnish labor and equipment to work temporarily under the utility owner's direction. Pipes or other structures damaged by the operation of the Contractor may be repaired by the utility owner which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation from the Town.

If during construction there is an existing utility and/or structure found to be in conflict with the proposed work under this Contract, the Contractor shall protect and maintain the services to the utilities and structures and shall notify the Engineer of the conflict. The Engineer will, as soon as possible, identify the utilities to be relocated or other such activities deemed suitable for resolution.

If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all of the work involved in protecting or repairing property as specified in this Section shall be included in the price paid for the various Contract items of work, and no additional compensation will be allowed.

Prior to opening an excavation, effort shall be made to determine whether underground installations, (i.e. sewer, water, fuel, electric lines, etc.) will be encountered and, if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined by careful probing or hand digging, and when it's uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

UTILITY COMPANIES WITHIN THE PROJECT AREA:

The following company and representative shall be contacted by the Contractor to coordinate the protection of their utilities on this project 30 days prior to the start of any work on this project involving their utilities:

Connecticut Natural Gas Corporation, Engineering Department
Mr. Jonathan Gould,
Gas Engineer
76 Meadow Street, 2nd Floor
East Hartford, CT 06108
(860) 727-3044
jgould@ctgcorp.com

Algonquin Gas Transmission Company dba Enbridge
Mr. Kenneth Ruel,
Area Supervisor
252 Shunpike Road
Cromwell, CT 06416
Phone: (860) 894-1600 EXT: 1608
kenneth.ruel@enbridge.com

Frontier Communications
Ms. Lynne DeLucia,
Manager – Engineering & Construction
1441 North Colony Road
Meriden, CT 06450-4101
Phone: 203-238-5000
Mobile: 860-967-4389
Lynne.m.delucia@ftr.com

CoxCom, Inc.
Ms. Denise Mazzoli,
Project Planner
170 Utopia Road
Manchester, CT 06042
Phone: (860) 432-5041
denise.mazzoli@cox.com

Eversource Energy - Electric Distribution
Mr. Thomas Woronik
Supervisor - Construction Engineering
22 East High Street
East Hampton, CT 06424
Phone: (860) 267-3891
thomas.woronik@eversource.com

Lightower Fiber Networks dba Crown Castle Fiber
Mr. Eric Clark,
Manager Fiber Construction
1781 Highland Avenue, Suite 102
Cheshire, CT 06410
Phone: (203) 649-3904
Mobile: 860-863-8311
Eric.clark@crowncastle.com

Metropolitan District Commission-(MDC)
Water Distribution
Mr. Richard Norris
Utility Coordinator/Project Manager
555 Main Street
P.O. Box 800
Hartford, CT. 06142
Phone: (860) 278-7850 Extension 3450
rnorris@themdc.com

Connecticut Natural Gas Corporation
Inspections
John Bonville
76 Meadow Street, 1st Floor
East Hartford, CT 06108
Phone: (860) 982-3815

TOWN OF GLASTONBURY:

Engineering Division 2155 Main Street Glastonbury, CT. 06033	Daniel A. Pennington, P.E. Director of Physical Services/Town Engineer Phone: (860) 652-7736 Email: Daniel.pennington@glastonbury-ct.gov
Engineering Division 2155 Main Street Glastonbury, CT. 06033	Stephen M. Braun, P.E. Assistant Town Engineer/Project Manager Phone: (860) 652-7743 Email: Stephen.braun@glastonbury-ct.gov
Glastonbury Police Department 2108 Main Street Glastonbury, CT. 06033	Watch Commander Phone: (860) 633-8301
Glastonbury Tree Warden 2143 Main Street Glastonbury, CT. 06033	Gregory Foran Director of Parks and Recreation/Tree Warden Phone: (860) 652-7686 Email: Gregory.foran@glastonbury-ct.gov
Refuse Disposal and Sanitation Division 2155 Main Street Glastonbury, CT. 06033	Michael J. Bisi Superintendent of Sanitation Phone: (860) 652-7774 Email: Mike.Bisi@glastonbury-ct.gov

ITEM # 0201001A CLEARING AND GRUBBING

Description:

The Contractor shall furnish all labor, materials, tools, and equipment necessary and shall do all work to prepare the site as indicated on the drawings and as herein specified.

Construction Methods:

Tree Removal: Removal of trees as indicated on the plans shall be performed by workman skilled in the area of tree removal under the supervision of a Connecticut Licensed Arborist. The Contractor shall mark all trees, shrubs, and plants to be removed in accordance with the plans and these specifications. The Engineer shall have 7 days to field review the markings and make any adjustments prior to the start of the clearing operation.

Trees and shrubs within the right-of-way or within any property owned by the Town of Glastonbury that are designated for removal must be posted as such by the Glastonbury Tree Warden (Mr. Greg Foran of the Parks and Recreation Department, 652-7686) for a period of 10 days prior to removal. **No trees or shrubs within the Town of Glastonbury right-of-way shall be cut or removed until such posting has been completed and subsequent approval given by the Tree Warden.**

In general, no trees, etc. in public streets and highways are to be cut or damaged in any way except as noted on the plans or described herein. Trees, bushes, and growing crops on other lands may be cut, removed, or trimmed only to the extent provided in the terms of the rights-of-way or access rights possessed by the Town, and also only within the limits and in the manner, if any, indicated by the Engineer or by the drawings or Special Conditions.

Tree Trimming**:** Trimming of trees with supervision by a Connecticut Licensed Arborist is included under this item as described on the plans and as required for clearance of construction equipment and pedestrians below the tree canopy. When the canopy of a tree must be elevated for clearance above the proposed improvements, trimming shall be done around the entire circumference of the tree unless otherwise directed in the field.

Tree Protection and Care of Property: The Contractor shall install high visibility construction fence at the drip line of the tree canopy as directed by the Engineer to protect existing trees that are not to be cut from damage during construction. The Engineer, at his sole discretion, may also direct the Contractor to enclose the trunks of trees adjacent to his work that are not to be cut with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from his operations, or otherwise due to his work. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees not to be cut, and particularly to overhanging branches and limbs.

Branches, limbs, and roots shall not be cut except by permission or at the direction of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. In case of cutting or unavoidable injury to branches, limbs, and trunks of trees, the cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree-healing paint, as directed.

Cultivated hedges, shrubs, and plant that might be injured by the Contractor's operations shall be protected by suitable means or shall be dug up and temporarily replanted and maintained. After the construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work at the Contractor's expense.

On paved surfaces, the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment, the treads of wheels that are so shaped as to cut or otherwise injure such surfaces.

Clearing: From areas to be cleared, the Contractor shall cut or otherwise remove all trees, saplings, brush, vines, and other vegetable matter such as snags, sawdust, bark, etc., and refuse. The area to be cleared shall be confined to the width shown on the plans or as required for proper execution of the work. Vines, brush, and similar undergrowth shall be cut as close to the ground as practicable. Trees may be cut leaving a longer stump to facilitate their removal by power-operated equipment. No trees shall be cut or trimmed unless they are so indicated on the drawings.

Clearing shall also include removal and disposal of all items shown on the plans to be removed or required to be removed for proper execution of the work, and as directed by the Engineer, including, but not limited to, removal and disposal of existing concrete steps, retaining walls, drainage structures, fences, gates, and any and all other structures or materials not specifically listed in the Bid Proposal but required to be removed to accomplish the work.

Grubbing: Grubbing shall consist of the complete removal of all tree stumps and roots larger than two inches in diameter to a minimum depth of 12-inches below the subgrade surface. All excavations made below the finished surface by the removal of trees, stumps, etc. shall be filled with suitable material and thoroughly compacted in such a manner that its surface will conform to the surrounding surface.

Stump grinding shall be used for stump removal where the potential for damage to adjacent improvements or underground utilities exists due to the excavation of stumps, or as directed by the Engineer. The requirements for grubbing noted above shall also apply to stump grinding operations.

Disposal: All materials removed during trimming, tree removal, and clearing and grubbing operations shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

Mailboxes: Mailboxes identified on the plans are to be carefully removed and relocated per plan details, U.S Postal Service standards or as directed by the Engineer. Existing landscaping and/or plantings surrounding the mailbox shall be removed and reset identically in the new location or as directed by the homeowner. Any damage from removal, storage, and resetting of the existing mailbox(s), plantings or landscaping is the responsibility of the Contractor for replacement at no cost to the Town of Glastonbury.

Stonewalls Stonewalls identified on the plans are to be completely removed to the limits of the subgrade and disposed of by the Contractor. Contractor is responsible to provide and install appropriate fill material to establish existing grade. The Town of Glastonbury reserves the right to retain the existing wall stones at the Engineer's discretion.

Concrete Steps Removal: Concrete Steps identified on the plans are to be completely removed to the limits of the subgrade and disposed of by the Contractor. Contractor is responsible to provide and install appropriate fill material to establish existing grade.

Concrete Endwall Removal: Concrete Endwall(s) identified on the plans are to be completely removed to the limits of the subgrade and disposed of by the Contractor. Contractor is responsible to provide and install appropriate fill material to establish existing grade.

Granite Post Relocation: Granite Post identified on the plans are to be carefully removed and relocated per plan details. Homeowner request or as directed by the Engineer. Any damage from removal, storage, and resetting of the existing Granite Post(s) is the responsibility of the Contractor for replacement at no cost to the Town of Glastonbury.

Construction Access Route: Construction access as depicted on the plans is required across property of #1381 Main Street in order to perform drainage system installation work under this contract. Contractor is responsible for clearing, grubbing, grading the access route area utilizing additional Gravel Borrow to provide

construction access as may be required. Contractor is responsible for restoration of this area with topsoil and wood chip mulch once complete.

Method of Measurement:

The work described under this item will not be measured for payment but its cost shall be considered included in the lump sum bid price for Clearing and Grubbing.

Topsoil required for the restoration of the Construction Access Route across #1381 Main Street will be measured for payment under the bid price for "Furnishing and Placing Topsoil". Restoration of any area that is disturbed by the Contractor due to negligence, for convenience or that is otherwise not required for performance of the work, as determined by the Engineer, will not be measured for payment, rather this restoration work shall be performed at the Contractors sole expense.

Wood Chip Mulch required for the restoration of the Construction Access Route across #1381 Main Street will be measured for payment under the bid price for "Wood Chip Mulch". Restoration of any area that is disturbed by the Contractor due to negligence, for convenience or that is otherwise not required for performance of the work, as determined by the Engineer, will not be measured for payment, rather this restoration work shall be performed at the Contractors sole expense.

Basis of Payment:

Except as provided otherwise in the Bid Proposal or Special Conditions, this work shall be paid for at the contract lump sum price for "Clearing and Grubbing" as listed in the Bid Proposal, which price shall include protection of existing trees and vegetation, installation of high visibility construction fence, tree removal, clearing and grubbing within the limits of the work, tree trimming under the supervision of a licensed arborist, stump grinding, removal and disposal of trees, roots, stumps, brush, and other objects, leveling of areas to accommodate the work, removal and relocation of existing mailbox(s) and associated landscaping, removal and disposal of existing stonewall(s), removal and disposal of concrete stairs, removal and disposal of concrete endwall(s), removal and relocation of granite stone post(s), and all work associated with the Construction Access Route across #1381 Main Street including all labor, materials, tools, and equipment necessary thereto.

A portion of the work associated with topsoil restoration of the Construction Access Route across #1381 Main Street will be paid for at the contract unit price per square yard for "Furnishing and Placing Topsoil" as listed in the Bid Proposal which price shall include all materials, equipment, tools, labor, and work incidental thereto.

A portion of the work associated with wood chip mulch restoration of the Construction Access Route across #1381 Main Street will be paid for at the contract unit price per square yard for "Wood Chip Mulch" as listed in the Bid Proposal which price shall include all materials, equipment, tools, labor, and work incidental thereto.

Item No.	Description	Unit
0201001A	CLEARING AND GRUBBING	L.S.

ITEM # 0202000A EARTH EXCAVATION

Description:

This item shall conform to Section 2.02 ROADWAY EXCAVATION, FORMATION OF EMBANKMENT AND DISPOSAL OF SURPLUS MATERIAL, of the Form 818 amended as follows:

Section 2.02.05 Basis of Payment shall be amended as follows:

Earth Excavation within the limits of the proposed drainage improvement on property of #1381 and #1407 Main Street as shown on plans sheet 14 and 15 shall be paid for at the contract unit price per cubic yard for Earth Excavation as listed in the bid proposal. All suitable excavated material shall be reused onsite for formation of embankment within the existing gully to achieve the grading shown on the plan. Additional borrow will be required for fill of this gully and will be paid for under the item for "Gravel Borrow".

All other earth excavation required for completion of the project work is included under the various contract items as further described below and will not be measured for payment.

The contract price for earth excavation shall include all labor, equipment, materials, transportation, fuel, disposal, etc., for earth excavation, on site relocation of earth products and transportation and/or disposal of surplus earth materials. All surplus earth materials, including topsoil, shall be hauled off-site by the contractor and shall become property of the contractor. There shall be no separate payment for transportation or disposal of any surplus materials.

Removal and/or Disposal of Bituminous Concrete or Concrete Sidewalk will not be measured for payment, but the cost of removal and disposal of bituminous concrete and concrete sidewalks, driveways, and pavements shall be included in the unit cost for concrete sidewalks, concrete sidewalk ramps, or bituminous concrete driveway as described elsewhere in these specifications.

Other earth excavation necessary for the installation of concrete sidewalks, concrete sidewalk ramps and bituminous concrete driveway construction as shown on the plans will not be measured for payment, but rather included in the unit cost for concrete sidewalks, concrete sidewalk ramps or bituminous concrete driveway construction as described elsewhere in these specifications.

Item No.	Description	Unit
0202000A	EARTH EXCAVATION	C.Y.

ITEM # 0205001A EARTH TRENCH EXCAVATION AND BACKFILL

Description:

The Contractor shall make excavations in earth for trenches and structures; shall backfill such excavations to the extent necessary; shall furnish the necessary material and construct embankments and fills; and shall make miscellaneous earth excavations and do miscellaneous grading. All such work shall be done as indicated on the drawings and as herein specified.

The program of excavation, dewatering, sheeting and bracing shall be carried out in such manner as to eliminate all possibility of undermining or disturbing the foundations of existing structures or of work previously completed under this contract.

Excavation in general shall be in open trenches. Tunneling shall be done only to pass under obstructions such as pipes or duct or only as indicated on contract drawings, or in Special Provisions, or on written permission of the Engineer, and then only in accordance with those sections hereof which describe tunnel excavation, and subject to such further conditions as may have been described by drawings, Special Provisions, or as the Engineer may specify.

The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all coffer damming, pumping and draining; and shall render the bottom of the excavations firm and dry and acceptable in all respects.

In general, and unless other material is indicated on the drawings or specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations.

Construction Methods:

Trench Excavation: Where pipe is to be laid in gravel bedding or concrete cradle, the trench may be excavated by machinery to or to just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed.

Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery, but, just before the pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

Depth of Trench: Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes or depths of cover indicated on the drawings, and at uniform slopes between indicated elevations.

Width of Trench: The methods and equipment used for excavation must be adapted to the conditions at the site and the dimensions of the required trench. The width of ground or street surfaces cut or disturbed shall, in general, be kept as small as practicable to accommodate the work and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

Width of pipe trenches shall be wide enough to provide sufficient space for shoring, for foundations, for drainage, for laying, jointing, inspecting, and backfilling of sides of pipe, or for building the required structures, and as near as feasible to the above described minimums, in order to reduce the load of backfill upon the top

of the sewer; to provide lateral support for the fill and haunching on the sides of the pipe, and to insure that the pipe will not be pushed out of line while placing backfill.

For surface restoration work related to trench excavation, the limits of payment by the Town varies with the diameter of the pipe as described in these specifications. Where the Contractor chooses not to use trench supports, the Contractor will still be paid for related surface restoration work as per the maximum trench widths or actual trench width, whichever is the least.

Excavation for Special Foundations: Where concrete, stone or underdrain is required or ordered, excavation shall be carried down to the depth and lines required for such foundation or underdrain. If required by contract drawings or Special Provisions as part of the structure and included in the price, no additional payment for this additional excavation, as excavation, will be made. If the foundation is paid by the cubic yard or other specific item of proposal, such price for foundation shall include excavation therefore. Excavation for underdrain is included in price for underdrain.

Where the plans, Proposal or Special Provisions indicate certain foundations, they will be constructed and paid for as indicated.

Where the soil in subgrade is found to be soft, loose or freshly-filled earth, or unstable or unsuitable as a base for the proposed sewer or structure, the Engineer may, in his discretion, order it excavated to such depth and width as he may deem proper and replaced with gravel, crushed stone, concrete, plank or similar materials as he may direct.

If the excavation for foundation is made wider or deeper than required or ordered, or if excavation for concrete on sides of pipe is made wider than required or ordered, then no additional payment for the additional quantities of excavation or for additional foundation or side filling materials will be made, if being assumed that the added space was excavated for the convenience of, or by error of, the contractor.

Length of Trench and Space Occupied: Trenches must be constructed with a minimum of inconvenience and danger to the public and all other parties. To that end, the length of trench opened at any time, from point where ground is being broken to completed backfill and temporary surfacing, and also the amount of space in streets or public and private lands occupied by trench soil banks, equipment and supplies, shall not exceed the space or spaces considered reasonably necessary and expedient by the Engineer. In determining the length of open trench, the space for equipment, materials, supplies, etc. needed, the Engineer will consider the nature of the street or land where work is being done, depth and width of trench, types and methods of construction and equipment being used, inconvenience to the public or to private parties, possible dangers, limits or rights-of-way and other proper matters.

The Contractor must keep streets and premises near the work free from unnecessary obstructions, debris, etc. The Engineer may, at any time order all equipment, materials, surplus from excavations, debris, etc., lying outside reasonable limits of space, promptly removed; and should the Contractor fail to remove such materials within three days after notice to remove same, the Engineer may cause any part or all of such materials to be removed by such persons as he may employ, at the Contractor's expense, and may deduct the costs thereof from payment which may be or may become due to the contractor under this Contract. In any cases when public safety urgently demands it, the Engineer may cause such materials to be removed without prior notice.

Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.

Dimensions of Trenches: Trenches shall be excavated to the lines indicated on contract drawings or as described for any particular structure by any contract document. In general, room shall be allowed for installing the pipe or other structure, for making and inspecting joints in pipe, for placing and compacting fill around and

on both sides of pipe, for draining and pumping as needed, for removal of unsuitable materials, and for any other purpose incidental to the fulfillment of the Contract and these specifications.

Care must be taken to excavate to correct line, grade and width at all points.

In general, sides of trenches must be not less than four inches from outside of barrel of all pipe eight inches or less in size, six inches from outside of barrel of pipe ten inches or larger in size, or as shown by contract drawings. Except as otherwise provided, excavation shall conform closely to the form and grade of the bottom of the pipe or foundation required. To accomplish this, the Engineer may require that no earth shall be excavated by machinery nearer than six inches to the finished subgrade, and the last six inches of excavation in earth shall be carefully removed by hand labor to the exact lines and grade required, immediately prior to laying pipe or underdrain or building bottom of structure.

Maximum trench width for various pipe sizes are described below. Where the Contractor chooses not to use trench supports the Contractor will still be paid for any restoration work specified elsewhere in the contract as per maximum trench widths described below.

MAXIMUM TRENCH WIDTHS FOR VARIOUS PIPE SIZES

Size Pipe Nominal Inside Diameter	Maximum Width of Trench
6”	2.5 Feet
8”	4.0 Feet
10”	4.0 Feet
12”	4.0 Feet
15”	4.0 Feet
18”	4.0 Feet
21”	4.3 Feet
24”	4.5 Feet
27”	4.8 Feet
30”	5.1 Feet
33”	5.4 Feet
36”	5.7 Feet
39”	5.9 Feet
42”	6.3 Feet

Extent of Open Excavation: The extent of excavation open at any one time will be controlled by the conditions, but shall always be confined to the limits prescribed by the Engineer. At no time shall the extent of the open excavation go beyond two structures.

Trench Excavation in Fill: If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least one foot above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.

Unauthorized Excavation: If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled at the Contractor’s expense with ¾” crushed stone if the excavation was for a pipeline not having a concrete cradle or encasement, or with Class C concrete if the excavation was for a masonry structure.

Cutting of Pavement: When the trench lies within a paved area, the trench shall be cut with an approved tool. All cuts shall be made to straight lines and shall be parallel and/or perpendicular to the center line of the trench.

Bridging Trenches: The Contractor shall, at no cost, provide suitable and safe bridges and other crossings where required for the accommodation of travel, and to provide access to private property during construction, and shall remove said structures thereafter.

Obstacles: Some obstructions, obstacles, or difficulties in the path of the work anticipated, or in the performance of the work, may have been indicated by drawings, Special Provisions, or in other contract documents. The omission of any indication or mention of any obstruction, obstacle or difficulty which a reasonable and careful contractor, bidder, or estimator might have anticipated, or any question as to adequacy of such indication as given, shall not entitle the Contractor to any extra or additional compensation for any loss or expense occasioned directly or indirectly by such obstruction, etc., not to any extension of time or waiver of any requirement of the Contract and Specifications. The Contractor shall be understood to have entered into the Contract with full knowledge that in any work involving excavation, operation in public highways or adjacent to other developments, some unforeseen obstacle, difficulties, unforeseen soil or ground water conditions, etc., may be encountered, and that the Contractor has included in the bid and contract obligations the assumptions of the risks and cost to which such obstacles, etc. may subject the bid.

The Town will make arrangements for clearance or avoidance of permanent obstruction by pipes and structures of public utilities and of public bodies, except as otherwise indicated on drawings or contract documents, where such obstruction is found in the space to be occupied by the pipe or structure to be built under the Contract. The Town will not assume the cost of temporary removal, support, protection, etc. of pipes, poles, and other structures which do not occupy the space to be occupied by the pipe or structure to be built for the Town, where removal, support, protection, etc. of such pipes, poles or structures is desired for the convenience of, or to save expense to, or to accommodate the equipment of the Contractor.

Ends of Certain Pipes to be Sealed: If any pipe, drain, culvert, connection or similar conduit is encountered and cut off or cut through incidental to the construction of the work, and if the said drain, etc. is not to continue to function or be used, the open end or ends of such pipes shall be securely and tightly closed by an adequate cover or bulkhead as directed by the Engineer. Except as a specific price for such closings was fixed in the Proposal, the cost of such covers, bulkheads, and the setting of them shall have been included in the price of prices bid for various other portions of the work in the Proposal and no additional payment will be made therefore.

In removing existing pipes or other structures, the Contractor shall use care to avoid damage to materials, and the Engineer shall include for payment only those new materials which are necessary to replace those unavoidably damaged.

The structures to which the provisions of the preceding three paragraphs shall apply include pipes, wires, and other structures which (a) are not indicated on the drawings or otherwise provided for, (b) encroach upon or are encountered near the substantially parallel to the edge of the excavation, and (c) in the opinion of the Engineer will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced.

When fences interfere with the Contractor's operations, the Contractor shall remove and (unless otherwise specified) later restore them to at least as good condition as that in which they were found immediately before the work was begun, all without additional compensation. The restoration of fences shall be done as promptly as possible and not left until the end of the construction period.

Excavation Near Existing Structures: Attention is directed to the fact that there are pipes, drains, and other utilities in certain locations. Some of these have been indicated on the drawings, but no attempt has been made to show all of the services, and the completeness or accuracy of the information given is not guaranteed.

As the excavation approaches pipes, conduits, or other underground structures, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools, as directed. Such manual excavation, when incidental to normal excavation, shall be included in the work to be done under items involving normal excavation.

Where determination of the exact location of a pipe or other underground structure is necessary for doing the work properly, the Contractor may be required to excavate test pits to determine such locations. When such test pits may be properly considered as incidental to other excavation, the Contractor shall receive no additional compensation, the work being understood to be included as a part of the excavation. When the Engineer orders test pits beyond the limits of excavation considered as part of the work, such test pits shall be paid for as extra work.

Protection of Existing Structures: All existing pipes, poles, wires, fences, curbing, property-line markers, and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated shall be carefully supported and protected from injury by the Contractor. Should such items be injured, they shall be restored by the Contractor, without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.

Relocation and Replacement of Existing Structures: Whenever the Contractor encounters certain existing structures as described below and is so ordered in writing, the Contractor shall do the whole or such portions of the work as he may be directed, to change the location of, remove and later restore, replace such structures, or to assist the owner thereof in so doing. For all such work, the Contractor shall be paid under such items of work as may be applicable, otherwise as Extra Work.

Backfilling and Consolidation: In general, and unless other material is indicated on the drawings or specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations.

Frozen materials shall not be placed in the backfill nor shall backfill be placed upon frozen material. Previously frozen material shall be removed, or shall be otherwise treated a required before new backfill is placed.

Backfilling Around Structures: The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected without distortion, cracking, or other damage. As soon as practical after the structures are structurally adequate and other necessary work has been done, special leakage tests, if required, shall be made. Promptly after the completion of such tests, the backfilling shall be started and then shall proceed until its completion. The best of the excavated materials shall be used in backfilling within two feet of the structure. Unequal soil pressures shall be avoided by depositing the material evenly around the structure.

Backfilling Pipe Trenches: As soon as practicable after the pipes have been laid and the joints have acquired a suitable degree of hardness, if applicable, or the structures have been built and are structurally adequate to support the loads, including construction loads to which they will be subjected, the backfilling shall be started, and thereafter it shall proceed until its completion in accordance with pipe manufacturer recommendations.

With the exception mentioned below in this paragraph, trenches shall not be backfilled at pipe joints until after that section of the pipeline has successfully passed any specified tests required. Should the contractor wish to minimize the maintenance of lights and barricades and the obstruction of traffic, the contractor may, at his own risk, backfill the entire trench, omitting or including backfill at joints as soon as practicable after the joints have acquired a suitable degree of hardness, if applicable, and the related structures have acquired a suitable degree of strength. The contractor shall, however, be responsible for removing and later replacing such backfill at no cost should the contractor be ordered to do so in order to locate and repair or replace leaking or defective joints or pipe.

a. Materials: The nature of the materials will govern both their acceptability for backfill and the methods best suited for their placement and compaction in the backfill. The materials and methods shall both be subject to the approval and direction of the Engineer. No stone or rock fragment larger than 12 inches in greatest dimension shall be placed in the backfill nor shall large masses of backfill material be dropped into the trench in such a manner as to endanger the pipeline. If necessary, a timber grillage shall be used to break the fall of material dropped from a height of more than five feet. Pieces of bituminous pavement shall be excluded from the backfill unless their use is expressly permitted, in which case they shall be broken up as directed.
b. Zone Around Pipe: The zone around the pipe shall be backfilled with the materials and to the limits indicated on the drawings. Selected earth, or screened gravel, if used, shall be thoroughly compacted by tamping.

c. Remainder of Trench: The remainder of the trench above the zone around the pipe shall be compacted by water jetting, puddling, or tamping as directed or approved in accordance with the nature of the material. Water jetting or puddling may be used wherever the material does not contain so much clay or loam as to delay or prevent satisfactory drying, as directed by the Engineer

d. Water Jetting: If the backfill of more than 10 foot depth is to be compacted by water jetting, the material shall be placed in uniform layers not exceeding 4 feet in depth. Before the succeeding layer is placed, each layer shall be thoroughly saturated its full depth and at frequent intervals across and along the trench until all slumping ceases. To accomplish this, the contractor shall furnish one or more jet pipes, each of sufficient length to reach to the specified depth and of sufficient diameter (not less than 1 inch) to supply an adequate flow of water to compact the material. The jet pipe shall be equipped with a quick acting valve and be supplied through a fire hose from the hydrant or a pump having adequate pressure and capacity. (Refer to Section on Puddling, also.)

e. Puddling: If the backfill is in blasted trenches, then puddling as described below is required in order to quickly consolidate that fill and to minimize the subsequent settlement of the backfill. For the removal of puddling water from the trench, the following methods and devices, or equivalent methods and devices, shall be used:

On the upstream side of each manhole, a 2 inch galvanized iron pipe or approved substitute with screwed cap shall be set through manhole walls just above the water table, or as directed, and one or more lengths of perforated tile drainage pipe, or equal, laid beyond said pipe with perforated cap in end, and surrounded with 3/4-inch crushed stone or equivalent gravel. This is intended to drain the puddling water out of the backfilled trench gradually enough to avoid carrying soil into the sewer, but at a faster drainage rate than would exist if the water had to dissipate itself into surrounding soils. After puddling water has been sufficiently drained out, each of these drain pipes shall be made watertight with a screw cap placed from inside the manhole. All the above shall be included in the price bid per manhole.

For the consolidation of the backfill by puddling, the Contractor should provide and arrange to use sufficient hose and other equipment. This shall include the following:

Jet pipe, or probe pipe, 6 feet long, of 1 inch pipe, preferably with a 1 inch gate valve, T handle and 1 inch hose nipple at top.

One piece of 1 inch hose not more than 15 feet long (to minimize loss of pressure and volume) with fittings to attach jet pipe to 2-½ inch hose.

2-½ inch fire hose of sufficient length to reach from fire hydrants to all parts of the job where puddling is to be performed.

NOTE: The Contractor shall obtain equipment from wherever obtainable. Part or all of the above items may be available on a rental basis from the Metropolitan District Commission at its Hartford (South Meadows) Sewage Treatment Plant.

Also, the Contractor shall arrange with the Metropolitan District Water Bureau to temporarily install a 2-inch water meter with 2-½ inch hose connection on hydrants when, where, and as needs them. Due to the danger of freezing, meters will not be installed on fire hydrants when the temperature is below 12 degrees F.

The Contractor must be prepared to cover and protect hydrant meters by providing heat, if necessary, to prevent freezing and must not block or otherwise impede access to the hydrant in case of need for fire. For these installations, a deposit must be made in advance with the Water Bureau. The cost of installing the meter and connections, of removing same, and of water used shall be paid promptly by the Contractor to the Water Bureau in accordance with its requirements. Note that no person other than as authorized by the Water Bureau should operate, at any time, any valve which is part of any fire hydrant. With the meter, the Water Bureau will install a temporary auxiliary valve can be used by the Contractor during the progress of the work. Applicants for hydrant meters must sign a statement to the Water Bureau that they will pay for any damage to the meter or hydrant, including damage by freezing. Hydrants shall be kept free of obstructions at all times so as to be readily available for use by the applicable Fire Department.

Puddling will be done by means of a jet pipe or probe pipe inserted to a depth of from 2 feet to 4 feet into the backfill and sufficient water forced through the jet pipe into the backfill to wash material into all voids and to cause the fill to compact and settle. Avoid swelling backfill material by an excess of water. Spacing and depth of jet pipe insertions, quantity of water to be injected into fill at each point, and other details will be determined by the Engineer as the work progresses. Minor changes in this process may be ordered and will be made as conditions and results observed on the job may indicate to be advantageous. The intention is to secure compaction and settlement of the full width, length and depth of trench backfills as quickly and as completely as possible, thus to minimize road maintenance and annoyance to the public by subsequent trench settlements.

Puddle Time: Normally, it is expected that if puddling is ordered, the Contractor will carry out the puddling operation immediately after all or large portions of the length of the job have been backfilled to the top of the trench. The Contractor shall not puddle close enough to pipe laying work to permit puddling water to interfere with foundations, pipe laying and bedding and haunching, pacing and tamping, or to wet, newly formed joints. While doing this work, the Contractor should excavate the top 6 to 18 inches of trench backfill in order to confine water within the trench backfill and keep water out of the road base and off the road surface. The Contractor should expect the surface of the remaining backfill to settle and should be prepared to immediately fill the space left at the top of the trench with approved road base material and keep the road passable. In this connection, and as applied to this part of the work, re: Length of Trench Left Open, should be interpreted to mean as long a length as the Contractor can in one day puddle, place road base and keep road and driveways open for traffic, as required, bearing in mind that the settlement due to puddling may travel along the trench somewhat ahead of the point where he is jetting.

No puddling will be performed when weather conditions make it inadvisable.

Whether or not the Engineer orders trenches consolidated by puddling, the Contractor shall be, and remain, fully responsible for proper placing, consolidation, and maintenance of the backfill and roadway as provided elsewhere in the standard Contract and Specifications and including the additional risks, delays, and costs involved in puddling work.

f. Tamping: If the material does not require jetting or puddling, compaction shall be accomplished by tamping or, under appropriate circumstances, rolling. The material shall be deposited and spread in uniform, parallel layers not exceeding 12 inches thick before compaction. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. If necessary, the Contractor shall furnish and use an adequate number of power driven tampers, each weighing at least 20 lb for this purpose. Care shall be taken that the material close to the bank, as well as in all other portions of the trench, is thoroughly compacted. When the trench width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe, backfill may, on approval, by compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For

compaction by tamping (or rolling), the rate at which backfilling material is deposited in the trench shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

If necessary to ensure proper compaction by tamping (or rolling), the material shall first be wet by sprinkling. However, no compaction by tamping (or rolling) shall be done when the material is too wet either from rain or too great an application of water to be compacted properly. At such times, the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compacting, or such other precautions shall be taken as may be necessary to obtain proper compaction.

g. Ho Pac Trench Consolidation: Where the trench backfill is consolidated by the "Ho Pac" method and the depth of the trench from the road or ground surface to the top of the pipe exceeds eight feet, the trench backfill shall be placed and consolidated in two lifts of equal depth.

The approved backfill material shall be placed and compacted at a moisture content between four and eight percent (based on dry density, by weight), or with two percent of the optimum moisture content as determined by the moisture density relationship test specified in ASTM D 1557, at the option of the Engineer. Compaction shall be by a "Ho Pac" vibratory compactor or approved equal, operating at a frequency between ten and 40 Hertz, placed directly on the backfill surface, and applied with the maximum practical force applicable by the backhoe to which it is attached. Compaction effort shall be continued until no further visible settlement occurs.

h. Miscellaneous Requirements: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. Only approved quantities of stone and rock fragments shall be used in the backfill. The Contractor shall, as part of the work done under the items involving earth excavation and rock excavation as appropriate, furnish and place all other necessary backfill material.

All voids left by the removal of sheeting shall be completely backfilled with suitable materials, thoroughly compacted.

Where required, excavated material which is acceptable to the Engineer for surfacing or pavement sub base shall be placed at the top of the backfill to such depths as may be specified elsewhere or as directed. The surface shall be brought to the required grade and stones raked out and removed.

Embankments Over Pipe: Where the top of the pipe is less than three feet below the surface of the ground, additional fill shall be placed to form an embankment to cover and protect the pipe. The top of such embankment shall not be less than three feet above the top of the pipe and not less than one foot wider than the outside diameter of the pipe, with side slopes no steeper than one and one half horizontal to vertical, or of such section as may have been indicated by drawings. Such embankments shall be made of suitable dry earth, well compacted. Embankments must be maintained to the full required dimensions during the maintenance period of the Contract, and any settlement, washout, or deficiency occurring or found during that time shall be rectified and embankments brought up to the required height, width and slopes.

In general, such embankments may be made with materials excavated on the job and not used for backfill elsewhere. Should there not be sufficient surplus material for embankments, or should it be unsuitable or inconveniently located, the Contractor shall secure and provide sufficient suitable material. In any case, where the Town has provided borrow pits from which the Contractor may obtain filling material, the Contractor must conform to the conditions for excavating and moving such material as established by acts of the Town in obtaining such rights, and by indications on drawings or in other contract documents.

Openings through embankments for the passage of water and other purposes will be provided as indicated on drawings or elsewhere, or as ordered.

Grass shall be seeded or turf placed on embankments if, where, and as provided in contract documents. In general, if grassing is not required, the Contractor may, at his option, grass embankments to facilitate his maintenance. The Engineer may order grassing where not otherwise required under the general provisions for additional work if he deems proper.

Care shall be taken that sewer and appurtenances are not damaged by equipment or methods used for making and maintaining embankments.

Except as specific provisions may have been made in the Proposal for a particular contract, no payment other than prices bid for pipe will be paid for building and maintaining embankments or securing material therefore. If, however, a price per cubic yard was established by the Proposal for filling material placed in embankments and/or in fills at side of embankment to avoid the formation of depressions there, the quantity of such filling material will be estimated and paid as the actual quantity placed, up to, but not exceeding the lines or sections required, measured after the embankment or fill has been made.

Material for Filling and Embankments: Approved selected materials available from the excavations and not required for backfill around pipes or against structures may be used for filling and building embankments, except as otherwise specified. Material needed in addition to that available from construction operations shall be obtained from approved gravel banks or other approved deposits. The Contractor shall furnish, at no cost, all borrowed material needed on the work.

All material, whether from the excavations of from borrow, shall be of such nature that after it has been placed and properly compacted it will make a dense, stable fill. It shall not contain vegetation, masses of roots, individual roots more than 18 inches long or more than one half inch in diameter, stones over six inches in diameter, or porous matter. Organic matter shall not exceed minor quantities and shall be well distributed.

Preparation of Subgrade: The Contractor shall remove loam and topsoil, loose vegetable matter, stumps, large roots, etc. from areas upon which embankments will be built or material will be placed for grading. The subgrade shall be shaped as indicated on the drawings and shall be so prepared by forking, furrowing, or plowing so that the first layer of the new material placed thereon will be well bonded to it.

Placing and Compacting Material: After the subgrade has been prepared as hereinbefore specified, the material shall be placed thereon and built up in successive layers until it has reached the required elevation.

Layers shall not exceed 12 inches in thickness before compaction. In embankments at structures, the layers shall have a slight downward slope away from the structure. In other embankments, the layers shall be slightly dished toward the center. In general, the finer and less pervious materials shall be placed against the structures or in the center, and the coarser and more pervious materials, upon the outer parts of embankments.

Each layer of material shall be compacted by the use of approved rollers or other approved means so as to secure a dense, stable and thoroughly compacted mass. At such points as cannot be reached by mobile mechanical equipment, the materials shall be thoroughly compacted by the use of suitable power driven tampers.

Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly. At such times, the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction.

Basis of Payment:

This item will not be paid for separately. Rather, payment for earth trench excavation, trench support (including sheeting, shoring or bracing as required by soil conditions), dewatering, backfilling, compacting,

and disposal of surplus excavated material shall be included in the unit price or lump sum price of the item associated therewith.

ITEM # 0207001A GRAVEL BORROW

Description:

This work shall include loading, trucking, placement, and compaction of gravel borrow supplied by the Town of Glastonbury at the Town of Glastonbury Bulky Waste Facility Gravel Pit, for use in the formation of the drainage outfall embankment to match the proposed subgrade elevation. The Gravel Borrow will be supplied to the contractor at no cost.

Material:

Gravel Borrow for use in the formation of the drainage outfall embankment shall be utilized from the Town of Glastonbury Bulky Waste Facility Gravel Pit located at 1145 Tryon Street during the hours of operation.

Construction Methods:

Contractor is responsible for contacting the Town of Glastonbury Superintendent of Sanitation prior to obtaining Gravel Borrow from the Bulky Waste Facility to arrange for a material removal account to be established for tracking of quantities weighed. A schedule of anticipated excavation and hauling operations will need to be reviewed and approved by the Superintendent.

Contractor is responsible for providing a loader and operator at the Bulky Waste Facility Gravel Pit utilized for excavation, loading and trucking of the Gravel Borrow to the project site.

Contractor is responsible for providing all trucks and drivers utilized for transportation of the Gravel Borrow to the project site.

Contractor is responsible for weighing all trucks entering and exiting the Bulky Waste Facility. A copy of the weight ticket from the scale must be provided to Town inspection personnel accordingly to quantify material delivered daily by the Contractor.

Gravel Borrow will be required for the drainage outfall area as backfill to form an embankment as shown on the plans. This material will also be required when unsuitable subsoils are encountered and removal of this material is ordered by the Engineer as described in the Special Provision for Earth Excavation. In these areas, the Contractor shall be responsible for loading, trucking, placement, and compaction of sufficient gravel borrow to fulfill these requirements.

Formation of embankment shall also be completed by the Contractor under this pay item as described in the Special provision for Earth Excavation and Article 2.02.03-Placement of Embankment Material of the Form 818, and meet the proposed subgrade elevations described on the plans or directed by the Engineer.

Method of Measurement:

The work for this item will be measured for payment by actual quantities delivered to the project site derived from truck weight tickets obtained from the Bulky Waste Facility scale and submitted to Town inspection personnel.

Basis of Payment:

Borrow shall be paid for at the Contract price per cubic yard for “Gravel Borrow”, complete and in place. The Gravel Borrow will be supplied to the contractor at no cost. This contract price shall be for the work required for loading, trucking, placement, compaction, formation of embankment, and all labor, tools, equipment, and materials incidental thereto.

Item No.	Description	Unit
0207001A	GRAVEL BORROW	C.Y.

ITEM # 0210100A CONSTRUCTION ENTRANCE

Description:

Work of this item shall generally consist of the installation and maintenance of a stone construction entrance as located and detailed on the contract drawings.

Materials:

Crushed Stone shall consist of No 3 stone as per Section M01.02-Coarse Aggregates- Table M.01.02-2-Gradation of Standard Sizes of Coarse Aggregate of the Form 818.

Geotextile (Separation, High Survivability) shall be Tencate Geosynthetics North America FW500 or another approved product as listed in the "QUALIFIED PRODUCT LIST FOR CONNECTICUT DEPARTMENT OF TRANSPORTATION PROJECTS", latest edition, published by the Connecticut Department of Transportation.

Method of Measurement:

The work for this item will be measured for payment by each Construction Entrance approved and accepted by the Engineer. Stone and Geotextile required for this item will not be measured for payment, but its cost shall be included in the bid price for Construction Entrance.

Basis of Payment:

The work under this item shall be paid at the contract unit price for each "Construction Entrance", complete and in place, which price will include all materials, equipment, labor, base preparation, excavation, geotextile, disposal of excavated material, removal and tools incidental to the construction and maintenance of this item.

Item No.	Description	Unit
0210100A	CONSTRUCTION ENTRANCE	EA.

ITEM # 0210116A STONE CHECK DAM

Description:

Work of this item shall generally consist of construction of stone check dams located and detailed on the contract drawings. Work shall include base preparation and excavation as necessary.

Materials:

Crushed Stone shall consist of No 3 stone as per Section M01.02-Coarse Aggregates- Table M.01.02-2-Gradation of Standard Sizes of Coarse Aggregate of the Form 818.

Method of Measurement:

The work for this item will be measured for payment by each “Stone Check Dam” approved and accepted by the Engineer.

Basis of Payment:

The work under this item shall be paid at the contract unit price for “Stone Check Dam” as listed in the Bid Proposal for each stone check dam constructed per the contract drawings and as measured in the field. The unit price shall include all materials, equipment, labor, excavation, and tools incidental to the construction.

Item No.	Description	Unit
0210116A	STONE CHECK DAM	EA.

ITEM # 0219011A SEDIMENTATION CONTROL SYSTEM AT CATCH BASIN

Description:

This work shall consist of furnishing, installing, maintaining, cleaning, and removing all sediment control system at catch basins within the project area as directed by the Engineer or as shown on the contract drawings.

Materials:

Sediment control system at catch basin shall be the "Siltsack" product as manufactured by ACF Environmental or approved equal. Curb inlet (Type 'C') catch basins shall use a "Type B – High Flow" siltsack (with gutter deflector) without the optional overflow. Flat top (Type C-L) catch basin shall use a "Type A – High Flow" siltsack without the optional overflow.

Sediment control system at catch basin shall be manufactured from a specially designed woven polypropylene geotextile and sewn using high strength nylon thread. The sediment control system at catch basin shall be manufactured to fit the opening of the catch basin or drop inlet to be protected. Sediment control system at catch basin shall have the following features: two dump straps attached at the bottom to facilitate emptying; lifting loops shall be included as an integral part of the system to be used to lift the sedimentation control system from the basin; sediment control system shall have a restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls, this yellow cord is also a visual means of indicating when the sack should be emptied. Once the strap is covered with sediment, sediment control system should be emptied, cleaned and placed back into the basin.

Construction Methods:

To install the sediment control system in the catch basin, remove the grate and place the sack in the opening. Hold out approximately six inches of the sack outside the frame. This is the area of the lifting straps. Replace the grate to hold the sack in place.

When the restraint cord is no longer visible, the sediment control system at catch basin is full and should be emptied.

To remove the sediment control system, take two pieces of 1" diameter rebar and place through the lifting loops on each side of the sack.

To empty the sediment control sack, place it where the contents will be collected. Place the rebar through the lift straps (connected to the bottom of the sack) and lift. This will turn the sedimentation control sack inside out and empty the contents which shall be properly disposed of by the Contractor. Return the sedimentation control sack to its original shape and place back in the basin.

The sediment control system at catch basin is reusable. Once the construction cycle is complete, the sedimentation control sack shall be removed from the basin and cleaned.

Method of Measurement:

The work under this item will be measured for payment by each Sedimentation Control System at Catch Basin approved and accepted by the Engineer. Maintenance required for this item will not be measured for payment, but its cost shall be included in the bid price for Sedimentation Control System at Catch Basin.

Basis of Payment:

The work under this item shall be paid for at the contract unit price for "Sedimentation Control System at Catch Basin" as listed in the Bid Proposal for each unit provided and installed. Maintenance of the sediment control sacks, removal and proper disposal of accumulated sediment, and cleaning after completion of construction as described herein shall also to be included in this bid price.

Item No.	Description	Unit
0219011A	SEDIMENTATION CONTROL SYSTEM AT CATCH BASIN	EA.

ITEM # 0506002A CONCRETE FOR ENDWALLS

Description:

Work under this heading shall include the construction of concrete endwalls in the locations indicated or directed, to the lines, grades, dimensions and details shown on the plans and in accordance with the provisions of these specifications.

Materials:

The materials furnished and used in the work shall be those prescribed herein and shown on the plans.

Concrete for endwalls shall be Class “A” Concrete

Bedding material for shall meet the requirements of Article M.08.03.

Construction Methods:

All construction methods for endwalls shall be in accordance with the detailed requirements prescribed for the construction of the various items required for the completed structure. All requirements relative to concrete structures that are pertinent shall apply equally to work covered by this Section.

Trench excavation, backfill and dewatering shall be according to the special provisions for “EARTH TRENCH EXCAVATION AND BACKFILL” and “TRENCH DEWATERING”, included elsewhere in these specifications.

1. Foundations shall be excavated to the depth shown on the plans, unless the character of the material encountered is such as to require changes, in which case the depth shall be as ordered by the Engineer. A minimum of 6 inches of bedding material shall be installed and compacted as a foundation for the endwall. Special treatment of foundations shall meet the requirements of the plans and special provisions, or if not specified therein, shall be as directed by the Engineer and will be classed as extra work or additional work. No construction material shall be placed in any foundation until the Engineer has examined the material encountered and approved its character and the depth of the excavation.

2. Endwalls shall be built in the location and to the dimensions and details shown on the plans, or as ordered, and they shall be neatly and accurately finished, true to the lines and grades given. Pipes shall be of sufficient length to extend to the exposed face of the endwall, and the end shall be finished to provide neat, watertight joints. The ends of pipe culverts which enter endwalls on a skew shall be cut to the angle of the skew.

Method of Measurement:

The quantities shall be determined in accordance with the provisions of the plans and specifications. Only accepted work shall be included, and the dimensions used shall be those shown on the plans, except as modified by the written orders of the Engineer.

The work related to construction of Endwalls will be measured for payment by the accepted number of cubic yards of “Concrete for Endwalls”, complete and in place.

Excavation, bedding material, reinforcement, dewatering, backfilling and consolidation will not be measured for payment, but its cost shall be included in the bid price per cubic yard for Concrete for Endwalls.

If rock in trench excavation is required such work will be measured for payment as extra work.

Basis of Payment:

Payment for Concrete for Endwalls will be made at the Contract Unit price per cubic yard for "Concrete for Endwalls" complete in place including all materials, excavation, dewatering, bedding, backfilling, reinforcement, tools, equipment and labor necessary to the completion of the work.

Item No.	Description	Unit
0506002A	CONCRETE FOR ENDWALLS	C.Y.

ITEM # 0586651A RESET MANHOLE (STORM)

Work under this item shall conform to the applicable provisions of Section 5.07 of the Standard Specifications Form 818 amended as follows:

Description:

Under this item shall be included the alteration or reconstruction of existing manholes in conformity with the lines, grades, dimensions, and details shown on the plans, or as ordered, and in accordance with the provisions of these specifications for the various materials and work which constitute the completed structure.

Construction Methods:

Trench excavation, backfill and dewatering for these items shall be according to the special provisions for “EARTH TRENCH EXCAVATION AND BACKFILL” and “TRENCH DEWATERING”, included elsewhere in these specifications.

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the tops, frames and covers reset, or the grates or covers may be raised by extensions of suitable height approved by the Engineer.

Method of Measurement:

Resetting tops, frames and covers will be measured as units. When resetting tops, frames and covers, there will be no measurement for excavation; cutting, removal and replacement of pavement; pervious material and backfill.

There will be no measurement for trench excavation in the installation or removal of the various drainage appurtenances.

Basis of Payment:

Reset manholes will be paid for at the contract unit price each for "Reset Manhole," of the type specified, respectively, complete in place, which price shall include excavation, pervious material, backfill, cutting of pavement, removal and replacement of pavement structure, extensions, concrete masonry units, mortar, and all materials, equipment, tools and labor incidental thereto.

Item No.	Description	Unit
0586651A	RESET MANHOLE (STORM)	EA.

ITEM # 0601445A EMBANKMENT WALL (SITE NO. 1)
ITEM # 0601446A EMBANKMENT WALL WITH INTEGRATED STAIRS (SITE NO. 2)

Description:

This item will consist of designing, furnishing and constructing an embankment retaining wall and an embankment wall with integrated stairs in the location, grades, and to the dimensions and details shown on the contract drawings, and in accordance with these specifications.

Retaining Wall Selection: The Contractor shall furnish and install a **Versa-Lok Mosaic** embankment retaining walls, weathered finish with both gray and tan color tones from the selected supplier shown below or an approved equal.

VERSA-LOK Retaining Wall
VERSA-LOK of New England
P.O. Box 6002
Nashua, NH 03063
(603) 883-3042

Design:

Design Computations: It is the Contractor's responsibility for the collection of geotechnical data of the soil in the area of the embankment wall to support the design calculations, design, detailing and additional construction specifications required to construct the wall. The actual designer of the retaining wall shall be a qualified Professional Engineer licensed in the State of Connecticut.

Designer's Liability Insurance: The Designer shall secure and maintain at no direct cost to the Town, a Professional Liability Insurance Policy for errors and omissions in the minimum amount of Five Hundred Thousand Dollars ($500,000). The designer may, at his election, obtain a policy containing a maximum One Hundred Twenty Five Thousand Dollars ($125,000) deductible clause, but if he should obtain a policy containing such a clause, the designer shall be liable to the extent of the deductible amount. The Designer shall obtain the appropriate and proper endorsement to its Professional Liability Policy to cover the indemnification clause in this contract as the same relates to negligent acts, errors or omissions in the work performed by the Designer. The Designer shall continue this liability insurance coverage for a period of three years from the date of the acceptance of the work by the agency head as evidenced by a certificate of acceptance issued to the contractor or for three years after the termination of the contract, whichever is earlier, subject to the continued commercial availability of such insurance.

The designer shall supply the certificate of this insurance to the Engineer prior to the start of construction of the wall. The designer's insurance company shall be licensed in the State of Connecticut.

Preliminary Submissions: Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include, but not be limited to the following:

a. Detailed Plans:

Plan sheets shall be approximately 24" x 36"

Stamped by a licensed Professional Engineer (Connecticut).

Full plan view of the wall drawn to scale. The plan view must reflect the horizontal alignment and offset from the horizontal control line to the face of the wall. Beginning and ending stations, all utilities, signs, lights, etc. that affect the construction along with all property lines and easement lines adjacent to the wall shall be shown.

Full elevation view of the wall drawn to scale. Elevation views should indicate the elevation at the top and bottom of walls, horizontal and vertical break points, and the location of finished grade.

Typical cross sections drawn to scale including all appurtenances. Detailed cross section should be provided at significant reinforcement transitions such as wall ends.

Details of all wall components and their connections such as the length, size and type of soil reinforcement and where any changes occur; facing details; connections; etc.

Certified test reports indicating the connection strength versus normal load relationship for the block-soil reinforcement connection to be used.

Drainage details for embankment backfill including attachment to outlets shown on contract drawings.

Details of any roadway drainage pipe projecting through the wall, or any attachments to the wall. Details of the treatment of drainage swales or ditches shown on the contract drawings.

Design parameters used along with AASHTO references.

Material designations for all materials to be used.

Detailed construction methods including a quality control plan. Construction quality control plans should include monitoring and testing frequencies (e,g, for setting batter and maintaining horizontal and vertical control). Construction restraints should also be listed in the details. Specific requirements for construction around obstructions should be included.

Details of installation of protective fencing where required.

Details of Architectural Treatment where required.

Details of Temporary Earth Retaining System(s) where required.

Details of wall treatment where the wall abuts other structures.

Treatment at underground utilities where required.

b. Design Computations:

Stamped by a licensed Professional Engineer (Connecticut).

Computations shall clearly refer to the applicable AASHTO provisions as stated in the Notes on the Contract Drawings.

Documentation of computer programs including all design parameters.

c. Construction Specifications:

Construction methods specific to the proprietary retaining wall chosen. These specifications should include construction limitations including vertical clearance, right-of-way limits, etc. Submittal requirements for materials such as certification, quality, and acceptance/rejection criteria should be included. Details on connection of modular units and connection of reinforcements such that assurance of uniform stress transfer should be included.

Any requirements not stated herein.

The submissions for proprietary retaining walls shall be treated as working drawings according to Section 1.05 amended as follows:

a. One PDF copy of each submission shall be supplied to the Town

b. The Contractor shall allow 21 days for the review of each submission. If subsequent submissions are required as a result of the review process, 21 days shall be allowed for review of these submissions. No extensions in contract time will be allowed for the review of these submissions.

Final Submissions: Once a proprietary retaining wall design has been reviewed and accepted by the Engineer, the Contractor shall submit the final plans. The final submission shall include one set of full size (approximately 24" x 36") mylar sheets and one signed PDF copy.

The final submission shall be made within 14 days of acceptance by the Engineer. No work shall be performed on the retaining wall until the final submission has been received by the Town

Acceptance of the final design shall not relieve the Contractor of his responsibility under the contract for the successful completion of the work.

The actual designer of the proprietary retaining wall is responsible for the review of any shop drawings prepared for the fabrication of the wall. One set of full size copies of all approved shop drawings shall be submitted to the Town's permanent records.

General Design Requirements:

a. All designs for proprietary walls and temporary earth retaining systems shall conform to the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges and later interims published except as noted otherwise herein:

b. The wall design shall follow the general dimensions of the wall envelope shown in the contract plans.

c. The top of the concrete leveling pad shall be located at or below the theoretical leveling pad elevation. The minimum wall embedment shall be two feet as measured to the top of the leveling pad or as shown on the plans.

d. If footing steps are required, they shall be kept below the minimum embedment depth. Footing steps in addition to those shown on the plans will be permitted at no additional cost to the Town.

e. The wall shall be designed to be within all property lines and easement lines shown on the contract drawings. If additional work areas are necessary for the construction of the proprietary retaining wall, the Contractor shall be responsible for obtaining the rights from the affected property owners. Copies of these rights shall be forwarded to the Engineer.

f. The top of the wall shall be at or above the top of the wall elevations shown on the plans. The top of the wall may be level or stepped to meet the top of the wall line noted. The maximum exposed vertical elevation from the finished grade in front of the wall to the top of the wall shall be less than four feet.

g. Cast-in-place concrete will not be an acceptable replacement for areas noted by the wall envelope, except for minor grouting of pipe penetrations.

h. The mechanical wall height for the purposes of design calculations shall be from the top of the leveling pad to the top of the potential failure surface where the failure surface intercepts the ground surface.

i. The minmum length of internal soil reinforcement shall be as specified in AASHTO 5.8.1, except for the minimum eight (8.0') foot length requirement.

i. If there are specific surcharges acting on the wall, they shall also be accounted for. The minimum equivalent fluid pressure used to design the wall shall be 33 lbs./ft^2 per linear foot of wall.

j. The maximum allowable bearing capacity of the soil shall be assumed to be 4 ksf unless otherwise shown on the plans. If additional soils information is required by the designer, it must be obtained by the Contractor and will not be reimbursed by the Town.

k. For limit state allowable stress computations of extensible reinforcements, the combined factor of safety for construction damage and environmental/aging effects shall not be less than 1.75.

Materials:

Materials shall conform to the following requirements and those not listed below shall be as prescribed within the Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, including supplemental specifications and applicable special provisions.

Facing Block: The facing block can be precast or drycast concrete and shall be the style, texture, and color specified below. The block shall meet the following requirements:

Style: VERSA-LOK Mosiac or Approved Equal

Texture: Weathered

Color: Two tone gray and tan

Contractor shall provide three representative samples of the facing block units for style and color selection by the Town.

Drycast Concrete:

The minimum compressive strength of the block shall be 4000 psi measured at 28 days.

The maximum water absorption shall be less than five percent.

The Contractor shall submit to the Engineer a certified test report confirming the compressive strength and water absorption conform to the requirements of ASTM C-140.

Precast Concrete: Shall conform to the requirements of Section M.03 and as follows:

The minimum compressive strength of the block shall be 4000 psi measured at 28 days.

All precast concrete components shall be air-entrained composed of portland cement, fine and coarse aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either air-entraining portland cement or an approved air-entraining admixture. The entrained-air content shall be not less than four percent or more than seven percent.

Geosynthetic Soil Reinforcement: The minimum strength of the geosynthetic soil reinforcement shall be based on experimental data. The Contractor shall submit to the Engineer a certified test report confirming the strength of the material when tested according to the methods specified in ASTM D5262 and extrapolated according to ASTM D2837 as outlined in AASHTO Article 5.8.7.2.

Metallic Soil Reinforcement: All soil reinforcement and structural connectors shall be hot dipped galvanized according to the requirements of ASTM A123 (AASHTO M-111). The minimum thickness of the galvanizing shall be based on the service life requirements in the AASHTO Specifications.

Steel strip reinforcement shall be hot rolled to the required shape and dimensions. The steel shall conform to AASHTO M223 (ASTM A572) Grade 65 unless otherwise specified.

Welded wire fabric reinforcement shall be shop fabricated from cold-drawn wire of the sizes and spacings shown on the plans. The wire shall conform to the requirements of ASTM A82, fabricated fabric shall conform to the requirements of ASTM A185.

Metal Connectors: All metal hardware shall be hot dipped galvanized according to the requirements of ASTM A123 (AASHTO M-111). The minimum thickness of the galvanizing shall be based on the service life requirements in the AASHTO Specifications.

Backfill Material: The material for backfill shall be Pervious Structure Backfill conforming to the requirements of Articles M.02.05 and M.02.06.

Drainage aggregate: Drainage aggregate for backfill behind the wall shall consist of a clean, washed ¾" No. 6 Coarse Aggregate Stone conforming to Section M01.02-Coarse Aggregates- Table M.01.02-2-Gradation of Standard Sizes of Coarse Aggregate of the Form 818.

Underdrain: Underdrain shall be 4" Schedule 40 Perforated and Solid PVC pipe.

Construction Adhesive: Construction Adhesive required for installation of the Retaining Wall Caps and Stair Treads must meet the recommended product requirements outlined within the manufactures specifications.

¾" Washed Landscape Stone: ¾" Washed Landscape Stone shall be of an earth tone color closely matching the color of the proposed embankment wall stones.

Facing Sealer: The face of all exposed drycast block shall be coated with clear Penetrating Sealer Protective Compound conforming to the requirements of Article M.03.01-11.

Construction Methods:

All construction methods for items not listed below shall be in accordance with the detailed requirements prescribed for the construction of the several contract items entering into the completed structure as specified in the Standard Specifications for Roads, Bridges, Facilities and Incidental Construction.

Installation: The foundation for the structure shall be graded level for a width equal to or exceeding the length of the soil reinforcements, or as shown on the plans. If rock is encountered in the excavation, it shall removed to provide a level area equal to or exceeding the length of the soil reinforcements, but not greater than the pay limits shown on the plans.

Prior to wall construction, the foundation, if not in rock, shall be compacted as directed by the Engineer. Any foundation soils found to be unsuitable shall be removed and replaced.

At each foundation level, an unreinforced concrete leveling pad shall be provided as shown on the plans. The leveling pad shall have nominal dimensions of 6 inch thickness and 24 inch width, and shall be cast using minimum 2,000 psi 28-day compressive strength concrete. The leveling pad shall be cast to the design elevations as shown on the plans. Allowable elevation tolerances are +0.01 foot (1/8 inch), and -0.02 foot (1/4 inch), from the design elevation.

The materials for the wall shall be handled carefully and installed in accordance with manufacturer's recommendations and specifications. Special care shall be taken in setting the bottom course of blocks to true line and grade.

All blocks above the first course shall interlock with the lower courses by means of connecting pins. Vertical joints shall be staggered with each successive course as shown on the working drawings. Vertical tolerances and horizontal alignment tolerances measured from the face line shown on the plans shall not exceed ½ inch when measured along a 8-foot straightedge. The overall tolerance of the wall from top to bottom shall not exceed ½ inch per eight feet of wall height or one inch total, whichever is the lesser, measured from the face line shown on the plans. A bond breaker shall be placed between the blocks and any adjacent cast-in-place concrete.

Contractor is required to furnish and install embankment wall drainage piping providing an outlet to the nearest storm drainage structure where feasible. If it is unfeasible to provide a connection, the embankment wall design should include provisions for daylighting drainage through the embankment wall.

Backfilling: Backfill placement shall closely follow erection of each course of panels. Backfill shall be placed in such a manner as to avoid any damage or disturbance to the wall materials or misalignment of the facing panels. Any wall materials which become damaged or disturbed during backfill placement shall be either removed and replaced at the Contractor's expense or corrected, as directed by the Engineer. Any backfill material placed within the reinforced soil mass which does not meet the requirements of this specification shall be corrected or removed and replaced at the Contractor's expense.

Backfill shall be compacted to 95 percent of the maximum density as determined by AASHTO T-99, Method C or D (with oversize correction, as outlined in Note 7).

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T-99, Method C or D (with oversize correction, as outlined in Note 7).

If 30 percent or more of the backfill material is greater than 19 mm in size, AASHTO T-99 is not applicable. For such a material, the acceptance criterion for control of compaction shall be either a minimum of 70 percent of the relative density of the material as determined by a method specification provided by the wall supplier, based on a test compaction section, which defines the type of equipment, lift thickness, number of passes of the specified equipment, and placement moisture content.

The maximum lift thickness after compaction shall not exceed 10 inches, regardless of the vertical spacing between layers of soil reinforcements. The Contractor shall decrease this lift thickness, if necessary, to obtain the specified density. Prior to placement of the soil reinforcements, the backfill elevation at the face shall be level with the connection after compaction. From a point approximately three feet behind the back face of the panels to the free end of the soil reinforcements the backfill shall be two inches above the attachment device elevation unless otherwise shown on the plans.

Compaction within three feet of the back face of the panels shall be achieved by at least three passes of a lightweight mechanical tamper, roller or vibratory system. The specified lift thickness shall be adjusted as warranted by the type of compaction equipment actually used. Care shall be exercised in the compaction process to avoid misalignment of the panels or damage to the attachment devices. Heavy compaction equipment shall not be used to compact backfill within three feet of the wall face.

At the end of each day's operation, the Contractor shall slope the last level of backfill away from the wall facing to direct runoff of rainwater away from the wall face. The Contractor shall control and divert runoff at the ends

of the wall such that erosion or washout of the wall section does not occur. In addition, the Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

Face Sealer: After the wall has been erected, the entire exposed face of the wall shall be coated with Penetrating Sealer Protective Compound. The application of the sealer shall conform to the requirements Article 8.18.03.

Several samples of the dry cast block shall be sealed prior to sealing the actual wall to ensure that the sealer will not discolor the block. If the sealer does discolor the block, the Contractor shall change to another approved supplier of sealer.

Method of Measurement::

This work will be paid for on a lump sum basis and will not be measured for payment.

Basis of Payment:

This work will be paid for at the contract lump sum for "EMBANKMENT WALL (SITE NO.1) and EMBANKMENT WALL WITH INTEGRATED STAIRS (SITE NO. 2)", complete in place, which price shall include all work shown within the pay limits shown on the plans for the retaining wall including but not limited to the following:

Design, detailing, and specifications for the wall.

Excavation for the wall

Design and Construction of temporary earth retaining systems for the support of the slope during construction.

Construction of the Embankment Wall, including the unreinforced concrete leveling pad.

The furnishing, placing and compacting of pervious structure backfill within the maximum payment lines.

The furnishing and placing of backfill drainage systems for the wall.

Furnishing, installing, and connecting embankment wall drainage system pipes to daylight or existing drainage system.

Any other work and materials shown on the plans for the construction of the wall.

The price shall also include all materials, equipment, tools and labor incidental thereto.

If bedrock or large boulders (greater than one cubic yard) are encountered in the excavation, the payment for it's removal will be made as extra work

Item No.	Description	Unit
0601445A	EMBANKMENT WALL (SITE NO. 1)	L.S.
0601446A	EMBANKMENT WALL WITH INTEGRATED STAIRS (SITE NO. 2)	L.S.

ITEM # 0604301A PEDESTRIAN BRIDGE SUPERSTRUCTURE (SITE NO. 1)

Description:

Work under this item shall consist of designing, fabricating and furnishing a prefabricated pedestrian bridge superstructure as shown on the plans, as directed by the Engineer and in accordance with this specification. The prefabricated pedestrian bridge superstructure shall resemble the drawings shown in the plans in terms of make, general appearance and aesthetic appeal.

Materials:

Steel Superstructure: The prefabricated pedestrian bridge superstructure shall utilize steel Pratt-style trusses with steel floor framing and lateral bottom chord bracing to support a timber walking surface.

All major components of the trusses, such as top chord, bottom chord, verticals and diagonals shall be fabricated from rectangular steel tubing. All floor beams, stringers and lateral bracing shall be fabricated from rectangular steel tubing or structural steel shapes.

All rectangular Hollow Structural Sections (HSS) shall conform to ASTM A847 and shall be tested per AASHTO T243 M/T, frequency P, for tubular members.

All other steel shall be AASHTO M270 Grade 50W steel and tested per AASHTO LRFD Article

6.6.2 - Fracture.

Charpy V-Notch Requirements				
Type of Steel	Grade of Steel	Type of Member	Min. Average Energy (FT- LBS)	Temperature (°F)
ASTM A1085	50	HSS	25	40
AASHTO M270	50F2	All Remaining Shapes and Plates	25	40

Bolts shall be ASTM A325 Type 3 – weathering. Washers shall be ASTM F436 Type 3 – weathering. Nuts shall be ASTM A563 Grade C3 - weathering.

Tapered bearing plates shall be welded to the bridge structure as shown on the plans and shall be oriented such that the bottom of the sole plates are level (making up for residual camber) at installation of the bridge on the abutment.

Welding details, procedures and testing shall conform to the ANSI/AWS D1.1 - Structural Welding Code. Welding of shapes and plates shall conform to ANSI/AWS D1.5 Bridge Welding Code. All Fracture-Critical Members (FCM) shall be fabricated according to D1.5 Bridge Welding Code, Section 12.

Timber Decking: Timber Decking shall be pressure treated 3” thick select structural southern yellow pine (Fb=1,400 psi min.) or better.

The structural steel fabricator shall be certified by the AISC Quality Certification Program for fabrication of Intermediate Steel Bridge Structures (IBr).

The Contractor shall submit Certified Test Reports and Materials Certificates for steel superstructure components, including high-strength bolts in accordance with Form 818, Article 1.06.07.

Construction Methods:

Prior to fabrication, the Contractor shall prepare and submit calculations and working drawings for the design, fabrication and erection of the prefabricated bridge superstructure for review in accordance with Article

1.05.02 and Sub Article 6.03.03-2. An individual, independently packaged set of working drawings and computations, with all details and documents necessary for fabrication and erection of the structure and its components, including a copy of the certificate of insurance, shall be prepared and submitted for each pedestrian bridge superstructure. The bridge number (or site identifier, if no bridge number has been assigned) shall be included on these documents. The working drawings and computations shall be prepared in Customary U.S. units.

The packaged set of working drawings and computations for each bridge superstructure shall be submitted for review. The packaged set shall include the following:

- title sheet
- table of contents
- contact information for designer, fabricator and metallizer – contact information should include name and address of each firm and the name of contact person with phone number and email address
- copy of the certificate of insurance
- copy of fabricator's AISC certification
- pedestrian bridge superstructure working drawings
- pedestrian bridge superstructure design computations
- pedestrian bridge live load ratings, together with all electronic files, including intelligent files from load rating software used
- welding procedures
- fracture control plan
- bridge erection plans concrete mix design

The working drawings and design computations shall be **signed, dated and sealed** by a Professional Engineer licensed in the State of Connecticut, who shall also be available for consultation in interpreting his computations and drawings, and in the resolution of any problems which may occur during the performance of the work. Each working drawing shall be signed, dated and sealed. The cover/first sheet for the computations shall be signed, dated and sealed.

The Working Drawings shall include complete details of all pedestrian bridge superstructure components. The drawings shall include, but not be limited to the following:

- Project number, town and crossing with bridge identification number (Bridge No. or Site No. as applicable)
- Reference to the design specifications, including interim specifications
- Design criteria
- Material specifications for all components, including Charpy testing
- Non-destructive weld testing requirements
- Layout plan, Elevation View and Typical Bridge Section with Shipping length, width, height and weight of units to be transported
- Framing plan, showing trusses, locations and details of all connections and field splices, support beams, deck edge supports, lateral bracing and bearing plate details. The number of truss sections shall be minimized to reduce the amount of field splicing, but shall allow for the legal transportation of the sections being shipped.
- Identify all Fracture Critical Members (FCM's)
- Fabrication details, including member sizes, shear connectors, materials lists, etc.
- Bolted splice details, including plate sizes, materials lists, installation instructions, etc. Splice plates shall be installed inside of the tubular members.
- Dead load and permanent camber requirements

- Deck plan, sections and details
- Fencing and handrail details
- Erection Plan and details with lifting point locations and complete erection sequence

The Bridge Erection Plan and Sequence shall include the following information for all stages of installation:

- The location and design capacity of any temporary shoring towers.
- The weight of each section of the superstructure handled during installation and the weight of the bridge on any towers.
- Detailed installation procedure for all stages of installation that breaks down each stage into easy to follow steps.
- The capacity, position and orientation of all cranes, steerable trailers, mobile lifting equipment, delivery trucks, jacks, etc. used to move/assemble the superstructure sections.
- Crane charts
- Size and placement of crane mats to be used
- The limits of roadway closure and anticipated duration of each step of the installation procedure.
- Temporary staging layout including orientation of equipment required to make splice connections.

The Design Computations shall include, but not be limited to the following:

- The project number, town and bridge identification (crossing and Bridge No. or Site No.)
- References to design specifications, including interim specifications, and the applicable code section and articles
- Description/documentation for all computer programs used in the design
- Drawings/models of the structure, components and connections, with dimensions, loads and references to the local and global coordinate systems used (as applicable), to facilitate review of the results
- A tabulation of the section properties of the tubular members at each analyzed section. The tabulated values should include the dimensions of rectangular sections, wall thickness, inside bend radius, cross-sectional area, moment of inertia, section modulus, radius of gyration, and the effective length factor.
- Field splice design and calculations.
- Coefficients and factors used in the design
- Results of all group loads and load combinations
- Horizontal and vertical deflections due to load combination Service I in Table 3.4.1-1of AASHTO LRFD
- Live load ratings for the bridge.
- The live load ratings shall be computed in accordance with the load and resistance factor rating (LRFR) method described in the AASHTO Manual for Bridge Evaluation (AASHTO MBE). Live loads used shall be those used in design, as specified in the LRFD Guide Specifications for the Design of Pedestrian Bridges. In the event of conflict between live load rating requirements and procedures outlined in the Bridge Inspection Manual with those of the AASHTO MBE, the Engineer will resolve the matter.

The Contractor shall submit the packaged set of working drawings and calculations to the Town. The working drawings, design computations and live load ratings shall be sealed by a Professional Engineer licensed in the State of Connecticut, who shall also be available for consultation in interpreting his computations and

drawings and in the resolution of any problems which may occur during the performance of the work. Please note that each working drawing must be sealed.

The reviewed and stamped working drawings and calculations will be returned to the Contractor, along with a recommendation regarding acceptance. Should the Town recommend resubmittal, the Contractor shall address the comments and resubmit the corrected package with a letter indicating the disposition of his responses to the comments. After the Town has reviewed the revised package and the responses, ensured all comments have been addressed satisfactorily and have found the submittal to be acceptable, a recommendation for acceptance may be sent to the Contractor.

The bridge superstructure shall be designed in accordance with the latest editions of the following specifications, including interim specifications: LRFD Guide Specifications for the Design of Pedestrian Bridges (LRFD Guide), and the AASHTO LRFD Bridge Design Specifications (LRFD Specifications).

The superstructure shall be designed to carry the Design Loads listed on the plans in combination with all other applicable loads in the AASHTO load groups.

The superstructure shall have a total camber at mid span as shown on the plans.

Prior to fabrication of any material, the Contractor shall take all field measurements necessary for the design and fabrication of the superstructure. The Contractor shall confirm the line, grade and lengths of the proposed bridge.

The structure shall be shipped with sufficient dunnage and shall be securely tied down in such a manner as to protect the structure from damage.

The superstructure supplier shall provide the services of an on-site technical advisor to instruct the Contractor in the proper method of handling and placement of the prefabricated bridge superstructure. The technical advisor shall remain on the site during the entire bridge erection operation and will be discharged of his/her services only at the Engineer's discretion. Installation of the bridge shall be performed and paid in accordance with these specifications.

Should the Contractor cause any damage to the roadway or its appurtenances, utilities above or below the roadway or other structures nearby, he shall be responsible to repair the damage or replace the damaged element at his own cost. Such repairs or replacement are subject to prior approval by the Engineer.

The prefabricated pedestrian bridge superstructure may be delivered to the job site in sections with measurements and weights as depicted on the plans and accepted Working Drawing submittal.

Fabrication and construction of the pedestrian bridge superstructure shall conform to the Standard Form 818, Article 6.03.03.

The minimum vertical and horizontal clearances for operating equipment under and adjacent to overhead utility lines shall be in accordance with the current State of Connecticut & OSHA Regulations. Deviations, including power outages, require prior written approval from the utility owner.

After the concrete in the abutment reaches the minimum compressive strength as determined by the pedestrian bridge designer, the bridge superstructure may be installed as shown on the plans and in accordance with the approved working drawings. The Contractor shall adhere to the project traffic control plans, maintenance and protection of traffic and prosecution and progress specifications.

Installation of the superstructure shall be completed in accordance with a detailed Bridge Erection Plan and Sequence submitted to and accepted by the Engineer a minimum of 60 calendar days before the scheduled installation date of the superstructure.

The deck shall be constructed with edge supports beneath the timber walkway as part of the structural steel framing. The deck shall be designed with a maximum deflection due to live loads of L / 1200.

Method of Measurement:

This work, being paid for on a lump sum basis, will not be measured for payment.

Basis of Payment:

This work will be paid for at the lump sum price for "Pedestrian Bridge Superstructure (Site No. 1)", complete and accepted, which price shall include all materials, equipment, tools and labor incidental to the design, fabrication, construction, delivery, handling, and unloading of the prefabricated bridge superstructure, including anchor bolts and bearings as required, at the locations shown on the plans.

Item No.	Description	Unit
0604301A	PEDESTRIAN BRIDGE SUPERSTRUCTURE (SITE 1)	L.S.

ITEM # 0651012A 15" R.C. PIPE
ITEM # 0651015A 24" R.C. PIPE

These items shall conform to Section 6.86 DRAINAGE PIPES, DRAINAGE PIPE ENDS of the Form 818, modified as follows:

Construction Methods:

Trench excavation, backfill and dewatering for these items shall be according to the special provisions for "EARTH TRENCH EXCAVATION AND BACKFILL" and "TRENCH DEWATERING", included elsewhere in these specifications.

All drainage pipe shall be reinforced concrete pipe (RCP) Class IV or Class V as shown on the plans or as directed by the Engineer.

Method of Measurement:

There will be no direct measurement for trench excavation and there will be no measurement for payment for gravel fill, bedding material, or for the cost of modifications required to existing manholes or catch basins as required for connecting proposed drainage pipes with existing drainage structures, but the cost thereof shall be included in the contract unit price per linear foot for the size and type of pipe being installed.

Trench excavation, dewatering, backfilling and consolidation will not be measured for payment, but its cost shall be included in the bid price per linear foot for the size and type of pipe being installed.

If rock in trench excavation is required such work will be measured for payment as extra work.

Basis for Payment:

The work under these items will be paid for at the contract unit price as listed in the Bid Proposal per linear foot for the size of pipe specified, complete in place including trench excavation, dewatering, gravel fill, bedding material, backfilling and consolidation, and all other materials, equipment, tools, and labor incidental thereto.

Rock excavation, when encountered during the course of this work, will be paid for as extra work.

Item No.	Description	Unit
0651012A	15" RC PIPE	LF.
0651015A	24" RC PIPE	LF.

ITEM # 0652013A 24" R.C. CULVERT END

This item shall conform to Section 6.86 DRAINAGE PIPES, DRAINAGE PIPE ENDS of the Form 818, modified as follows:

Materials:

Concrete footings for culverts ends shall conform to the requirements of M.08.02 for construction with CMU or precast concrete. If cast-in-place concrete is used for footings it shall conform Class "A" Concrete.

Construction Methods:

Trench excavation, backfill and dewatering for these items shall be according to the special provisions for "EARTH TRENCH EXCAVATION AND BACKFILL" and "TRENCH DEWATERING", included elsewhere in these specifications.

Concrete footings for culvert ends shall be furnished and installed as shown in the construction details.

Method of Measurement:

There will be no direct measurement for trench excavation and there will be no measurement for payment for gravel fill, bedding material, or for the cost of connecting proposed drainage systems with existing systems, but the cost thereof shall be included in the contract unit price for the size and type of culvert end being installed.

Trench excavation, dewatering, backfilling and consolidation will not be measured for payment, but its cost shall be included in the bid price for each size and type of culvert end being installed.

If rock in trench excavation is required such work will be measured for payment as extra work.

Concrete footings for culvert ends as shown in the construction details will not be measured for payment, but its cost shall be included in the contract unit price for each culvert end.

Basis for Payment:

The work under these items will be paid for at the contract unit price as listed in the Bid Proposal per each size specified, complete in place, including trench excavation, dewatering, gravel fill, bedding material, concrete footing, backfilling and consolidation, and all other materials, equipment, tools, and labor incidental thereto.

Rock excavation, when encountered during the course of this work, will be paid for as extra work.

Item No.	Description	Unit
0652013A	24" RC CULVERT END	EA.

ITEM # 0702000A HELICAL PILES

Description:

Work under this item shall consist of furnishing all design, materials, tools, equipment, labor and supervision, and installation techniques necessary to install helical piles as detailed on the plan sheets, including connection details.

Materials:

Material for the helical piles shall be manufactured by a helical pile manufacturer meeting the requirements of this specification. Submit the selected manufacturer to the Engineer for approval.

Components of the helical pile system shall be in accordance with the following:

Central Steel Shaft.

The central steel shaft, consisting of lead sections, helical extensions, and plain extensions, shall comply with the following minimum requirements:

- All lead and extension sections shall be hot-dip galvanized in accordance with ASTM A123 and A153, as appropriate after fabrication.

- **Round-Cornered-Square (RCS) solid steel bars:** Shall be hot rolled RCS solid steel bars meeting dimensional and workmanship requirements of ASTM A29. The bar shall be either modified medium carbon steel grade (similar to AISI 1044) with improved strength due to fine grain size or high strength low alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

    - Minimum torsional strength rating= 5500 foot-pounds
    - Minimum yield strength = 70 ksi

    If the structure requires the piles to resist lateral loads, RCS solid steel bars shall only be used in conjunction with a grout column of at least 4 inches to provide lateral stability to the central shaft. The grout shall be a neat grout with a compressive capacity of no less than 4000 psi. All appropriate displacement plates and spacings shall be shown in the shop drawings.

- **Structural steel tube or pipe:** Shall be seamless or straight-seam welded, per ASTM A53, A252, ASTM A500, or ASTM A618. Minimum wall thickness is 0.300 inches (schedule 80).

    - Torsional strength rating= 8,000 foot-pounds
    - Minimum yield strength= 50 ksi

Helical Bearing Plate.

The Helical Bearing Plats shall be hot rolled carbon steel sheet, strip, or plate formed on matching metal dies to true helical shape and uniform pitch. Bearing plate material shall conform to the following ASTM specifications: ASTM A36, ASTM A572, A1018, or A656 with minimum yield strength of 50 ksi. The minimum plate thickness shall be 3/8 inches.

Bolts.

The size and type of bolts used to connect the central steel shaft sections together shall conform to the following ASTM specifications:

- For use with solid square shafts: 3/4 inch diameter bolts per ASTM A320 Grade L7.
- For use with solid square shafts: 7/8 inch diameter bolts per ASTM A193 Grade B7.
- For use with solid square shafts: 1 1/8 inch diameter bolts per ASTM A193 Grade B7.
- For use with solid square shafts: 1 1/4 inch diameter bolts per ASTM A193 Grade B7.
- For use with steel tube or pipe shafts: 3/4 inch diameter bolts per SAE J429 Grade S.

Couplings.
Shall be formed as integral part of the plain and helical extension material. For RCS, the couplings shall be hot upset forged sockets or hot forge expanded sockets. For tubes or pipes, the couplings shall be integral forged round deep socket sleeves.

Plates, Shapes, or Pier Caps.
Structural steel plates and shapes for helical pile top attachments shall conform to ASTM A36 or ASTM A572 Grade 50.

Construction Methods:

The Contractor shall be experienced in performing design and construction of helical piles and shall furnish all materials, labor, and supervision to perform the work. The Contractor shall be trained and certified by the helical pile system manufacturer in the proper methods of design and installation of helical piles. The Contractor shall provide names of on-site personnel materially involved with the work, including those who carry documented certification from the helical pile system manufacturer. At a minimum, these personnel shall include foreman, machine operator, and project engineer/manager.

Quality Assurance.

The Helical piles shall be installed by a Contractor certified by the helical pile manufacturer. The Contractor shall have satisfied the certification requirements relative to the technical aspects of the product and installation procedures as required by the manufacturer.

The Contractor shall employ an adequate number of skilled workers who are experienced in the necessary crafts and who are familiar with the specified requirements and methods needed for proper performance of the work of this specification.

All helical piles shall be installed in the presence of a designated representative of the Engineer unless said representative informs the Contractor otherwise.

Helical pile components as specified shall be manufactured by a facility whose quality systems comply with ISO (International Organization of Standards) 9001 requirements. Certificates of Registration denoting ISO Standards Number shall be presented upon request to the Engineer or their representative.

Design.

The Contractor shall be responsible for the design of the helical piles. Helical piles shall be designed to meet the specified loads and acceptance criteria determined by the pre-engineered steel truss pedestrian bridge manufacturer. The loads shown on the plans are preliminary and subject to change during final design by the Contractor. Pile loads are anticipated to include vertical and lateral loading conditions. The calculations and shop drawings required from the Contractor or helical pile engineer shall be submitted for review and shall:

- Provide calculations stamped by a Professional Engineer licensed in Connecticut demonstrating the helical piles can support required design loads. This documentation shall include, but is not limited to, geotechnical capacity of the helical piles, structural capacity of the helical piles, factor of safety used, bearing layer, minimum depth, design installation torque, and load charts correlating drive torque to bearing capacity. This documentation shall be reviewed by the Engineer prior to installation of the

helical piles.

- For ASD design, a minimum factor of safety of 2 is required for compression capacity and 3 for tension capacity. The allowable lateral capacity shall be equal to one half of the lateral load that produces a gross lateral movement of 1 inch at the top of the pile.
- For LRFD design, a maximum resistance factor of 0.45 for compression capacity, 0.3 for tension capacity, and 1 for lateral capacity shall be used.
- The piles shall be designed such that the helices are bearing in naturally deposited soil and not fill.

The helical pile attachment (pile cap) shall distribute the design load to the concrete foundation such that the concrete bearing stress does not exceed the allowable stresses of the concrete as noted on the plans and the stresses in the steel plates/welds does not exceed the allowable stresses for steel members as noted on the plans.

Ground Conditions:

The geotechnical report, including logs of soil borings, shall be considered to be representative of the in-situ subsurface conditions likely to be encountered on the project site. The geotechnical report shall be used as the basis for helical pile design using generally accepted engineering judgment and methods. The Contractor may conduct additional geotechnical investigations at no additional cost to the Town.

Submittals:

The Contractor shall prepare and submit to the Engineer, for review, working drawings and design calculations for the helical pile foundation intended for approval at least 30 days prior to planned start of construction. All submittals shall be signed and sealed by a Professional Engineer licensed in the State of Connecticut.

The Contractor shall submit a detailed description of the construction procedures proposed for use to the Engineer for review. This shall include a list of major equipment to be used. The working drawings shall include the following:

- Helical pile number, location and pattern by assigned identification number
- Helical pile design load
- Type and size of central steel shaft
- Helix configuration (number and diameter of helical plates)
- Minimum effective installation torque
- Minimum overall length
- Inclination angle (-0- for vertical piles)
- Minimum cased length, if applicable
- Cut-off elevation

The Contractor shall submit shop drawings for all helical pile components, including casing components and pile top attachment to the Engineer for review. This includes helical pile lead and extension section identification (manufacturer's catalog numbers).

The Contractor shall submit certified mill test reports for the central steel shaft, as the material is delivered, to the Engineer for record purposes. The ultimate strength, yield strength, % elongation, and chemistry composition shall be provided.

The Contractor shall submit to the Engineer copies of calibration reports for each torque indicator and all load test equipment to be used on the project. The calibration tests shall have been performed within one year of the date submitted. helical pile installation and testing shall not proceed until the Engineer has received the calibration reports. These calibration reports shall include, but are not limited to, the following information:

- Name of project and Contractor

- Name of testing agency
- Identification (serial number) of device calibrated
- Description of calibrated testing equipment
- Date of calibration
- Calibration data

Work shall not begin until all the submittals have been received and reviewed by the Engineer. Allow the Engineer a reasonable time to review, comment, and return the submittal package after a complete set has been received. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the Contractor.

Verification of Site Conditions:

Prior to commencing helical pile installation, the Contractor shall inspect the work of all other trades and verify that all said work is completed to the point where Helical Piles may commence without restriction. The Contractor shall also verify that all helical piles may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc.

Installation Equipment:

The installation equipment shall be rotary type, hydraulic power driven torque motor with clockwise and counterclockwise rotation capabilities. The torque motor shall be capable of continuous adjustment to revolutions per minute (RPM's) during installation. Percussion drilling equipment shall not be permitted. The torque motor shall have torque capacity 15% greater than the torsional strength rating of the central steel shaft to be installed. The equipment shall be capable of applying adequate down pressure (crowd) and torque simultaneously to suit project soil conditions and load requirements. The equipment shall be capable of continuous position adjustment to maintain proper helical pile alignment.

Installation Tooling:

Installation tooling should be maintained in good working order and safe to operate at all times. Flange bolts and nuts should be regularly inspected for proper tightening torque. Bolts, connecting pins, and retainers should be periodically inspected for wear and/or damage and replaced with identical items provided by the manufacturer. Heed all warning labels. Worn or damaged tooling should be replaced.

A torque indicator shall be used during helical pile installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling and:

- Shall be capable of providing continuous measurement of applied torque throughout the installation.
- Shall be capable of torque measurements in increments of at least 500 foot-pounds.
- Shall be calibrated prior to pre-production testing or start of work. Torque indicators which are an integral part of the installation equipment, shall be calibrated on-site. Torque indicators which are mounted in-line with the installation tooling, shall be calibrated either on-site or at an appropriately equipped test facility. Indicators that measure torque as a function of hydraulic pressure shall be calibrated at normal operating temperatures.
- Shall be re-calibrated, if in the opinion of the Engineer and/or Contractor reasonable doubt exists as to the accuracy of the torque measurements.

Central Steel Shaft Installation Procedures:

The helical pile installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project.

The lead section shall be positioned at the location as shown on the working drawings. The helical pile sections shall be engaged and advanced into the soil in a smooth, continuous manner at a rate of rotation of 5 to 20

RPM's. Extension sections shall be provided to obtain the required minimum overall length and installation torque as shown on the working drawings. Connect sections together using coupling bolt and nut torqued to 40 foot-pounds.

Sufficient down pressure shall be applied to uniformly advance the helical pile sections approximately 3 inches per revolution. The rate of rotation and magnitude of down pressure
shall be adjusted for different soil conditions and depths.

Termination Criteria:

The torque as measured during the installation shall not exceed the torsional strength rating of the central steel shaft. The minimum installation torque and minimum overall length criteria as shown on the working drawings shall be satisfied prior to terminating the helical pile.

If the torsional strength rating of the central steel shaft and/or installation equipment has been
reached prior to achieving the contractor specified minimum overall length required, the
Contractor shall have the following options:

a. Terminate the installation at the depth obtained subject to the review and acceptance of the helical pile design representative.
b. Remove the existing helical pile and install a new one with fewer and/or smaller diameter helical plates. The new helix configuration shall be subject to review and acceptance of the Engineer. If re-installing in the same location, the top-most helix of the new helical pile shall be terminated at least 3 feet beyond the terminating depth of the original helical pile. Shaft section shall not be reused after it has been permanently twisted during a previous installation.

If the minimum installation torque as shown on the working drawings is not achieved at the minimum overall length, and there is no maximum length constraint, the Contractor shall have the following options:

a. Install the helical pile deeper using additional extension sections, displacement plates, casing if required, and grout.
b. Remove the existing helical pile and install a new one with additional and/or larger diameter helical plates. The new helix configuration shall be subject to review and acceptance of the Engineer. If re-installing in the same location, the top-most helix of the new helical pile shall be terminated at least 3 feet beyond the terminating depth of the original helical pile.
c. De-rate the load capacity of the helical pile and install additional pile(s). The de-rated capacity and additional pile location shall be subject to the review and acceptance of the Engineer.

If the helical pile is refused or deflected by a subsurface obstruction, the installation shall be terminated and the pile removed. The obstruction shall be removed, if feasible, and the helical pile re-installed. If obstruction can't be removed, the helical pile shall be installed at an adjacent location, subject to review and acceptance of the Engineer.

The average torque for the last 3 feet of penetration shall be used as the basis of comparison with the minimum installation torque as shown on the working drawings. The average torque shall be defined as the average of the last three readings recorded at 1 foot intervals.

Method of Measurement:

Helical Piles will be measured for payment by the number of Helical Piles installed and accepted. There will be no separate measurement or payment for furnishing the design of the Helical Piles or developing installation methods to meet these Specifications.

Basis of Payment:

Helical Piles will be paid for at the Contract unit price each for “Helical Piles” complete and accepted in place, including all design, development of installation methods, materials, equipment, tools, proper disposal of drilling spoil and labor incidental thereto.

Item No.	Description	Unit
0702000A	HELICAL PILES	EA.

ITEM # 0703012A MODIFIED RIPRAP

Description:

This item shall conform to Section 7.03 RIPRAP, of the Form 818, amended as follows:

Construction Methods:

Excavation and backfill for these items shall be according to the special provisions for "EARTH EXCAVATION", included elsewhere in these specifications.

Method of Measurement:

The quantity of riprap measured for payment shall be the number of square yards of riprap apron, splash pad, or scour hole whose length and width are measured in place as accepted and thickness as shown on the plans.

There will be no direct measurement for earth excavation, dewatering, granular fill, backfilling or consolidation in the installation of the riprap.

Geotextile, where required at the direction of the Engineer, will be measured for payment under that item.

Basis of Payment:

This work will be paid for at the contract unit price per cubic yard as listed in the Bid Proposal for the type of riprap indicated, complete in place, including all materials, excavation, dewatering, granular fill backfill, equipment, tools, and labor incidental thereto.

Item No.	Description	Unit
0703012A	MODIFIED RIPRAP	C.Y.

ITEM # 0910001A METAL BEAM RAIL (TYPE R-B 350)

This item shall conform to Section 9.10 METAL BEAM RAIL, of the Form 818, amended as follows:

Materials:

Weathering Steel shall be used for rail elements, terminal sections, and posts which shall meet the requirements described Article M.10.02 of the Form 818.

Basis of Payment: Add the following to Article 9.10.05:

Metal Beam Rail (Type R-B 350) shall be paid for at the contract unit price per linear foot of "Metal Beam Rail (Type R-B 350)" as listed in the Bid Proposal, installed and accepted which price shall include all materials, equipment, tools and labor incidental thereto.

Item No.	Description	Unit
0910001A	METAL BEAM RAIL (TYPE R-B 350)	L.F.

ITEM # 0915001A TREE PROTECTION TRENCH

Description:

This work includes excavation of a tree protection trench adjacent to an existing or proposed sidewalk by means of a chain-driven trenching machine (Ditch Witch or similar) with additional pruning of roots using hand methods as required. This is performed adjacent to the proposed sidewalk excavation and within the drip line of an existing tree to cleanly sever roots prior to sidewalk or other trench excavation.

The services of a licensed arborist will be required to supervise the above referenced work and shall be included in the contract unit price for tree protection trench.

Construction Methods:

Tree protection trench shall be installed in advance of the intended construction during time periods where damage to trees will be minimized, as directed by the Engineer. The work area shall generally include the length of sidewalk within the drip line of the canopy of the tree of concern. Extreme care shall be taken by the Contractor to identify and protect underground utilities within the work area, and any conflicts shall be immediately brought to the attention of the Engineer.

Where tree protection trench is called for on the plans, the Contractor shall use a chain-driven trenching apparatus to cleanly sever tree roots adjacent to the sidewalk to the full depth of the sidewalk excavation as directed by the Engineer. Additional pruning of roots using hand methods may also be required, as directed by the Engineer or licensed arborist supervising the work.

The disturbed area shall be restored to existing grades and shall be seeded as per the special provision for "TURF ESTABLISHMENT" included elsewhere in these specifications.

Method of Measurement:

Tree Protection Trench will be measured for payment by the actual number of linear feet of completed and accepted Tree Protection Trench.

Basis of Payment:

Tree Protection Trench shall be paid for at the Contract unit price per linear foot of "Tree Protection Trench" as listed in the Bid Proposal, which price shall include all materials, equipment, tools, labor, and work incidental thereto.

The services of a certified arborist to supervise work under this item shall not be measured separately for payment, but rather shall be included in the contract unit price for "Tree Protection Trench".

Restoration of disturbed areas shall be measured and paid for under the pay item for "TURF ESTABLISHMENT".

Item No.	Description	Unit
0915001A	TREE PROTECTION TRENCH	L.F.

ITEM # 0921001A CONCRETE SIDEWALK
ITEM # 0921005A CONCRETE SIDEWALK RAMP

Description:

The Contractor is to construct sidewalks to lines and grades as shown on the plans or at locations as directed by the Engineer. Concrete sidewalks shall be five inches thick. Sidewalk construction shall include the removal of existing and construction of new house lateral walks where new sidewalk grades make it necessary. The sidewalk shall pitch to the street at a slope of 2 percent or as directed by the Engineer.

Concrete sidewalk ramps are to be constructed to the lines and grades shown on the plans or at locations as directed by the Engineer, and shall be a minimum of five inches thick. This work shall also include furnishing and installing Detectable Warning Strips in the locations and to the dimensions and details shown on the plans or as ordered by the Engineer.

Materials:

Processed Stone Base: The material for this item shall be **crushed trap rock** conforming to the requirements of Article M.05.01 Processed Aggregate Base and Pavement of the Form 818, except that coarse aggregate shall be broken stone, and fine aggregate shall be stone sand, screenings, or a combination thereof. Gravel or reclaimed miscellaneous aggregate shall not be used.

Forms: The forms used shall be five-inch steel or 2" x 6" wood firmly supported and staked to the line and grade given by the Engineer. **2"x 4" wood forms shall not be used and shall be cause for immediate rejection of sidewalk.** The forms shall be free from warp and shall be of sufficient strength to resist springing out of shape. All forms shall be cleaned and oiled before use.

Concrete: The concrete furnished shall conform with respect to composition, transportation, mixing and placing, to Class F Cement Concrete 4,400 PSI, as specified by the State of Connecticut Department of Transportation in its latest specification and revisions. An approved air-entraining admixture shall be used to entrain 5% to 7% air in the concrete.

Concrete Curing Compound / Sealer: All concrete sidewalks shall be treated using Repel 100 by Kingdom Products curing compound / sealer which contains water and road salt resistance additives or approved equal meeting ASTM C309, Type 1, Class A and B.

Detectable Warning Strips: The Detectable Warning Strip shall be a replaceable tactile warning surface tile as manufactured by ADA Solutions, Inc of Wilmington MA 01887 Tel: 800.372.0519 Fax: 978.262.9125 www.adatile.com or approved equal. Tile shall be brick red in color (Federal Color # 20109) and all attachment hardware shall be stainless steel. The tile shall conform to the dimensions shown on the plans or as directed by the Engineer.

Dowels: Smooth metal dowels, 5/8-inch in diameter, measuring 18 inches in length shall be installed using plastic sleeves within all expansion and contraction joints, concrete driveway aprons, at concrete sidewalk ramps, and at the last end section of each sidewalk slab poured at the end of each working day.

Plastic sleeves of the size required for accepting the 5/8-inch by 18-inch smooth metal dowels shall be "Speed Dowel" sleeves as manufactured by Greenstreak, 3400 Tree Court Industrial Blvd, St. Louis, MO 63122, telephone number (800) 551-5145 or approved equal. Plastic sleeves shall be installed according to manufacturer instructions and as directed by the Engineer.

Smooth metal dowels shall be 5/8-inch in diameter and 18 inches in length. All metal dowels shall conform to the requirements of ASTM A615 Grade 60.

Expansion Joints: At maximum intervals of 15 feet, an expansion joint shall be placed to the full depth of the concrete slab. The material for expansion joints shall be 1/2-inch thick asphalt impregnated bonded cellular fiber or approved equal. Expansion joints of the same material shall also be placed at points abutting existing structures.

Construction Methods:

Limits of Disturbance: The Contractor is to exercise caution to prevent unnecessary damage to lawns, trees, bushes, or any other existing improvements. If, in the opinion of the Engineer, existing improvements are damaged due to the carelessness of the Contractor, the same shall be repaired or replaced at the Contractor's expense.

Earthwork: The Contractor shall remove and dispose of grass, rubbish, and other objectionable materials within the limits of the sidewalk construction. The Contractor shall perform all excavation necessary within the grading limits to support and construct sidewalks to the lines and grades as shown on the plans and cross sections or as directed by the Engineer. Excavation shall include sawcutting, removal and disposal of bituminous concrete, existing concrete sidewalks, existing concrete sidewalk ramps, driveways and pavements, including curbing and tree roots, where necessary, due to sidewalk grade and as shown on the plans or as directed by the Engineer. When connecting new concrete sidewalk to a section of existing concrete sidewalk, the connection point shall be at the nearest joint in the existing sidewalk. Existing house lateral walks and driveways adjacent to the sidewalk shall be removed and base graded and prepared for a smooth connection. The Contractor shall remove and dispose of all excess material.

Suitable excavated material shall be re-used within the project limits as directed by the Engineer to form embankment for sidewalks where required. Embankment formation shall be completed as described in Article 2.02.03 of the Form 818, and shall meet the proposed subgrade elevations described on the plans or directed by the Engineer. Excess earth materials shall become the property of the Contractor and shall be disposed of at no additional cost to the Town.

Processed Stone Base Installation: The processed stone base course shall be spread upon the prepared subgrade to such depth as to give a compacted thickness of eight (8) inches. The material shall be uniformly spread in two layers of equal depth in the entire base course excavation and each layer shall be wetted and compacted to a firm even surface with a roller weighing not less than 500 pounds or by use of pneumatic tampers or vibratory compactors.

Installation of Dowel abutting existing sidewalks: Dowels are to be installed between new and existing concrete slabs at all expansion joint locations. Where new or repaired walks abut up against existing concrete sidewalks, the Contractor shall drill two holes measuring ¾-inches in diameter and 9 inches minimum depth into the existing concrete slab. The dowels shall be set into the existing sidewalk slab prior to the placement of new concrete. The dowels are to be level with the latitude pitch of the sidewalk and shall conform to details of these specifications. Dowel sleeves shall be installed on the new concrete sidewalk end of the dowel.

Concrete Work: The surface finish shall be struck off, forcing coarse aggregate below mortar surface. After strike-off, the surface shall be worked and floated with a wooded, aluminum, or magnesium float followed by steel troweling. The slab shall then be broomed cross-wise with a fine hair broom. The outside edges of the slab shall be edged with a ¼-inch radius tool. All edging lines shall be removed.

The Detectable Warning Strip shall be set directly in poured concrete according to the plans and the manufacturer's specifications or as directed by the Engineer. The Contractor shall place two 11.34 Kg concrete blocks or sandbags on each tile to prevent the tile from floating after installation in wet concrete.

Curing Compound / Sealer Application: The Contractor shall apply the approved curing compound / sealer using a 3/8" nap roller or low pressure sprayer at a rate of 200 to 300 square feet per gallon and according to

manufacturer installation instructions or as directed by the Engineer. Concrete surface shall be clean and free of any surface contaminants when applying sealer. When applying sealer to fresh concrete the bleed water must be off the surface as this water can inhibit proper function of the sealer. Any areas where the sealer puddles shall be immediately spread to other areas where absorption can occur to avoid undesirable appearance of finished surface. Sealer shall not be applied if rain is forecast within 24 hours, or if ambient temperature at the time of application is below 50 degrees or above 80 degrees Fahrenheit, or as directed by the Engineer.

Newly constructed sidewalk surfaces shall be protected from all foot or vehicular traffic for a period of seven days. The Contractor shall have on the job, at all times, sufficient polyethylene film or waterproof paper to provide complete coverage in the event of rain.

Temperature: No concrete is to be placed when air temperature is below 40°F, or at 45°F and falling, unless prior approval is given by the Engineer. In the event weather conditions may be such that concrete that is not completely cured is subject to freezing, the Contractor shall provide a minimum of a six-inch layer of hay, straw, or thermal blankets for protection. Any concrete laid during cold weather that is damaged by freezing shall be the responsibility of the Contractor and shall be replaced at his expense.

Final Grading: Upon completion of sidewalk construction, the Contractor is to re-grade the areas between sidewalks and curbs, if the typical section indicates a grass plot, and disturbed areas back of the sidewalk. The Contractor shall backfill and compact these areas so as to conform to the typical cross-section. The upper four inches of the backfill shall be loam or topsoil, loose and friable and free of sticks, rocks, roots, weeds, or other unsuitable material.

Method of Measurement:

Concrete Sidewalk will be measured by the actual number of square feet of completed and accepted Concrete Sidewalks.

Concrete Sidewalk Ramp will be measured by the actual number of square feet of completed and accepted Concrete Sidewalk Ramp.

Excavation: Excavation below the finished grade of the concrete sidewalk or concrete sidewalk ramp, backfilling, and disposal of all surplus materials required within the grading limits to support and construct sidewalks to the lines and grades as shown on the plans and cross sections will not be measured for payment; but the cost shall be included in the price bid for Concrete Sidewalk of the type specified.

Removal and disposal of existing concrete sidewalk and concrete sidewalk ramps will be measured for payment under the item “Removal of Concrete Sidewalk”.

Processed Stone Base Course: This work will not be measured for payment but the cost shall be included in the price bid for Concrete Sidewalk or Concrete Sidewalk Ramp of the type specified.

Detectable Warning Strips: The detectable warning strip required per the details for new construction of the accessible curb ramps will not be measured for payment. All materials, equipment, tools and labor incidental thereto shall be included in the bid price for Concrete Sidewalk Ramp.

Dowels and Sleeves: This work will not be measured for payment but the cost shall be included in the price bid for Concrete Sidewalk or Concrete Sidewalk Ramp of the type specified.

Expansion Joint Material: This work will not be measured for payment but the cost shall be included in the price bid for Concrete Sidewalk or Concrete Sidewalk Ramp of the type specified.

Curing Compound/Sealer: This work will not be measured for payment but the cost shall be included in the price bid for Concrete Sidewalk or Concrete Sidewalk Ramp of the type specified.

Basis of Payment:

"Concrete Sidewalk" will be paid for at the contract unit price per square foot, complete in place, which price shall include all required excavation and disposal of surplus material, processed stone base, compaction, expansion joint material, dowels, dowel sleeves, finishing, curing compound/sealer, backfill, equipment, tools, materials and labor incidental thereto.

"Concrete Sidewalk Ramp" will be paid for at the contract unit price per square foot ,complete in place, which price shall include all required excavation and disposal of surplus material, processed stone base, compaction, wire mesh reinforcing, expansion joint material, dowels, dowel sleeves, finishing, curing compound/sealer, furnishing and placing detectable warning strip, backfill, equipment, tools, materials and labor incidental thereto.

Item No.	Description	Unit
0921001A	CONCRETE SIDEWALK	S.F.
0921005A	CONCRETE SIDEWALK RAMP	S.F

ITEM # 0922500A BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)
ITEM # 0922501A BITUMINOUS CONCRETE DRIVEWAY

Work under this item shall conform to the applicable provisions of Section 9.22 of the Standard Specifications Form 818 amended as follows:

Description:

The item "Bituminous Concrete Driveway (Commercial) and Bituminous Concrete Driveway" shall include sawcutting, excavation to the required depth below finish grades and furnishing and installing all materials to construct the bituminous concrete driveway complete with compacted processed stone base to the lines and grades shown on the plans or as directed by the Engineer.

Materials:

Bituminous Concrete: Materials shall conform to the requirements of Special Provision Section 4.06-0.375 inch Superpave.

Processed Stone Base: The material for this item shall be **crushed trap rock** conforming to the requirements of Article M.05.01 Processed Aggregate Base and Pavement of the Form 818, except that coarse aggregate shall be broken stone, and fine aggregate shall be stone sand, screenings, or a combination thereof. Gravel or reclaimed miscellaneous aggregate shall not be used.

Backfill: Suitable earth material which shall be free from admixture of subsoil, refuse, stumps, roots, rocks, brush, weeds, and other material which will prevent the formation of a suitable bed.

Construction Methods:

Excavation: Excavation, including removal of any existing asphalt, concrete snow shelf, bituminous sidewalk or bituminous driveway shall be made to the required depth below finished grade, as shown on the plans or as directed by the Engineer. Sawcuts shall be made at all limits of work to provide a clean vertical joint. Sawcuts at limits of work, or any intermediate sawcut performed to facilitate excavation shall not be measured for payment separately. All soft and yielding material shall be removed and replaced with suitable backfill material.

Base Course: Processed Stone Base for the base course shall be uniformly spread to the required depth and thoroughly compacted with a self-propelled roller with a mass of not less than 1 ton. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers and vibratory plate compactors.

Bituminous Concrete Surface: This surface shall be constructed in accordance with the requirements of Special Provision Section 4.06, except that the material may be spread by hand. Driveway aprons shall be placed and compacted in one lift. Compaction of the driveway bituminous concrete material shall be attained by self-propelled roller(s) with a mass of not less than 1 ton and to a minimum density of 90.0% of the theoretical maximum specific gravity of the mixture, or by methods approved by the Engineer. A tack coat shall be applied as indicated on the plans or as directed by the Engineer prior to placement of any bituminous materials.

The Contractor shall protect existing features to remain such as sidewalks, curbing, and utilities. Any damage to existing features shall be repaired at no cost to the Town.

Method of Measurement:

Bituminous Concrete Driveway (Commercial) shall be measured for payment by the actual number of square yards of completed and accepted Bituminous Concrete Driveway (Commercial).

Bituminous Concrete Driveway shall be measured for payment by the actual number of square yards of completed and accepted Bituminous Concrete Driveway.

Basis of Payment:

This work shall be paid for at the contract unit price per square yard for "Bituminous Concrete Driveway (Commercial) and Bituminous Concrete Driveway" completed in place and accepted, which price shall include all excavation as specified above, sawcuts, preparation of subgrade, suitable backfill, processed stone base, bituminous material, disposal of surplus material, tack coat, and all equipment, tools, labor, and materials incidental hereto.

Item No.	Description	Unit
0922500A	BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)	S.Y.
0922501A	BITUMINOUS CONCRETE DRIVEWAY	S.Y.

ITEM # 0944000A FURNISHING AND PLACING TOPSOIL

Description:

This work shall consist of furnishing, placing, and shaping topsoil or wetland topsoil in areas shown on the plans where directed by the Engineer. The topsoil shall be placed to the depth stated in the Contract or specifications.

Material:

Topsoil shall conform to the requirements of Article M.13.01.1 of the Form 818.

Construction Methods:

Topsoil shall be placed in all other disturbed areas designated for turf establishment as shown on the plans.

The areas on which topsoil is to be placed shall be graded to a reasonably true surface and cleaned of all stones, brickbats, and other unsuitable materials. After areas have been brought to proper subgrade and approved by the Engineer or his agent, loam shall be spread to a depth as indicated in the Contract, or to a depth of no less than four inches, with due allowance made for settlement. All stones, roots, debris, sod, weeds, and other undesirable material shall be removed from the topsoil. After shaping and grading, all trucks and other equipment shall be excluded from the topsoiled area to prevent excessive compaction. The Contractor shall perform such work as required to provide a friable surface for seed germination and plant growth prior to seeding.

During hauling and spreading operations, the Contractor shall immediately remove any material dumped or spilled on the shoulders or pavement.

It shall be the Contractor's responsibility to restore to line, grade, and surface all eroded areas with approved material and to keep topsoiled areas in acceptable condition until the completion of the construction work.

Method of Measurement:

This work will be measured for payment by the number of square yards of area on which the placing of the topsoil has been completed and the work accepted.

The limits of payment shall be to the slope limits as shown on the plans.

No payment shall be made outside of these limits unless the disturbance was directed or approved by the Engineer. No payment shall be made for areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor.

Basis of Payment:

This work will be paid for at the contract unit price per square yard for "Furnishing and Placing Topsoil" as listed in the Bid Proposal which price shall include all materials, equipment, tools, labor, and work incidental thereto. This price shall include all stripping, stockpiling, screening, hauling, re-handling, raking, and other processing of topsoil from off-site or on-site sources and all materials, equipment, tools, and labor incidental thereto.

Item No.	Description	Unit
0944000A	FURNISHING AND PLACING OF TOPSOIL	S.Y.

ITEM # 0949000A WOOD CHIP MULCH

Description:

This work under this item shall consist of utilizing existing onsite chipped land clearing debris generated from a gas powered commercial wood chipper and possibly providing off-site supplemental wood chips from another source, placing, and shaping a 6" thick wood chip mulch over the top soiled areas to the lines and grades depicted on the plans or as directed by the Engineer. The topsoil shall be placed to the depth stated in the Contract or specifications.

Material:

Wood Chips shall be of the size and shape typically processed through a gas powered commercial wood chipper.

Wood Chip Mulch shall consist of utilizing existing onsite chipped land clearing debris and possibly providing off-site supplemental wood chips supplied from another source

Wood Chip Mulch shall be of mainly hardwood species, free of disease and environmentally harmful insects.

Construction Methods:

The Contractor is required to mechanically chip, retain and stockpile any and all land clearing debris on-site to be utilized for this item. Additional off-site supplemental material may be required.

Wood Chip Mulch shall be placed in 6" layers uniformly over top soiled areas designated for Wood Chip Mulch to the lines and grades depicted on the plans or as directed by the Engineer.

The areas on which topsoil is to be placed shall be graded to a reasonably true surface and cleaned of all stones, brickbats, and other unsuitable materials. After areas have been brought to proper subgrade and approved by the Engineer or his agent, loam shall be spread to a depth as indicated in the Contract, or to a depth of no less than four inches, with due allowance made for settlement. All stones, roots, debris, sod, weeds, and other undesirable material shall be removed from the topsoil. After shaping and grading, all trucks and other equipment shall be excluded from the top soiled area to prevent excessive compaction.

It shall be the Contractor's responsibility to restore to line, grade, and surface all eroded areas with approved material and to keep top soiled areas in acceptable condition until the completion of the construction work.

Method of Measurement:

This work will be measured for payment by the number of square yards of " Wood Chip Mulch" in place, completed and accepted by the Engineer.

The limits of payment shall be to the wood chip mulch area as shown on the plans.

No payment shall be made outside of these limits unless the disturbance was directed or approved by the Engineer. No payment shall be made for areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor.

Basis of Payment:

This work will be paid for at the contract unit price per square yard of "Wood Chip Mulch" as listed in the Bid Proposal which price shall include chipping, stockpiling existing wood chips, furnishing and installing supplemental wood chip mulch, placing, spreading, raking, all materials, equipment, tools, labor, and work incidental thereto.

Item No.	Description	Unit
0949000A	WOOD CHIP MULCH	S.Y.

ITEM # 0950005A TURF ESTABLISHMENT
ITEM # 0950006A TURF ESTABLISHMENT – CONSERVATION MIX

Description:

The work included in this item shall consist of providing an accepted uniform stand of established perennial turf grasses or conservation seed mix by furnishing and placing fertilizer, seed, and mulch on all areas to be treated as shown on the plans or where designated by the Engineer.

Materials:

The materials for this work shall conform to the requirements of Section M.13 of the Form 818, except as noted below.

Residential Lawn Areas: Seed mix for residential lawn areas shall consist of 30% Crest Kentucky Bluegrass, 30% Baron Kentucky Bluegrass, 20% Victory II Chewings Fescue, and 20% Perennial Rye Grass.

Roadside Areas: Seed mix for other roadside areas designated for turf establishment shall consist of 70% Red Fescue, 20% Kentucky Blue Grass, and 10% Perennial Rye Grass.

Conservation Seed Mix: Conservation seed mix, when specified, shall be 25% New England Roadside Matrix Wet Meadow Seed Mix and 75% New England Erosion Control / Restoration Mix, as listed within New England Wetland Plants, Inc.'s catalog or approved equal.

Material certificates shall be provided for all materials supplied under this item.

Construction Methods:

Construction Methods shall be those established as agronomically acceptable and feasible and which are approved by the Engineer.

1. **Preparation of the Seedbed:**

(a) Level areas, medians, interchanges and lawns: These areas shall be made friable and receptive for seeding by disking or by other approved methods to the satisfaction of the Engineer. In all cases the final prepared and seeded soil surface shall meet the lines and grades for such surface as shown in the plans, or as directed by the Engineer.

(b) Slope and Embankment Areas: These areas shall be made friable and receptive to seeding by approved methods which will not disrupt the line and grade of the slope surface. In no event will seeding be permitted on hard or crusted soil surface.

(c) All areas to be seeded shall be reasonably free from weeds taller than 3 inches. Removal of weed growth from the slope areas shall be by approved methods, including hand-mowing, which do not rut or scar the slope surface, or cause excessive disruption of the slope line or grade. Seeding on level areas shall not be permitted until substantially all weed growth is removed. Seeding on slope areas shall not be permitted without removal or cutting of weed growth except by written permission of the Engineer.

2. **Seeding Season: The calendar dates for seeding shall be:**

Spring—March 15 to June 15
Fall—August 15 to October 15

All disturbed soil areas shall be treated during the seeding seasons as follows:
(a) Areas at final grade: Seeding will be accomplished.

(b) "Out-of-season" seedings shall be performed in the same manner as "in-season" seedings. Since acceptable turf establishment is less likely, the Contractor shall be responsible for "in-season" reseeding until the turf stand conforms to this specification.

(c) During "out-of-season" periods unseeded areas shall be treated in accordance with Section 2.10, Water Pollution Control.

3. Seeding Methods: The seed mixture shall be applied by any agronomically acceptable procedure. The rate of application shall be no less than 175 pounds per acre or according to manufacturer instructions. Fertilizer conforming to M.13.03 shall be initially applied at a rate of 320 pounds per acre during or preceding seeding. When wood fiber mulch is used, it shall be applied in a water slurry at a rate of 2,000 pounds per acre with or immediately after the application of seed, fertilizer and limestone.

When the grass seeding growth has attained a height of 6 inches, the areas of Turf Establishment designated herein shall be mowed to a height of 3 inches. Following mowing, all seeding grass areas (mowed and un-mowed) shall receive a uniform application of fertilizer hydraulically placed at the rate of 320 pounds per acre. **Areas of Conservation seed mix shall not be mowed.**

4. Compaction: The Contractor shall keep all equipment and vehicular and pedestrian traffic off areas that have been seeded to prevent excessive compaction and damage to young plants. Where such compaction has occurred, the Contractor shall rework the soil to make a suitable seedbed; then re-seed and mulch such areas with the full amounts of the specified materials, at no extra expense to the Town.

5. Stand of Perennial Turf Grasses: The Contractor shall provide and maintain a uniform stand of established turf grass or wetland vegetation having attained a height of 6 inches consisting of no less than 100 plants per square foot throughout the seeded areas until the entire project has been accepted.

6. Establishment: The Contractor shall keep all seeded areas free from weeds and debris, such as stones, cables, baling wire, and he shall mow at his own expense, on a one-time-only basis, all turf established slopes of 4:1 or flatter and level turf established (seeded) areas to a height of 3 inches when the grass growth attains a height of 6 inches. **Areas of Conservation seed mix shall not be mowed.** Clean-up shall include, but not be limited to, the removal of all debris from the turf establishment and wetland seeding operations on the shoulders, pavement, and/or elsewhere on adjacent properties publicly and privately owned.

Method of Measurement:

This work will be measured for payment by the number of square yards of surface area of accepted established perennial turf grass or conservation seed mix as specified or by the number of square yards surface area of seeding actually covered and as specified.

Restoration of areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor will not be measured for payment.

Basis of Payment:

This work will be paid for at the contract unit price per square yard for "Turf Establishment" or “Turf Establishment – Conservation Mix” as listed in the Bid Proposal, which price shall include all materials, mowing, maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted.

Item No.	Description	Unit
0950005A	TURF ESTABLISHMENT	S.Y.
0950006A	TURF ESTABLISHMENT – CONSERVATION MIX	S.Y.

ITEM # 0970006A TRAFFICPERSON (MUNICIPAL POLICE OFFICER)
ITEM # 0970007A TRAFFICPERSON (UNIFORMED FLAGGER)

This item shall conform to Section 9.70 TRAFFICPERSON, of the Form 818, amended as follows:

Description: Add the following to the first paragraph of Section 9.70.01

"Trafficpersons shall consist of uniformed flaggers meeting acceptable criteria or extra duty officers of the Glastonbury Police Department. The Contractor shall provide Uniformed Flaggers meeting the requirements of this specification as required for safe traffic operations in the project area. Extra-duty police officers will be used only when specifically required by the Police Chief, as the Local Traffic Authority, who will make this determination based on the Contractor's proposed operations, traffic volumes, and traffic conditions."

"All work under this item shall be paid only for the duration of the Contract as contained in the Special Conditions under 'Time for Completion/Notice to Proceed' and for any time extensions granted in writing by the Town. Payment for police officers required after the duration of the Contract and approved time extensions shall be made directly by the Town and such costs deducted from future payments due the Contractor."

Basis of Payment: Replace Section 9.70.05 with the following:

"There will be no direct payment for safety garments or STOP/SLOW paddles. All costs associated with furnishing safety garments and STOP/SLOW paddles shall be considered included in the general cost of the item.

1. Trafficperson - Uniformed Flagger: Uniformed flaggers will be paid for at the contract unit price per hour for "Trafficperson (Uniformed Flagger)" as listed in the Bid Proposal, which price shall include all compensation, insurance benefits, and any other cost or liability incidental to the furnishing of the trafficpersons ordered."

2. Trafficperson - Police Officer: The sum of money shown on the Bid Proposal as "Estimated Cost" for this work will be considered the bid price even though payment will be made as described below. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount for the contract.

Police Officers will be paid for at the actual hourly rate charged for extra-duty police officers services by the Town (monthly statement or receipted bills) plus a 5% markup. Use of a Town police vehicle requested by the Engineer will be paid at the actual rate charged by the Town plus a 5% markup. The rate charged by the Town for use of a Uniformed Town Police Officer and/or an official Town Police vehicle shall not be greater than the rate it normally charges others for similar services.

Item No.	Description	Unit
0970006A	TRAFFICPERSON (MUNICIPAL POLICE OFFICER)	EST
0970007A	TRAFFICPERSON (UNIFORM FLAGGER)	HR

ITEM # 0971001A MAINTENANCE AND PROTECTION OF TRAFFIC

Description: is supplemented by the following:

The Contractor shall maintain and protect traffic as described by the following and as limited in the Special Provision "PROSECUTION AND PROGRESS" where applicable.

The Town of Glastonbury CHIEF OF POLICE, acting in the capacity of the LOCAL TRAFFIC AUTHORITY, shall be the sole and final authority for the Maintenance and Protection of Traffic.

All Roadways

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction on House Street and Western Boulevard, each lane on a paved travel path not less than 11 feet in width.

Construction Method: is supplemented as follows:

General

The Contractor shall schedule operations such that all open excavations are backfilled or steel plated by the end of each active work period. The installation of steel plates shall be approved by the Town of Glastonbury Public Works Department prior to installation. Trenches and other excavations within the travelway that are backfilled shall be brought up to finished grade and paved with bituminous concrete pavement prior to reopening the roadway to vehicular traffic.

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3-foot shoulder between the work area and travel lanes, with traffic drums spaced every 20 feet. At the end of the workday, if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary traversable slope of 4:1 or flatter that is acceptable to the Engineer.

If applicable, when an existing sign is removed, it shall be either relocated or replaced by a new sign during the same working day.

The Contractor shall not store any material on-site which would present a safety hazard to motorists or pedestrians (e.g. fixed object or obstruct sight lines).

The field installation of a signing pattern shall constitute interference with existing traffic operations and shall not be allowed, except during the allowable periods.

Existing Signing

The Contractor shall maintain all existing overhead and side-mounted signs throughout the project limits during the duration of the project. The Contractor shall temporarily relocate signs and sign supports as many times as deemed necessary, and install temporary sign supports if necessary and as directed by the Engineer.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory. 42-inch traffic cones and approved traffic drums are to be utilized for lane closures.

Requirements for Winter

The Contractor shall schedule a meeting with representatives from the Town of Glastonbury to determine what interim traffic control measures the Contractor shall accomplish for the winter to provide safety to the

motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

TRAFFIC CONTROL DURING CONSTRUCTION OPERATIONS

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

TRAFFIC CONTROL PATTERNS

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder. For each situation, the installation of traffic control devices shall be based on the following:

Speed and volume of traffic
Duration of operation
Exposure to hazards

Traffic control patterns shall be uniform, neat and orderly so as to command respect from the motorist.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist.

Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials and parked vehicles.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate trafficperson shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.

PLACEMENT OF SIGNS

Signs must be placed in such a position to allow motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs shall be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads), where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

ALLOWABLE ADJUSTMENT OF SIGNS AND DEVICES SHOWN ON THE TRAFFIC CONTROL PLANS

The traffic control plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions.

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations.

Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

TABLE I – MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT MILES PER HOUR	MINIMUM TAPER LENGTH IN FEET FOR A SINGLE LANE CLOSURE
30 OR LESS	180
35	250
40	320
45	540
50	600
55	660
65	780

SECTION 1. WORK ZONE SAFETY MEETINGS

1.a) Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of the Town Engineer, Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the project. Other work zone safety meetings during the course of the project should be scheduled as needed.

1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project.
The agenda should include:

- Review Project scope of work and time
- Review Section 1.08, Prosecution and Progress
- Review Section 9.70, Trafficpersons
- Review Section 9.71, Maintenance and Protection of Traffic
- Review Contractor's schedule and method of operations.
- Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
- Open discussion of work zone questions and issues
- Discussion of review and approval process for changes in contract requirements as they relate to work zone areas

SECTION 2. GENERAL

2.a) If the required minimum number of signs and equipment (i.e. one High Mounted Internally Illuminated Flashing Arrow for each lane closed, two TMAs, Changeable Message Sign, etc.) are not available; the traffic control pattern shall not be installed.

2.b) The Contractor shall have back-up equipment (TMAs, High Mounted Internally Illuminated Flashing Arrow, Changeable Message Sign, construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.

2.c) Failure of the Contractor to have the required minimum number of signs, personnel and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for loss time.

2.d) In cases of legitimate differences of opinion between the Contractor and the Inspection staff, the Inspection staff shall err on the side of safety. The matter shall be brought to the Town Engineer for resolution immediately or, in the case of work after regular business hours, on the next business day.

SECTION 3. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

3.a) Lane Closures shall be installed beginning with the advanced warning signs and proceeding forward toward the work area.

3.b) Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advanced warning signs.

3.c) Stopping traffic may be allowed:

- As per the contract for such activities as blasting, steel erection, etc.
- During paving, milling operations, etc. where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway and traffic should not travel across the longitudinal joint or difference in roadway elevation.
- To move slow moving equipment across live traffic lanes into the work area.

3.d) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advanced warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic. If required, traffic slowing techniques may be used and shall include the use of Truck Mounted Impact Attenuators (TMAs) as appropriate, for a minimum of one mile in advance of the pattern starting point. Once the advanced warning signs and the first ten traffic cones/drums are installed/removed, the TMAs and sign crew shall continue to install/remove the pattern as described in Section 5c and traffic shall be allowed to resume their normal travel.

3.e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

3.f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

3.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.

3.h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

SECTION 4. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

4.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).

4.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.

4.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.

4.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closure tapers and in the “caution” mode (four corners) for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.

4.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.

SECTION 5. USE OF TRUCK MOUNTED IMPACT ATTENUATOR VEHICLES (TMAs)

5.a) For lane closures on limited access roadways, a minimum of two TMAs shall be used to install and remove traffic control patterns. If two TMAs are not available, the pattern shall not be installed.

5.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to utilize the TMAs.

5.c) Generally, to establish the advance and transition signing, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane. The flashing arrow board mounted on the TMA should be in the “flashing arrow” mode when taking the lane. The sign truck and workers should be immediately ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Changeable Message Signs, signs, Flashing Arrows, and cones/drums are installed. The flashing arrow board mounted on the TMA should be in the “caution” mode when traveling in the closed lane.

5.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The flashing arrow board mounted on the TMA should be in the “caution” mode when in the closed lane.

5.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant

vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to the specification entitled "Type 'D' Portable Impact Attenuation System". Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) should be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

5.f) TMAs should be paid in accordance with how the unit is utilized. When it is used as a TMA and is in the proper location as specified, and then it should be paid at the specified hourly rate for "Type 'D' Portable Impact Attenuation System". When the TMA is used as a Flashing Arrow, it should be paid at the daily rate for "High Mounted Internally Illuminated Flashing Arrow". If a TMA is used to install and remove a pattern and then is used as a Flashing Arrow, the unit should be paid as a "Type 'D' Portable Impact Attenuation System" for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove), and is also paid for the day as a "High Mounted Internally Illuminated Flashing Arrow".

SECTION 6. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

6.a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.

6.b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.

6.c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.

6.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacing's and may be reduced to meet actual field conditions as required.

Construction Methods:

Signing Patterns

The Contractor shall provide such safety measures, pavement markings, traffic control devices, incidental flagmen, and signs deemed necessary to safeguard and guide the traveling public through the work zones as ordered by the Engineer, included in the approved maintenance scheme, or as shown on the plan. The Contractor shall erect, maintain, move, adjust, clean, relocate, store all signs, barricades, drums, traffic cones, and delineators when, where, and as directed by the Engineer. The use of unauthorized or unapproved signs, barricades, drums, traffic cones, or delineators will not be permitted.

All signs in any one signing pattern shall be mounted at the same height above the pavement. The Contractor shall keep all signs in proper position, clean and legible at all times. The Contractor shall maintain the site so that no weeds, shrubbery, construction materials, equipment or soil will obscure any sign, light, or barricade. Signs that no longer pertain to the project conditions shall be removed or adjusted from the view of traffic. Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 72-hour duration. Traffic drums shall be used to delineate raised catch basins and other hazards.

Pavement Markings

During construction, the Contractor shall maintain all pavement markings on paved surfaces on all roadways throughout the limits of the project.

Interim Pavement Markings

The Contractor shall install painted pavement markings, which shall include centerlines, shoulder edge lines, lane lines (broken lines), lane-use arrows, and stop bars, on each intermediate course of bituminous

concrete pavement and on any milled surface by the end of the work day/night. If the next course of bituminous concrete pavement will be placed within seven days, shoulder edge lines are not required. The painted pavement markings will be paid under the appropriate items.

If the Contractor will install another course of bituminous concrete pavement within 24 hours, the Contractor may install Temporary Plastic Pavement Marking Tape in place of the painted pavement markings by the end of the work day/night. These temporary pavement markings shall include centerlines, lane lines (broken lines) and stop bars; shoulder edge lines are not required. Centerlines shall consist of two 4 inch wide yellow markings, 2 feet in length, side by side, 4 to 6 inches apart, at 40-foot intervals. No passing zones should be posted with signs in those areas where the final centerlines have not been established on two-way roadways. Stop bars may consist of two 6 inch wide white markings or three 4 inch wide white markings placed side by side. The Contractor shall remove and dispose of the Temporary Plastic Pavement Marking Tape when another course of bituminous concrete pavement is installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

If an intermediate course of bituminous concrete pavement will be exposed throughout the winter, then Epoxy Resin Pavement Markings should be installed unless directed otherwise by the Engineer.

Final Pavement Markings

The Contractor should install painted pavement markings on the final course of bituminous concrete pavement by the end of the work day/night. If the painted pavement markings are not installed by the end of the work day/night, then Temporary Plastic Pavement Marking Tape shall be installed as described above and the painted pavement markings shall be installed by the end of the work day/night on Friday of that week.

If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the painted pavement markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

The Contractor shall install permanent Epoxy Resin Pavement Markings in accordance with Section 12.10 entitled "Epoxy Resin Pavement Markings, Symbols, and Legends" after such time as determined by the Engineer.

NOTE: Painted pavement markings will not be allowed as a substitution for either the permanent pavement markings or the Temporary Plastic Pavement Marking Tape on the final course of bituminous concrete pavement.

Dust Control

The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the street free of accumulations of sand or similar materials. When ordered by the Engineer, the Contractor shall remove snow and take care of ice on temporary, new and existing sidewalks within the limits of the project. No additional payment will be made for this work.

Basis of Payment:

When the item of "Maintenance and Protection of Traffic" appears in the contract, this work will be paid for at the contract lump sum price for "Maintenance and Protection of Traffic" as listed in the Bid Proposal. This price shall include all material, equipment, tools, labor, transportation, operations and all work incidental thereto. The amount of the lump sum paid in any given period shall be proportional to the percentage of the total of all other work completed. All costs for labor, equipment and services involved in the erection, maintenance, moving, adjusting, cleaning, relocating and storing of signs, barricades, drums, traffic cones and delineators furnished by the Contractor as well as all costs of labor and equipment involved

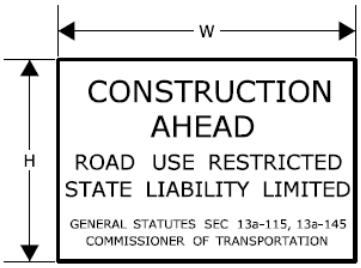
in the maintenance of traffic lanes and detours, except for pavement markings, ordered or included in the approved scheme for maintenance of traffic shall be included in the lump sum cost of this item.

Should the Contractor fail to perform any of the work required under this item, the Town may perform or arrange for others to perform such work. In those instances, the Town will deduct money due or money to become due to the contractor all expenses connected with the execution of this work. This money shall be deducted even if the Town expense exceeds the price bid for this work by the Contractor.

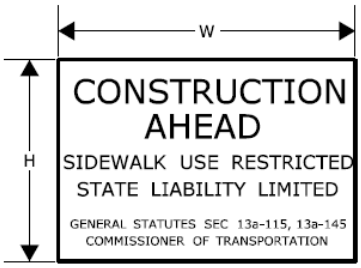
The contract lump sum price for "Maintenance and Protection of Traffic" shall also include temporarily relocating existing signs and sign supports as many times as deemed necessary and furnishing, installing, and removing temporary sign supports and foundations if necessary during construction of the project.

Item No.	Description	Unit
0971001A	MAINTENANCE AND PROTECTION OF TRAFFIC	LS.

SERIES 16 SIGNS



		W H
16-E	80-1605	84" x 60"
16-H	80-1608	60" x 42"
16-M	80-1613	30" x 24"



		W H
16-S	80-1619	48" x 30"

THE 16-S SIGN SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS, AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

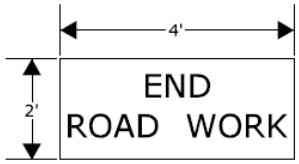
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

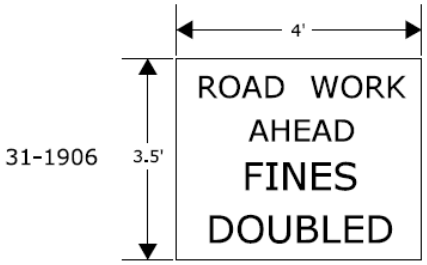
THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.





SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
REQUIRED SIGNS

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 11:35:43-04'00'
PRINCIPAL ENGINEER

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.

2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.

3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.

4. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.

5. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.

6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.

7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).

8. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.

10 SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180' (55m)
35	250' (75m)
40	320' (100m)
45	540' (165m)
50	600' (180m)
55	660' (200m)
65	780' (240m)

METRIC CONVERSION CHART (1" = 25mm)

ENGLISH	METRIC	ENGLISH	METRIC	ENGLISH	METRIC
12"	300mm	42"	1050mm	72"	1800mm
18"	450mm	48"	1200mm	78"	1950mm
24"	600mm	54"	1350mm	84"	2100mm
30"	750mm	60"	1500mm	90"	2250mm
36"	900mm	66"	1650mm	96"	2400mm

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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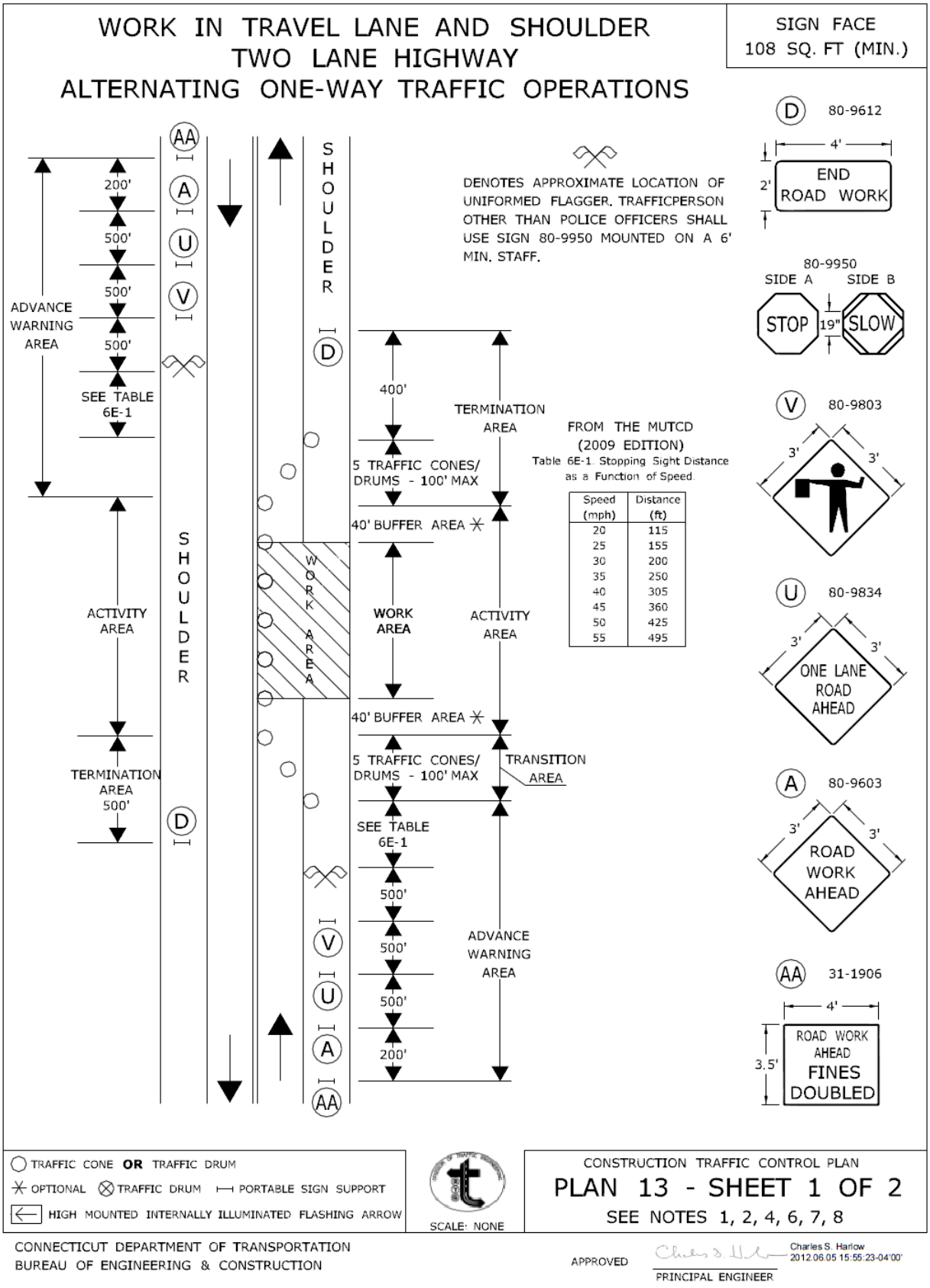
PRINCIPAL ENGINEER


WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS
SIGN FACE
108 SQ. FT (MIN.)
DENOTES APPROXIMATE LOCATION OF UNIFORMED FLAGGER. TRAFFICPERSON OTHER THAN POLICE OFFICERS SHALL USE SIGN 80-9950 MOUNTED ON A 6' MIN. STAFF.
ADVANCE WARNING AREA
200'
500'
500'
500'
SEE TABLE 6E-1
ACTIVITY AREA
TERMINATION AREA 500'
SHOULDER
WORK AREA
400'
5 TRAFFIC CONES/ DRUMS - 100' MAX
40' BUFFER AREA
WORK AREA
40' BUFFER AREA
5 TRAFFIC CONES/ DRUMS - 100' MAX
SEE TABLE 6E-1
500'
500'
500'
200'
TERMINATION AREA
ACTIVITY AREA
TRANSITION AREA
ADVANCE WARNING AREA
FROM THE MUTCD (2009 EDITION)
Table 6E-1. Stopping Sight Distance as a Function of Speed
Speed (mph) | Distance (ft)
20 | 115
25 | 155
30 | 200
35 | 250
40 | 305
45 | 360
50 | 425
55 | 495
D 80-9612
4'
2'
END ROAD WORK
80-9950
SIDE A SIDE B
STOP 19" SLOW
V 80-9803
3' 3'
U 80-9834
3' 3'
ONE LANE ROAD AHEAD
A 80-9603
3' 3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 1 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
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APPROVED
PRINCIPAL ENGINEER
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WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6E.07, FLAGGER PROCEDURES, IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 80-9950) SHOWN ON THE TRAFFIC STANDARD SHEET TR-1220 01 ENTITLED, "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

A. TO STOP TRAFFIC

TO STOP ROAD USERS, THE FLAGGER SHALL FACE ROAD USERS AND AIM THE STOP PADDLE FACE TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FREE ARM SHALL BE HELD WITH THE PALM OF THE HAND ABOVE SHOULDER LEVEL TOWARD APPROACHING TRAFFIC.

B. TO DIRECT TRAFFIC TO PROCEED

TO DIRECT STOPPED ROAD USERS TO PROCEED, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FLAGGER SHALL MOTION WITH THE FREE HAND FOR ROAD USERS TO PROCEED.

C. TO ALERT OR SLOW TRAFFIC

TO ALERT OR SLOW TRAFFIC, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. TO FURTHER ALERT OR SLOW TRAFFIC, THE FLAGGER HOLDING THE SLOW PADDLE FACE TOWARD ROAD USERS MAY MOTION UP AND DOWN WITH THE FREE HAND, PALM DOWN.

◯ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⟼ PORTABLE SIGN SUPPORT
⟵ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
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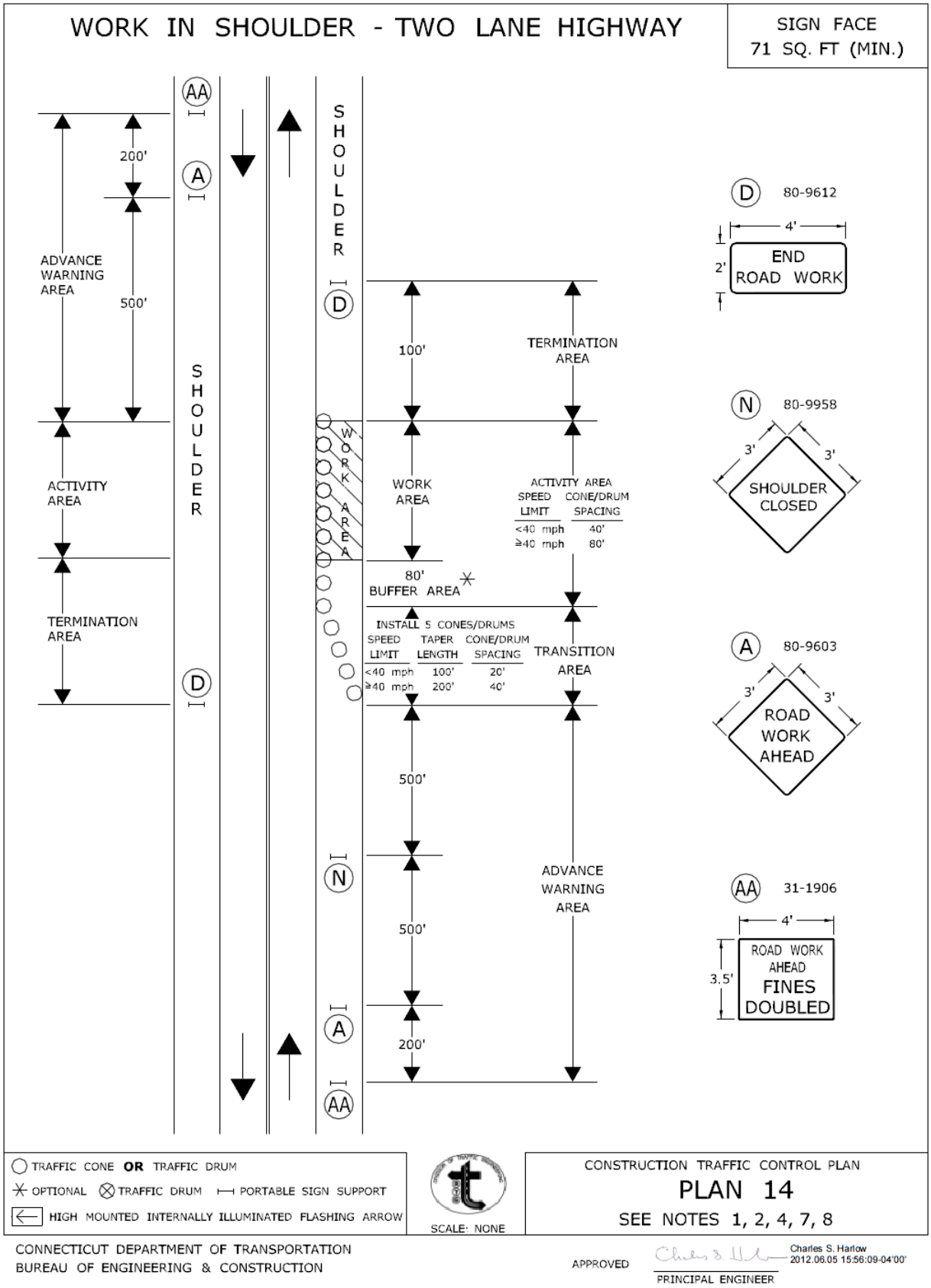
WORK IN SHOULDER - TWO LANE HIGHWAY
SIGN FACE
71 SQ. FT (MIN.)
AA
A
D
N
200'
500'
ADVANCE WARNING AREA
ACTIVITY AREA
TERMINATION AREA
SHOULDER
SHOULDER
WORK AREA
100'
TERMINATION AREA
WORK AREA
ACTIVITY AREA
SPEED LIMIT
CONE/DRUM SPACING
<40 mph 40'
≥40 mph 80'
80' BUFFER AREA
INSTALL 5 CONES/DRUMS
SPEED LIMIT
TAPER LENGTH
CONE/DRUM SPACING
<40 mph 100' 20'
≥40 mph 200' 40'
TRANSITION AREA
500'
ADVANCE WARNING AREA
500'
200'
D 80-9612
4'
2'
END ROAD WORK
N 80-9958
3'
3'
SHOULDER CLOSED
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 14
SEE NOTES 1, 2, 4, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
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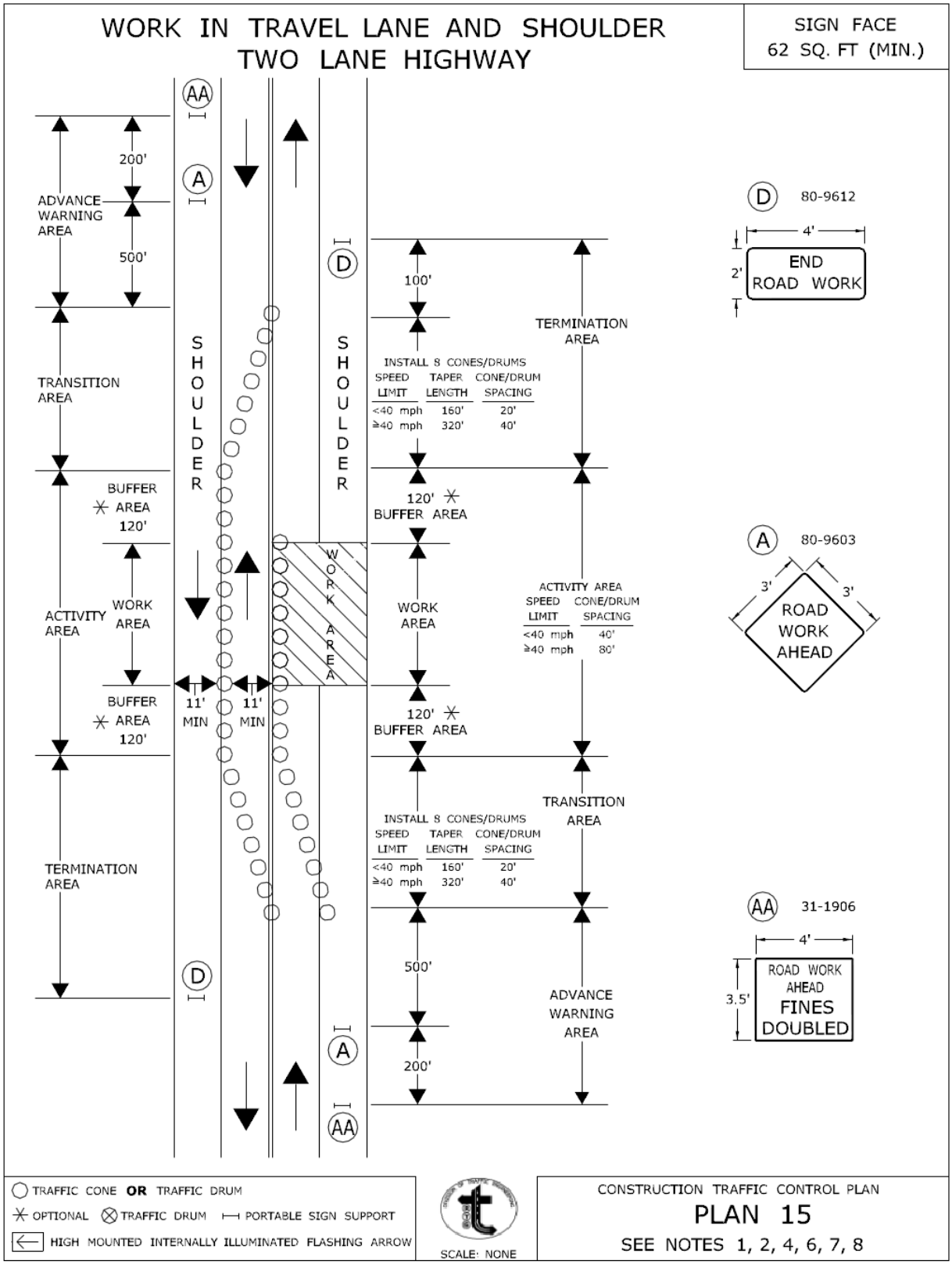
PRINCIPAL ENGINEER


WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
SIGN FACE
62 SQ. FT (MIN.)
AA
A
D
200'
ADVANCE WARNING AREA
500'
TRANSITION AREA
BUFFER AREA 120'
ACTIVITY AREA
WORK AREA
BUFFER AREA 120'
TERMINATION AREA
SHOULDER
SHOULDER
WORK AREA
11' MIN
11' MIN
100'
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
120' BUFFER AREA
WORK AREA
120' BUFFER AREA
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
500'
200'
TERMINATION AREA
ACTIVITY AREA
SPEED LIMIT | CONE/DRUM SPACING
<40 mph | 40'
≥40 mph | 80'
TRANSITION AREA
ADVANCE WARNING AREA
D 80-9612
4'
2'
END ROAD WORK
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
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PRINCIPAL ENGINEER
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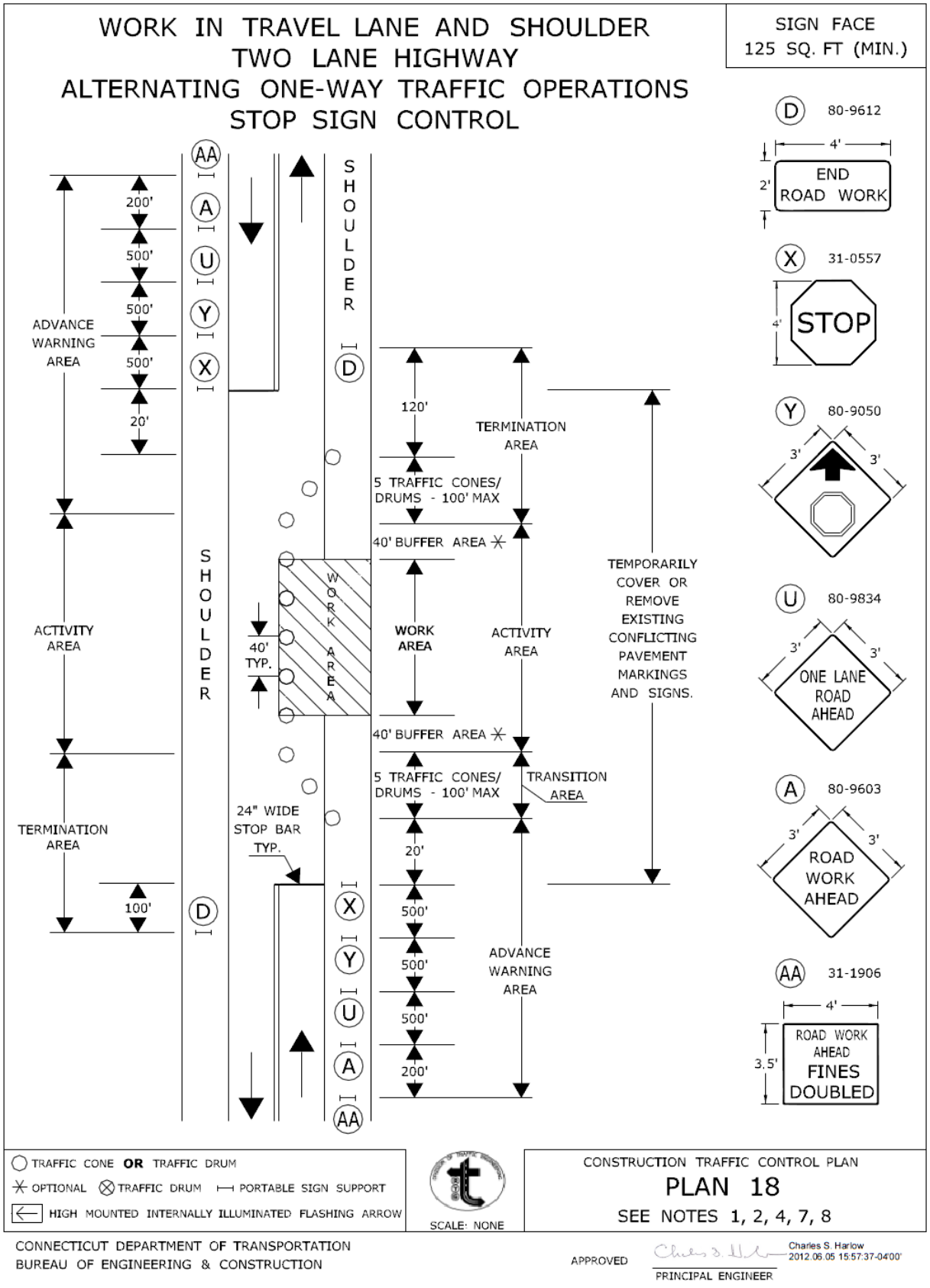
2012.06.05 15:56:29-04'00'


WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS
STOP SIGN CONTROL
SIGN FACE
125 SQ. FT (MIN.)
AA
A
U
Y
X
D
ADVANCE WARNING AREA
200'
500'
500'
500'
20'
ACTIVITY AREA
TERMINATION AREA
100'
SHOULDER
SHOULDER
40' TYP.
WORK AREA
120'
5 TRAFFIC CONES/ DRUMS - 100' MAX
40' BUFFER AREA
WORK AREA
40' BUFFER AREA
5 TRAFFIC CONES/ DRUMS - 100' MAX
24" WIDE STOP BAR TYP.
TERMINATION AREA
ACTIVITY AREA
TRANSITION AREA
TEMPORARILY COVER OR REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS AND SIGNS.
20'
500'
500'
500'
200'
ADVANCE WARNING AREA
D 80-9612
4'
2'
END ROAD WORK
X 31-0557
4'
STOP
Y 80-9050
3'
3'
U 80-9834
3'
3'
ONE LANE ROAD AHEAD
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 18
SEE NOTES 1, 2, 4, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
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2012.06.05 15:57:37-04'00'
PRINCIPAL ENGINEER

ITEM # 1206023A REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Description: is supplemented with the following:

Work under this item shall consist of the removal and/or relocation of designated side-mounted extruded aluminum and sheet aluminum signs, sign posts, sign supports, and foundations where indicated on the plans or as directed by the Engineer. Work under this item shall also include furnishing and installing new sign posts and associated hardware for signs designated for relocation.

Construction Methods: is supplemented with the following:

The Contractor shall take care during the removal and relocation of existing signs, sign posts, and sign supports that are to be relocated so that they are not damaged. Any material that is damaged shall be replaced by the Contractor at no cost to the State.

Foundations and other materials designated for removal shall be removed and disposed of by the Contractor as directed by the Engineer and in accordance with existing standards for Removal of Existing Signing.

Sheet aluminum signs designated for relocation are to be re-installed on new sign posts.

Method of Measurement: is supplemented with the following:

Payment under Removal and Relocation of Existing Signs shall be at the contract lump sum price which shall include all extruded aluminum and sheet aluminum signs, sign posts, and sign supports designated for relocation, all new sign posts and associated hardware for signs designated for relocation, all extruded aluminum signs, sheet aluminum signs, sign posts and sign supports designated for scrap, and foundations and other materials designated for removal and disposal, and all work and equipment required.

Basis of Payment: is supplemented with the following:

This work will be paid for at the contract lump sum price for “Removal and Relocation of Existing Signs” which price shall include relocating designated extruded aluminum and sheet aluminum signs, sign posts, and sign supports, providing new posts and associated hardware for relocated signs, removing and disposing of foundations and other materials, and all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of extruded aluminum signs, sheet aluminum signs, sign posts, and sign supports designated for scrap and all equipment, material, tools and labor incidental thereto.

Item No.	Description	Unit
1206023A	REMOVAL AND RELOCATION OF EXISTING SIGNS	LS

ITEM # 1206091A RELOCATE BUSINESS SIGN AND LIGHTING

Description:

Work under this item shall consist of the Contractor removing and reinstalling existing business signs where shown on the plans or as directed by the Engineer. The installation shall consist of erecting the sign in a manner as required to match the existing sign foundation, removal of the old sign foundation as required, relocating associated light fixtures as required to match the new sign location, removing or extending underground conduit as required for the sign lighting fixtures, and making all necessary electrical connections for proper operation. Building permits required.

Materials:

The Contractor shall be responsible for damage to all equipment and materials incurred during removal. All repairs or replacements due to damage or loss by the Contractor shall be made at the Contractor's expense.

Construction Methods:

Prior to removal of the existing business signs, the Contractor shall have prepared the area for the new sign to be installed to the satisfaction of the Engineer, including all site preparation, placement of gravel fill and formation of embankment as required. After approval is given by the Engineer, the Contractor shall remove the business sign as shown on the plans or as directed. As required, the Contractor shall provide a means to temporarily support the business sign in a manner satisfactory to the Engineer.

Any existing concrete sign foundation shall be removed. The relocated sign posts shall be set securely in concrete or otherwise installed as required to match the existing sign foundation, and shall be erected plumb. The sign shall be erected with the face of the sign placed perpendicular to the center line of the roadway.

Light fixtures that illuminate the business sign shall be removed and relocated such that they are centered on the relocated sign and provide adequate illumination. Additional conduit, fittings, and wiring shall be provided as required for a complete lighting installation. All work shall be in strict conformance with the National Electric Code and local building code.

Method of Measurement:

The work described under this item will not be measured for payment but its cost shall be considered included in the bid price for “Relocate Business Sign and Lighting”.

Basis of Payment:

This work will be paid for at the contract lump sum price for "Relocate Business Sign and Lighting" as specified, which price shall include permits, removal, and installation of the business sign and associated lighting, and all work, materials, tools and equipment incidental thereto.

Item No.	Description	Unit
1206091A	RELOCATE BUSINESS SIGN AND LIGHTING	LS

ITEM # 1206095A GRANT FUNDING SIGN

Description:

Work under this item shall consist of furnishing, installing and removal of a Grant Funding Sign per the specifications and attached sign detail in the locating depicted on the plans or as directed by the Engineer.

Materials:

Sign Panel:

Sign(s) should be made from suitable materials to perform effectively for a minimum of 3 years. Examples of allowable materials include ¾" MDO—EXT-APA Plywood or 0.125-gauge sheet aluminum. The following types of materials shall not be used: mesh, non-rigid, roll-up, corrugated or waffle board types substrates, foam core and composite aluminum sign substrates.

Suitable attachments shall be provided so that the sign(s) can be firmly attached to the sign supports without causing damage to the sign(s).

Signs may be painted or use non-reflective plastic sheeting. Paint shall be extremely durable, high quality, semi-gloss enamel resistant to air, sun and water. Non-reflective plastic sheeting shall be permanently adhered to the backing. The material shall withstand 3 years vertical, south-facing exterior exposure.

Sign Panel Colors:

All letters and symbols shall be blue code # 0000FF, rgb (0, 0, 255), paintone 294, or approved equal. Background shall be white code # FFFFFF, rgb (255, 255, 255), or approved equal. If plywood is used for the sign panel, the back of the panel shall be painted matte black.

Sign Panel Typeface:

Helvetica Medium

Sign Supports:

Sign panels shall be attached to vertical sign support posts. All sign supports shall have breakaway features that meet AASHTO requirements contained in the current "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals". The breakaway features shall be structurally adequate to carry the sign panel at 60- mph wind loading.

Construction Methods:

Sign supports shall be installed in accordance with the manufacturer's recommendation. Multiple breakaway sign supports may be required to adequately support the Sign Panel. A minimum 2-ft embedment depth below the ground line is required.

The sign(s) SHALL be installed parallel to the travel way, so they are NOT easily viewable by drivers, as the signs are not MUTCD compliant and not intended to be roadway signs.

The lateral offset from the edge of the road to the face of the sign(s) should be 6-12 feet. 12 feet is preferred where space is available for installation. When installed on a trail, the lateral offset should be 2 feet.

The bottom of the sign should be mounted 7 feet above the edge of the road.

The sign(s) shall be erected for the life of the construction project. This means that they should be erected only after Notice to Proceed has been given to the contractor and should be removed with all other

construction related signs at the end of the project considered to be the point that acceptance of the construction work is given.

Method of Measurement::

Grant Funding Sign will be measured for payment by the number of square feet of sign face, complete, installed, and accepted. Breakaway sign supports, posts and mounting hardware will not be measured for payment but should be considered included in this item.

Basis of Payment::

"Grant Funding Sign" required and used on the project will be paid for at the Contact unit price per square foot as listed in the bid proposal. This price shall include the furnishing, installing and maintenance of the sign panel, sign supports, breakaway sign supports, posts and all mounting hardware and all work, materials, tools and equipment incidental thereto.

Item No.	Description	Unit
1206095A	GRANT FUNDING SIGN	S.F.


NAME OF PROJECT
Funding Program
Constructed in cooperation with the
STATE OF CONNECTICUT
NED LAMONT, GOVERNOR
Department of Transportation
Joseph Giulietti, Commissioner
and the
15" SHIELD Name of Town/City 15" SHIELD
Name of Chief Elected Official and title
CONNECTICUT DEPARTMENT OF TRANSPORTATION
8'-0"
88"
4'-0"

ITEM # 1220013A CONSTRUCTION SIGNS – BRIGHT FLUORESCENT SHEETING

Description:

The Contractor shall furnish construction signs with bright fluorescent sheeting and their required portable supports or metal sign posts that conform to the requirements of NCHRP Report 350 (TL-3). The construction signs and their required portable supports or metal sign posts shall conform to the signing requirements stated in Article 9.71 "Maintenance and Protection of Traffic", as shown on the plans and/or as directed by the Engineer.

Materials:

Prior to using the construction signs and their portable supports, the Contractor shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the manufacturer documenting that the devices (both sign and portable support tested together) conform to NCHRP Report 350 (TL-3).

Portable sign supports shall be designed and fabricated so as to prevent signs from being blown over or displaced by the wind from passing vehicles. Portable sign supports shall be approved by the Engineer before they are used. Mounting height of signs on portable sign supports shall be a minimum of 1 foot and a maximum of 2 feet, measured from the pavement to the bottom of the sign.

All sign faces shall be rigid and reflectorized. Sheet aluminum sign blanks shall conform to the requirements of Article M.18.13. Metal sign posts shall conform to the requirements of Article M.18.14. Application of reflective sheeting, legends, symbols, and borders shall conform to the requirements specified by the reflective sheeting manufacturer. Attachments shall be provided so that the signs can be firmly attached to the portable sign supports or metal posts without causing damage to the signs. A Materials Certificate and Certified Test Report conforming to Article 1.06.07 shall be required for the reflective sheeting.

The following types of construction signs shall not be used: mesh, non-rigid, roll-up, corrugated or waffle board types substrates, foam core and composite aluminum sign substrates.

Reflective sheeting shall conform to the following:
The fluorescent orange prismatic retroreflective sheeting shall consist of prismatic lenses formed in a transparent fluorescent orange synthetic resin, sealed, and backed with an aggressive pressure sensitive adhesive protected by a removable liner. The sheeting shall have a smooth surface.

Physical Properties:

A. Photometric - Coefficient of Retroreflection RA
When the sheeting applied on test panels is measured in accordance with ASTM E 810, it shall have minimum coefficient of retroreflection values as shown in Table I. The rotation angle shall be as designated by the manufacturer for test purposes, the observation angles shall be 0.2 degrees and 0.5 degrees, the entrance angles (component B1) shall be -4 degrees and +30 degrees.

TABLE I
Minimum Coefficient of Retroreflection R_A
Candelas per footcandle per square foot

Observation Angle (deg.)	Entrance Angle (deg.)	R_A Orange
0.2	- 4	200
0.2	+ 30	90
0.5	- 4	80
0.5	+ 30	50

The rotation shall be as designated by the manufacturer.

B. Daytime Color

Color shall conform to the requirements of Table II. Daytime color and maximum spectral radiance factor (peak reflectance) of sheeting mounted on test panels shall be determined instrumentally in accordance with ASTM E 991. The values shall be determined on a Hunter Lab Labscan 6000 0/45 Spectrocolorimeter with option CMR 559 (or approved equal 0/45 instrument with circumferential viewing illumination). Computations shall be done in accordance with ASTM E 308 for the 2 degree observer.

TABLE II
Color Specification Limits** (Daytime)

Color	1		2		3		4		Reflectance Limit Y (%)	
	X	Y	X	Y	X	Y	X	Y	MIN	MAX
Orange (new)	.583	.416	.523	.397	.560	.360	.631	.369	28	-
Orange (weathered)	.583	.416	.523	.397	.560	.360	.631	.369	20	45

Maximum Spectral Radiance Factor, new: 110%, min.
weathered: 60%, min.

** The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illuminant D65.

C. Nighttime Color

Nighttime color of the sheeting applied to test panels shall be determined instrumentally in accordance with ASTM E 811 and calculated in the u', v' coordinate system in accordance with ASTM E 308. Sheeting shall be measured at 0.33 degrees observation and -4 degree entrance at rotation as determined by the manufacturer for test purposes. Color shall conform to the requirements of Table III.

TABLE III
Color Specification Limits ** (Nighttime)

Color	1		2		3		4	
	u'	v'	u'	v'	u'	v'	u'	v'
Orange (new and weathered)	.400	.540	.475	.529	.448	.522	.372	.534

D. Resistance to Accelerated Weathering

The retroreflective surface of the sheeting shall be weather resistant and show no appreciable cracking, blistering, crazing, or dimensional change after one year's unprotected outdoor exposure in south Florida, south-facing and inclined 45 degrees from the vertical, or after 1500 hours exposure in a xenon arc weatherometer in accordance with ASTM G26, Type B, Method A. Following exposure, panels shall be washed in a 5% HCL solution for 45 seconds, rinsed thoroughly with clean water, blotted with a soft clean cloth and brought to equilibrium at standard conditions. After cleaning, the coefficient of retroreflection shall be not less than 100 when measured as in D.2, below, and the color is expected to conform to the requirements of Tables II and III for weathered sheeting. The sample shall:

1. Show no appreciable evidence of cracking, scaling, pitting, blistering, edge lifting or curling or more than 0.031 inch shrinkage or expansion.

2. Be measured only at angles of 0.2 degrees observation, -4 degrees entrance, and rotation as determined by the manufacturer for test purposes. Where more than one panel of color is measured, the coefficient of retroreflection shall be the average of all determinations.

E. Impact Resistance

The retroreflective sheeting applied according to the manufacturer's recommendations to a test panel of alloy 6061-T6, 0.040 inch by 3 inches by 5 inches and conditioned for 24 hours, shall show no cracking outside the impact area when the face of the panel is subjected to an impact of 100 inch-pounds, using a weight with a 0.625 inch diameter rounded tip dropped from a height necessary to generate an impact of 100 inch-pounds, at test temperatures of both 32° F and 72° F.

F. Resistance to Heat

The retroreflective sheeting, applied to a test panel as in E., above, and conditioned for 24 hours, shall be measured in accordance with Paragraph A. at 0.2 degree observation and -4 degree entrance angles at rotation as determined by the manufacturer for test purposes and exposed to 170° ± 5° F for 24 hours in an air circulating oven. After heat exposure the sheeting shall retain a minimum of 70% of the original coefficient of retroreflection.

G. Field Performance:

Retroreflective sheeting processed and applied to sign blank materials in accordance with the sheeting manufacturer's recommendations, shall perform effectively for a minimum of 3 years. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions; or (2) the coefficient of retroreflection is less than 100 when measured at 0.2 degrees observation and -4 degree entrance. All measurements shall be made after sign cleaning according to the sheeting manufacturer's recommendations.

Construction Methods:

Ineffective signs, as determined by the Engineer and in accordance with the ATSSA guidelines contained in "Quality Standards for Work Zone Traffic Control Devices", shall be replaced by the Contractor at no cost to the State.

Signs and their portable sign supports or metal posts that are no longer required shall be removed from the project and shall remain the property of the Contractor.

Method of Measurement:

Construction Signs - Bright Fluorescent Sheeting will be measured for payment by the number of square feet of sign face. Sign supports will not be measured for payment.

Basis of Payment:

"Construction Signs - Bright Fluorescent Sheeting" required and used on the project will be paid for at the Contact unit price per square foot as listed in the bid proposal. This price shall include the furnishing and maintenance of the signs, portable sign supports, metal sign posts and all hardware. Each sign and support or posts will be paid for once, regardless of the number of times it is used.

Item No.	Description	Unit
1220013A	CONSTRUCTION SIGNS BRIGHT FLOURESCENT SHEETING	S.F.

ITEM # 1302060A ADJUST GATE BOX (WATER)

Description: Reference to the "District" in this item refers to "The Metropolitan District".

The Contractor shall adjust to final grade, the gate boxes and covers appurtenant to the water mains or water services as required and furnish and install extension rings, extension stems, air valve extensions, covers, and additional top or bottom sections if necessary, as shown on the Contract Drawings or as directed by the Engineer in accordance with these specifications.

The District shall be contacted a minimum of 48 hours prior to initiating the adjustment of any water gate boxes so that an inspector can be provided for this work. The Contractor shall contact Mr. Rich Norris at (860) 278-7850 extension 3450 to arrange an inspector for this work.

Materials:

The Contractor shall furnish standard District cast iron Dwyer type gate box sections as required and extension stems if necessary.

All additional materials, including any resurfacing materials and any additional fill required, shall be furnished and placed by the Contractor. Gravel shall conform to Article M.02.01.

Construction Methods:

The Contractor shall carefully excavate around the gate boxes, remove the boxes, install extension stems and air valve extensions, if necessary, reinstall the present gate box if reusable, adjust the box to final grade using extension rings if applicable, and refill the excavation. Care shall be taken to prevent material from filling the inside of the gate box.

Extension stems will be required if the gate box is raised 24-inches or more. Extension stems shall be fabricated according to the detail shown on sheet WS-25 of the District's "Developers Manual."

Any damage done to District facilities by the Contractor shall be repaired or replaced by the Contractor at his expense.

Method of Measurement:

The number of adjust gate boxes, complete with extension stems, air valve extensions, gate box extension rings, covers, and additional top or bottom sections, if necessary, measured for payment shall be the actual number of each box reset.

Basis of Payment:

This work will be paid for at the contract unit price listed in the bid proposal for "Adjust Gate Box (Water)" complete in place, which price shall include the cost of furnishing material, including labor and equipment to incorporate them into the work. It shall also include the clearing, trenching and disposal of excavated materials, refilling trenches, furnishing the additional material for refilling, grading, sheeting, bracing, and pumping.

Item No.	Description	Unit
1302060A	ADJUST GATE BOX (WATER)	EA.

ITEM # 1302062A ADJUST GATE BOX (GAS)

Description:

This work consists of adjusting existing gas gate boxes to new grades indicated on the Plans or as directed by the Engineer, all in accordance with these Specifications. Adjustment of gas gate boxes shall be performed under the direct supervision of Connecticut Natural Gas (CNG) personnel. The contractor shall contact John Bonville of CNG at 860-982-3815 a minimum of 48 hours prior to his anticipated date that this work is to be performed.

Materials:

Any materials required for the adjustment of boxes shall conform to the applicable section of the Form 818 or the specification of CNG.

Construction Methods:

Gas gate boxes shall be carefully loosened from the surrounding material and adjusted to the designated new grades. The Contractor shall then carefully place approved granular material around the gate boxes and hand tamp this material until it is well compacted.

The Contractor must maintain access to the gate boxes at all times. If a gas gate box is damaged due to improper construction methods, the Contractor shall replace the damaged unit with the corresponding new unit at no additional cost to the Town.

Method of Measurement:

"Adjust Gate Box (Gas)" will be measured by the number of such units actually adjusted in accordance with the Plans and/or as directed by the Engineer.

Basis of Payment:

The accepted quantities of "Adjust Gate Box (Gas)" will be paid for at the contract unit price per each as listed in the Proposal. Each and every adjustment authorized by the Engineer will be paid for. The price shall constitute full and complete compensation for all labor, materials, and equipment including excavation, backfill, compaction, adapter collar and for all other incidentals required to finish the work, complete and accepted by both the Engineer and the representative of the particular utility company involved.

Item No.	Description	Unit
1302062A	ADJUST GATE BOX (GAS)	EA.

ITEM # 1403501A RESET MANHOLE (SANITARY SEWER)

Work under this item shall conform to the applicable provisions of Section 5.86 of the Standard Specifications Form 818 amended as follows

Description:

Under this item shall be included the construction, installation, alteration, reconstruction or removal of existing or proposed manholes in conformity with the lines, grades, dimensions, and details shown on the plans, or as ordered, and in accordance with the provisions of these specifications for the various materials and work which constitute the completed structure.

Construction Methods:

Trench excavation, dewatering, and backfill for these items shall be according to the special provisions for EARTH TRENCH EXCAVATION included under Item #0205001A Special Provision

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the tops, frames and covers reset, or the grates or covers may be raised by extensions of suitable height approved by the Engineer.

Method of Measurement:

Resetting tops, frames and covers will be measured as units. When resetting tops, frames and covers, there will be no measurement for excavation; cutting, removal and replacement of pavement; pervious material and backfill.

There will be no measurement for trench excavation in the installation or removal of the various drainage appurtenances.

Item No.	Description	Unit
1403501A	RESET MANHOLE (SANITARY SEWER)	EA.

ATTACHMENT A:
REQUIRED STATE CONTRACT PROVISIONS

STATE OF CONNECTICUT

Certificate of Compliance with Connecticut General Statute Section 31 - 57b

I hereby certify that all of the statements herein contained below have been examined by me, and to the best of my knowledge and belief are true and correct.

The _____ **HAS / HAS NOT**
Company Name (Cross out Non-applicable)

been cited for three (3) or more willful or serious or serious violations of any Occupational Safety and Health Act (OSHA) or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act of 1970, and not abated within the time fixed by the citation and such citation has not been set aside following appeal to the appropriate agency of court having jurisdiction or **HAS / HAS NOT** (Cross out Non-applicable) received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the bid.

The list of violations (if applicable) is attached.

_____
(Name of Firm, Organization or Corporation)

Signed: _____
Written Signature:

_____
Name Typed: *(Corporation Seal)*

Title: _____
(Title of Above Person, typed)

Dated: _____

State of)
County of) ***ss:*** ***A.D., 20_____***
)

Sworn to and personally appeared before me for the above, _____,
(Name of Firm, Organization, Corporation)

Signer and Sealer of the foregoing instrument of and acknowledged the same to be the free act and deed of

_____, and his/her free act and deed as
(Name of Person appearing in front of Notary or Clerk)

_____.
(Title of Person appearing in front of Notary or Clerk)

My Commission Expires: _____
(Notary Public) *(Seal)*

Construction Contracts - Required Contract Provisions
(State Funded Only Contracts)

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EXHIBIT E - State Wage Rates (Attached at the end)

1. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit A, all of which are hereby made a part of this Contract.

2. Contractor Work Force Utilization / Equal Employment Opportunity

(a) The Contractor shall comply with the Contractor Work Force Utilization / Equal Employment Opportunity requirements attached at Exhibit B and hereby made part of this Contract, whenever a contractor or subcontractor at any tier performs construction work in excess of $10,000. These goals shall be included in each contract and subcontract. Goal achievement is calculated for each trade using the hours worked under each trade.

(b) Companies with contracts, agreements or purchase orders valued at $10,000 or more will develop and implement an Affirmative Action Plan utilizing the ConnDOT Affirmative Action Plan Guideline. This Plan shall be designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuation program. Plans shall be updated as required by ConnDOT.

3. Contract Wage Rates

The Contractor shall comply with:

The State wage rate requirements indicated in Exhibit E hereof are hereby made part of this Contract.

Prevailing Wages for Work on State Highways; Annual Adjustments. With respect to contracts for work on state highways and bridges on state highways, the Contractor shall comply with the provisions of Section 31-54 and 31-55a of the Connecticut General Statutes, as revised.

As required by section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 816), as may be revised, every Contractor or subcontractor performing project work on a federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

4. Americans with Disabilities Act of 1990, as Amended

This provision applies to those Contractors who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 et seq.), (Act), during the term of the Contract. The Contractor represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the Contractor to satisfy this standard as the same applies to performance under this Contract, either now or during the term of the Contract as it may be amended, will render the Contract voidable at the option of the State upon notice to the contractor. The Contractor warrants that it will hold the State harmless and indemnify the State from any liability which may be imposed upon the State as a result of any failure of the Contractor to be in compliance with this Act, as the same applies to performance under this Contract.

5. Connecticut Statutory Labor Requirements

(a) Construction, Alteration or Repair of Public Works Projects; Wage Rates. The Contractor shall comply with Section 31-53 of the Connecticut General Statutes, as revised. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of section 31-53 of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 3l-53a of the Connecticut General Statutes, as revised.

(c) Construction Safety and Health Course. The Contractor shall comply with section 31-53b of the Connecticut General Statutes, as revised. The contractor shall furnish proof to the Labor Commissioner 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 of the Connecticut General Statutes, as revised, 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 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

Any employee required to complete a construction safety and health course as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance, they shall be removed from the project until such time as they have completed the required training.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

(d) Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited. The Contract is subject to Section 31-57b of the Connecticut General Statutes, as revised.

(e) Residents Preference in Work on Other Public Facilities. NOT APPLICABLE TO FEDERAL AID CONTRACTS. Pursuant to Section 31-52a of the Connecticut General Statutes, as revised, in the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available, then to residents of other states

6. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)

The Contractor shall comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The Contractor is responsible for determining its tax liability. If the Contractor purchases materials or supplies pursuant to the Connecticut Department of Revenue Services' "Contractor's Exempt Purchase Certificate (CERT-141)," as may be revised, the Contractor acknowledges and agrees that title to such materials and supplies installed or placed in the project will vest in the State simultaneously with passage of title from the retailers or vendors thereof, and the Contractor will have no property rights in the materials and supplies purchased.

Forms and instructions are available anytime by:

Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or
Telephone: Call 1-800-382-9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

7. Executive Orders

This contract is subject to the provisions of 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 the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order No. 14 and/or Executive Order No. 49 are applicable, they are deemed to be incorporated into and are made a part of the contract as if they had been fully set forth in it. At the Contractor's request, the Department shall provide a copy of these orders to the Contractor.

8. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised): References to "minority business enterprises" in this Section are not applicable to Federal-aid projects/contracts. Federal-aid projects/contracts are instead subject to the Federal Disadvantaged Business Enterprise Program.

(a) For purposes of this Section, the following terms are defined as follows:

(1) "Commission" means the Commission on Human Rights and Opportunities;
(2) "Contract" and "contract" include any extension or modification of the Contract or contract;
(3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
(4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
(5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;

(6) "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;

(7) "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;

(8) "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;

(9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and

(10) "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the State of Connecticut, including, but not limited to municipalities, unless the contract is a municipal public works contract or quasi-public agency project contract, (2) any other state of the United States, including but not limited to, the District of Columbia, Puerto Rico, U.S. territories and possessions, and federally recognized Indian tribal governments, as defined in Connecticut General Statutes § 1-267, (3) the federal government, (4) a foreign government, or (5) an agency of a subdivision, state or government described in subdivision (1), (2), (3), or (4) of this subsection.

(b) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor 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, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor 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; and the Contractor 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, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor

agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes §§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor 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 Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

(c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.

(e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will 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 the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor 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 Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.

(h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such

provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

Please be aware the Nondiscrimination Certifications can be found at the Office of Policy and Management website:

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

9. Whistleblower Provision

The following clause is applicable if the Contract has a value of Five Million Dollars ($5,000,000) or more.

Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.

10. Connecticut Freedom of Information Act

(a) Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. 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.

(b) Confidential Information. The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must

accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as "CONFIDENTIAL," DOT will first review the Contractor's claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.,* Conn. Gen. Stat. §1-210(b)(5)(A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

11. Service of Process

The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office, as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract and six (6) years thereafter.

12. Substitution of Securities for Retainages on State Contracts and Subcontracts

This Contract is subject to the provisions of Section 3-ll2a of the General Statutes of the State of Connecticut, as revised.

13. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

The Contractor shall comply, if applicable, with the Health Insurance Portability and Accountability Act of 1996 and, pursuant thereto, the provisions attached at Exhibit C, and hereby made part of this Contract.

14. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be

transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

15. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

16. Audit and Inspection of Plants, Places of Business and Records

(a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
(b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
(c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
(d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
(e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
(f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

17. Campaign Contribution Restriction

For all State contracts, defined in Conn. Gen. Stat. §9-612(f)(1) as having a value in a calendar year of $50,000 or more, or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this contract, attached as Exhibit D.

18. Tangible Personal Property

(a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;
(2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
(3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
(4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
(5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.

(b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.

(c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

19. Bid Rigging and/or Fraud – Notice to Contractor

The Connecticut Department of Transportation is cooperating with the U.S. Department of Transportation and the Justice Department in their investigation into highway construction contract bid rigging and/or fraud.

A toll-free "HOT LINE" telephone number 800-424-9071 has been established to receive information from contractors, subcontractors, manufacturers, suppliers or anyone with knowledge of bid rigging and/or fraud, either past or current. The "HOT LINE" telephone number will be available during normal working hours (8:00 am – 5:00 pm EST). Information will be treated confidentially and anonymity respected.

20. Consulting Agreement Affidavit

The Contractor shall comply with Connecticut General Statutes Section 4a-81(a) and 4a-81(b), as revised. Pursuant to Public Act 11-229, after the initial submission of the form, if there is a change in

the information contained in the form, a contractor shall submit the updated form, as applicable, either (i) not later than thirty (30) days after the effective date of such change or (ii) prior to execution of any new contract, whichever is earlier.

The Affidavit/Form may be submitted in written format or electronic format through the Department of Administrative Services (DAS) website.

EXHIBIT A

TITLE VI CONTRACTOR ASSURANCES

During the performance of this Contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. **Compliance with Regulations:** The Contractor shall comply with the regulations relative to nondiscrimination in federally assisted programs of the United States Department of Transportation (hereinafter, "USDOT"), Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the Contract, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Subsection 5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:**
In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.

4. **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Connecticut Department of Transportation (ConnDOT) or the Funding Agency (FHWA, FTA and FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to ConnDOT or the Funding Agency, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the ConnDOT shall impose such sanctions as it or the Funding Agency may determine to be appropriate, including, but not limited to:

A. Withholding contract payments until the Contractor is in-compliance; and/or
B. Cancellation, termination, or suspension of the Contract, in whole or in part.

6. **Incorporation of Provisions:** The Contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the ConnDOT or the Funding 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 supplier as a result of such direction, the Contractor may request the ConnDOT to enter into such litigation to protect the interests of the Funding Agency, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States

EXHIBIT B

CONTRACTOR WORKFORCE UTILIZATION / EQUAL EMPLOYMENT OPPORTUNITY

1. **Project Workforce Utilization Goals:**
These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted or funded) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications which contain the applicable goals for minority and female participation.

The goals for minority and female utilization are expressed in percentage terms for the contractor's aggregate work-force in each trade on all construction work in the covered area, are referenced in the Appendix A below.

STATE FUNDED PROJECTS (only)
APPENDIX A
(Labor Market Goals)

LABOR MARKET AREA GOAL			***Minority***
Female			
Bridgeport			**22.7%**
1.4%			
Ansonia	Beacon Falls	Bridgeport	Derby
Easton	Fairfield	Milford	Monroe
Oxford	Seymour	Shelton	Stratford
Trumbull			
Danbury			**10.7%**
3.8%			
Bethel	Bridgewater	Brookfield	Danbury
Kent	New Fairfield	New Milford	Newtown
Redding	Ridgefield	Roxbury	Sherman
Washington			
Danielson			**4.3%**
1.8%			
Brooklyn	Eastford	Hampton	Killingly
Pomfret	Putnam	Scotland	Sterling
Thompson	Voluntown	Union	Woodstock
Hartford			**13.7%**
2.1%			
Andover	Ashford	Avon	Barkhamsted

Belin	Bloomfield	Bolton	Bristol
Burlington	Canton	Chaplin	Colchester
Columbia	Coventry	Cromwell	Durham
East Granby	East Haddam	East Hampton	East Hartford
East Windsor	Ellington	Enfield	Farmington
Glastonbury	Granby	Haddam	Hartford
Harwinton	Hebron	Lebanon	Manchester
Mansfield	Marlborough	Middlefield	Middletown
Newington	Plainville	Plymouth	Portland
Rocky Hill	Simsbury	Somers	South Windsor
Southington	Stafford	Suffield	Tolland
Vernon	West Hartford	Wethersfield	Willington
Winchester	Windham	Windsor	Windsor Locks

Lower River				**4.3%**
1.8%				
Chester	Deep River	Essex	Old Lyme	
Westbrook				

LABOR MARKET AREA GOAL ***Minority***
Female

New Haven				**17.9%**
3.1%				
Bethany	Branford	Cheshire	Clinton	
East Haven	Guilford	Hamden	Killingworth	
Madison	Meriden	New Haven	North Branford	
North Haven	Orange	Wallingford	West Haven	
Woodbridge				

New London				**7.4%**
3.1%				
Bozrah	Canterbury	East Lyme	Franklin	
Griswold	Groton	Ledyard	Lisbon	
Montville	New London	North Stonington	Norwich	
Old Lyme	Old Saybrook	Plainfield	Preston	
Salem	Sprague	Stonington	Waterford	
Hopkinton	RI – Westerly Rhode Island			

Stamford				**33.2%**
2.1%				
Darien	Greenwich	New Canaan	Norwalk	
Stamford	Weston	Westport	Wilton	

Torrington				**4.3%**
1.8%				
Canaan	Colebrook	Cornwall	Goshen	
Hartland	Kent	Litchfield	Morris	
Norfolk	North Canaan	Salisbury	Sharon	

Torrington	Warren		

Waterbury 1.6%				**12.4%**
Bethlehem	Middlebury	Naugatuck	Prospect	
Southbury	Thomaston	Waterbury	Watertown	
Wolcott	Woodbury			

Rev. 4/24/2019

EXHIBIT C

Health Insurance Portability and Accountability Act of 1996 ("HIPAA").

(a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.

(b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and

(c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the "Department") is a "covered entity" as that term is defined in 45 C.F.R. § 160.103; and

(d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of "individually identifiable health information," as that term is defined in 45 C.F.R. § 160.103; and

(e) The Contractor is a "business associate" of the Department, as that term is defined in 45 C.F.R. § 160.103; and

(f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.

(g) Definitions

(1) "Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))

(2) "Business Associate" shall mean the Contractor.

(3) "Covered Entity" shall mean the Department of the State of Connecticut named on page 1 of this Contract.

(4) "Designated Record Set" shall have the same meaning as the term "designated record set" in 45 C.F.R. § 164.501.

(5) "Electronic Health Record" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

(6) "Individual" shall have the same meaning as the term "individual"' in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).

(7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.

(8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.

(9) "Required by Law"' shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.

(10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.

(11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.

(12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.

(13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R.§ 164.304.

(14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.

(15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).

(h) Obligations and Activities of Business Associates.

(1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.

(2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.

(3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.

(4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

(5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.

(6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.

(7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.

(8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.

(9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.

(10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.

(11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.

(12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.

(13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.

(14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.

(15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations

(16) Obligations in the Event of a Breach

A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
    1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.

    2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).

    3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.

    4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.

    5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to

individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.

E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.

(i) Permitted Uses and Disclosure by Business Associate.

(1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.

(2) Specific Use and Disclosure Provisions

(A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.

(B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.

(C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).

(j) Obligations of Covered Entity.

(1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.

(2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.

(3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.

(k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.

(l) Term and Termination.

(1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.

(2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:

(A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or

(B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or

(C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

(3) Effect of Termination

(A) Except as provided in (l)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity

within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

(B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

(1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.

(2) Amendment. The Parties agree to take such action as in necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.

(3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.

(4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

(5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.

(6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the

HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly** *solicit* contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to $2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to $2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than $5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may resulting the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.
Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to “Lobbyist/Contractor Limitations.”

DEFINITIONS

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization**,** (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract,* (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

"Subcontractor" means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. "Subcontractor" does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a subcontractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

EXHIBIT E

(state wages will be inserted here)

SEE ATTACHMENT B
FOR PREVAILING
WAGE RATES

ATTACHMENT B:
PREVAILING WAGE RATES

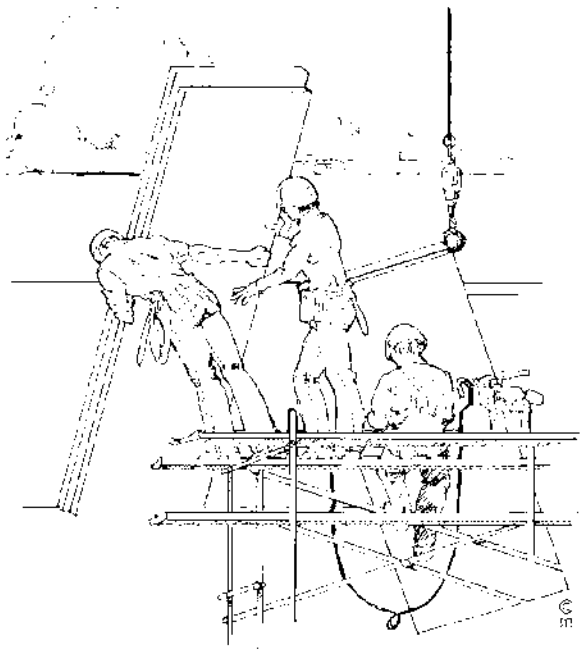
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

✎ Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative title

for _____, located at _____,
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number address

shall be $_____, which includes all work, regardless of whether such project

consists of one or more contracts.

CONTRACTOR INFORMATION

Name:_____

Address:_____
Authorized Representative:_____
Approximate Starting Date: _____

Approximate Completion Date:_____

_____ _____
Signature Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

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): _____

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.

[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 HOURS WORKED EACH DAY	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
													1. $							
												$	2. $							
												Base Rate	3. $							
													4. $							
												$	5. $							
												Cash Fringe	6. $							
													1. $							
												$	2. $							
												Base Rate	3. $							
													4. $							
												$	5. $							
												Cash Fringe	6. $							
													1. $							
												$	2. $							
												Base Rate	3. $							
													4. $							
												$	5. $							
												Cash Fringe	6. $							
													1. $							
												$	2. $							
												Base Rate	3. $							
													4. $							
												$	5. $							
												Cash Fringe	6. $							

12/9/2013 *IF REQUIRED
WWS-CP1

*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

WEEKLY PAYROLL

Week-Ending Date:
Contractor or Subcontractor Business Name:

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 HOURS WORKED EACH DAY	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

12/9/2013
WWS-CP2

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

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on 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 (g) 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 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(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, 2009, 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 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.

(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.)

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.

STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions,Their Agents, and Contractors

Connecticut General Statute 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 of the general statutes, 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 of the general statutes 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.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement 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 Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. 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.

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

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 20-14631

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: Glastonbury
Project Town: Glastonbury
State#: Glastonbury
FAP#: Glastonbury

Project: Main Street Sidewalk Construction (Phases 3A & 3B - Glastonbury)

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	35.72	33.16
2) Carpenters, Piledrivermen	34.53	25.64
2a) Diver Tenders	34.53	25.64
3) Divers	42.99	25.64
03a) Millwrights	34.94	26.19
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	52.25	22.55
4a) Painters: Brush and Roller	35.62	22.55
4b) Painters: Spray Only	38.62	22.55
4c) Painters: Steel Only	37.62	22.55
4d) Painters: Blast and Spray	38.62	22.55
4e) Painters: Tanks, Tower and Swing	37.62	22.55

As of: August 11, 2020

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)	40.25	29.17+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	36.67	37.62 + 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)	44.63	32.95
----LABORERS---- -		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	31.0	22.15
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	31.25	22.15
10) Group 3: Pipelayers	31.5	22.15
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	31.5	22.15
12) Group 5: Toxic waste removal (non-mechanical systems)	33.0	22.15
13) Group 6: Blasters	32.75	22.15
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	32.0	22.15
Group 8: Traffic control signalmen	18.0	22.15
Group 9: Hydraulic Drills	29.3	18.90
----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	33.23	22.15 + a
13b) Brakemen, Trackmen	32.26	22.15 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		

14) Concrete Workers, Form Movers, and Strippers	32.26	22.15 + a
15) Form Erectors	32.59	22.15 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	32.26	22.15 + a
17) Laborers Topside, Cage Tenders, Bellman	32.15	22.15 + a
18) Miners	33.23	22.15 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	39.72	22.15 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	39.52	22.15 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	37.54	22.15 + a
21) Mucking Machine Operator	40.31	22.15 + a
----TRUCK DRIVERS----(*see note below)		
Two axle trucks	29.86	25.79 + a
Three axle trucks; two axle ready mix	29.97	25.79 + a
Three axle ready mix	30.03	25.79 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	30.08	25.79 + a
Four axle ready-mix	30.13	25.79 + a
Heavy duty trailer (40 tons and over)	30.35	25.79 + a

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	30.13	25.79 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	42.45	25.30 + a
Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	42.11	25.30 + a
Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), 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)	41.32	25.30 + a
Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	40.91	25.30 + 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	40.28	25.30 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	40.28	25.30 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	39.95	25.30 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24	39.59	25.30 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	39.17	25.30 + 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).	38.71	25.30 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	36.54	25.30 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	36.54	25.30 + a
Group 12: Wellpoint Operator.	36.48	25.30 + a

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Group 13: Compressor Battery Operator.	35.86	25.30 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	34.66	25.30 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	34.23	25.30 + a
Group 16: Maintenance Engineer/Oiler	33.54	25.30 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	38.11	25.30 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	35.53	25.30 + a
**NOTE: SEE BELOW		
----LINE CONSTRUCTION----(Railroad Construction and Maintenance)--- -		
20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
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----		
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

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28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

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Project: Main Street Sidewalk Construction (Phases 3A & 3B - Glastonbury)

Welders: Rate for craft to which welding is incidental.

**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*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra $4.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

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

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.

As of: August 11, 2020

Project: Main Street Sidewalk Construction (Phases 3A & 3B - Glastonbury)

~~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: August 11, 2020

ATTACHMENT C:
CHRO CONTRACT COMPLIANCE
REGULATIONS NOTIFICATION TO BIDDERS

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS
(Revised 09/3/15)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4)Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

(a) the bidder's success in implementing an affirmative action plan;
(b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
(c) the bidder's promise to develop and implement a successful affirmative action plan;
(d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
(e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving o f written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

White (not of Hispanic Origin)-All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black (not of Hispanic Origin)-All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART 1 – Bidder Information

Company Name: Street Address: City & State: Chief Executive:	Bidder Federal Employer Identification Number: Or Social Security Number:
Major Business Activity: (brief description)	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor? Yes ☐ No ☐ -Bidder is a minority business enterprise? Yes ☐ No ☐ (If yes, check ownership category) Black ☐ Hispanic ☐ Asian American ☐ American Indian/Alaskan Native ☐ Iberian Peninsula ☐ Individual(s) with a Physical Disability ☐ Female ☐ -Bidder is certified as above by State of CT? Yes ☐ No ☐
Bidder Parent Company: (If any)	
Other Locations in CT: (If any)	

PART II - Bidder Nondiscrimination Policies and Procedures

1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes ☐ No ☐	7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes ☐ No ☐
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes ☐ No ☐	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes ☐ No ☐
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes ☐ No ☐	9. Does your company have a mandatory retirement age for all employees? Yes ☐ No ☐
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes ☐ No ☐	10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes ☐ No ☐ N/A ☐
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes ☐ No ☐	11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes ☐ No ☐ N/A ☐
6. Does your company have a collective bargaining agreement with workers? Yes ☐ No ☐ 6a. If yes, do the collective bargaining agreements contain non-discrimination clauses covering all workers? Yes ☐ No ☐ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of CT? Yes ☐ No ☐	12. Does your company have a written affirmative action Plan? Yes ☐ No ☐ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes ☐ No ☐ If yes, give name and phone number:

1. Will the work of this contract include subcontractors or suppliers? Yes ☐ No ☐

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? Yes ☐ No ☐

PART IV - Bidder Employment Information Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Management											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

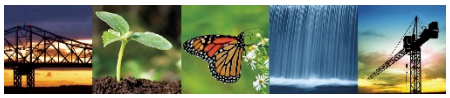
*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service	☐	☐			Work Experience	
Private Employment Agencies	☐	☐			Ability to Speak or Write English	
Schools and Colleges	☐	☐			Written Tests	
Newspaper Advertisement	☐	☐			High School Diploma	
Walk Ins	☐	☐			College Degree	
Present Employees	☐	☐			Union Membership	
Labor Organizations	☐	☐			Personal Recommendation	
Minority/Community Organizations	☐	☐			Height or Weight	
Others (please identify)	☐	☐			Car Ownership	
	☐	☐			Arrest Record	
	☐	☐			Wage Garnishments	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)

ATTACHMENT D:
GEOTECHNICAL REPORT



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95 Glastonbury Boulevard
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Glastonbury, CT 06033
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F: 860.633.5699
www.gza.com

January 9, 2019
GZA Project No. 05.0046356.00

Ms. Mary F. Visone, CPPB
Purchasing Agent – Town of Glastonbury
2155 Main Street, Glastonbury, Connecticut

Re: Structure Geotechnical Report
Main Street Sidewalk Phase 3
Glastonbury, Connecticut

Dear Ms. Visone:

GZA GeoEnvironmental, Inc. (GZA) has completed our geotechnical investigation for the proposed Phase 3 Sidewalk Improvement project along Main Street in Glastonbury, Connecticut (site). Our services were performed in general accordance with our proposal dated August 23, 2018 and according to our Purchase Order 61846-00. This report summarizes our finding and presents our geotechnical engineering recommendations for design and construction of the retaining walls and pedestrian bridge. Recommendations for design of the sidewalk were not requested and are not included in this report. Report Limitations are attached in **Appendix A**.

Elevations referenced in this report are based on plans[1] provided by you and are assumed to reference North American Vertical Datum of 1988 (NAVD 88).

PROJECT BACKGROUND

Our understanding of the project is based on discussions with the Town of Glastonbury personnel, our knowledge of the general site area, and the information provided in the Request for Quotation (Quote-2019-02). Proposed construction consists of a sidewalk along the west side of Main Street (State Route 17) that extends from Stockade Road (Station 0+00) to about 160 feet south of Mallard Drive (Station 43+69). Three retaining walls and a pedestrian bridge will also be constructed as part of the proposed sidewalk development. The proposed construction will be located within the Town's right-of-way. Additional information regarding the retaining walls and pedestrian bridge are provided below. The location of the propose retaining walls are presented on **Figure 1** and the location of the proposed pedestrian bridge is presented on **Figure 2**.

Retaining Wall No. 1 (Station 8+85 to 9+40)

Retaining Wall No. 1 will be about 53-feet long and is located along the frontage of 1137 Main Street. The exposed face of the wall will be up to four feet high and is planned to be designed and constructed in accordance with the Connecticut Department of Transportation (CTDOT) Embankment Wall Special Provision under a design-build contract.

[1] "Plan Depicting Sidewalk Improvements, Phase 3, Main Street, Glastonbury, Connecticut" by Town of Glastonbury Engineering, Dated July 27, 2018, Sheets 1 through 14.

Existing grades range from about El. 90 to El. 93 feet and slope down towards Main Street at an approximate 3.5 horizontal to 1 vertical (3.5H:1V) slope. The surface of the existing slope consists of maintained grass.

Retaining Wall No. 2 (Station 9+55 to 10+75)

Retaining Wall No. 2 will be about 120-feet long and is located along the frontage of 1143 Main Street. The exposed height of the wall will be up to four feet high and constructed in accordance with the CTDOT Embankment Wall Special Provision under a design-build contract. Existing grades range from about El. 92 to El. 98 feet and slope down towards Main Street at an approximate 1.7H:1V to 8H:1V slope. The surface of the existing slope consists of maintained grass.

Retaining Wall No. 3 (Station 17+90 to 23+15)

Retaining Wall No. 3 will be about 500-feet long and located between properties located at 1213 and 1241 Main Street. The exposed height of the wall will be up to six feet tall and will be cut into the toe of an existing 10- to 25-foot high slope. The existing slopes range from 1.5H:1V to 2H:1V. Existing grades range from about El. 98 feet to El. 68 feet. The surface of the existing slope consists of trees, brush and unmaintained vegetation.

Pedestrian Bridge (Station 28+25 to 28+75)

The pedestrian bridge will be 6-feet wide, 50-feet long and will be constructed with pre-engineered steel trusses. The bridge will span Holland Brook which is located to the southeast of the Old Cider Mill (1287 Main Street). Within the footprint of the southern abutment, existing grades range from about El. 51 to 44 feet and slope down away from Main Street at an approximate 2.5H:1V slope. Within the footprint of the northern abutment, existing grades range from about El. 51 to 48 feet and slope down away from Main Street at an approximate 3.4H:1V. Both abutments consist of maintained grass at the ground surface. The Town of Glastonbury recently completed a similar pedestrian project and we understand typical loading for the similar bridge consisted of: 6.2 kips dead load, 16.8 kips live load (including impact), and 23 kips of load on each abutment.

SUBSURFACE EXPLORATION PROGRAM

A subsurface exploration program consisting of seven test borings (GZ-1 through GZ-7) was performed for the proposed retaining walls and pedestrian bridge. The test borings were drilled by New England Boring Contractors, Inc. of Glastonbury, CT on October 30 and 31, 2018. The approximate exploration locations are shown on the attached **Figure 1** and **Figure 2**.

The test borings were advanced with an ATV-mounted drill rig using hollow-stem augers. Soil samples were collected with a 2-inch O.D. split-spoon sampler driven (normally) 24 inches into the ground with a 140-lb. safety hammer falling 30 inches. The number of hammer blows required to drive the split-spoon sampler from 6 to 18 inches is the SPT N-value, a commonly used indicator of soil density and consistency. The hammer blows, SPT N-values, and observations at various depths were recorded on the boring logs.

The subsurface explorations were monitored and logged by GZA personnel. The soils were classified according to the Modified Burmister Classification System. Groundwater depth measurements were attempted at the times and conditions noted on the boring logs and are summarized in **Table 1**. The test boring logs are attached as **Appendix B**.

The exploration locations were approximated by GZA personnel using tape measurements from known site features. Ground surface elevations were estimated using existing topographic plans.

SUBSURFACE CONDITIONS

Based on the results of our subsurface exploration program, the subsurface conditions at each proposed structure generally consist of the following, in order of increasing depth:

Retaining Wall Nos. 1 and 2 (Test Borings GZ-6 and GZ-7)

Topsoil, Subsoil and Fill (Surface Cover)– The surficial soil at proposed Retaining Wall No. 1 consisted of Topsoil over Subsoil and consisted of Topsoil over Fill at proposed Retaining Wall No. 2. Topsoil was about 0.5 feet thick at both retaining wall borings. Subsoil at Retaining Wall No. 1 was about 1.5 feet thick and consisted of orange-brown, fine to medium SAND with up to 20 percent Silt and up to 10 percent Gravel. Fill at Retaining Wall No. 2 was about 1.5 feet thick and consisted of brown, fine to medium SAND with up to 20 percent Silt and up to 20 percent Gravel.

Lake Bottom Deposits – Naturally-deposited Lake Bottom Deposits were encountered below the Surface Cover at Retaining Wall Nos. 1 and 2. The Lake Bottom Deposits were not fully penetrated in the test borings and was at least 15 to 25 feet thick. The Lake Bottom Deposits generally consisted of either brown, fine to medium SAND with 10 to 35 percent Silt or SILT with varying percentages of Sand and Clay. SPT N-values measured in the Lake Bottom Deposits ranged from 6 to 17, indicating medium stiff to stiff cohesive soil or loose to medium dense granular soil.

Groundwater – Groundwater was measured in GZ-6 and GZ-7 at depths of 11 to 14 feet below the ground surface, corresponding to El. 73 feet to El. 85.5 feet. It should be noted that water levels will vary due to seasonal and climatic fluctuation, changes caused by construction, stabilization time and other factors different from those existing at the time the observations were made.

Retaining Wall No. 3 (Test Borings GZ-3 through GZ-5)

Topsoil, Subsoil and Asphalt (Surface Cover) – The surficial soil at proposed Retaining Wall No. 3 consisted of either 6 inches of Topsoil, 6 inches of Topsoil over 2.5 feet of Subsoil, or 3 inches of Topsoil over 2 inches of Asphalt. The Subsoil consisted of light brown, fine to medium SAND with up to 20 percent Silt.

Lake Bottom Deposits – Naturally-deposited Lake Bottom Deposits were encountered below the Surface Cover at each of the Retaining Wall No. 3 test borings. The top of the Lake Bottom Deposits was encountered at depths of 0.4 to 3 feet below grade, corresponding to El. 76 to 89.6 feet. The Lake Bottom Deposits were fully penetrated at GZ-3 and was 20.5 feet thick. The Lake Bottom Deposits were not fully penetrated in GZ-4 and GZ-5 and was at least 11.4 to 11.5 feet thick. The Lake Bottom Deposits generally consisted of either brown, fine to medium SAND with up to 20 percent Silt or SILT with varying percentages of Sand and Clay. SPT N-values measured in the Lake Bottom Deposits ranged from 10 to 33, indicating medium dense to dense granular soil.

Glacial Till – Glacial Till was encountered below the Lake Bottom Deposits in GZ-3. The Glacial Till was not fully penetrated and was at least 3.5 feet thick. The Glacial Till consisted of very dense, brown, fine to coarse SAND with up to 40 percent SILT and up to 20 percent Gravel.

Groundwater – Groundwater measurements were attempted in GZ-3, GZ-4 and GZ-5 during drilling, however, groundwater was not encountered after about 5 to 10 minutes of stabilization time. It should be noted that water levels will vary due to seasonal and climatic fluctuation, changes caused by construction, stabilization time and other factors different from those existing at the time the observations were made.

Pedestrian Bridge (Test Borings GZ-1 and GZ-2)

Topsoil – Approximately 0.6 feet of Topsoil was encountered at test boring GZ-2. Topsoil was not encountered at GZ-1.

Fill – Fill was encountered at the ground surface of GZ-1 and below the Topsoil in GZ-2 and ranged from about 6.5 to 12.9 feet thick. The Fill generally consisted of brown or dark brown, fine to coarse SAND with up to 35 percent Silt and up to 20 percent Gravel. SPT N-values measured in the Fill ranged from 3 to 21, indicating a very loose to medium dense material.

Buried Subsoil – Buried Subsoil was encountered below the Fill at GZ-1 and was about 5.5 feet thick. The Subsoil generally consisted of brown, fine to medium SAND with up to 35 percent Silt. SPT N-values measured in the Subsoil ranged from 6 to 8 indicating a loose material.

Lake Bottom Deposits – Lake Bottom Deposits were encountered below the Subsoil at GZ-1 and below the Fill at GZ-2. The Lake Bottom Deposits were not penetrated in either test boring and the encountered thickness ranged from 7 to 14.7 feet. The Lake Bottom Deposits generally consisted of light brown, fine to medium SAND with up to 20 percent Silt. SPT N-values measured in the Lake Bottom Deposits ranged from 15 to refusal (100 blows for 6-inch penetration), indicating a medium dense to very dense material.

Groundwater – Groundwater was measured in GZ-1 and GZ-2 at depths of 10 to 11 feet below the ground surface, corresponding to El. 37.5 feet to El. 39.5 feet. It should be noted that water levels will vary due to seasonal and climatic fluctuations, the level of Holland Brook, changes caused by construction, stabilization time and other factors different from those existing at the time the observations were made.

The subsurface conditions encountered in the explorations are summarized on the attached **Table 1** and on the test boring logs attached as **Appendix B**.

GEOTECHNICAL DESIGN RECOMMENDATIONS

The recommendations are intended to be consistent with the CTDOT Bridge Design Manual (Revised 3/09) and the CTDOT Geotechnical Engineering Manual (Revised 02/09).

Implications of Subsurface Conditions

The primary geotechnical issues impacting the design and construction of the proposed retaining walls and pedestrian bridge are:

- The height and steep inclination of the existing slope at the proposed Retaining Wall No. 3;
- The proximity of the Town's property line at Retaining Wall No. 3; and
- 12 to 13.5 feet of unsuitable bearing material encountered at the proposed pedestrian bridge abutments.

The existing slope at proposed Retaining Wall No. 3 is as steep as 1.9H:1V and is approximately 10- to 25-feet high. The Town's property line is either at the top of the slope or within 20 feet of the top of slope. Where the property line is closer than 20 feet from the top of the slope, existing residences are located about 8 feet away from the property line. Conventional gravity- or mechanically stabilized earth (MSE)-type retaining walls will require temporary slopes for construction which will extend beyond the property line for a majority of Retaining Wall No. 3 and temporary lateral earth support may be required for construction. Therefore, these wall types are not considered feasible. Permanent solider

pile and lagging wall or permanent sheetpile walls can be constructed with a "Top down" construction approach which will eliminate the need for temporary lateral earth support. These wall types are recommended for Retaining Wall No. 3.

Unsuitable bearing material (Fill and buried Subsoil) was encountered to depths of 12 and 13.5 feet below grade in the footprint of the proposed pedestrian bridge abutments. The relative density and consistency of the Fill and buried Subsoil is variable and supporting the bridge abutments on conventional spread footings on this material has the potential for excessive differential and total settlement. Removal of the unsuitable bearing material would require temporary excavation support of Main Street and is not considered economical. Therefore, recommendations for deep foundations have been provided for support of the pedestrian bridge.

Pedestrian Bridge Foundations

The pedestrian bridge will consist of a precast steel superstructure supported by two abutments. Due to the thickness of unsuitable bearing material (Fill and buried Subsoil) encountered at each abutment location, deep foundations are recommended for abutment support. Several deep foundation alternatives were evaluated including driven piles (timber piles or steel pipe piles), micropiles and helical piles, and are discussed further below.

Driven Piles

Driven piles are typically installed with a crane and impact hammer. The available space within the Town's property boundaries to mobilize a crane and pile installation equipment is limited and installation of a driven pile may require a temporary closure of Main Street. Driven piles would likely be designed as friction and end-bearing in the Lake Bottom Deposits. The compression capacity of an end-bearing driven pile would likely be much greater than the anticipated load requirements for the abutments. Due to these details, driven piles are not considered economical and are not recommended.

Micropiles

Micropiles are considered a viable foundation alternative, however they are not considered economical. Micropiles are typically installed in difficult subsurface conditions (very dense soil, boulder/cobble soil) or when high-capacity foundations are required. Due to the anticipated load requirements and subsurface conditions encountered, micropiles are not recommended.

Helical Piles

Helical piles consist of steel shafts with a series of pitched steel plates (i.e., helix) welded on the lead section of the pile. The pile shafts can either be solid steel or round hollow shafts. The piles are typically installed with excavator-mounted equipment and are screwed into the ground. The pile installation is typically free of vibrations or spoils. The piles resist vertical loading (compression or tension) through soil bearing on the helices. Installation torques are recorded during pile advancement and installed capacities can be estimated in the field based on manufacturer's recommended torque correlations. Helical piles have not been included in the CTDOT Geotechnical Manual or CTDOT Bridge Design Manual; however, several helical pile manufacturers have piles approved by the International Code Council (ICC). Helical piles are considered an economical and feasible support alternative for the pedestrian bridge abutments based on the anticipated loading and access restrictions. Helical piles can also be battered if required to resist lateral loads.

We recommend a round shaft RS2875.276 helical pile manufactured by A. B. Chance Company or equivalent. The pile consists of a 2.875-inch diameter, 0.276-inch thick, grade 50 steel round shaft. The pile should be hot-dipped

galvanized to provide corrosion resistance. GZA evaluated a 20-foot long pile with a lead section that includes a 10-, 12-, and 14-inch diameter helix. GZA recommends designing the abutments based on nominal or ultimate pile capacities of 40 kips in compression and 20 kips in uplift. LPILE V2018 was used to estimate the lateral resistance of the RS2875.276 helical pile. For a pinned-head condition, we recommend a nominal or ultimate lateral capacity of 3 kips with an estimated 0.35 inches of deflection at the pile head. Helical pile capacity should be evaluated in the field based on manufacturer's recommend torque-capacity correlations.

For Allowable Strength Design (ASD), GZA recommends a factor of safety of 2 for compression capacity, 3 for tension capacity, and 1 for lateral capacity. Resistance factors for Load and Resistance Factor Design (LRFD) are not available for helical piles in published references (AASHTO, CTDOT). GZA recommends designing based on a resistance factor of 0.45 for compression capacity, 0.3 for tension capacity and 1 for lateral capacity. The final shaft size and helix configuration should be included in a helical pile design prepared by the pile contractor and stamped by a Professional Engineer licensed in Connecticut. The helical pile design should include structural capacity, geotechnical capacity, and combined stress (bending and axial stresses) analysis.

Helical piles should be spaced a minimum of three times the largest helix diameter to minimize the potential for group interaction. In accordance with the CTDOT Geotechnical Engineering Manual, pile caps should be embedded at least 4 feet below finished grade. We anticipate the bridge abutments will be fully backfilled on both sides and subsurface drainage is not required.

Retaining Wall Nos. 1 and 2

Retaining Wall Nos. 1 and 2 are planned to be designed and constructed in accordance with the CTDOT Embankment Wall Specification, which consists of modular block and MSE walls. The walls should be supported on the naturally-deposited Lake Bottom Deposits with an allowable bearing pressure of 2,000 pounds per square foot (psf). Topsoil, Subsoil, and Fill should be removed from within the footprint of the walls and footprint of the geogrid reinforced area, if geogrids are required in design. The excavations for Topsoil, Subsoil and Fill should include the foundation bearing zone, defined as a 1 horizontal to 1 vertical (1H:1V) slope extending downward and outward from the outside edge of the lowest wall blocks.

The exposed natural subgrades should be proof-rolled prior to wall construction. Proof-rolling should consist of a minimum of 4 static passes of a drum roller having a drum weight of at least 5,000 pounds. Granular Fill, Sand-Gravel Fill, or Crushed Stone should be used if backfill is required to raise grades to bottom of footing elevation and should be compacted to at least 95 percent of the maximum dry density (ASTM D1557). Material gradations are provided in the Recommended Backfill Section below.

We anticipate that the slope at the top of the retaining walls may vary from relatively flat to about 4H:1V . Recommended lateral earth pressures for three slope inclinations at the top of the walls backfilled with Sand -Gravel or Granualr Fill and additional engineering properties are provided below.

Engineering Properties			
Soil Parameters	**Units**	**Lake Bottom Deposits**	**Sand-Gravel Fill & Granular Fill (Compacted to 95%)**
Friction Angle, ϕ	degrees	30	35
Unit Weight- Moist, γ_m	pcf	110	130
Active Lateral Earth Pressure Coefficient 4H:1V Slope at Top of Wall 7H:1V Slope at Top of Wall Horizontal Slope at Top of Wall	K_a	 Not Recommended Not Recommended Not Recommended	 0.33 0.28 0.27
Notes: pcf = pounds per cubic foot			

The lateral earth pressures may be multiplied by the unit weight provided in the Engineering Properties Table to develop equivalent fluid pressures**.** In general, passive soil pressure should be ignored in calculating lateral load resistance for walls with a shallow embedment. The lateral earth pressures recommended above do not include an allowance for hydrostatic pressure. To reduce the possibility of hydrostatic pressure, GZA recommends installation of a chimney drain behind the walls. A chimney drain typically consists of 12 inches of Crushed Stone wrapped in filter fabric that extends the full height of the wall. The chimney drain should drain away from the proposed sidewalk and should not drain directly onto the sidewalk. In accordance with Section 4.4 of the CTDOT Bridge Design Manual, the lateral earth pressures also do not include an allowance for seismic induced lateral earth pressures.

For MSE retaining walls, factors of safety and designs should be in accordance with the manufacturer's recommendations, American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges, and the latest edition of the Design Manual for Segmental Retaining Walls as published by the National Concrete Masonry Association (NCMA). The design should be performed by the contractor's design engineer registered in the State of Connecticut and reviewed by the owner's geotechnical engineer.

Retaining Wall No. 3

Retaining Wall No. 3 is planned to be about 6 feet tall and 500 feet long. Construction of the retaining wall by excavating into the existing 1.9H:1V slope is not considered practical. Therefore, we recommend constructing Retaining Wall No. 3 from the "top down". Two retaining wall types were evaluated for Retaining Wall No. 3 which include a permanent sheet pile wall and a permanent driven soldier pile and timber lagging wall. Both wall types can be finished with an architectural façade or a modular block wall could be constructed in front for aesthetics.

Design of either wall type should be completed by a Professional Engineer licensed in the State of Connecticut. We recommend designing the wall as cantilevered with no anchors or tiebacks. Cantilevered walls will deflect from soil loading and estimated deflections at the top of the wall are on the order of 2 to 4 inches. Regrading at the top of wall may be required after construction of the retaining wall. For steel members of the wall, a minimum 1/16-inch loss of steel should be included in the design for corrosion, or the steel should be coated with a corrosion inhibitor (i.e. coal tar, etc). Timber portions of the wall should be pressure treated. Order-of-magnitude cost estimates for each wall type are provided in Appendix C.

Permanent Sheet Pile Wall

Sheet piles can be installed from the existing ground surface by impact driving, vibrating, or hydraulically pushing interlocking steel sheets. Sheet piles should include weep holes at a maximum 10-foot spacing near the ground surface to reduce the potential for hydrostatic pressure on the back of the wall. The weepholes should not discharge directly onto the sidewalk and may require construction of a crushed stone swale in front of the wall.

GZA performed a preliminary analysis and recommends a minimum embedment depth of 13.5-feet below finished grade. The minimum embedment assumes an exposed height of wall of 8 feet to account for construction of the sidewalk (6-foot final exposed height plus 2 feet for construction of sidewalk). GZA recommends a minimum section modulus of 8.25 in^3/ft of wall, based on a steel yield strength of 50 ksi.

Soldier Pile Wall

Soldier piles are installed by drilling or driving steel pipes or steel H-piles into the ground, and then installing lagging between the steel members as the excavation progresses downward. Lagging typically consists of timber boards,

steel panels or precast concrete panels. Unsupported excavations during lagging should be maintained to a practical minimum (less than 2 feet) to reduce the potential for loss of ground behind the wall. We recommend the wall be designed to support the final exposed wall height plus a minimum of 2 feet to accommodate sidewalk construction.

Permanent Soil Slopes

Permanent fill slopes of 3H:1V or flatter should be constructed with loam and seed for permanent erosion protection. Soil fill slopes steeper than approximately 3H:1V are not currently planned. Slopes of 4H:1V or steeper may exhibit surface instability prior to establishment of vegetation during rain events. A temporary, biodegradable erosion control mesh (jute mesh or equivalent) should be placed over the loam to limit instability prior to vegetation growth. Maintenance of slopes that exhibit surface erosion or shallow slip surfaces after rain events and/or following freeze/thaw events should be expected.

Existing slopes at Retaining Wall No. 3 are as steep as about 1.5H:1V. These slopes can remain or be graded to a minimum slope of 2H:1V, and flatter if possible. If the slopes are regraded, permanent erosion protection such as crushed stone may be required.

Temporary Soil Slopes

Excavation slopes should be flattened to maintain stability. All excavations should be performed in accordance with current OSHA requirements under the observation and responsibility of the project contractors. Construction site safety generally is the responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. We are providing this information as a service to our client.

Based on the granular nature of the existing Fill and Lake Bottom Deposits, it is anticipated that the soil exposed in excavations would generally be classified as Type C soil in accordance with OSHA regulations. OSHA recommends a maximum slope inclination of 1.5H:1V for Type C soils. Excavation slopes should be checked regularly for signs of instability and should be shored or flattened as required. Temporary slopes should be protected from surface run-off erosion to promote stability of the slope, by means of berms and swales located along the top of the slope, a flattened slope inclination and/or plastic sheeting placed over the slope.

Based on our understanding of the anticipated construction, we do not anticipate that an excavation support system will be required. However, if an excavation support system is used, the system should be designed by a Professional Engineer licensed in the State of Connecticut.

RECOMMENDED BACKFILL

The following materials and their respective applications are recommended for use on this project.

Crushed Stone

This material is recommended for use as an element of drainage systems or as a stabilization layer. Where used in thicknesses over 4 inches, Crushed Stone should be wrapped in non-woven filter fabric. Crushed Stone should consist of ¾-inch minus angular crushed stone and shall conform to CONNDOT Form 817, Division III Section M.01.01, No. 6. Crushed Stone shall consist of durable crushed rock or durable crushed gravel stone, free of organics, deleterious materials, clay, ice, snow, and waste of any kind and meet the gradation tabulated herein.

Sand-Gravel

This material is recommended as backfill for retaining walls and in other free-draining, potential frost area applications. Sand-Gravel should meet CONNDOT Form 817, Division II Section M.02.05 and M.02.06 Grading A and consist of clean sand, gravel and/or aggregate, free of organics, deleterious materials, ice, snow, and waste of any kind and meet the gradation tabulated below. The fine fraction should NOT consist of Clayey Silt, Silty Clay, Clay, Organic Silt, Organic Clay or Peat. Water content by weight during compaction should not exceed ±2 percent of optimum moisture as determined by ASTM D 1557.

Granular Fill

This material is recommended for use within the bearing zone of footings and walls. Granular Fill should meet CONNDOT Form 817, Division II Section M.02.05 and M.02.06 Grading B with modified No. 200 gradation below and consist of clean sand, gravel and/or aggregate, free of organics deleterious materials, ice, snow, and waste of any kind, and meet the gradation tabulated below. The fine fraction should NOT consist of Clayey Silt, Silty Clay, Clay, Organic Silt, Organic Clay or Peat. Water content by weight during compaction should not exceed ±2 percent of optimum moisture as determined by ASTM D 1557.

Filter Fabric

Filter Fabric should be used to separate Crushed Stone from surrounding soils. The fabric should consist of a filtration-type non-woven geotextile (i.e., Mirafi 140N or equivalent).

Fill Gradations

Particle Size	Percent Passing by Weight		
	Crushed Stone	Sand-Gravel	Granular Fill
5½ - inch			100
3½ - inch		100	90-100
1½ inch		55-100	55-95
1 - inch	100		
¾ - inch	90-100		
½ - inch	20-55		
3/8 - inch	0-15		
¼ - inch		25-60	25-60
No. 10		15-45	15- 45
No. 4	0-5		
No. 40		5-25	5-25
No. 100		0-10	
No. 200		0-5	0-15

Additional Geotechnical Services

We recommend that GZA be consulted to review final plans and specifications prior to bidding and to review submittals and shop drawings developed by earthwork contractor(s) to determine that our geotechnical recommendations have been properly interpreted and implemented. In addition, GZA should provide on-site construction quality assurance support during earthwork activities.

Closure

We appreciate the opportunity to work with you on this project. Please call us with any questions.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

James F. Davis, P.E.
Project Manager

David M. Barstow, P.E.
Associate Principal

Dan T. Kinard, P.E.
Consultant/Reviewer

\\GZAGlastonbury\Jobs_46,000-46,499\46356.h56 Town of Glastonbury\46356-00.dmb\Reports\Final\46356 Main Street Retaining Walls, Glastonbury, CT - GZA GeoEnvironmental, Inc. - Geotechnical Engineering Report 1-9-19.docx

Attachments: Table 1 – Summary of Test Boring Exploration Data
Figure 1 – Exploration Location Plan- Proposed Retaining walls
Figure 2 – Exploration Location Plan- Proposed Pedestrian Bridge
Appendix A – Limitations
Appendix B – Test Boring Logs
Appendix C – Order-of-Magnitude Cost Estimates

TABLES

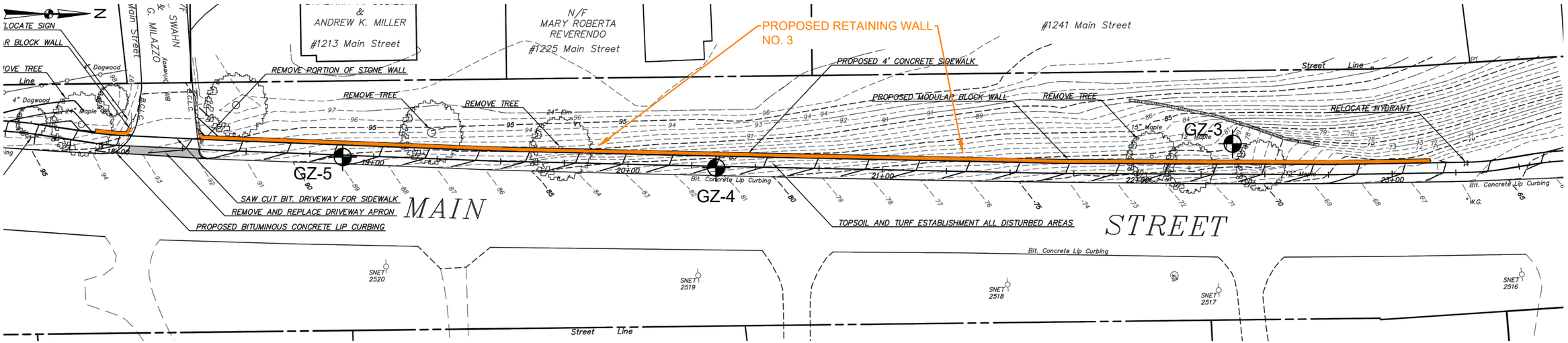
TABLE 1
SUMMARY OF TEST BORING EXPLORATION DATA
Main Street Retaining Walls
Glastonbury, Connecticut

	GZ-1	GZ-2	GZ-3	GZ-4	GZ-5	GZ-6	GZ-7
Proposed Structure	Pedestrian Bridge	Pedestrian Bridge	Retaining Wall #3	Retaining Wall #3	Retaining Wall #3	Retaining Wall #2	Retaining Wall #1
Depth (ft) to:							
Topsoil	NE	0.0	0.0	0.0	0.0	0.0	0.0
Fill	0.0	0.6	NE	NE	NE	0.5	NE
Subsoil	6.5	NE	0.5	NE	NE	NE	0.5
Asphalt	NE	NE	NE	NE	0.3	NE	NE
Lake Bottom Deposits	12.0	13.5	3.0	0.5	0.4	2.0	2.0
Glacial Till	NE	NE	23.5	NE	NE	NE	NE
Groundwater[1]	10.0	11.0	NE	NE	NE	11.0	14.0
Bottom of Exploration	26.7	20.5	27.0	12.0	12.0	17.0	27.0
Thickness (ft) of:							
Topsoil	NE	0.6	0.5	0.5	0.3	0.5	0.5
Fill	6.5	12.9	NE	NE	NE	1.5	NE
Subsoil	5.5	NE	2.5	NE	NE	NE	1.5
Asphalt	NE	NE	NE	NE	0.1	NE	NE
Lake Bottom Deposits	>14.7	>7	20.5	>11.5	>11.6	>15.0	>25.0
Glacial Till	NE	NE	>3.5	NE	NE	NE	NE
Approximate Elevations (ft):							
Ground Surface [2]	49.5	48.5	79.0	83.0	90.0	96.5	87.0
Top of Topsoil	NE	48.5	79.0	83.0	90.0	96.5	87.0
Top of Fill	49.5	47.9	NE	NE	NE	96.0	NE
Top of Subsoil	43.0	NE	78.5	NE	NE	NE	86.5
Top of Asphalt	NE	NE	NE	NE	89.7	NE	NE
Top of Lake Bottom Deposits	37.5	35.0	76.0	82.5	89.6	94.5	85.0
Top of Glacial Till	NE	NE	55.5	NE	NE	NE	NE
Groundwater[1]	39.5	37.5	NE	NE	NE	85.5	73.0
Bottom of Exploration	22.8	28.0	52.0	71.0	78.0	79.5	60.0

NE - Not encountered

Notes:
1. Groundwater readings were taken at the times and conditions noted on the logs.
2. Ground surface elevations were estimated using a survey level and known elevations of drainage structures as benchmarks.

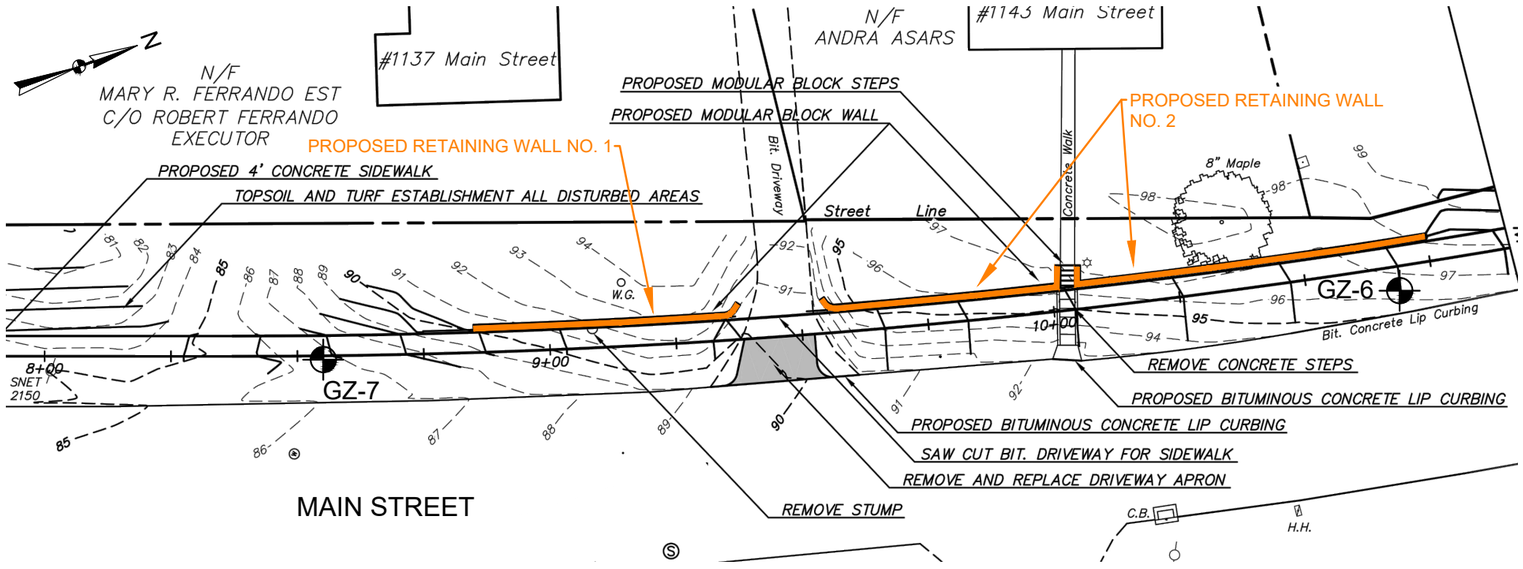
FIGURES



PROPOSED RETAINING WALL NO. 3
STATION 17+90 TO 23+15

0 20' 40' 80'

SCALE: 1" = 40'



PROPOSED RETAINING WALL NO. 1 AND 2
STATION 8+85 TO 9+40 AND 9+55 TO 10+75

0 15' 30' 60'

SCALE: 1" = 30'

GENERAL NOTES

1. BASE MAP DEVELOPED FROM DRAWING NO. 1, 2 AND 3, TITLED "PLAN DEPICTING PROPOSED SIDEWALK IMPROVEMENTS", DEVELOPED BY THE TOWN OF GLASTONBURY, DATED 7/27/2018.
2. THE LOCATION OF THE EXPLORATIONS WERE APPROXIMATELY DETERMINED BY LINE OF SIGHT AND/OR TAPE MEASUREMENTS FROM EXISTING TOPOGRAPHIC FEATURES, BY GZA PERSONNEL.
3. THE PURPOSE OF THIS DRAWING IS TO LOCATE, DESCRIBE, AND REPRESENT THE POSITIONS OF EXPLORATIONS IN RELATION TO THE SUBJECT SITE. THIS DRAWING IS NOT CONSIDERED A LAND SURVEY. THE LOCATIONS SHOWN SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

GZ-1 — INDICATES BORINGS PERFORMED BY NEW ENGLAND BORING CONTRACTORS, INC. BETWEEN OCTOBER 30 AND 31, 2018 AND OBSERVED BY GZA PERSONNEL.

NO.	ISSUE/DESCRIPTION	BY	DATE

MAIN STREET SIDEWALK PHASE 3
GLASTONBURY, CONNECTICUT

EXPLORATION LOCATION PLAN
PROPOSED RETAINING WALLS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF GLASTONBURY
2155 MAIN STREET
GLASTONBURY, CT

PROJ MGR: JFD	REVIEWED BY: JFD	CHECKED BY: DMB	FIGURE 1
DESIGNED BY: DKR	DRAWN BY: DKR	SCALE: AS NOTED	
DATE: DECEMBER 2018	PROJECT NO. 05.0046356.00	REVISION NO. 0	SHEET NO. 1 OF 2

N

TOWN OF GLASTONBURY

#1287 Main Street

100 Year Flood Limit

PROPOSED BRIDGE FOOTING 5'x10'

PROPOSED 50' PEDESTRIAN BRIDGE
STATION 28+20 TO 28+70

PROPOSED PEDESTRIAN BRIDGE

REMOVE TREE

CREATE OPENING IN GAURD R

RELOC.

Street Line

Bit. Driveway

W.G.

15" Maple

GZ-1

GZ-2

29+00

28+00

Sign

C.B.

TABLISHMENT ALL DISTURBED AREAS

SAW CUT BIT. DRIVEWAY FOR SIDEWALK

PROPOSED BITUMINOUS CONCRETE LIP CURBING

REMOVE AND REPLACE DRIVEWAY APRON

MAIN STREET

CRETE LIP CURBING

LK

Bit. Concrete Lip Curbing

SNET
2512

SNET
2511

Street Line

43 44 45 46 47 48 49 50 52

GENERAL NOTES

1. BASE MAP DEVELOPED FROM DRAWING NO. 1, 2 AND 3, TITLED "PLAN DEPICTING PROPOSED SIDEWALK IMPROVEMENTS", DEVELOPED BY THE TOWN OF GLASTONBURY, DATED 7/27/2018.
2. THE LOCATION OF THE EXPLORATIONS WERE APPROXIMATELY DETERMINED BY LINE OF SIGHT AND/OR TAPE MEASUREMENTS FROM EXISTING TOPOGRAPHIC FEATURES, BY GZA PERSONNEL.
3. THE PURPOSE OF THIS DRAWING IS TO LOCATE, DESCRIBE, AND REPRESENT THE POSITIONS OF EXPLORATIONS IN RELATION TO THE SUBJECT SITE. THIS DRAWING IS NOT CONSIDERED A LAND SURVEY. THE LOCATIONS SHOWN SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

GZ-1 — INDICATES BORINGS PERFORMED BY NEW ENGLAND BORING CONTRACTORS, INC. BETWEEN OCTOBER 30 AND 31, 2018 AND OBSERVED BY GZA PERSONNEL.

0 10' 20' 40'

SCALE: 1" = 20'

NO.	ISSUE/DESCRIPTION	BY	DATE

MAIN STREET SIDEWALK PHASE 3
GLASTONBURY, CONNECTICUT

EXPLORATION LOCATION PLAN
PROPOSED PEDESTRIAN BRIDGE

PREPARED BY:	PREPARED FOR:		
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	TOWN OF GLASTONBURY 2155 MAIN STREET GLASTONBURY, CT		
PROJ MGR: JFD	REVIEWED BY: JFD	CHECKED BY: DMB	FIGURE 2
DESIGNED BY: DKR	DRAWN BY: DKR	SCALE: AS NOTED	
DATE: DECEMBER 2018	PROJECT NO. 05.0046356.00	REVISION NO. 0	SHEET NO. 2 OF 2

APPENDIX A

LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report,as appropriate, to reflect the unanticipated changed conditions .

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.

8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

COMPLIANCE WITH CODES AND REGULATIONS

10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

COST ESTIMATES

11. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

ADDITIONAL SERVICES

12. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX B

TEST BORING LOGS

LOG KEY

GZA
Geo Environmental, Inc.
Engineers and Scientists

BURMISTER SOIL CLASSIFICATION

COMPONENT	NAME	PROPORTIONAL PERCENT BY TERM	WEIGHT
MAJOR	GRAVEL, SAND, FINES*		>50
Minor	Gravel, Sand, Fines*	and	35-50
		some	20-35
		little	10-20
*See identification of fines table.		trace	0-10

IDENTIFICATION OF FINES		
Material	**PI**	**Atterberg Thread Dia.**
SILT	0	Cannot Roll
Clayey SILT	1-5	1/4"
SILT & CLAY	5-10	1/8"
CLAY & SILT	10-20	1/16"
Silty CLAY	20-40	1/32"
CLAY	>40	1/64"

Sieve Size	Description
Passing #200	Silts & Clays
#200 - #40	Fine Sand
#40 - #10	Medium Sand
#10 - #4	Coarse Sand
#4 – ¾"	Fine Gravel
¾" – 3"	Coarse Gravel
3" – 6"	Cobbles
>6"	Boulders

GRADATION DESIGNATION	PROPORTION OF COMPONENT
Fine to coarse	All fractions > 10%
Medium to coarse	<10% fine
Fine to medium	<10% coarse
Coarse	<10% fine and medium
Medium	<10% coarse and fine
Fine	<10% coarse and medium

PLASTIC SOILS		
Consistency	**Blows/Ft. SPT N-Value**	
Very Soft	< 2	
Soft	2 - 4	
Medium Stiff	4 - 8	
Stiff	8 - 15	
Very Stiff	15 - 30	
Hard	>30	

GRAVEL & SAND	
Density	**Blows/Ft. SPT N-Value**
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (ASTM D 2487)

MAJOR DIVISIONS			Group Symbols
Coarse Grained Soils	Gravel	Clean Gravels	GW
More than 50% of material	More than 50%	(Little or no fines	GP
larger than No. 200 sieve.	larger than No. 4 sieve.		
Gravels with Fines			GM
(Appreciable amount of fines)			GC
Sand		Clean Sands	SW
	More than 50%	(Little or no fines)	SP
	smaller than No. 4 sieve.		
Sands with Fines			SM
(Appreciable amount of fines)			SC
			ML
		Silts and Clays Liquid Limit <50	
Fine Grained Soils			CL
More than 50% of material			
smaller than No. 200 sieve.			OL
			MH
Silts and CLays Liquid Limit >50			CH
			OH
Highly Organic Soils			Pt

ORGANIC SOIL CLASSIFICATION

Fibrous PEAT (Pt) - Lightweight, spongy, mostly visible organic matter, water squeezes readily from sample. Typically near top of deposit.
Fine Grained PEAT (Pt) - Lightweight, spongy, little visible organic matter, water squeezes readily from sample. Typically below fibrous peat.
Organic Silt (OL) - Typically gray to dark gray, often has strong H2S odor. Typically contains shells or shell fragments. Lightweight. Usually found near coastal regions. May contain wide range of sand fractions.
Organic Clay (OH) - Typically gray to dark gray, high plasticity. Usually found near coastal regions. May contain wide range of sand fractions. Need organic content test for final identification.

ABBREVIATIONS

MR = Mud Rotary
HSA = Hollow Stem Auger
SSA = Solid Stem Auger
SS = Split Spoon Sampler
U = Undisturbed Sample (Shelby Tube)
MC = Modified California Sampler
V = Vibracore
M = Macrocore

USCS = Unified Soil Classification System (ASTM D2487)
NYCBC = New York City Building Code
WOR = Weight of Rods
WOH= Weight of Hammer
SPT = Standard Penetration Test (ASTM D1586)

Tv = Field Vane Shear Test (Torvane) Shear Strength
PP = Pocket Penetrometer Shear Strength
PI = Plasticity Index
Wn = Moisture Content
CO = Consolidation
UC = Unconfined Compression Test
UU = Unconsolidated Undrained (Triaxial) Test
SI = Sieve Analysis
DS = Direct Shear
PID = Photoionization Detector
ppm = Parts Per Million
REC = Recovery
RQD = Rock Quality Designation
= Measured Water Level

N-Value = Cumulative number of uncorrected blows for the middle two six-inch intervals (blows/foot).

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-1
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 49.5
Final Boring Depth (ft.): 26.7
Date Start - Finish: 10/30/2018 - 10/30/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/30/18	0950	10'	5 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	STRATUM Description	Elev. (ft.)
		S-1	0-2	24	16	5 9 12 9	21	S-1 : Top 4": Dark brown, fine to coarse SAND, some Silt, trace Gravel Bottom 12": Dark brown, fine to coarse SAND, little Silt, little Gravel	1				
		S-2	2-4	24	7	10 5 5 5	10	S-2 : Top 5": Brown, fine to coarse SAND, little Silt Bottom 2": Black ASPHALT				FILL	
5		S-3	5-7	24	14	2 1 2 4	3	S-3 : Top 12": Brown, fine to coarse SAND, little Silt, trace Gravel			6.5		43.0
		S-4	7-9	24	14	3 3 3 4	6	Bottom 2": Dark brown, fine to medium SAND and SILT, trace Gravel S-4 : Loose, brown, fine SAND, some Silt				BURIED SUBSOIL	
10		S-5	10-12	24	3	6 6 2 2	8	S-5 : Loose, light brown, fine to medium SAND, trace Silt			12		37.5
15		S-6	15-17	24	12	7 9 16 21	25	S-6 : Medium dense, light brown, fine to medium SAND, little Silt					
20		S-7	20-22	24	24	11 6 9 60	15	S-7 : Medium dense, light brown, fine to medium SAND, trace Silt				LAKE BOTTOM DEPOSITS	
25		S-8	25-26.7	20	20	6 7 48 50/2"	55	S-8 : Dense, light brown, fine to medium SAND, trace Silt			26.7		22.8
30								End of exploration at 26.7 feet below grade.					

REMARKS

1 - Test boring advanced with 2-1/4-inch inside diameter, hollow-stem augers. Groundwater measured at a depth of 10 feet prior to introduction of water. Water added to inside of augers during advancement from 17 feet to end of exploration.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-1

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-2
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 48.5
Final Boring Depth (ft.): 20.5
Date Start - Finish: 10/30/2018 - 10/30/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/29/18	1345	11'	5 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	7	1 2 5 7	7	S-1 : Medium dense, dark brown, fine to coarse SAND and SILT, trace Roots			0.6	TOPSOIL	47.9
		S-2	2-4	24	0	9 8 7 6	15	S-2 : No Recovery (Gravel in spoon tip)					
5		S-3	5-7	24	10	4 3 6 5	9	S-3 : Loose, brown, fine to coarse SAND, little Silt, little Gravel (Gravel in spoon tip)					
		S-4	7-9	24	14	3 3 5 3	8	S-4 : Loose, light brown, fine to coarse SAND, some SILT, trace Gravel				FILL	
10		S-5	10-12	24	0	7 7 7 3	14	S-5 : No Recovery					
											13.5		35.0
15		S-6	15-17	24	22	12 8 17 17	25	S-6 : Medium dense, light brown, fine to medium SAND, little Silt				LAKE BOTTOM DEPOSITS	
20		S-7	20-20.5	6	6	102/6"		S-7 : Light brown, fine to medium SAND, trace Silt			20.5		28.0
								End of exploration at 20.5 feet below grade.					
25													
30													

REMARKS

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-2

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-3
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 79
Final Boring Depth (ft.): 27
Date Start - Finish: 10/30/2018 - 10/30/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/29/18	1615	Dry	5 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	20	2 3 3 2	6	S-1 : Top 4": Black SILT and fine to medium SAND, trace Roots Bottom 16": Light brown, fine to medium SAND, little SILT			0.5	TOPSOIL	78.5
		S-2	2-4	24	18	4 6 12 12	18	S-2 : Top 8": Light brown, fine to medium SAND, little SILT Bottom 10": Light to dark brown SILT, some fine Sand			3	SUBSOIL	76.0
5		S-3	5-7	24	15	2 5 7 13	12	S-3 : Top 4": Brown, fine SAND, some SILT Middle 2": Gray, fine to coarse SAND, little Silt, little fine Gravel					
		S-4	7-9	24	24	10 11 13 15	24	Bottom 9": Light brown, fine SAND, trace Silt S-4 : Medium dense, light brown SILT, little fine Sand					
10		S-5	10-12	24	16	9 11 13 15	24	S-5 : Top 9": Light brown, fine to medium SAND, trace Silt Bottom 7": Light brown SILT, little fine Sand				LAKE BOTTOM DEPOSITS	
15		S-6	15-17	24	24	12 11 12 14	23	S-6 : Medium dense, brown, fine SAND, trace Silt					
20		S-7	20-22	24	18	13 13 20 21	33	S-7 : Dense, brown SILT, little fine Sand			23.5		55.5
25		S-8	25-27	24	8	47 34 35 23	69	S-8 : Very dense, brown, fine to coarse SAND and SILT, little Gravel				GLACIAL TILL	
								End of exploration at 27 feet below grade.			27		52.0
30													

REMARKS

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-3

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-4
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 83
Final Boring Depth (ft.): 12
Date Start - Finish: 10/31/2018 - 10/31/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/31/18	0950	Dry	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	16	2 3 3 3	6	S-1 : Top 6": Dark brown SILT, some fine to coarse Sand Bottom 10": Light brown, fine to medium SAND, trace Silt			0.5	TOPSOIL	82.5
		S-2	2-4	24	22	4 5 5 7	10	S-2 : Medium dense, light brown, fine to medium SAND, trace Silt					
5		S-3	5-7	24	22	5 9 12 13	21	S-3 : Medium dense, light brown, fine to medium SAND, trace Silt				LAKE BOTTOM DEPOSITS	
10		S-4	10-12	24	16	13 9 15 19	24	S-4 : Top 14": Light brown, fine SAND, little Silt Bottom 2": Brown SILT & CLAY, little fine Sand			12		71.0
								End of exploration at 12 feet below grade.					
15													
20													
25													
30													

REMARKS

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-4

GZA TEMPLATE 0210.GDT GZA TEMPLATE TEST BORING BORING LOGS.GPJ LIBRARY 012111.GLB 12/4/2018 12:09:46 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-5
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 90
Final Boring Depth (ft.): 12
Date Start - Finish: 10/31/2018 - 10/31/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/31/18	1115	Dry	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	17	4 4 5 5	9	S-1 : Top 3": dark brown, fine to medium SAND and SILT, trace Roots Middle 2": Black GRAVEL (former Asphalt) Bottom 12": Light brown, fine to medium SAND and SILT			0.3 0.4	TOPSOIL ASPHALT	89.7 89.6
		S-2	2-4	24	16	6 7 8 8	15	S-2 : Medium dense, light brown, fine to medium SAND, little SILT, trace fine Gravel					
5		S-3	5-7	24	24	4 11 18 16	29	S-3 : Medium dense, light to dark brown, fine to medium SAND, trace Silt				LAKE BOTTOM DEPOSITS	
10		S-4	10-12	24	13	14 15 17 18	32	S-4 : Medium dense, light brown, fine to medium SAND, trace Silt			12		78.0
								End of exploration at 12 feet below grade.					
15													
20													
25													
30													

REMARKS

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-5

GZA TEMPLATE 0210.GDT GZA TEMPLATE TEST BORING BORING LOGS.GPJ LIBRARY 012111.GLB 12/4/2018 12:09:56 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-6
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 96.5
Final Boring Depth (ft.): 17
Date Start - Finish: 10/31/2018 - 10/31/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/31/18	1217	11'	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	17	2 3 13 15	16	S-1 : Top 6": Dark brown SILT and fine to medium SAND, trace Roots Bottom 11": Brown, fine to medium SAND, little Silt, little Gravel			0.5	TOPSOIL	96.0
		S-2	2-4	24	24	9 9 8 10	17	S-2 : Medium dense, light brown, fine to medium SAND, trace Silt			2	FILL	94.5
5		S-3	5-7	24	17	6 7 7 9	14	S-3 : Medium dense, light brown, fine to medium SAND, trace Silt					
10		S-4	10-12	24	17	5 3 4 5	7	S-4 : Medium stiff, brown CLAY & SILT (wet)				LAKE BOTTOM DEPOSITS	
15		S-5	15-17	24	24	8 6 6 6	12	S-5 : Stiff, red/brown Silty CLAY			17		79.5
								End of exploration at 17 feet below grade.					
20													
25													
30													

REMARKS

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-6

GZA TEMPLATE 0210.GDT GZA TEMPLATE TEST BORING BORING LOGS.GPJ LIBRARY 012111.GLB 12/4/2018 12:10:05 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Main Street Retaining Walls
Glastonbury, Connecticut

EXPLORATION NO.: GZ-7
SHEET: 1 of 1
PROJECT NO: 05.0046356.00
REVIEWED BY: J. Davis

Logged By: B. Edwards
Drilling Co.: New England Boring Contractors
Foreman: M. St. John

Type of Rig: ATV
Rig Model: M1
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 87
Final Boring Depth (ft.): 27
Date Start - Finish: 10/31/2018 - 10/31/2018

H. Datum: PROJECT
V. Datum: PROJECT

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 2.25 ID

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/31/18	1340	14'	5 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	10	3 3 2 3	5	S-1 : Top 4": Dark brown, fine to medium SAND and SILT, trace Roots Bottom 6": Orange-brown, fine to medium SAND, little Silt, trace Gravel			0.5	TOPSOIL	86.5
		S-2	2-4	24	16	5 7 7 5	14	S-2 : Medium dense, light brown, fine to medium SAND, trace Silt			2	SUBSOIL	85.0
5		S-3	5-7	24	22	6 8 8 11	16	S-3 : Medium dense, brown SILT, little fine Sand					
10		S-4	10-12	24	22	6 6 8 7	14	S-4 : Medium dense, brown, fine SAND, some Silt					
15		S-5	15-17	24	22	3 3 3 4	6	S-5 : Loose, brown, fine to medim SAND, some Silt				LAKE BOTTOM DEPOSITS	
20		S-6	20-22	24	23	12 8 3 3	11	S-6 : Medium dense, brown, fine SAND, trace Silt					
25		S-7	25-27	24	23	3 6 10 26	16	S-7 : Medium dense, brown, fine SAND, little Silt					
30								End of exploration at 27 feet below grade.			27		60.0

REMARKS

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-7

GZA TEMPLATE 0210.GDT GZA TEMPLATE TEST BORING BORING LOGS.GPJ LIBRARY 012111.GLB 12/4/2018 12:10:15 PM

APPENDIX C

ORDER-OF-MAGNITUDE COST ESTIMATES

Glastonbury Main Street Sidewalk Phase 3 Project
Conceptual Engineer's Estimate of Probable Cost for Retaining Wall No. 3

Alternative No. 1 - Sheet Pile Wall					
DESCRIPTION		**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL COST**
Mobilization/Demobilization		LS	1	$ 20,000	$ 20,000
	500 feet of Steel Sheet Piles (220 sheets @ 20ft each)	Ton	80	$ 2,600	$ 208,000
	Alternative No. 1 Subtotal			**Sub Total**	**$ 228,000**
	Contingency (±20%)				$ 45,600
				Alternative No. 1 - Estimated Total Cost (rounded)	**$ 274,000**

Alternative No. 2 - Soldier Pile Wall					
DESCRIPTION		**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL COST**
Mobilization/Demobilization		LS	1	$ 20,000	$ 20,000
	HP 12x53 Soldier Piles (85 piles @26 ft each)	LF	2,210	$ 41	$ 89,505
	3-inch Timber Lagging	SF	4,000	$ 14	$ 56,000
	Alternative No. 2 Subtotal			**Sub Total**	**$ 166,000**
	Contingency (±20%)				$ 33,200
				Alternative No. 2 - Estimated Total Cost (rounded)	**$ 200,000**

Notes:

1. Orgder-of magnitude costs do not include excavations in front of wall, engineering design, permitting, or architectural facades.
2. Construction-phase engineering services are not included.

GZA GeoEnvironmental, Inc.

Known for excellence.
Built on trust.

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

95 Glastonbury Boulevard
3rd Floor
Glastonbury, CT 06033
T: 860.286.8900
F: 860.633.5699
www.gza.com

September 6, 2019
GZA Project No. 05.0046356.01

Ms. Mary F. Visone, CPPB
Purchasing Agent – Town of Glastonbury
2155 Main Street, Glastonbury, Connecticut

Re: Structure Geotechnical Report Addendum
Main Street Sidewalk Phase 3
Glastonbury, Connecticut

Dear Ms. Visone:

GZA GeoEnvironmental, Inc. (GZA) has completed our Structure Geotechnical Report Addendum for the proposed Phase 3 Sidewalk Improvement project along Main Street in Glastonbury, Connecticut (site). Our services were performed in accordance with our Change Order No. 1 dated August 7, 2019. This Report Addendum provides additional recommendations for design and construction of soil nail retaining walls to supplement our "Structure Geotechnical Report, Main Street Sidewalk Phase 3, Glastonbury, Connecticut", dated January 9, 2019. Limitations are attached in **Appendix A**.

Elevations referenced in this report are based on plans[1] provided by you and are assumed to reference North American Vertical Datum of 1988 (NAVD 88).

SUPPLEMENTAL TEST PITS

Retaining Wall No. 3 is planned to be about 6-feet tall and 500-feet long and located between properties located at 1213 and 1241 Main Street. Refer to the Structure Geotechnical Report for additional details. Two test pits (TP-4 and TP-5) were excavated by the Town of Glastonbury for the proposed Retaining Wall No. 3. The test pits were completed with a KX080 Kubota excavator on August 8, 2019. The test pit locations were staked in the field by others. Ground surface elevations were estimated using existing topographic plans. The test pits were monitored and logged by GZA personnel. The soils were classified according to the Modified Burmister Classification System. The approximate test pit locations are shown on the attached **Figure 1** and the test pit logs are attached as **Appendix B**.

The test pits were approximately 10-feet wide and ranged from 5.5- to 8-feet deep. TP-4 was excavated to depths of approximately 3, 4, and 5.5 feet and allowed to remain open for about 10 minutes at each depth increment. TP-5 was excavated to depths of approximately 4, 6, and 8 feet and allowed to remain open for about 10 minutes at each depth increment to allow observation of excavation sidewall sloughing. The excavations did not slough during the 10-minute intervals. Photographs of the test pits are provided in **Appendix C**.

[1] "Plan Depicting Sidewalk Improvements, Phase 3, Main Street, Glastonbury, Connecticut" by Town of Glastonbury Engineering, Dated July 27, 2018, Sheets 1 through 14.

SUBSURFACE CONDITIONS

Consistent with the results of our original subsurface exploration program, the subsurface conditions at the test pits consisted of the following, in order of increasing depth:

Forest Mat (Surface Cover) – The surficial soil at each of the test pits consisted of about 0.7 to 1.4 feet of Forest Mat. The Forest Mat consisted of brown, SILT with up to 35 percent fine SAND and up to 20 percent Roots.

Lake Bottom Deposits – Naturally-deposited Lake Bottom Deposits were encountered below the Surface Cover at each of test pits. The Lake Bottom Deposits were not fully penetrated. The Lake Bottom Deposits generally consisted of brown, fine SAND with up to 10 percent Silt.

Groundwater – Groundwater was not encountered in the test pits. It should be noted that water levels will vary due to seasonal and climatic fluctuations, changes caused by construction, stabilization time and other factors different from those existing at the time the observations were made.

GEOTECHNICAL DESIGN RECOMMENDATIONS

The recommendations are intended to be consistent with the CTDOT Bridge Design Manual (Revised 3/09) and the CTDOT Geotechnical Engineering Manual (Revised 02/09).

Retaining Wall No. 3

Retaining Wall No. 3 is planned to be about 6-feet tall and 500-feet long. Construction of the retaining wall by an open cut excavation into the existing 1.9H:1V slope is not considered practical. Therefore, we recommend constructing Retaining Wall No. 3 from the "top down". GZA's January 2019 Structure Geotechnical Engineering Report recommends either a permanent sheet pile wall or a permanent driven soldier pile and lagging wall. We understand a permanent soil nail wall is being considered and this Addendum provides recommendations specific to a permanent soil nail wall.

Soil Nail Wall Design Recommendations

Soil nail walls should be designed in accordance with American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges, and the latest edition of the FHWA Geotechnical Engineering Circular No. 7- Soil Nail walls Reference Manual. The soil nail wall design should be performed by a Professional Engineer registered in the State of Connecticut and can be completed either by the Owner or by the contractor's design engineer. The wall design should include global stability analysis during each level of wall construction. GZA recommends an ultimate (or nominal in LRFD analysis) bond strength of 15 psi for rotary drilled soil nails and 20 psi for driven cased soil nails.

The soil nails should be double corrosion protected, which typically consists of either grout and epoxy-coated bars or grout and PVC-sheathing encapsulated bars. Typical soil nail inclinations are on the order of 10 to 20 degrees. Soil nail inclinations less than 10 degrees are not recommended. Conventional geocomposite drain strips and weep holes should be incorporated into the design. Weep holes should not discharge directly onto sidewalks. Centralizers should be provided on the soil nail at maximum 10-foot spacing.

A minimum of two verification tests should be performed on sacrificial soil nails. Verification tests should be conducted to failure, or as a minimum, to a test load that includes the design bond strength and pullout factor of safety

of 2. Proof tests should be performed on a minimum of 5% of production soil nails, and should be conducted to a minimum of 150 percent of the design load.

Soil Nail Wall Construction Recommendations

Prior to the start of wall excavation, surface water controls should be constructed at the top of the wall to prevent surface water from flowing over the excavations. Surface water controls may consist of collector trenches or swales.

Unsupported excavations for soil nails should be kept to a practical minimum and on the order of 3 to 5 feet. The actual height of excavations will be dependent on the conditions during construction and may need to be modified during soil nail wall construction. The excavation face will have a tendency to slough as the soils are exposed and allowed to dry. The Contractor may need to add moisture to the face of the excavations throughout the day to limit excavation sloughing. The exposed length of an excavation should be limited to that which can be shotcreted during a single working day. The Owner should be aware that if sloughing of the excavation face occurs, additional shotcrete or other measures may be required which may increase costs.

If signs of excavation instability are observed such as sloughing or seepage, the area should be backfilled and protected with a temporary soil berm to allow for further evaluation.

Closure

We appreciate the opportunity to work with you on this project. Please call us with any questions.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

James F. Davis, P.E.
Sr. Project Manager

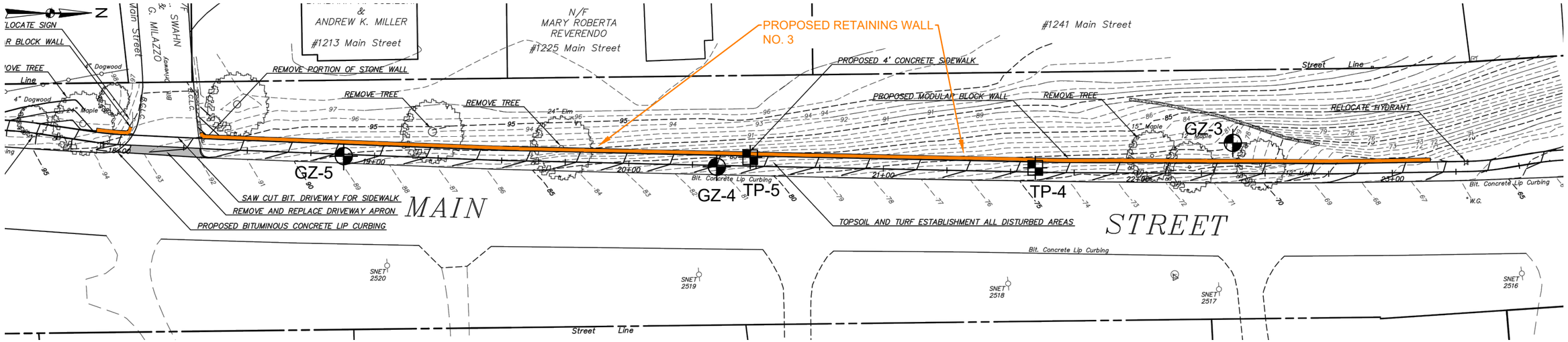
David M. Barstow, P.E.
Associate Principal

Lawrence F. Johnsen, P.E.
Consultant/Reviewer

J:_46,000-46,499\46356.h56 Town of Glastonbury\46356-00.dmb\Reports\Addendum\46356 Main Street Retaining Walls, Glastonbury, CT - GZA GeoEnvironmental, Inc. - Geotechnical Engineering Report 1-9-19.docx

Attachments: Figure 1 – Exploration Location Plan- Proposed Retaining walls
Appendix A – Limitations
Appendix B – Test Pit Logs
Appendix C – Test Pit Photographs

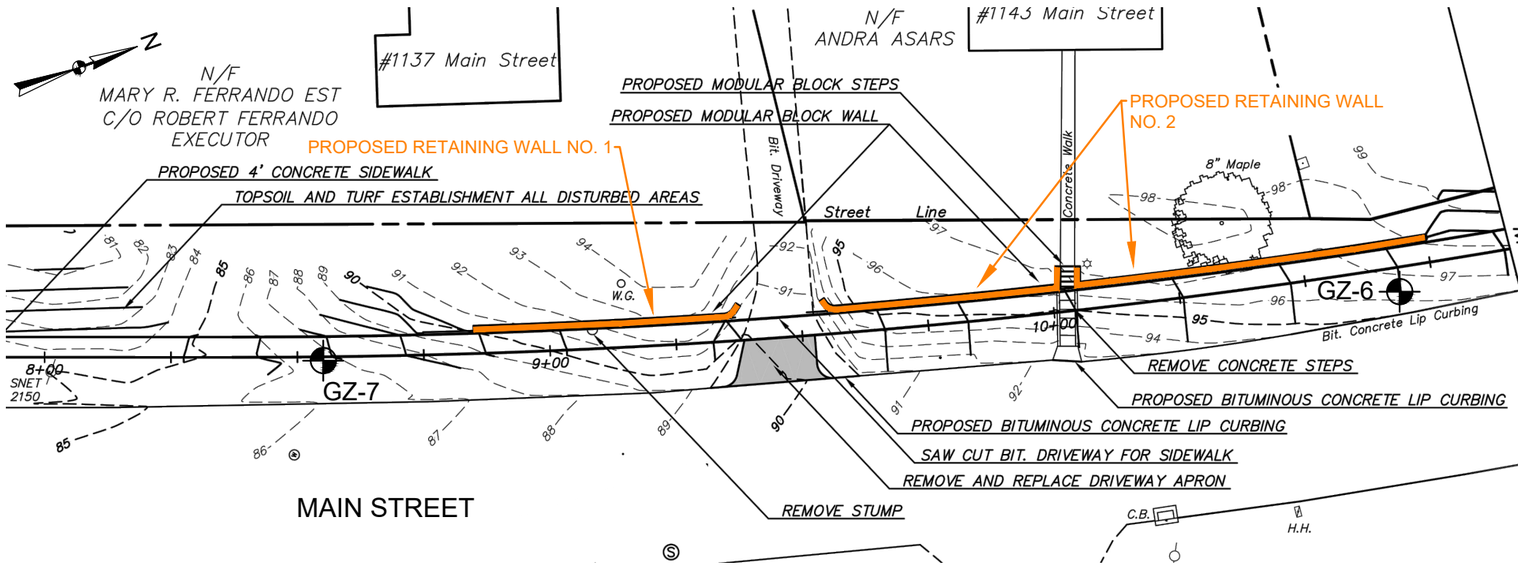
Figure



PROPOSED RETAINING WALL NO. 3
STATION 17+90 TO 23+15

0 20' 40' 80'

SCALE: 1" = 40'



PROPOSED RETAINING WALL NO. 1 AND 2
STATION 8+85 TO 9+40 AND 9+55 TO 10+75

0 15' 30' 60'

SCALE: 1" = 30'

GENERAL NOTES

1. BASE MAP DEVELOPED FROM DRAWING NO. 1, 2 AND 3, TITLED "PLAN DEPICTING PROPOSED SIDEWALK IMPROVEMENTS", DEVELOPED BY THE TOWN OF GLASTONBURY, DATED 7/27/2018.
2. THE LOCATION OF THE EXPLORATIONS WERE APPROXIMATELY DETERMINED BY LINE OF SIGHT AND/OR TAPE MEASUREMENTS FROM EXISTING TOPOGRAPHIC FEATURES, BY GZA PERSONNEL.
3. THE PURPOSE OF THIS DRAWING IS TO LOCATE, DESCRIBE, AND REPRESENT THE POSITIONS OF EXPLORATIONS IN RELATION TO THE SUBJECT SITE. THIS DRAWING IS NOT CONSIDERED A LAND SURVEY. THE LOCATIONS SHOWN SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

GZ-1 — INDICATES BORINGS PERFORMED BY NEW ENGLAND BORING CONTRACTORS, INC. BETWEEN OCTOBER 30 AND 31, 2018 AND OBSERVED BY GZA PERSONNEL.

TP-4 — INDICATES TEST PIT PERFORMED BY TOWN OF GLASTONBURY ON AUGUST 8, 2019 AND OBSERVED BY GZA PERSONNEL.

NO.	ISSUE/DESCRIPTION	BY	DATE

MAIN STREET SIDEWALK PHASE 3
GLASTONBURY, CONNECTICUT

EXPLORATION LOCATION PLAN
PROPOSED RETAINING WALLS

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: TOWN OF GLASTONBURY 2155 MAIN STREET GLASTONBURY, CT	
PROJ MGR: JFD	REVIEWED BY: JFD	CHECKED BY: DMB	FIGURE 1
DESIGNED BY: DKR	DRAWN BY: DKR	SCALE: AS NOTED	
DATE: SEPTEMBER 2019	PROJECT NO. 05.0046356.00	REVISION NO. 1	SHEET NO. 1 OF 1

Appendix A – Limitations

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report,as appropriate, to reflect the unanticipated changed conditions .

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, express or implied, is made.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.

8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

COMPLIANCE WITH CODES AND REGULATIONS

10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

COST ESTIMATES

11. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

ADDITIONAL SERVICES

12. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

Appendix B – Test Pit Logs

TEST PIT FIELD LOG

GZA GeoEnvironmental, Inc. Engineers and Scientists	PROJECT *Main Street Retaining Walls* *Glastonbury, Connecticut*	Test Pit No. TP-4 File No. 46356.01 Date 8/8/2019

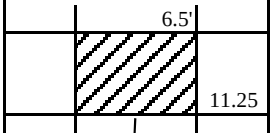
GZA Engineer	H. Zapata	EXCAVATION EQUIPMENT		Ground Elevation	79
Weather	80s Sunny	Contractor	Town of Glastonbury	Time Started	2:04 PM
		Operator	Rick Butticello	Time Completed	3:11 PM
		Make	Kubota Model KX080-4		
		Capacity	0.35 cu.yd. Reach 14 ft.		

Depth	SOIL DESCRIPTION		Excav. Effort	Boulder Count Qty. Class.	Remark No.
	0.7'	Brown SILT, some fine Sand, little Roots (FOREST MAT)			
--- 1' ---		Light brown, fine SAND, trace Silt, Roots observed to about 3 feet (LAKE BOTTOM DEPOSITS)	E	-	
--- 2' ---			E	-	
--- 3' ---			E	-	
--- 4' ---			E	-	
--- 5' ---			E	-	
--- 6' ---			E	-	
--- 7' ---			E	-	
--- 8' ---			E	-	1, 2
--- 9' ---		End of Test Pit @ 8 ft			
--- 10' ---					
--- 11' ---					
--- 12' ---					
--- 13' ---					
--- 14' ---					

REMARKS:

1. Groundwater not encountered.
2. Test pit allowed to stay open for 10 minutes at depths of 4, 6 and 8 feet. The sidewalls of the excavation were not observed to slough during each 10 minute interval.

TEST PIT PLAN



Depth = 8 ft.
Volume = 16 cu.yd.

LEGEND

BOULDER COUNT

Size Range Classification	Letter Designation
6" - 18"	A
18" - 36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS

F - Fine
M - Medium
C - Coarse
F/M - Fine to Medium
F/C - Fine to Coarse
V - Very
GR - Gray
BN - Brown
YEL - Yellow

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

GROUNDWATER

Elapsed Time to Reading (hours) — NE — G.W.L.

M:\STND\TP-4\Sheet1

TEST PIT FIELD LOG

GZA GeoEnvironmental, Inc. Engineers and Scientists	PROJECT *Main Street Retaining Walls* *Glastonbury, Connecticut*	Test Pit No. TP-5 File No. 46356.01 Date 8/8/2019

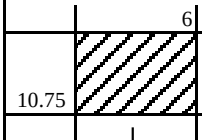
GZA Engineer	H. Zapata	EXCAVATION EQUIPMENT	
Weather	80s Sunny	Contractor: Town of Glastonbury	Ground Elevation: 85
		Operator: Rick Butticello	Time Started: 1:06 PM
		Make: Kubota Model: KX080-4	Time Completed: 1:55 PM
		Capacity: 0.35 cu.yd. Reach: 14 ft.	

Depth		SOIL DESCRIPTION		Excav. Effort	Boulder Count Qty. Class.	Remark No.
--- 1' ---		Brown SILT, some fine Sand, little Roots (FOREST MAT)		E	-	
	1.4'					
--- 2' ---		Light brown, fine SAND, trace Silt, Roots observed to about 3 feet (LAKE BOTTOM DEPOSITS)		E	-	
--- 3' ---				E	-	
--- 4' ---				E	-	
--- 5' ---				E	-	
	5.5'					
--- 6' ---		End Test Pit @ 5.5 ft bgs		E	-	1, 2
--- 7' ---						
--- 8' ---						
--- 9' ---						
--- 10' ---						
--- 11' ---						
--- 12' ---						
--- 13' ---						
--- 14' ---						

REMARKS:

1. Groundwater not encountered.
2. Test pit allowed to stay open for 10 minutes at depths of 3, 4 and 5.5 feet. The sidewalls of the excavation. Were not observed to slough during each 10 minute interval.

TEST PIT PLAN



Depth = 5.5 ft.
Volume = 11 cu.yd.

LEGEND

BOULDER COUNT

Size Range Classification	Letter Designation
6" - 18"	A
18" - 36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS

F - Fine
M - Medium
C - Coarse
F/M - Fine to Medium
F/C - Fine to Coarse
V - Very
GR - Gray
BN - Brown
YEL - Yellow

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

GROUNDWATER

Elapsed Time to Reading (hours) | NE | G.W.L.

Appendix C- Test Pit Photographs

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Town of Glastonbury	Main Street Retaining Walls	05.0046356.01

Photo No.: 01 **Photographer**: H. Zapata **Photo Direction:** North **Description:** Approximate location of Test Pit No. 4.	

Photo No.: 02 **Photographer**: H. Zapata **Photo Direction:** North **Description:** Excavation of Test Pit No. 4.	

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Town of Glastonbury	Main Street Retaining Walls	05.0046356.01

Photo No.: 03

Photographer: H. Zapata

Photo Direction: South

Description:

Excavation of Test Pit No. 4.

Photo No.: 04

Photographer: H. Zapata

Photo Direction: North

Description:

Excavation of Test Pit No. 5.

GZA GeoEnvironmental, Inc.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Town of Glastonbury	Main Street Retaining Walls	05.0046356.01

Photo No.: 05

Photographer: H. Zapata

Photo Direction: South

Description:

Excavation of Test Pit No. 5.

Photo No.: 06

Photographer: H. Zapata

Photo Direction: South

Description:

Soil within Test Pit No. 5.

ATTACHMENT E:
SCHEDULE OF MINIMUM TESTING
FOR LOTCIP PROJECTS

Local Transportation Capital Improvement Program (LOTCIP) **4/2/2019**

ONLY Applies to Municipal Adminstered LOTCIP Projects ***not*** *on National Highway System*

Material Name	Unit	Test/Documentation	Frequency 1 per	Notes
Anchor Bolts	ea.	MC	project	1 per size
Asphalt Emulsions (CSS-1, RS-1 or SS-1)	gal	MC	10k	
Bituminous Concrete (HMA)	ton	D 2950 FLDT	day	See Note 3
Cement - Portland Type I/II	bag	FLDT	project	empty bag
Chemcial Anchor	lb.	QPL MC	project	
Concrete-Ready Mixed	c.y.	T22 FLDL	75	4 cylinders
Construction Signing	ea.	MC	project	
Geotextile	s.y.	QPL MC	project	
Gravel (Bank Run or Crushed)	c.y.	T27 LABT	5k	
Grout, Non-shrink	bag	MC	project	
Masonry Brick & Block (Solid)	ea.	FLDT	project	See Note 1
Pipe - Reinforced Concrete	l.f.	PC-1	project	See Note 1
Pipe (Metal & Plastic) All types	lf	MC	project	See Note 1
Pipe Arch - Aluminum	lf	MC	project	See Note 1
Precast Concrete Items (not pipe)	ea.	PC-1	Item type	
Prestressed Concrete Members	ea.	LABT	1	See Note 2 & 3
Reclaimed Misc. Aggregate	c.y.	T27/Chem Analysis	2500	See Note 5
Reclaimed Waste	c.y.	T180 LABT	50k	See Note 5
Sand (Masonry /Trenching & Backfilling)	c.y.	T27 LABT	2500	
Sheet Piling	l.f.	MC	project	See Note 4
Sign Post	ea	MC	project	See Note 1
Span Pole - Steel or Wood	ea.	MC	project	See Note 3
Steel Reinforcing Bars (Plain or Epoxy)	lb.	T244 MC	200t	
Stone (Broken/Crushed)	c.y.	T27 LABT	20k	
Structural Steel	cw	Shop Drawings	project	Notes 2, 3 & 4
Traffic Signal Equipment	ea.	MC	project	NA

Notes

1	Material should be inspected on the project site prior to use. Suspect material should be physically tested to determine conformance.
2	QC Inspection should be provided and documented during fabrication.
3	Contact the Department of Transportation Division of Materials Testing to determine vendor qualifications and QA inspection availablity.
4	Documentation should be provided to determine conformance to Buy America requirements.
5	FORM MAT-212 should be completed and provided by the Contractor prior to use of material.

Test Method/Test Type

LABT	Laboratory Test
FLDT	Test performed in the field
QPL	ConnDOT Qualified Products List (http://www.ct.gov/dot/lib/dot/documents/dresearch/conndot_qpl.pdf)
PC-1	MAT-308 Required from producer with shipment
MC*	Materials Certificate

*Should comply with ConnDOT Standard Specification Section 1.06.07

Legend

Item: Standard Specification Section and the first four digits of the Contract Item number.
Title: Generally the overall subject of the Standard Specification Section and the Contract Item numbers.
Item Unit: Generally the pay unit of the Contract Item.
Material #: Code used in SiteManager and by the Division of Materials Testing to identify component materials used in Contract Items.
Material Name: Definition of the Material #.
Material Unit: Unit of Material that defines a quantity represented by a sample. Example: A sample of concrete represents 50 CY of material regardless of what the item unit is.
MAT 100: Indicates wether a Request for Test (MAT-100) is required to be submitted to the Division of Materials Testing (See Note 11. for ALT)
Sample Type: Acceptance (Prod) or Information requires a MAT-100 to be submitted. Accept (Field) does not require a MAT-100 to be submitted.
Test Method: AASHTO or ASTM test method. See below. "Chem" requires
Test Type: Describes the test, where the test is performed, or what is required to be submitted with the MAT-100.
Responsibility: Person who performs the test.
Frequency: Number of tests required per quantity of material using the material units: (E) English (M) Metric.

1 per "quantity" indicates that **all** the quantity of each type (size/shape/composition) of material, per item, from a single vendor and manufacturer **must be represented** on a single or multiple Request for Test(s) (MAT-100). MAT-100(s) total represented quantity must match total quantity installed.

Sample Size: Size of Sample.

Test Type:

FLDT	**Test performed in the field**
LABT	**Laboratory Test**
FLABT	**Field and Laboratory Testing**
LMCT*	**Lab Test, Mat Cert and Cert Test Report (Originals Required)**
MC*	**Materials Certificate (Original Required)**
MCCTR*	**Materials Certificate and Certified Test Report (Originals Required)**
PC1	**Self Certification from producer supplied per shipment**
QPL	**Qualified Product List**
Visual	**Project Inspector must visually inspect upon delivery/installation. Visual inspection by DMT staff denotes witnessing fabrication of material where it is being fabricated. Documentation of visual inspection on the project by project staff is in accordance with District/Office of Construction policies.**

***Materials Certificates and Certified Test Reports must comply with Standard Specification Section 1.06.07. Note: Materials Certificates for items composed of, or containing, steel or cast iron must also indicate where the steel and cast iron was produced and fabricated.**

ATTACHMENT F1:
CONSTRUCTION PLANS

UNDER SEPARATE COVER