PROJECT MANUAL

DOWNTOWN SANITARY, STORMWATER, AND STREETSCAPE IMPROVEMENTS

NAUGATUCK, CONNECTICUT

July 3, 2023

BOROUGH OF NAUGATUCK
CONNECTICUT

Contract No. FY24-B059

Digitally signed by Neil Kulikauskas, PE
Date: 2023.07.03 13:41:05 -04'00'

Designer:
Kleinfelder
400 Capital Blvd, Suite 104
Rocky Hill, CT, 06067

Landscape Architect:
Richter & Cegan
Avon Park North
8B Canal Court
Avon, CT, 06001

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Borough of Naugatuck

LEGAL NOTICE

REQUEST FOR BIDS

Sealed bids for the construction of the following project will be received by the Purchasing Agent for the Borough of Naugatuck, Accounting Dept. Basement, Town Hall, 229 Church Street, Connecticut, 06770 until August 22, 2023 at 10:00 AM local time after which no additional bids will be accepted. No exceptions.

Contract No. FY24-B059
DOWNTOWN SANITARY, STORMWATER, AND STREETSCAPE IMPROVEMENTS

Immediately following the above time and date sealed bids will be publicly opened and read aloud in the Hall of Burgesses, located on the 4th floor of Town Hall at the Borough of Naugatuck, 229 Church Street, Naugatuck, CT 06770 and read aloud via Zoom.

Join Zoom Meeting
https://us06web.zoom.us/j/81179415915?pwd=QTA0c2lvZEdDSU9nVnkyL0pQNDFydz09&from=addon

Meeting ID: 811 7941 5915
Passcode: 799354

Dial by your location
• +1 929 205 6099 US (New York)
• +1 646 518 9805 US (New York)

The project consists of full-depth roadway and sidewalk reconstruction on Church Street, roadway improvements and sidewalk reconstruction on Maple Steet, installation of sidewalk pavers, curbing, lighting, street trees, and major storm drainage and sanitary sewer modifications along Church Street, Maple Street, Water Street, Elm Street, and Old Firehouse Road. Construction shall be in accordance with the Borough of Naugatuck's Design and Construction Standards, Form 818 (2020), all supplements thereto and special provisions provided herein. All proposals must be on the form furnished with the Contract Documents.

The minimum rates to be paid labor of the various classifications shall be in accordance with the current schedule of wages established by the State Labor Commissioner as provided in the General Statutes of Connecticut, as revised. The Contract Wage Certification Form is to be submitted to the Labor Commissioner before the award of the contract.

The bid document may be examined and obtained at no cost from the Borough of Naugatuck web site http://www.naugatuck-ct.gov. All bidders must check the Borough web site within two (2) days of the scheduled bid opening to check for addenda. No hard copies shall be provided.

Bids must be accompanied by a certified check or Bid Bond in writing on forms provided by the Borough of Naugatuck in the amount of at least one tenth (10%) of the amount of the Bid and payable to the order of the Borough of Naugatuck. The successful Bidder will be required to furnish and pay for a Performance Bond and a Payment Bond in the amount of one hundred percent (100%) of the Contract price.

The right is reserved by the Borough of Naugatuck to reject any or all Bids, to waive any informalities or defects in Bids, and to make such time extensions as may be necessary in order to review and compare Bids, to obtain such supplemental information as may be necessary to review Bids and to accept Bid(s) that, in the judgment of the Borough of Naugatuck, will be in the Borough's best interest.

No Bidder may withdraw their bid within (90) days after the actual date of the opening thereof.

AN AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER MBE'S, WBE'S, SBE'S AND SECTION 3 DESIGNATED ENTERPRISES ARE ENCOURAGED TO APPLY

INFORMATION FOR BIDDERS

Borough of Naugatuck

DOWNTOWN SANITARY, STORMWATER, AND STREETSCAPE IMPROVEMENTS NAUGATUCK, CT

1. Proposals Received

Sealed bids for the construction of the following project will be received by the Purchasing Agent for the Borough of Naugatuck, Accounting Dept. Lobby, Town Hall, 229 Church Street, Connecticut, 06770 until August 22, 2023 at 10:00 AM local time after which no additional bids will be accepted.

Immediately following the above time and date sealed bids will be publicly opened and read aloud in the Hall of Burgesses, located on the 4th floor of Town Hall at the Borough of Naugatuck, 229 Church Street, Naugatuck, CT 06770.

2. Location and Description of Work

The project consists of full-depth roadway and sidewalk reconstruction on Church Street, roadway improvements and sidewalk reconstruction on Maple Steet, installation of sidewalk pavers, curbing, lighting, street trees, and major storm drainage and sanitary sewer modifications along Church Street, Maple Street, Water Street, Elm Street, and Old Firehouse Road. Construction shall be in accordance with the Borough of Naugatuck's Design and Construction Standards, Form 818 (2020), all supplements thereto and special provisions provided herein. All proposals must be on the form furnished with the Contract Documents.

3. Schedule of Construction and Time of Completion

The attention of the Bidder is called to the provisions of the General Requirements, Section 6 of the General Conditions, and requiring submittal of a schedule of operations.

The attention of the Bidder is called to the requirements of Time for Completion, Section 3 of the Supplemental Conditions for initiation and completion of the work.

The Bidder's attention is especially directed to Liquidated Damages, Section 4 of the Supplement Conditions for information about failure to complete the project on time.

4. Plans and Project Manuals

The bid document may be examined and obtained at no cost from the Borough of Naugatuck web site http://www.naugatuck-ct.gov. All bidders must check the Borough web site within two (2) days of the scheduled bid opening to check for addenda.

The construction contract will be entered into by the successful bidder and the Borough of Naugatuck. The State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 818, along with the specifications and contract drawings, contained herein will detail the general requirements for materials, methods of installation, measurement, and basis of payment to be required in this project. Any references to the State of Connecticut, the Department, the commissioner, Engineer, or other terms indicating the State of Connecticut and her agents as party to the contract shall for this project mean the Borough of Naugatuck and her designated agents or employees.

Where insurance is required to be carried in the name of the Borough of Naugatuck and the Borough of Naugatuck shall be held harmless.

All requirements for material testing, certificates of the compliance or material certifications shall be done as if this were a contract being entered into with the State of Connecticut, shall be in accordance with Form 818. It is the intent of this contract to maintain all standard requirements of Form 818 without attempting to redefine every term within the 818 to the "Borough of Naugatuck".

The bidder shall, therefore, be aware that the Borough of Naugatuck and its agents shall inspect and administrate this contract, make contract interpretations, determine the acceptability of the work and approve requests for payments. The Contractor shall be responsible for the requirements stated in Form 818, supplemental specifications, special provisions and in the construction drawings.

5. Addenda and Interpretations

No interpretations of the meaning of the contract documents will be made to any Bidder orally. Every request for such interpretation shall be in writing, addressed to James Stewart, Borough of Naugatuck Department of Public Works, 246 Rubber Avenue, Naugatuck, CT 06770 or emailed to JStewart@naugatuck-ct.gov. To be given consideration, such requests must be received at least seven (7) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the contract documents, which, if issued, will be posted to the Borough's internet page for all prospective Bidders, no later than four (4) days prior to the date fixed for the opening of bids. Failure of any Bidder to receive any such addendum or interpretations shall not relieve such Bidder from any obligation under the bid as submitted. All addenda so issued shall become part of the Contract Documents.

6. Familiarity of the Work

Each Bidder shall fully inform him/herself prior to bidding as to existing conditions and limitations under which the work is to be performed and shall include in their bid a sum to cover the cost of items necessary to perform the work as set forth in the Contract Documents. No allowance will be made to a Bidder because of lack of such examination

or knowledge. The submission of a bid will be considered as conclusive evidence that the Bidder has made such examination.

Where borings or other exploration data are shown on the Plans or made available to the Bidder, it is understood that such data were obtained in the usual manner, and with reasonable care, and are to be interpreted and used as the Bidder sees fit. There is no expressed or implied agreement that the depths or the character of the material and water levels have been correctly indicated, and the Bidder is cautioned to take into account that condition affecting the work may differ from those indicated.

The Owner assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site of the project.

The Contractor agrees that they shall make no claim for and have no right to additional payment or extension of time for completion of the work, or any other concessions, because of any interpretations or misunderstanding on their part of this Contract, or because of any failure on their part to fully acquaint themself with all conditions relating to the work. Permission for making borings, test pits, or other investigations of subsurface conditions will be arranged for by the Owner upon receipt of a written request thereof.

7. Existing Conditions

In bidding on this Contract, each Bidder acknowledges that they have made whatever investigation of the project site they deemed necessary for the purpose of bidding.

8. Estimate of Work

For bidding purposes, the work has been subdivided into unit price items. The quantities shown below are to be considered as approximate only. The Owner does not expressly or by implication agree that the actual quantity(ies) will correspond therewith, but reserves the right to increase or decrease the amount of any Item or portion of the work as may be deemed necessary.

9. Qualification of Bidders

A Bidder shall be a contractor who is experienced in the construction of the projects of this type. The Proposal shall contain adequate proof of the qualifications of the Bidder to perform, in a satisfactory manner and within the time specified, all the work covered by the Plans and Project Manual. This proof shall be fully recorded on the pages titled “References”, which shall become part of the Proposal.

10. Disqualification of Bidders

More than one proposal from an individual, firm, partnership, corporation, or an association under the same, or different, names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such Bidder is interested. Any or all proposals in which such Bidder is interested will be rejected if there is reason for believing that collusion exists among the Bidders; and all participants in such collusion will not be considered in future proposals for the same work. Proposals in which the prices are obviously unbalanced may be rejected. No Contract will be awarded except to competent Bidders capable of performing the class or work contemplated.

11. Preparation of Proposals

The Proposal must be made upon the forms contained herein. The blank spaces in the Proposals must be filled in correctly where indicated. The Bidder must state, both in words and in numerals, written or printed in ink, the prices for which they propose to do each Item of the work contemplated. In case of discrepancy between the words and the numerals, the words shall govern. Ditto marks are not considered writing, or printing, and shall not be used. The Bidder shall sign the Proposal correctly. If an individual makes the Proposal, name and post office address must be shown. If made by a firm, partnership, or corporation, the Proposal must be signed by an official of the firm, partnership, or corporation authorized to sign contracts, and must show the post office address of the firm, partnership, or corporation.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, this address, and name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to: Purchasing Office, Borough of Naugatuck, City Hall, 229 Church Street, Naugatuck, CT 06770.

12. Irregular Proposals

The Borough of Naugatuck reserves the right to reject any proposals if they show any omission, alteration of form, additions not called for, conditional bids, or irregularities of any kind.

13. Proposal Guarantee

No proposal will be considered unless accompanied by a certified check in U.S. dollars or bid bond using an insurance company licensed to do business in the State of Connecticut in an amount equal to at least ten percent (10%) of the amount of the bid and payable to the order of the Borough of Naugatuck, said check or bid bond to be returned to the Bidder unless forfeited as hereinafter stipulated. Such checks or bid bonds will be returned to all bidders within five (5) days after the execution of the Contract and the furnishing of the required security by the successful Bidder.

14. Withdrawal of Proposals

If a Bidder wishes to withdraw their Proposal, they may do so before the time fixed for the opening of bids by communicating their purpose to the office of the Mayor. Upon such notice, the Proposal will be handed to the Bidder unopened.

15. Execution of Contract

The party to whom the Contract is awarded, or their authorized representative, will be required to attend at the office of the Mayor, Borough of Naugatuck, with the sureties offered by them, and a current certificate of Corporate good standing issued by the Office of the Secretary of State in which the corporation is incorporated, and execute the Contract within five (5) days from the date of the award. If the party entering into this contract is a corporation, a Corporate Resolution duly executed by the president and Secretary of the Corporation authorizing the Corporation to enter into this Contract shall be provided. In case of the failure or neglect to do so, the Owner may, at its opinion, determine that the Bidder has abandoned the Contract and thereupon the Proposal and acceptance shall be null and void, and bid security accompanying the Proposal shall be forfeited as liquidated damages to the Owner. If the party entering into this contract is a partnership, a partnership resolution duly executed by a majority of the general partners authorizing the partnership to enter into this contract shall be provided.

16. Bonds

The successful Bidder, at the time of the execution of the Contract, shall furnish a Performance Bond in an amount at least equal to one hundred percent (100%) of the Contract prices as security for the faithful performance of this Contract and also a Payment bond in an amount not less than one hundred percent (100%) for the Contract prices as security for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract. All Bonds shall be in the forms prescribed by Law or Regulation and be acceptable to the Owner. Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Connecticut. Bidder shall provide evidence that Surety Company is licensed to conduct business in the State of Connecticut. All sureties shall be in full force throughout the guarantee period and until the retainage is released.

17. Responsibility of the Contractor

Attention is hereby particularly directed to the provisions of the Contract and Specifications whereby the Contractor shall be responsible for any loss or damage that may happen in the work, or any part thereof, during its progress and also whereby the Contractor shall make good any defects for faults that may occur within one (1) year after date of final estimate. The Contractor shall indemnify and save harmless the Owner and Engineer from any damages or costs to which they may be put by reason of injury to the

person or property of another resulting from negligence or carelessness in the performance of the work under this Contract.

18. Insurance

Before execution of the Contract, the Bidder will be required to file with the Borough of Naugatuck a certificate of insurance. The certificate, executed by an insurance company satisfactory to the Borough of Naugatuck shall name the Borough of Naugatuck and the Borough's Authorized Representatives as additional insured parties on the form furnished with these Contract Documents. The ACORD Certificate of Liability Insurance form is the industry accepted evidence of insurance and shall state that at a minimum, with respect to the contract, the bidder carries insurance in accordance with the requirements and stipulations listed below.

'The Contractor' shall indemnify, defend and hold harmless the Borough of Naugatuck, its officials, officers, employees, and designees caused in whole or in part to the fullest extent permitted by law from and against any and all claims, suits, actions, obligations, liabilities, damages, losses or injury (including the resulting death of a person), penalties, and expenses (including reasonable attorneys' fees) to the extent arising out of the performance of this Agreement or due to the Contractor's negligence or willful misconduct or omissions of the Contractor or its employees, agents, subcontractors or representatives.

Prior to the commencement of the work, and until final completion and acceptance of the work, the Contractor shall procure and maintain the following types of insurance and maintain all insurance coverage for the life of the contract, from an insurance company or companies with an A.M. Best Rating of A- (IX) or better. Such insurance will protect and indemnify the Borough of Naugatuck from all claims which may arise out of or result from the Contractor's obligations under this agreement, whether caused by the contractor or by a subcontractor or any person or entity directly or indirectly employed by the Contractor or by anyone for whose acts said Contractor may be liable.

Refer to Borough of Naugatuck: Insurance Agreement within the Contract Forms section for insurance coverage amounts.

Prior to the issuing of any notice to proceed by the Borough of Naugatuck, the Contractor shall furnish the Borough of Naugatuck with Certificates of Insurance evidencing such insurance as set forth above. Said policies shall not be cancelled or permitted to lapse until final completion and approval of the performance of the work until ten (10) days after the Borough of Naugatuck has received written notice, by certified or registered mail, that the cancellation or change of such policy is contemplated.

The Contractor shall advise their insurers or agent of the contract provisions regarding insurance. The failure of the Contractor to notify insurers or agent of the contract provision shall not relieve the Contractor from its insurance obligations under the Agreement. Non-fulfillment of the insurance provisions shall constitute a breach of this agreement and the Borough of Naugatuck retains the right to stop work until proper evidence of insurance is provided.

19. Care and Protection of Property

The Contractor shall take particular care to avoid damages to all private property and to private improvements within the Boroughs' right of way. The Contractor shall make good any damages to the satisfaction of the Borough. There shall be no additional compensation for the repair or restoration of private property, or private improvements within the Boroughs' right of way.

20. Sales Tax

Certain materials and supplies incorporated in the work of this project are exempt from Connecticut Sales Tax. The Bidder shall familiarize themself with current regulations of the State Tax Department. The tax on materials or supplies exempted by such regulations shall not be included as part of the bid. The Owner will furnish the successful Bidder a sales tax exemption number.

21. Compliance with Federal and State Regulations

The Contractor shall be responsible for full compliance with any Federal and/or State laws, regulations and standards, as applicable to any project fully or partially funded by State and/or Federal funding agency. This project is funded, in part, by the State and Federal government.

22. Permits

All licenses and permits for complying with any applicable Federal, State, and Municipal laws, codes and regulations in connection with the prosecution of the work shall be obtained by the Contractor, at no additional cost to the Owner.

23. Sedimentation and Erosion Control Plan

The Contractor shall prepare a sedimentation and erosion control plan for the work.

24. Subcontractors

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must:

A. Be acceptable to the Owner, and;

B. Submit form entitled “Contractors Wage Certification Form”

C. Submit form entitled “Non-Collusion Affidavit of Subcontractor”

D. Submit form “Certificate of Compliance with Connecticut General Statue Section 31 – 57b”

E. Submit form entitled “Nondiscrimination Certification”

F. Comply with the Federal Requirements pertaining to "Sole Proprietor/Working Owners"

Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed Contractor has submitted the certification forms and/or other evidence showing that it has fully complied with any reporting and compliance requirements to which it is or was subject.

25. Contractor's Right to Terminate Work

If the work should be stopped under an order of any court or other public authority, for a consecutive period of not less than thirty (30) days, through no act or fault of the Contractor or of anyone employed by them, then the Contractor may terminate this Contract and recover from the Owner payment for all work executed.

26. Wage Rates

The Bidder's attention is directed to Section 40 of the General Requirements in connection with wage rates.

27. Power of Attorney

Attorneys-in-fact who sign contract bonds must file, with each bond, a certified and effectively dated copy of their power of attorney.

28. Right to Reject

The Owner reserves the right to reject any or all proposals or to accept any bid, should it deem it to be in the best interest of the Owner.

29. Local Bidders

Local bidders shall be given no special preference.

30. Purchasing

All goods and services pertaining to work in this bid document shall commence with the vendors receipt of a Purchase Order from the Borough of Naugatuck.

Invoices must include the purchase order number and the charges listed in accordance with the purchase order. Invoices are to be delivered via email to accountspayable@naugatuck-ct.gov or as follows:

Borough of Naugatuck, Accounts Payable, 229 Church Street, Naugatuck, CT 06770

31. Equal Opportunity Clause

(a) Government contracts. Except as otherwise provided, each contracting agency shall include the following equal opportunity clause contained in section 202 of the order in each of its Government contracts (and modifications thereof if not included in the original contract): During the performance of this contract, the contractor agrees as follows: (1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

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

(c) The Contractor will send to each labor union or representative of workers with which they have a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

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

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

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

(g) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

PROPOSAL FORMS/BID FORMS

DOWNTOWN SANITARY, STORMWATER,
AND STREETSCAPE IMPROVEMENTS
NAUGATUCK, CT

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PROPOSAL/BID FORM

Borough of Naugatuck

DOWNTOWN SANITARY, STORMWATER, AND STREETSCAPE IMPROVEMENTS NAUGATUCK, CT

The undersigned, as Bidder, declares that no person or persons, other than those named herein, are interested in this Proposal; that this Proposal is made without collusion with any person, firm or corporation; that they have carefully examined the location of the proposed work, the proposed Form of Contract, and the Contract Drawings therein referred to; that no person or persons acting in any official capacity for the Owner is directly or indirectly interested therein or in any portion of the profit thereof; and that they propose and agree, if this Proposal is accepted, to execute the Form of Contract with the Owner; to provide all necessary equipment, tools, and other means of construction, and to do all work and furnish all materials specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Borough of Naugatuck as therein set forth, and that they will take in full payment therefore, the following unit prices and lump sums, to wit:

The Bidder acknowledges receipt of the following addenda:

Addendum No._____ Dated: _____

Addendum No._____ Dated: _____

Addendum No._____ Dated: _____

Addendum No._____ Dated: _____

Addendum No._____ Dated: _____

Addendum No._____ Dated: _____

The undersigned agrees that they shall execute the Contract within the ten (10) days after the date of award and shall commence work within the ten (10) days after date of the Notice to Proceed and shall progress therewith to its entire completion within the time stipulated in the Contract.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) days after the scheduled closing time for receiving bids.

If this Proposal shall be accepted by the Owner and the undersigned fails to contract as aforesaid, and to give bonds in a sum equal to one hundred percent (100%) of the Contract price, as determined by the canvass of bids, and with surety or sureties satisfactory to the Owner within

ten (10) days from the date of the award, then the Owner may, at its option, determine that the Bidder has abandoned the Contract: thereupon, the Proposal and acceptance shall be null and void, and the bid security, for not less than one-tenth (10%) of the amount of the bid, accompanying this Proposal, shall become the property of the said Owner as liquidated damages for the delay and additional expense to the Owner caused thereby if said Proposal shall be rejected, or if said Proposal shall be accepted and the Bidder shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Proposal) and shall furnish a Bond for the faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Proposal, the accompanying bid security shall be returned to the undersigned making bid.

Seal
(if bid is by a Corporation)

Firm or Corporation_____

By:_____
(Duly Authorized)

Street Address_____

City_____ State_____ Zip_____

Telephone _____

Email _____

Fax _____

_____
Date

PROPOSAL FORM - BID SCHEDULE
DOWNTOWN SANITARY, SEWER, AND COMPLETE STREETS IMPROVEMENTS
PROJECT NO. FY 23-B059
BOROUGH OF NAUGATUCK, CONNECTICUT

BIDDER'S NAME: _____

GENERAL ITEMS

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0971001	1	L.S.	MAINTENANCE AND PROTECTION OF TRAFFIC		
			_____dollars and _____cents per lump sum	$	$
0975004	1	L.S.	MOBILIZATION AND PROJECT CLOSEOUT		
			_____dollars and _____cents per lump sum	$	$
0980020	1	L.S.	CONSTRUCTION SURVEYING		
			_____dollars and _____cents per lump sum	$	$
970006	1	EST.	TRAFFICPERSON (MUNICIPAL POLICE OFFICER) (ESTIMATED COST)		
			three-hundred twenty-thousand dollars and no cents estimated	$320,000.00	$320,000.00
0969060	15	MO.	CONSTRUCTION FIELD OFFICE, SMALL		
			_____dollars and _____cents per month	$	$
			GENERAL PROJECT ITEMS TOTAL (in words)		
			_____dollars and _____cents per each	$	$

BASE BID

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0100078A	1	L.S.	ELECTRICAL WORK IN TOWN GREEN		
			_____dollars and _____cents per lump sum	$	$
0101157A	1	L.S.	CONTAMINATED SOIL MANAGEMENT		
			_____dollars and _____cents per lump sum	$	$
0202000	4,800	C.Y.	EARTH EXCAVATION		
			_____dollars and _____cents per cubic yard	$	$
0202452A	10	EA.	TEST PIT		
			_____dollars and _____cents per each	$	$
0202491	3,400	L.F.	REMOVE GRANITE STONE CURBING		
			_____dollars and _____cents per linear foot	$	$
0202502	1,400	S.Y.	REMOVAL OF CONCRETE PAVEMENT (MAPLE STREET)		
			_____dollars and _____cents per square yard	$	$
0202513A	110	S.Y.	REMOVAL OF CONCRETE SIDEWALK (CHURCH STREET CROSSWALKS)		
			_____dollars and _____cents per square yard	$	$
0202529	3,000	L.F.	CUT BITUMINOUS CONCRETE PAVEMENT		
			_____dollars and _____cents per linear foot	$	$
0209001	4,300	S.Y.	FORMATION OF SUBGRADE		
			_____dollars and _____cents per square yard	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0216012A	225	C.Y.	CONTROLLED LOW STRENGTH MATERIAL		
			_____dollars and _____cents per cubic yard	$	$
0219004.1A	1	L.S.	TREE FILTER - GREEN STORMWATER INFRASTRUCTURE		
			_____dollars and _____cents per lump sum	$	$
0219004.2A	1	L.S.	SUBSURFACE INFILTRATION SYSTEM - GREEN STORMWATER INFRASTRUCTURE		
			_____dollars and _____cents per lump sum	$	$
0219004.3A	1	L.S.	OUTFALL PLUNGE POOL / SEDIMENT FOREBAY - GREEN STORMWATER INFRASTRUCTURE		
			_____dollars and _____cents per lump sum	$	$
0219011A	33	EA.	SEDIMENTATION CONTROL AT CATCH BASIN		
			_____dollars and _____cents per each	$	$
0304002	550	C.Y.	PROCESSED AGGREGATE BASE		
			_____dollars and _____cents per cubic yard	$	$
0402800A	1,060	S.F.	CLEAN EXISTING SIDEWALK		
			_____dollars and _____cents per square foot	$	$
0402802A	960	S.F.	CLEAN EXISTING CONCRETE RETAINING WALL		
			_____dollars and _____cents per square foot	$	$
0406002	3,300	S.Y.	TEMPORARY PAVEMENT (TRENCH WIDTH AND TEMPORARY RAMPS)		
			_____dollars and _____cents per square yard	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0406170	1,000	TON	HMA S1		
			_____dollars and _____cents per TON	$	$
0406171	700	TON	HMA S0.5		
			_____dollars and _____cents per TON	$	$
0406236	70	GAL.	MATERIAL FOR TACK COAT		
			_____dollars and _____cents per gallon	$	$
0409001	1,000	S.Y.	FINE MILLING OF BITUMINOUS CONCRETE (0" TO 4")		
			_____dollars and _____cents per square yard	$	$
0507105	4	EA.	CONNECTION TO EXISTING MANHOLE AND/OR CATCH BASIN		
			_____dollars and _____cents per each	$	$
0507119A	7	EA.	GRANITE CURB CATCH BASIN INLET (SINGLE)		
			_____dollars and _____cents per each	$	$
0507120A	1	EA.	GRANITE CURB CATCH BASIN INLET (DOUBLE)		
			_____dollars and _____cents per each	$	$
0586501.06	1	EA.	STORM MANHOLE - 6' DIAMETER		
			_____dollars and _____cents per each	$	$
0507900A	11	EA.	TRENCH DRAIN		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0519003A	1	ALLOW	WATERPROFFING AT BUILDING WALL AND PAVEMENT INTERFACE		
			Forty Thousand dollars and No cents estimated	$40,000.00	$40,000.00
0586001.1	7	EA.	TYPE 'C' CATCH BASIN - 0'-10' DEEP		
			_____dollars and _____cents per each	$	$
0586040.1	17	EA.	TYPE 'C-L' CATCH BASIN - 0'-10' DEEP		
			_____dollars and _____cents per each	$	$
0586044.1	4	EA.	TYPE 'C-L' CATCH BASIN DOUBLE GRATE TYPE 2 - 0' - 10' DEEP		
			_____dollars and _____cents per each	$	$
0586086A	5	EA.	ABANDON DRAINAGE STRUCTURE		
			_____dollars and _____cents per each	$	$
0586500.10	11	EA.	STORM MANHOLE - 4' DIAMETER		
			_____dollars and _____cents per each	$	$
0586501.05	12	EA.	STORM MANHOLE - 5' DIAMETER		
			_____dollars and _____cents per each	$	$
0586510A	2	EA.	DOGHOUSE MANHOLE - 5' DIAMETER		
			_____dollars and _____cents per each	$	$
0586704	1	EA.	CONVERT MANHOLE TO TYPE 'C' CATCH BASIN		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0586790	18	EA.	REMOVE DRAINAGE STRUCTURE - 0' - 10' DEEP		
			_____dollars and _____cents per each	$	$
0651745	20	L.F.	8" POLYVINYL CHLORIDE PIPE		
			_____dollars and _____cents per linear foot	$	$
0652013	1	EA.	24" R.C. CULVERT END		
			_____dollars and _____cents per each	$	$
0652015	1	EA.	36" R.C. CULVERT END		
			_____dollars and _____cents per each	$	$
0653100A	150	EA.	CLEAN EXISTING CULVERT - 30" DIAMETER		
			_____dollars and _____cents per each	$	$
0686000.15	550	L.F.	15" R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$
0686000.18	580	L.F.	18" R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$
0686000.21	50	L.F.	21" R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$
0686000.24	1,000	L.F.	24" R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0686000.30	180	L.F.	30" R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$
0686000.36	1,090	L.F.	36" R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$
686950.2	3,200	L.F.	REMOVE EXISTING PIPE - 0' - 20' DEEP		
			_____dollars and _____cents per linear foot	$	$
0813012A	3,000	L.F.	5" X 18" GRANITE STONE CURBING		
			_____dollars and _____cents per linear foot	$	$
0813013A	480	L.F.	5" X 18" GRANITE CURVED STONE CURBING		
			_____dollars and _____cents per linear foot	$	$
0813013.10	80	L.F.	SHALLOW GRANITE CURB		
			_____dollars and _____cents per linear foot	$	$
0814007A	40	L.F.	RESET EXISTING GRANITE LAWN CURB		
			_____dollars and _____cents per linear foot	$	$
0815001	20	L.F.	BITUMINOUS CONCRETE LIP CURBING		
			_____dollars and _____cents per linear foot	$	$
0901006A	3	EA.	REMOVABLE BOLLARD		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0901007.1A	17	EA.	GRANITE BOLLARD		
			_____dollars and _____cents per each	$	$
0901007.2A	2	EA.	GRANITE BOLLARD - MAINTENANCE/ATTIC STOCK		
			_____dollars and _____cents per each	$	$
0901008A	26	EA.	CLEAN EXISTING GRANITE BOLLARD		
			_____dollars and _____cents per each	$	$
0901009A	600	L.F.	CLEAN EXISTING GRANITE LAWN CURBING		
			_____dollars and _____cents per linear foot	$	$
0915000A	1	L.S.	TREE PROTECTION, PRUNING AND TRIMMING - STREETSCAPE		
			_____dollars and _____cents per lump sum	$	$
0921001A	1,070	S.F.	CONCRETE SIDEWALK		
			_____dollars and _____cents per square foot	$	$
0921003A	800	S.F.	CONCRETE SIDEWALK REPAIR		
			_____dollars and _____cents per square foot	$	$
0921008.1A	5,730	S.F.	BRICK SIDEWALK - BANDING PAVER		
			_____dollars and _____cents per square foot	$	$
0921008.2A	100	S.F.	BRICK SIDEWALK - BANDING PAVER - MAINTENANCE/ATTIC STOCK		
			_____dollars and _____cents per square foot	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0921009.1A	40,000	S.F.	BRICK SIDEWALK - FIELD PAVER		
			_____dollars and _____cents per square foot	$	$
0921009.2A	200	S.F.	BRICK SIDEWALK - FIELD PAVER - MAINTENANCE/ATTIC STOCK		
			_____dollars and _____cents per square foot	$	$
0921010.1A	1,280	EA.	BRICK SIDEWALK - INSET PAVER		
			_____dollars and _____cents per each	$	$
0921010.2A	45	EA.	BRICK SIDEWALK - INSET PAVER - MAINTENANCE/ATTIC STOCK		
			_____dollars and _____cents per each	$	$
0921016.1A	770	S.F.	BRICK PAVER ROADWAY - BANDING PAVER		
			_____dollars and _____cents per square foot	$	$
0921016.2A	100	S.F.	BRICK PAVER ROADWAY - BANDING PAVER - MAINTENANCE/ATTIC		
			_____dollars and _____cents per square foot	$	$
0921017.1A	7,000	S.F.	BRICK PAVER ROADWAY - FIELD PAVER		
			_____dollars and _____cents per square foot	$	$
0921017.2A	200	S.F.	BRICK PAVER ROADWAY - FIELD PAVER - MAINTENANCE/ATTIC STOCK		
			_____dollars and _____cents per square foot	$	$
0921018.1A	200	EA.	BRICK PAVER ROADWAY - INSET PAVER		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0921018.2A	45	EA.	BRICK PAVER ROADWAY - INSET PAVER - MAINTENANCE/ATTIC STOCK		
			_____dollars and _____cents per each	$	$
0921030A	7	L.F.	GRANITE SIGN WALL - STRAIGHT		
			_____dollars and _____cents per linear foot	$	$
0921031A	7	L.F.	GRANITE SEAT WALL - STRAIGHT - TYPE 1		
			_____dollars and _____cents per linear foot	$	$
0921032A	7	L.F.	GRANITE SEAT WALL - STRAIGHT - TYPE 2		
			_____dollars and _____cents per linear foot	$	$
0921033A	48	L.F.	GRANITE SEAT WALL - CURVED - TYPE 1		
			_____dollars and _____cents per linear foot	$	$
0921034A	12	L.F.	GRANITE SEAT WALL - CURVED - TYPE 2		
			_____dollars and _____cents per linear foot	$	$
0921035.1A	2	EA.	GRANITE SEAT WALL - VOLUTE - TYPE 2		
			_____dollars and _____cents per each	$	$
0921035.2A	6	EA.	GRANITE SEAT WALL - VOLUTE - TYPE 1		
			_____dollars and _____cents per each	$	$
0921036A	2	EA.	GRANITE SIGN WALL - VOLUTE		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0921037A	14	L.F.	GRANITE SEAT WALL COPING - STRAIGHT - TYPE 1		
			_____dollars and _____cents per linear foot	$	$
0921038A	7	L.F.	GRANITE SIGN WALL COPING - STRAIGHT		
			_____dollars and _____cents per linear foot	$	$
0921039A	60	L.F.	GRANITE SEAT WALL COPING - CURVED - TYPE 1		
			_____dollars and _____cents per linear foot	$	$
0921040A	8	EA.	GRANITE SEAT WALL COPING - VOLUTE - TYPE 1		
			_____dollars and _____cents per each	$	$
0921041A	2	EA.	GRANITE SIGN WALL COPING - VOLUTE		
			_____dollars and _____cents per each	$	$
0921042A	60	S.F.	GRANITE PAVER BANDING - TYPE C		
			_____dollars and _____cents per square foot	$	$
0921043A	370	S.F.	GRANITE PAVER BANDING - TYPE R		
			_____dollars and _____cents per square foot	$	$
0921044A	52	L.F.	GRANITE LAWN CURB - TYPE 1 CURVED		
			_____dollars and _____cents per linear foot	$	$
0921045A	25	L.F.	GRANITE LAWN CURB - TYPE 1 STRAIGHT		
			_____dollars and _____cents per linear foot	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0921046A	56	L.F.	GRANITE LAWN CURB - TYPE 2 CURVED		
			_____dollars and _____cents per linear foot	$	$
0921048A	28	EA.	ANTI-SKATEBOARD GUARD		
			_____dollars and _____cents per each	$	$
0921050A	290	S.F.	DETECTABLE WARNING CAST IRON PAVER		
			_____dollars and _____cents per square foot	$	$
0921052A	2	EA.	GRANITE SIGN POST 8" X 8" WITH NOTCH		
			_____dollars and _____cents per each	$	$
0921053A	1	EA.	GRANITE SIGN POST 8" X 8"		
			_____dollars and _____cents per each	$	$
0921054A	3	EA.	GRANITE SIGN POST CAP 10" X 10" X 2"		
			_____dollars and _____cents per each	$	$
0921055A	1	EA.	GRANITE SIGN PANEL		
			_____dollars and _____cents per each	$	$
0921057A	1	EA.	GRANITE MEDALLION AT BRICK PAVER ROADWAY		
			_____dollars and _____cents per each	$	$
0921098A	33	EA.	FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/ STRUCTURAL SOIL		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0921099A	6	S.F.	FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/ TREE FILTER		
			_____dollars and _____cents per square foot	$	$
0922050A	1,300	S.F.	DECORATIVE CROSSWALK		
			_____dollars and _____cents per square foot	$	$
0944000A	190	CY	FURNISHING AND PLACING TOPSOIL		
			_____dollars and _____cents per CY	$	$
0947207A	26	EA.	BICYCLE RACK		
			_____dollars and _____cents per each	$	$
0949003A	1	L.S.	FURNISHING, PLANTING AND MULCHING TREES, SHBS, VINES & GRNDS		
			_____dollars and _____cents per lump sum	$	$
0950005A	1,130	S.Y.	TURF ESTABLISHMENT		
			_____dollars and _____cents per square yard	$	$
0950027A	18	EA.	PLANTER, PRECAST CONCRETE 48LX30WX36H		
			_____dollars and _____cents per each	$	$
0950028A	10	EA.	PLANTER, PRECAST CONCRETE 36LX36WX36H		
			_____dollars and _____cents per each	$	$
0952001	1	L.S.	SELECTIVE CLEARING AND THINNING		
			_____dollars and _____cents per lump sum	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0992090A	32	EA.	BENCH (METAL)		
			_____dollars and _____cents per each	$	$
0992103A	16	EA.	TRASH RECEPTACLE		
			_____dollars and _____cents per each	$	$
0992104A	16	EA.	RECYCLE RECEPTACLE		
			_____dollars and _____cents per each	$	$
1002110A	39	EA.	DECORATIVE LIGHT POLE FOUNDATION		
			_____dollars and _____cents per each	$	$
1003595A	39	EA.	DECORATIVE LIGHT POLE AND LUMINARIE		
			_____dollars and _____cents per each	$	$
1003674A	16	EA.	CATENARY LIGHT POLE - 12' H (DINING AREAS)		
			_____dollars and _____cents per each	$	$
1003675A	8	EA.	CATENARY LIGHT POLE - 16' H (GATEWAY)		
			_____dollars and _____cents per each	$	$
1003676A	16	EA.	CATENARY LIGHTING POLE FOUNDATION (12' H POLE)		
			_____dollars and _____cents per each	$	$
1003677A	8	EA.	CATENARY LIGHTING POLE FOUNDATION (16' H POLE)		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1003678A	750	L.F.	CATENARY LIGHTING AND SUPPORT CABLE		
			_____dollars and _____cents per linear foot	$	$
1003906A	31	EA.	REMOVE LIGHT STANDARD		
			_____dollars and _____cents per each	$	$
1003912A	31	EA.	REMOVE CONCRETE LIGHT STANDARD BASE		
			_____dollars and _____cents per each	$	$
1008127	6,000	L.F.	2" PVC CONDUIT IN TRENCH		
			_____dollars and _____cents per linear foot	$	$
1008215	100	L.F.	2" RIGID CONDUIT UNDER ROADWAY		
			_____dollars and _____cents per linear foot	$	$
1050114A	1	L.S.	HIGH RESOLUTION LED FULL COLOR VARIABLE MESSAGE SIGN		
			_____dollars and _____cents per lump sum	$	$
1106003A	1	L.S.	1 WAY PEDESTRIAN SIGNAL PEDESTAL MOUNTED WITH PUSHBUTTON		
			_____dollars and _____cents per lump sum	$	$
1111401	12	EA.	LOOP VEHICLE DETECTOR		
			_____dollars and _____cents per each	$	$
1111451	750	L.F.	LOOP VEHICLE DETECTOR SAW CUT		
			_____dollars and _____cents per linear foot	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1118012	1	L.S.	REMOVAL AND/OR RELOCATION OF TRAFFIC SIGNAL EQUIPMENT		
			_____dollars and _____cents per lump sum	$	$
1206023A	1	L.S.	REMOVAL AND RELOCATION OF EXISTING SIGNS		
			_____dollars and _____cents per lump sum	$	$
1208931	20	S.F.	SIGN FACE - SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)		
			_____dollars and _____cents per square foot	$	$
1210101	2,300	L.F.	4" WHITE EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210102	1,500	L.F.	4" YELLOW EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210105	210	S.F.	EPOXY RESIN PAVEMENT MARKINGS, SYMBOLS AND LEGEND		
			_____dollars and _____cents per square foot	$	$
1210106	500	L.F.	12" WHITE EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1302047A	54	EA.	RESET GATE BOXES		
			_____dollars and _____cents per each	$	$
1303195	1	EA.	REMOVE HYDRANT (WATER MAIN) (MAPLE STREET)		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1303205	2	EA.	FIRE HYDRANT		
			_____dollars and _____cents per each	$	$
1400104	900	L.F.	12" POLYVINYL CHLORIDE PIPE (SANITARY SEWER)		
			_____dollars and _____cents per linear foot	$	$
1400201.1A	800	L.F.	SERVICE LATERAL INSPECTION AND CLEANING (AS DIRECTED)		
			_____dollars and _____cents per linear foot	$	$
1400201.2A	100	L.F.	CURED IN PLACE LATERAL LINING 4" (SANITARY SEWER - AS DIRECTED)		
			_____dollars and _____cents per linear foot	$	$
1400201.3A	500	L.F.	CURED IN PLACE LATERAL LINING 6" (SANITARY SEWER - AS DIRECTED)		
			_____dollars and _____cents per linear foot	$	$
1401643.1A	100	L.F.	4" POLYVINYL CHLORIDE LATERALS (SANITARY SEWER) (AS DIRECTED)		
			_____dollars and _____cents per linear foot	$	$
1401643.2A	300	L.F.	6" POLYVINYL CHLORIDE LATERALS (SANITARY SEWER) (AS DIRECTED)		
			_____dollars and _____cents per linear foot	$	$
1401662A	5	EA.	SANITARY MANHOLE (4' DIA.) 0' TO 10' DEEP		
			_____dollars and _____cents per each	$	$
1403501A	2	EA.	RESET MANHOLE (SANITARY SEWER)		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
2020310.1A	25	TON	TRANSPORTATION AND DISPOSAL FOR SOIL AND FILL - CLASS A		
			_____dollars and _____cents per ton	$	$
2020310.2A	25	TON	TRANSPORTATION AND DISPOSAL FOR SOIL AND FILL - CLASS B		
			_____dollars and _____cents per ton	$	$
2020310.3A	25	TON	TRANSPORTATION AND DISPOSAL FOR SOIL AND FILL - CLASS C		
			_____dollars and _____cents per ton	$	$
			PROJECT TOTAL (in words)		
			_____dollars and _____cents per each	$	$

MAPLE STREET - ADD ALTERNATE 1

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1008127	2,000	L.F.	2" PVC CONDUIT IN TRENCH		
			_____dollars and _____cents per linear foot	$	$
1008215	100	L.F.	2" RIGID CONDUIT UNDER ROADWAY		
			_____dollars and _____cents per linear foot	$	$
0202000	650	C.Y.	EARTH EXCAVATION		
			_____dollars and _____cents per cubic yard	$	$
0202452A	3	EA.	TEST PIT		
			_____dollars and _____cents per each	$	$
0202491	700	L.F.	REMOVE GRANITE STONE CURBING		
			_____dollars and _____cents per linear foot	$	$
0202502	600	S.Y.	REMOVAL OF CONCRETE PAVEMENT (MAPLE STREET)		
			_____dollars and _____cents per square yard	$	$
0202529	500	L.F.	CUT BITUMINOUS CONCRETE PAVEMENT		
			_____dollars and _____cents per linear foot	$	$
0216012A	5	C.Y.	CONTROLLED LOW STRENGTH MATERIAL		
			_____dollars and _____cents per cubic yard	$	$
0219011A	5	EA.	SEDIMENTATION CONTROL AT CATCH BASIN		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0304002	10	C.Y.	PROCESSED AGGREGATE BASE		
			_____dollars and _____cents per cubic yard	$	$
0406170	600	TON	HMA S1		
			_____dollars and _____cents per ton	$	$
0406236	300	GAL.	MATERIAL FOR TACK COAT		
			_____dollars and _____cents per gallon	$	$
0507105	1	EA.	CONNECTION TO EXISTING MANHOLE AND/OR CATCH BASIN		
			_____dollars and _____cents per each	$	$
0507119A	1	EA.	GRANITE CURB CATCH BASIN INLET (SINGLE)		
			_____dollars and _____cents per each	$	$
0507120A	1	EA.	GRANITE CURB CATCH BASIN INLET (DOUBLE)		
			_____dollars and _____cents per each	$	$
0507554	1	EA.	RESET FRAME AND GRATE FOR CATCH BASIN		
			_____dollars and _____cents per each	$	$
0586001.1	1	EA.	TYPE 'C' CATCH BASIN - 0'-10' DEEP		
			_____dollars and _____cents per each	$	$
0586005.1	1	EA.	TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2 - 0' - 10' DEEP		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0686000.15	30	L.F.	15'' R.C. PIPE - 0' - 10' DEEP		
			_____dollars and _____cents per linear foot	$	$
0813012A	550	L.F.	5" X 18" GRANITE STONE CURBING		
			_____dollars and _____cents per linear foot	$	$
0813013A	200	L.F.	5" X 18" GRANITE CURVED STONE CURBING		
			_____dollars and _____cents per linear foot	$	$
0922050A	1,500	S.F.	DECORATIVE CROSSWALK		
			_____dollars and _____cents per square foot	$	$
0952001	1	L.S.	SELECTIVE CLEARING AND THINNING		
			_____dollars and _____cents per lump sum	$	$
1002110A	6	EA.	DECORATIVE LIGHT POLE FOUNDATION		
			_____dollars and _____cents per each	$	$
1003595A	6	EA.	DECORATIVE LIGHT POLE AND LUMINARIE		
			_____dollars and _____cents per each	$	$
1003674A	8	EA.	CATENARY LIGHT POLE - 12' H (DINING AREAS)		
			_____dollars and _____cents per each	$	$
1003676A	8	EA.	CATENARY LIGHTING POLE FOUNDATION (12' H POLE)		
			_____dollars and _____cents per each	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1003678A	20	L.F.	CATENARY LIGHTING AND SUPPORT CABLE		
			_____dollars and _____cents per linear foot	$	$
1003906A	3	EA.	REMOVE LIGHT STANDARD		
			_____dollars and _____cents per each	$	$
1003912A	3	EA.	REMOVE CONCRETE LIGHT STANDARD BASE		
			_____dollars and _____cents per each	$	$
1206023A	1	L.S.	REMOVAL AND RELOCATION OF EXISTING SIGNS		
			_____dollars and _____cents per lump sum	$	$
1208931	20	S.F.	SIGN FACE - SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)		
			_____dollars and _____cents per square foot	$	$
1210101	800	L.F.	4" WHITE EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210102	910	L.F.	4" YELLOW EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210105	30	S.F.	EPOXY RESIN PAVEMENT MARKINGS, SYMBOLS AND LEGEND		
			_____dollars and _____cents per square foot	$	$
1210106	505	L.F.	12" WHITE EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1303195	1	EA.	REMOVE HYDRANT (WATER MAIN)		
			_____dollars and _____cents per each	$	$
1303205	1	EA.	FIRE HYDRANT		
			_____dollars and _____cents per each	$	$
1403501A	5	EA.	RESET MANHOLE (SANITARY SEWER)		
			_____dollars and _____cents per each	$	$
0409006	160	S.Y.	COARSE MILLING OF BITUMINOUS CONCRETE (GREATER THAN 4" TO 8")		
			_____dollars and _____cents per square yard	$	$
0409001	3,600	S.Y.	FINE MILLING OF BITUMINOUS CONCRETE (0" TO 4")		
			_____dollars and _____cents per square yard	$	$
0402800A	576	S.F.	CLEAN EXISTING SIDEWALK		
			_____dollars and _____cents per square foot	$	$
0519003A	1	ALLOW	WATERPROFFING AT BUILDING WALL AND PAVEMENT INTERFACE		
			Five Thousand dollars and No cents estimated	$5,000.00	$5,000.00
0921001A	240	L.F.	CONCRETE SIDEWALK		
			_____dollars and _____cents per linear foot	$	$
0921003A	40	L.F.	CONCRETE SIDEWALK REPAIR		
			_____dollars and _____cents per linear foot	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0921008A	1,220	S.F.	BRICK SIDEWALK - BANDING PAVER		
			_____dollars and _____cents per square foot	$	$
0921009A	8,050	S.F.	BRICK SIDEWALK - FIELD PAVER		
			_____dollars and _____cents per square foot	$	$
0921010A	375	S.F.	BRICK SIDEWALK - INSET PAVER		
			_____dollars and _____cents per square foot	$	$
0921016A	55	S.F.	BRICK PAVER ROADWAY - BANDING PAVER		
			_____dollars and _____cents per square foot	$	$
0921017A	155	S.F.	BRICK PAVER ROADWAY - FIELD PAVER		
			_____dollars and _____cents per square foot	$	$
0921018A	5	EA.	BRICK PAVER ROADWAY - INSET PAVER		
			_____dollars and _____cents per each	$	$
0921050A	95	S.F.	DETECTABLE WARNING CAST IRON PAVER		
			_____dollars and _____cents per square foot	$	$
0947207A	3	EA.	BICYCLE RACK		
			_____dollars and _____cents per each	$	$
0949004A	1	L.S.	FURNISHING, PLANTING AND MULCHING TREES, SHBS, VINES & GRNDS		
			_____dollars and _____cents per lump sum	$	$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
0950027A	40	EA.	PLANTER, PRECAST CONCRETE 48LX30WX36H		
			_____dollars and _____cents per each	$	$
0952110A	10	EA.	BELGIAN BLOCK PLANTER AT NEW TREE		
			_____dollars and _____cents per each	$	$
0992090A	3	EA.	BENCH (METAL)		
			_____dollars and _____cents per each	$	$
0992103A	3	EA.	TRASH RECEPTACLE		
			_____dollars and _____cents per each	$	$
0992104A	3	EA.	RECYCLE RECEPTACLE		
			_____dollars and _____cents per each	$	$
			MAPLE STREET - ADD ALTERNATE 1 TOTAL (in words)		
			_____dollars and _____cents per each	$	$

MAPLE STREET BRIDGE ROADWAY - ADD ALTERNATE 2A

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
202502A	850	S.Y.	REMOVAL OF CEMENT PAVERS, POLYMERIC BEDDING SAND, DRAINAGE BLANKET		
			_____dollars and _____cents per square yards	$	$
0406171	95	TON	HMA S0.5		
			_____dollars and _____cents per ton	$	$
0406173	120	TON	HMA S0.25		
			_____dollars and _____cents per ton	$	$
0406236	42	GAL.	MATERIAL FOR TACK COAT		
			_____dollars and _____cents per gallon	$	$
1210101	375	L.F.	4" WHITE EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210102	375	L.F.	4" YELLOW EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210105	50	S.F.	EPOXY RESIN PAVEMENT MARKINGS, SYMBOLS, AND LEGEND		
			_____dollars and _____cents per square foot	$	$
			MAPLE STREET BRIDGE ROADWAY - ADD ALTERNATE 2A TOTAL (in words)		
			_____dollars and _____cents per each	$	$

MAPLE STREET BRIDGE THERMOPLASTIC - ADD ALTERNATE 2B [1]

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1210101	(375)	L.F.	**DELETE** 4" WHITE EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210102	(375)	L.F.	**DELETE** 4" YELLOW EPOXY-RESIN PAVEMENT MARKINGS		
			_____dollars and _____cents per linear foot	$	$
1210105A	7560	S.F.	IMPRESSED PREFORMED THERMOPLASTIC PATTERN		
			_____dollars and _____cents per square foot	$	$
1209431A	375	L.F.	IMPRESSED THERMOPLASTIC PAVEMENT LINE - 4'' WHITE		
			_____dollars and _____cents per linear foot	$	$
1209441A	375	L.F.	IMPRESSED THERMOPLASTIC PAVEMENT LINE - 4'' YELLOW		
			_____dollars and _____cents per linear foot	$	$
1209467A	50	S.F.	IMPRESSED THERMOPLASTIC LEGENDS, ARROWS AND MARKINGS		
			_____dollars and _____cents per linear foot	$	$
			MAPLE STREET BRIDGE ROADWAY - ADD ALTERNATE 2A + 2B TOTAL (in words)		
			_____dollars and _____cents per each	$	$

[1] ALTERNATE 2A MUST BE ACCEPTED FOR ALTERNATE 2B TO BE ACCEPTED.

Unit Price" amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. In case of discrepancy between "Unit Price" and "Total Amount", the unit price will govern.

The award of the Contract will be made to the lowest responsible bidder. By submission of the Bid, each bidder certifies that his bid has been arrived at independently, without consultation, communication, or agreement as to any matter related to this Bid and with any other Bidder or competitor.

Signature	Date
Print Name	Tel
Corporation Name	Fax
Address	E-mail

REFERENCES

The Bidder is required to fill out the following form to enable the Owner to make inquiries and judge as to the Bidder's experience, skill, available financial resources, credit, and business standing.

1. Number of years the bidder has been in business as a General Contractor: _____

2. List three (3) projects of similar nature to the project described herein that the Bidder has completed within the past 10 years, with name, address, and telephone number of a reference for each project. Include approximate construction cost:

_____

_____

_____

_____

_____

_____

_____

3. List projects presently under construction by the Bidder, dollar amount of the contract, and percent completed:

_____

_____

_____

_____

_____

_____

_____

4. Has the Bidder ever failed to complete work awarded; and if so, state where and why:

_____

_____

_____

5. Does the Bidder plan to sublet any part of this work; and if so, give details:

_____

_____

_____

_____

_____

6. List equipment Bidder owns that is available for this project:

_____

_____

_____

_____

_____

_____

_____

_____

7. List equipment the Bidder plans to rent or purchase for this project:

_____

_____

_____

_____

_____

_____

_____

8. If the Bidder has worked under the direction of the Borough of Naugatuck or its Consulting Engineer, list recent projects with the name, address, and telephone number of the Consultant:

_____

_____

_____

_____

9. List name, address, and telephone number for the following:

Surety:_____

Bank:_____

Major Material Supplier:_____

_____
Bidder

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BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned, _____as Principal, and _____as Surety, are hereby held and firmly bound unto _____as OWNER in the penal sum of

_____

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 2023.

The Condition of the above obligation is such that whereas the Principal has submitted to _____a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Downtown Sanitary, Stormwater, and Streetscape Improvements.

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for the faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.)
Principal

_____
Surety

By:_____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

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CONTRACT FORMS

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CONTRACT AND AGREEMENT

THIS AGREEMENT, for DOWNTOWN SANITARY, STORMWATER, AND STREETSCAPE IMPROVEMENTS, Naugatuck, CT made this _____ day of _____ _____ in the year 20___, between the Borough of Naugatuck, with its principal office and place of business at 229 Church Street, Connecticut 06770, acting herein through it's Mayor and _____ , a _____ , with an office and place of business at _____ , hereinafter called the contractor.

WITNESSETH: That the parties to this agreement in consideration of the undertakings, promises, and agreements on the part of the other herein contained, hereby undertake, promise, and agree as follows:

I Definitions

The word "Owner" as used herein shall mean the Borough of Naugatuck, acting through its properly authorized representatives.

The words "as directed", "as required", "as permitted", "as allowed", or phrases of like effect or import, used herein shall mean that the direction, requirement, permission, or allowance of the Owner is intended and similarly the words "approved", "reasonable", "suitable", "proper", "satisfactory", or words of like effect or import, unless otherwise particular specified herein, shall mean approved, reasonable, suitable, proper, or satisfactory in the judgment of the Owner.

The word "Contractor" shall mean _____or it's duly authorized agents.

II Contract Includes

The indices, headings and subheadings are for convenience only and do not form a part of the Contract Documents.

The Contractor shall, at their own sole cost and expense, furnish all labor, materials, and other services necessary for the completion of this Contract and shall complete and finish the same in the most thorough, workmanlike, and substantial manner, in every respect, to the satisfaction and approval of the Borough of Naugatuck, in the manner and within the time hereinafter limited, and in strict accordance with the Advertisement, Information for Bidders, Proposal, Contract Forms, General Requirements, Supplemental Specifications, Standard Specifications, Special Provisions and Addenda hereto attached, and the Contract Drawings herein referred to, (collectively the "contract documents"), which contract documents are hereby made a part of this Contract as fully as if the same were repeated at length herein.

Addendum No. ___	Dated: _____	Addendum No. ___	Dated: _____
Addendum No. ___	Dated: _____	Addendum No. ___	Dated: _____
Addendum No. ___	Dated: _____	Addendum No. ___	Dated: _____

III Specifications and Contract Drawings Supplementary

The said standard and supplemental specifications, special provisions and Contract Drawings are intended to supplement each other, and together constitute one complete set of Contract Documents, so that any work exhibited in the one and not in the other shall be executed just as if it had been set forth in both, in order that the work shall be completed in every respect according to the complete design or designs as decided and determined by the Borough of Naugatuck (or designated agent). Should anything be omitted from the Specifications and Contract Drawings, the Contractor shall promptly notify the Borough of Naugatuck. From time to time during the progress of the work, the Borough of Naugatuck will furnish such supplementary or working drawings as are necessary to show changes or define the work in more detail, and these also shall be considered as Contract Drawings.

IV Modifications

The Contractor, in entering into this Contract, understands that the Owner reserves the right to modify, to the extent herein provided, the arrangement, character, grade, or size of the work or appurtenances whenever, in the Owner's opinion, it shall be deemed necessary or advisable to do so. Minor changes in the work, not involving extra cost and consistent with the purposes of the work, may be made by verbal order, but no modifications involving extra work or material changes shall be made unless ordered in writing by the Borough of Naugatuck; and if the modification requires additional cost, a purchase order must be issued prior to work commencing. The Contractor shall and will accept such modifications when ordered in writing by the Owner through the Borough of Naugatuck, and the same shall not vitiate or void this Contract.

Any such modifications so made shall not, however, subject the Contractor to increased expense without equitable compensation, which shall be determined by the Borough of Naugatuck. If such modifications result in a decrease in the cost of work involved, and equitable deduction from the Contract price, to be determined by the Borough of Naugatuck, shall be made. The Borough of Naugatuck’s determination of such additional compensation, or of any such deduction, shall be based upon the unit prices in the Contractor's bid, unless the modification involves work not included in such bids and then in the event, the modification shall be as set forth in Section XXVIII prior to the commencement of additional work. In no event shall any modification in the work shown on the Plans and Specifications be made unless the nature and extent thereof has first been certified by the Borough of Naugatuck in writing and sent to the Contractor.

V Correction of Errors and Omissions

The Plans, Standards and Specifications and Special Provisions forming part of this Contract are intended to be explanatory of each other, but should any discrepancy appear, or misunderstanding arise, as to the import of anything contained in either, the explanation and decision of the Borough of Naugatuck shall be final and binding on the Contractor; and all directions and explanations required, to complete and make effective any of the provisions of the

Contract and Specifications, shall be given by the Borough of Naugatuck. Corrections of errors and omissions in the Drawings, Standard or Special Provisions may be made by the Borough of Naugatuck when such corrections are necessary for the proper fulfillment of the Contract Documents as construed by the Borough of Naugatuck. The effect of such corrections shall date from the time that the Borough of Naugatuck gives due notice thereof to the Contractor.

VI Borough of Naugatuck's Decision

All work under this Contract shall be done to the satisfaction of the Borough of Naugatuck, who shall determine the amount, quality, acceptability, and fitness of the several items of work and materials which are to be paid for hereunder. The Owner shall also decide all questions which may arise as to the fulfillment of the terms of the Contract Documents. The determination of the Borough of Naugatuck in all such matters shall be final and binding upon the parties thereto.

VII Inspection of Work

It is agreed that the Owner may, at its pleasure, appoint and employ, at its own expense, such persons as may be necessary, who are to act as Borough of Naugatuck, inspections, or agents, for the purpose of determining, in the Borough's interest, that the materials furnished and the work done, as the work progresses, conforms to the requirements of the Contract Documents. Such persons shall have unrestricted access to all parts of the work and to other places at and where the preparation of the materials and other parts of the work to be done under this Contract are carried on and conducted. They shall be given, by the Contractor, all facilities and assistance required to carry out their work of inspection.

It is not the function of the Borough of Naugatuck to supervise or direct the manner in which the work to be done under this Contract is carried on or conducted. The Borough of Naugatuck is not responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the work and will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

The Borough of Naugatuck shall have authority to reject and shall reject any work or material, or any part thereof, which does not, in their opinion, conform to the Contract Drawings, working drawings, Standard Specifications, Special Provisions and Contract, and it shall be permissible for them to do so at any time during the progress of the work.

No work shall be done except in the presence of the Borough of Naugatuck or Owner’s assistants. No material of any kind shall be used upon the work until it has been inspected and accepted by the Borough of Naugatuck. Any materials or workmanship found at any time to be defective, or not of the quality or character required by the Contract Drawings, Standard Specifications and Special Provisions shall be remedied at once regardless of previous inspection.

Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the Contract Drawings and Project Manual and work not so constructed shall be removed and made good by the Contractor at this own expense and free of all expense to the

Owner, whenever so ordered by the Owner, without reference to any previous oversight or error in inspection.

VIII Address of Contractor

The address in the Proposal, upon which this Contract is based, shall be the Contractor's place of business as set forth in this agreement. The delivering at the above-named place any such notice, letter, or other communication to the Contractor shall be deemed proper service to the Contractor. The notice letter or other communication may be mailed or delivered, from the Borough to the Contractor. The date of said service shall be the date of such delivery. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon the Contractor or their representative personally.

IX Obligation of the Contractor

The Contractor shall, at their own expense, provide any and all manner of supervisor, insurance, taxes, labor, materials, apparatus, scaffolding, appliances, tools, machinery, power, transportation, and whatever else may be required of every description necessary to do and complete the work and shall be solely answerable for the same and for the safe, proper, and lawful construction, maintenance, and use thereof. The Contractor shall cover and protect the work from damage and shall make good all injury to the same occurring before completion of this Contract. The Contractor shall employ only competent workmen and shall provide experienced superintendents and foremen on each part of the work.

The Contractor shall, at their own expense, wherever necessary or required, maintain fences, provide watchmen, maintain lights, place additional timber and braces, and take such other precautions as may be necessary to protect life, property, and structures, vehicles and pedestrians and shall be liable for all damages, occasioned in any way by their act or neglect or that of this agent, employees, or workmen. The Contractor shall provide access at all times to private property.

X Occupational Safety and Health Act

The applicable sections of the Occupational Safety and Health Act of 1970 (Williams-Steiger Act) shall apply and be made a part of this Contract. The Contractor's attention is particularly directed to the record keeping requirements of this Act.

XI Nondiscrimination in Employment

The Contractor agrees and warrants that, in the performance of this Contract, they will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, sex, religion, or national origin in any manner prohibited by State, Federal, County or Municipal law.

XII Personal Attention and Competent Workmen

The Contractor shall give their personal attention constantly to the faithful prosecution of the work and shall be present, either in person or by a duly authorized representative, on the site of the work continually during its progress to receive directions or instructions from the Borough of Naugatuck. The Contractor shall employ at the site, during the performance of the work, a competent superintendent or foreman who shall be satisfactory to the Borough of Naugatuck and who shall not be changed, except with the consent of the Borough of Naugatuck, unless they cease to be an employee of the Contractor. Such superintendent or foreman shall represent and have full authority to act for the Contractor in their absence, and all directions and instructions given such superintendent or foreman shall be as binding as if given to the Contractor.

The Contractor shall employ only competent, skillful persons to do the work, and whenever the Borough of Naugatuck shall notify the Contract in writing that any person on the work is, in their opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such person shall be discharged from the work and shall not again be employed on it, except with the consent of the Borough of Naugatuck.

XIII Public Safeguards

The Contractor agrees to conduct the work at all times in such a manner that public travel shall not be inconvenienced needlessly nor shall it be wholly obstructed at any point.

XIV Materials and Workmanship

It is the intent of the Specifications to describe fully and definitely the character of materials and workmanship furnished regarding all ordinary features and to require first-class work and materials in all particulars. For any unexpected features arising during the progress of the work and not fully covered herein, the Specifications shall be interpreted by the Borough of Naugatuck to require first class work and materials in all respects, and such interpretation shall be accepted by the Contractor.

XV Materials and Manufactured Articles

All materials and workmanship shall be subject to the approval of the Borough of Naugatuck and shall be in conformity with approved modern practice.

Unless otherwise specifically provided for in the Project Manual, all materials incorporated in the work shall be new, of standard and first-class quality, and of the best workmanship and design. No inferior or low grade, material will be either approved or accepted, and all work of assembly and construction must be done in a neat, first-class, and workmanlike manner.

XVI Unnoticed Defects

The inspection of the work and materials by the Borough of Naugatuck shall not relieve the Contractor of any of their obligations to fulfill this Contract, as herein described, and defective work shall be made good and unsuitable materials shall be rejected, notwithstanding that such work and materials had been previously overlooked by the Borough of Naugatuck and accepted or estimated for payment. If the work, or any part thereof, shall be found defective at any time before final acceptance of the whole work, the Contractor shall forthwith make good such defects, in a manner satisfactory to the Borough of Naugatuck.

XVII Care and Protection of Work

From the commencement of the work until the completion of the same, the Contractor shall be solely responsible for the care of the work covered by the Contract and for the materials delivered at the site intended to be used in the work; and all injury, damage, or loss of the same, from whatever cause, shall be made good at their expense before the final estimate is made. The Contractor shall provide suitable means of protection for all materials intended to be used in the work and for all work in progress as well as for completed work. The Contractor shall take all necessary precautions to prevent injury or damage to the work under construction by flood, freezing or inclement weather at any and all times. The methods used for this purpose shall be subject to the approval of the Borough of Naugatuck but shall not relieve the Contractor from liability for inadequate protection of the work or materials.

XVIII Assignment of Contract

The Contractor shall have no right or power to assign this Contact, in whole or in part, nor to assign any right arising, or moneys due or to grow due thereunder, without prior written approval of the Owner.

XIX Subcontracting

The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall not award the work to a subcontractor(s) without prior written approval of the Owner. The Contractor shall be fully responsible to the Owner for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by them.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of these Contract Documents, insofar as applicable to the work of subcontractors, and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provisions of these Contract Documents.

Nothing contained in this contract shall create any contractual relation between any subcontractor and the Owner.

XX Liability of Contractor for Employees

Each and every employee of the Contractor and each and every of their subcontractors engaged in the said work shall, for all purposes, be deemed and taken to be the exclusive servants of the Contractor and not for any purpose or in any manner in the employment of the Owner. The Contractor shall, in no manner, be relieved from responsibility or liability on account of any fault or delay in the execution of the said work, or any part thereof, by any such employee, or any such subcontractor, or any material men, whatsoever.

XXI Coordination With Other Contractors and Utilities

The Contractor shall notify utility companies in the project area within seven (7) calendars days of Notice to Proceed and identify a point-of-contact for coordination throughout construction. It is anticipated that existing utilities may be found to be in close proximity to or in conflict with the work being installed. The Contractor shall make every effort to identify and locate these utilities before working in the area. If it is known or found that these utilities exist the Contractor shall contact the appropriate utility and alert them to the situation. Should an existing utility be found to be in close proximity to the work the Contractor shall take all the necessary precautions to protect the utilities and their work. Should existing utilities be found to conflict with the work the Contractor shall arrange with the utility company for their adjustment. No additional compensation will be made for delays, inconvenience or damage sustained by the Contractor due to interference from the above-noted utility appurtenances or the operation of locating, installing or moving them or the inability of others to perform their work in a timely manner.

XXII Permits, Laws, Codes, Ordinances and Insurance

The Contractor shall keep themself fully informed of all existing and current codes, ordinances, and regulations and Municipal, County, State or National laws in any way limiting or controlling the actions or operations of those engaged upon the work or affecting the materials supplied to or by them. The Contractor shall, at all times, observe and comply with all such valid and legally binding ordinances, laws, and regulations and shall protect and indemnify the Owner and its representatives and agents against any claim or liability arising from, or based on, any violation of the same. The Contractor shall obtain and pay for all necessary permits and pay all fees required in connection with the Contract. Contractor shall provide the types and amounts of insurance as set forth in Section 18, Information of Bidders and maintain in effect. The Contractor shall take out and carry appropriate employer's liability insurance and public liability insurance.

XXIII Patent Rights

The Contractor shall indemnify and save harmless the Owner and its officers, agents, and representatives from all claims for damages arising from the infringements, or alleged infringements, of any Letters Patent or patent rights covering any material, appliance, or device used in or upon the work or any part thereof.

All royalties for patents or patent infringement claims, that might be involved in the construction or use of the work, shall be included in the Contract amount; and the Contractor shall satisfy all demands that may be made at any time for such and shall be liable for any damage or claims for patent infringements; and the Contractor shall, at their own expense, defend any and all suits or proceedings that may be instituted against the Owner for infringement, or alleged infringement, of any patent or patents involved, or alleged to be involved, in the work; and in case of any award for damages, the said Contractor shall pay such award.

XXIV Defense of Suits

The Contractor shall indemnify and hold harmless the Owner and it's consultants, agents and employees from and against all claims, damages, losses, and expenses, including, but not limited to, attorney fees, ("indemnification expense") arising out of or resulting from the performance of the work or arising out of or resulting from the Contract Documents, including, without limitation, all indemnification expense regarding personal injury or death and/or damage to real or personal property or motor vehicles.

In claims against any person or entity indemnified under this section by an employee or the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under worker's or workmen's compensation acts, disability benefit acts or other employee benefit acts.

XXV Claims for Labor and Materials

The Contractor shall indemnify and save harmless the Owner from all claims expenses and for judgments regarding labor done or materials furnished under this Contract, or any alterations or modifications thereof, including without limitation, reasonable Attorney's fees. Contractor shall furnish the Owner with a Mechanic's Lien Waiver from all persons who have done work, or furnished materials under this Contract. In case such waiver is not furnished, an amount necessary or sufficient, within the discretion of the Owner, to meet the claims of the persons aforesaid, shall be retained, as herein specified, from the money due the Contractor under this Contract until the liabilities aforesaid shall be fully discharged or satisfactorily secured.

XXVI Completion of Work by Owner

If the work to be done under this Contract shall be abandoned by the Contractor; or if this Contract shall be assigned, or the work sublet by them, otherwise than as herein specified; or if at any time the Owner shall be of the opinion that the performance of the Contract is unnecessarily or unreasonably delayed; or if the Contractor is willfully violating any of the conditions or covenants of this Contract, or of the Specifications, or is executing the same in bad faith or not in accordance with the terms thereof; of if the work be not fully completed within the time named in this Contract for its completion, or within the time to which the completion of the Contract may be extended by the Owner, the Owner may notify the Contractor to discontinue all work, or

any part thereof under the Contract, by a written notice to be served upon the Contractor as herein provided.

The Contractor shall, within five (5) days of the service of said written notice, discontinue the work, or such part thereof, and the Owner shall thereupon have the power to contract for the completion of the Contract, in the manner prescribed by law; or to place such and so many persons as it may be deemed advisable, by contract or otherwise, to work, and complete the work herein described, or such part thereof; or to take possession of and use any of the materials, plant, tools, equipment, supplies, and property of every kind provided by the Contractor for the purpose of their work; and to procure other materials and equipment for the completion of the same; and to charge the expense of said labor, materials and equipment to the Contractor.

The expense so charged shall be deducted and paid by the Owner out of such moneys as may be due, or may at any time thereafter grow due to the Contractor under and by virtue of this Contract, or any art thereof; and in case such expense shall exceed the amount which would have been payable under the Contract, if the same had been completed by the Contractor, the Contractor or the surety shall pay the amount of such excess to the Owner within five (5) days of written demand therefore; and in case such expense shall be less than the amount which would have been payable under this Contract, if the same had been completed by the Contractor, the owner shall pay such difference to the Contractor within five (5) days of written demand.

XXVII Partial and Final Estimates

On, or about, the last day of the month, the Borough of Naugatuck shall make an approximate estimate of the value of the work done and of the materials incorporated into the work.

The Owner will pay the Contractor, within 30 days of receipt of an estimate, ninety-five percent (95%) of the total estimated value of the work done, as estimated by the Borough of Naugatuck less previous payments. Partial payments will not be made whenever the amounts of the estimate or estimates of work done since the last previous estimate are less than $2,000.00.

The Borough of Naugatuck shall, as soon as practicable after the completion of work, make a final certificate of the entire amount of the work done under this Contract, and the value thereof, and the Owner shall, within thirty (30) days after such final estimate is approved, pay the entire sum so found to be due hereunder, after deducting there from all previous payments and also all percentages and deductions to be retained under any of the provisions of this Contract.

Before payment of each estimate, the Contractor shall provide the Owner with a mechanic's lien waiver from the Contractor and all persons who have done work or furnished materials under this Contract.

XXVIII Payment

The Owner, in consideration of the faithful performance by the Contractor of all and singular covenants, promises, and agreements contained herein, agrees to pay the Contractor for the full completion of the work embraced in this Contract, in the manner and within the time herein specified and limited, and to the satisfaction and approval of the Borough of Naugatuck, the prices stipulated in the said Proposal hereto attached, such payment to be made at the times and in the manner and upon the conditions herein expressly provided. The Owner also agrees to pay in addition such amounts as may be agreed upon for modifications and for extra work.

XXIX Guarantee

The Contractor guarantees that the work done under this Contract and the materials furnished by them and used in the construction of the same are free from defects or flaws. The guarantee is for a term of one (1) year from, and after, the date upon which the final estimate of the Borough of Naugatuck is formally approved by the Owner. It is hereby agreed and understood that this guarantee shall not include making any repairs made necessary by any cause or causes other than defective materials furnished by, or defective work done by, the Contractor.

XXX Rate of Progress and Time of Completion

The Contractor shall commence work within ten (10) calendar days of the date of the Notice to Proceed. The rate of progress shall be such that the whole work, inclusive of any add alternates, shall be performed and the grounds cleaned-up in accordance with Time for Completion, Section 3 of the supplemental conditions, unless extensions of time shall be made for the reasons, and in the manner, stated under Article XXXIII, "Extension of Time".

The allotted calendar days includes time for the Contractor to obtain approval of an Erosion and Sediment Control Plan, as applicable.

XXXI Extension of Time

The Contractor expressly covenants and agrees that, in undertaking to complete the work within the time mentioned, they have taken into consideration, and made allowance for, all of the ordinary delays and hindrances incidental to such work, whether growing out of delays in securing materials or workmen or otherwise. Should the Contractor, however, be substantially delayed in the prosecution and completion of the work by any changes, additions, or omissions therein ordered in writing by the Borough of Naugatuck, or by fire, lightning, earthquake, tornado, cyclone, riot, insurrection, or war, or by the abandonment of the work by the workman engaged therein through no fault of the Contractor, or by the discharge of all or any material number of workmen in consequence of difficulties arising between the Contractor and such workmen, or by the neglect, delay, or default of any other contractor of the Owner, then the Contractor may, within five (5) days after the occurrence of the delay for which they claim allowance, notify the Borough of Naugatuck thereof in writing, and thereupon, and not otherwise, the Contractor shall be allowed such additional time for the completion of the work as the Borough of Naugatuck, in their discretion, shall award in writing, and their decision shall be

final and conclusive upon the parties.

XXXII Damages for Failure to Complete on Time

The Contractor shall pay to the Owner for each and every calendar day (including Saturdays, Sundays, and holidays) that they shall be in default in completing the entire work in the time stipulated in Article XXX, or within the extension of time they may be granted as provided in Article XXXIII, the sum of One Thousand Eight Hundred Dollars ($1,800) per day. This sum is hereby agreed upon not as a penalty but as liquidated damages which Owner will suffer by reason of such default, time being of the essence of the Contract and a material consideration thereof. The Owner shall have the right to deduct the amount of any such damages from any monies due the Contractor under this Contract.

XXXIII No Waiver of Rights

No certificate given or payment made under this Contract, except the final certificate or final payment, shall be evidence of the performance of the Contract either wholly or in part, and no payment shall be construed to be an acceptance of defective work or improper materials. No act of the Owner or of the Borough of Naugatuck, or of any representatives of either of them in inspecting the work, nor any extension of time for the completion of the work, shall be regarded or taken as an acceptance of such work, or any part thereof, or materials used therein or thereof, either wholly or in part; but such acceptance shall be evidenced only by the final certificate of the Borough of Naugatuck.

Before any final certification shall be allowed, the Contractor shall be required, and hereby agrees, to sign and attest on said certificate a statement that they accept the same in full payment and settlement of all claims on account of work done and material furnished under this Contract, and furthermore, that all claims for materials provided or labor performed have been paid and satisfied in full. No waiver of any breach of this Contract by the Owner or anyone acting for it, or on its behalf, shall be held as a waiver of any other or subsequent breach thereof.

XXXIV Mandatory Negotiation

Contractor and the Owner agree that they will attempt to negotiate in good faith any dispute of any nature arising under this contract. The parties shall negotiate in good faith at not less than two negotiation sessions prior to seeking any resolution of any dispute under the provisions of arbitration paragraph of this contract. Each party shall have the right to legal representation at any such negotiation session.

XXXV Dispute Resolution

Any dispute or question arising under the provisions of this contract which has not been resolved under the mandatory negotiation paragraph of this contract shall be solely and exclusively initiated and maintained in the courts of the State or Federal District Court for the State. The Company and the Borough each irrevocably consents to the jurisdiction of such courts in any such actions or proceedings, waives any objection it may have to the laying of the jurisdiction of

any such action or proceeding, and waives its right to a trial by jury. Each party shall bear its own costs and expenses in any Legal Proceeding where it is the named defendant in such lawsuit.

XXXVI Owner's Right to Use

The Owner reserves the right to use or occupy any portion of the work considered by the Borough of Naugatuck as ready for use or occupancy. Such use or occupancy shall not be held, in any way, as final acceptance of the work or any portion thereof, or as a waiver of any portion of this Contract.

XXXVII Verification of Data

The quantities of work to be done and the materials to be furnished under this Contract, as given in the accompanying "Information for Bidders" and on the Proposal form, are approximate estimates for the purpose of comparing bids on a uniform basis. Neither the Owner nor the Borough of Naugatuck are to be held responsible for the data or information given relative to said quantities or that given on the Plans relative to existing conditions. The Contractor has judged for themself as to such quantities and as to other circumstances affecting the cost of the performance of this Contract, and they shall not at any time assert that there was any misunderstanding in regard to the character or amount of work to be done and materials and labor to be furnished.

XXXVIII Contractor's Wage Certification Form

If applicable the Contractor or their authorized agent will be required to sign the Contractor's Wage Certification Form at the time of Contract execution.

XXXIX Verbal Statements Not Binding

It is understood and agreed that the written terms and provisions of this Agreement shall supersede all prior verbal statements of the Borough of Naugatuck or other representatives of the Owner, and such statements shall not be effective or be construed as entering into or forming a part of, or altering in anyway whatsoever, the written Agreement.

XXXX Final Estimate Constitutes Release

It is agreed that acceptance by the Contractor of the last payment made, under the provisions of Article XXVII, shall operate as and shall be a release to the Owner, and every agent thereof, from all claims and liability to Contractor for anything done or furnished for, or relating to, the work or for any act or neglect of the Owner or any agent thereof.,

No payment, however, final or otherwise, shall operate to release the Contractor or their sureties from any obligations under this Contract.

XXXXI Delays or Termination by Governmental Authorities

Notwithstanding any other provision(s) of this contract, the parties agree that in the event of a stop work order from the State Department of Transportation, Department of Environmental Protection, or any other State or Federal agency, no additional compensation will be made by Owner to Contractor for delays, inconvenience or damage sustained by Contractor due to such order, including, without limitation, damages for loss of use of equipment or idle equipment. Similarly, in the event of a termination of the project by the State DOT, DEP or any other State or Federal agency, no additional compensation will be made by Owner to Contractor for the termination, or for any delay, inconvenience or damage sustained by Contractor due to such termination, including, without limitation, damages for loss of use of equipment or idle equipment. In the event of such termination, the Borough of Naugatuck shall prepare a final certificate for the entire amount of work done up to the effective date of termination. The provisions of Sections XXIX (Guarantee) shall apply to all work completed as of the effective date of any stop Work order, as if the effective date was the date upon which the final estimate of the Borough of Naugatuck is formally approved by the Borough.

XXXXII Validity of Agreement

The provision of this Agreement shall be binding upon the Parties and their respective successor or assigns.

IN WITNESS WHEREOF, the said parties hereto have caused this instrument to be signed by their respective duly constituted officers, attested, and sealed pursuant to proper resolutions.

Signed and sealed
in the presence of

_____

_____ _____

Borough of Naugatuck
Mayor

_____

_____ _____

(Duly Authorized)
Contractor

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BOROUGH OF NAUGATUCK: INSURANCE AGREEMENT

1. Indemnification and Insurance

_____ ('The Contractor') shall indemnify, defend and hold harmless the State of Connecticut and Borough of Naugatuck, its officials, officers, employees and designees caused in whole or in part to the fullest extent permitted by law from and against any and all claims, suits, actions, obligations, liabilities, damages, losses or injury (including the resulting death of a person), penalties, and expenses (including reasonable attorneys' fees) to the extent arising out of the performance of this Agreement or due to the Contractor's negligence or willful misconduct or omissions of the Contractor or its employees, agents, subcontractors or representatives.

Prior to the commencement of the work, and until final completion and acceptance of the work, the Contractor shall procure and maintain the following types of insurance and maintain all insurance coverage for the life of the contract, from an insurance company or companies with an A.M. Best Rating of A- (IX) or better. Such insurance will protect and indemnify the Borough of Naugatuck from all claims which may arise out of or result from the Contractor's obligations under this agreement, whether caused by the contractor or by a subcontractor or any person or entity directly or indirectly employed by the Contractor or by anyone for whose acts said Contractor may be liable.

A. *Workers Compensation*: The Contractor shall provide workers compensation and employer's liability insurance that complies with the regulations of the State of Connecticut with limits no less than $100,000 each accident by bodily injury; $100,000 each accident by disease and a policy limit of $500,000. Such policy shall contain a 'waiver of our right to recover from other endorsement'.

B. *Commercial General Liability Insurance*: The Contractor shall provide commercial general liability insurance policy that includes products, operations and completed operations as follows: Bodily injury & property damage with an occurrence limit of $1,000,000: Personal & advertising injury limit of $1,000,000 per occurrence: General aggregate limit of $2,000,000 (other than products and completed operations): Products and completed operations aggregate limit of $2,000,000. The policy shall name the Borough of Naugatuck as an additional insured on an ongoing basis. In addition,
   - Such policy will be provided on an occurrence basis and will be primary and shall not contribute in any way to any insurance or self-insured retention carried by the additional insured.
   - Such policy shall contain a broad form contractual liability endorsement or similar wording within the policy form.
   - Such policy shall contain a waiver of subrogation in favor to the Borough of Naugatuck.
   - Such policy shall include coverage for the Contractor's sub-contractors, or any person or entity directly or indirectly employed by said Contractor or by anyone for whose acts said Contractor may be liable.

C. *Commercial Automobile Insurance*: The Contractor shall provide commercial automobile insurance for any owned autos (symbol 1 or equivalent) in the amount of $1,000,000 each accident covering bodily injury and property damage on a combined single limit. Such coverage shall also include hired and non-owned automobile coverage.

D. *Umbrella Liability Insurance*: The Contractor shall provide commercial umbrella liability with limits no less than $5,000,000 each occurrence and $5,000,000 in the aggregate which shall be following form, without restriction or limitation, providing coverage over items (A), (B), (C), as noted above on a primary and non-contributory basis.

Prior to the issuing of any notice to proceed by the Borough of Naugatuck, the Contractor shall furnish the Borough of Naugatuck with Certificates of Insurance evidencing such insurance as set forth above. Said policies shall not be cancelled or permitted to lapse until final completion and approval of the performance of the work until ten (10) days after the Borough of Naugatuck has received written notice, by certified or registered mail, that the cancellation or change of such policy is contemplated.

The Contractor shall advise their insurers or agent of the contract provisions regarding insurance. The failure of the Contractor to notify insurers or agent of the contract provision shall not relieve the Contractor from its insurance obligations under the Agreement. Non-fulfillment of the insurance provisions shall constitute a breach of this agreement and the Borough of Naugatuck retains the right to stop work until proper evidence of insurance is provided.

This document must be signed by an owner or officer of the company.

Signed by Contractor: _____ Date: _____

Printed Name of Contractor: _____Title: _____

Address of Contractor:

_____

Signed by *Borough of Naugatuck*: _____ Date: _____

Printed Name of *Borough of Naugatuck*: _____Title: _____

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called Principal and
(Corporation, Partnership, or Individual)

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

_____
(Name of Owner)

_____
(Address of Owner)

hereinafter called OWNER, in the penal sum of _____Dollars, $(_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____day of _____, 20__, a copy of which is hereto attached and made a part hereof for the construction of: Downtown Sanitary, Stormwater, and Streetscape Improvements, Naugatuck, CT.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, an any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if they shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in anyway affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____counterparts each one of Which shall be deemed an original, this the_____day of _____, 20__.

ATTEST:

_____ By _____(s)
(Principal) Secretary Principal

(SEAL)

_____ _____
(Witness as to Principal) (Address)

_____ _____
(Address)

_____ _____
Surety

ATTEST:

_____
(Surety) Secretary

(SEAL)

_____ By_____
Witness as to Surety Attorney-in-Fact

_____ _____
(Address) (Address)

_____ _____

NOTES: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a_____, hereinafter called Principal and
(Corporation, Partnership, or Individual)

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

_____
(Name of Owner)

_____
(Address of Owner)

hereinafter called OWNER, in the penal sum of
_____Dollars, $(_____)
in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____day of _____, 201__, a copy of which is hereto attached and made a part hereof for the construction of: Downtown Sanitary, Stormwater, and Streetscape Improvements, Naugatuck, CT.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, an any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if they shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in anyway affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____counterparts each one of which shall be deemed an original, this the_____day of _____, 20__.

ATTEST:

_____ By _____(s)
(Principal) Secretary Principal

(SEAL)

_____ _____
(Witness as to Principal) (Address)

_____ _____
(Address)

_____ _____
Surety

ATTEST:

_____
(Surety) Secretary

(SEAL)

_____ By_____
Witness as to Surety Attorney-in-Fact

_____ _____
(Address) (Address)

_____ _____

NOTES: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

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): _____

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Department of Revenue Services
Discovery Unit
25 Sigourney Street
Hartford CT 06106-5032
(Rev. 10/05)

Form AU-766
Guarantee Bond

Purpose: A nonresident contractor working in Connecticut and a surety company licensed to do business in Connecticut use **Form AU-766** to post a guarantee bond with the Department of Revenue Services (DRS) for a specific project in the state. The guarantee bond ensures all taxes due to the State of Connecticut from the contractor are paid to DRS. Read the instructions on the reverse side before you complete this form. If you need help, call **860-541-7538,** Monday through Friday, during business hours.

Part I: Nonresident Contractor Information

Name	Connecticut Tax Registration No.
Address (Street or PO Box, City, State, and ZIP Code)	

Part II: Person Doing Business With a Nonresident Contractor Information

Name	Connecticut Tax Registration No., Federal ID No., or SSN
Address (Street or PO Box, City, State, and ZIP Code)	

Part III: Surety Company Information

Name	Bond No.	Amount of Bond
Address (Street or PO Box, City, State, and ZIP Code)		

Part IV: Project Information

☐ Check the box if this bond is for a change order.

Physical Location of Project (Street, City or Town)		Name of Project
Commencement Date	Completion Date for Nonresident Contractor	Total Contract Price or Amount of Change Order

Conditions of the obligation for the project detailed above:

- The nonresident contractor has entered into a contract related to real property at a Connecticut location.
- The nonresident contractor and the surety company are posting a bond of 5% of the total contract price, including any change orders and add-ons, with DRS to ensure that all taxes that become due and owing during the period of the contract will be paid.
- A bond must be posted within 120 days of the commencement of the contract or 30 days after the completion of the contract, whichever is earlier.
- If the nonresident contractor pays all taxes, interest, and penalties within three years from the last day of the month succeeding the reporting period in which the contractor posted the bond, the bond expires; otherwise the obligation remains in full force.
- This bond jointly and severally binds the nonresident contractor and the surety company, their heirs, executors, administrators, successors, and assigns for payment of this obligation.

Nonresident Contractor Declaration: I, the nonresident contractor named above or its authorized agent, declare under the penalty of law that I have examined Form AU-766 and, to the best of my knowledge and belief it is true, complete, and correct. I understand the penalty for willfully delivering a false document or return to DRS is a fine of not more than $5,000, or imprisonment for not more than five years, or both.

Print Name	Title
Authorized Signature	Date

Surety Company Declaration: I, an authorized agent of the surety company named above, declare under the penalty of law that I have examined this Form AU-766 and, to the best of my knowledge and belief it is true, complete, and correct. I understand the penalty for willfully delivering a false document or return to DRS is a fine of not more than $5,000, or imprisonment for not more than five years, or both.

Seal:

Print Name	Title
Authorized Signature	Date

General Instructions

A nonresident contractor and a surety company licensed to do business in Connecticut must execute **Form AU-766**, *Guarantee Bond*, to post a guarantee bond with the Department of Revenue Services (DRS) for a specific project in Connecticut. A power of attorney for the person signing the bond on behalf of the surety company **must** be attached to the bond, carry the corporate seal of the surety company, and bear the same date as the execution date of the bond.

A nonresident contractor has the option of filing a guarantee bond or a cash bond instead of the customer making a deposit with DRS under Conn. Gen. Stat. §12-430(7)(B). Under this option, the nonresident contractor has 120 days from the commencement of the contract or 30 days after the completion of the contract, whichever is earlier, to file a guarantee bond or a cash bond (Form AU-72) with DRS.

Return Form AU-766 to: Department of Revenue Services
Discovery Unit
25 Sigourney Street
Hartford CT 06106-5032

See **Special Notice 2005(12)**, *Nonresident Contractor Bonds and Deposits*, for more information.

Nonresident contractor means a contractor who does not maintain a regular place of business in Connecticut.

Regular place of business means:

- Any bona fide office, factory, warehouse, or other space in Connecticut at which a contractor is doing business in its own name in a regular and systematic manner; **and**
- Which place is continuously maintained, occupied, and used by the contractor in carrying on its business through its employees regularly in attendance to carry on the contractor's business in the contractor's own name.

A regular place of business **does not include**:

- A place of business for a statutory agent for service of process or a temporary office whether or not it is located at the site of construction;
- Locations used by the contractor only for the duration of the contract, such as short-term leased offices, warehouses, storage facilities, or facilities that do not have full time staff with regular business hours; **or**
- An office maintained, occupied, and used by a person affiliated with a contractor.

Contract price means the total contract price, including deposits, amounts held as retainage, costs for any change orders, or charges for add-ons.

Person doing business with a nonresident contractor means **any** person who makes payments of the contract price to a nonresident contractor, and includes, but is not limited to property owners, governmental, charitable or religious entities, and resident or nonresident general contractors or subcontractors. An owner or tenant of residential real property is not a person doing business with a nonresident contractor and is not required to comply with the provisions of Conn. Gen. Stat. §12-430(7). However, the nonresident contractor doing business with such an owner or tenant must comply with the bond requirements under Conn. Gen. Stat. §12-430(7)(F).

Commencement of the contract means the time when the nonresident contractor signs the contract, but, in any event, occurs no later than when the work under the contract actually starts. If a change order is made after the commencement of the original contract, the change order commences when it is signed by the nonresident contractor, but, in any event, occurs no later than when the work under the change order actually starts.

Completion of the contract means the time when the nonresident contractor makes the final periodic billing for the contract. The final periodic billing may be due before payment of any retainage becomes due. If a change order is made after the final periodic billing for the original contract, the change order is complete when the nonresident contractor bills for the change order.

Residential real property means real property used exclusively for residential purposes and consisting of three or fewer dwelling units in one of which the owner or tenant resides.

Any bond that bears an erasure or alteration, regardless of its nature, must have the change authenticated by a notation in the margin. The notation should describe the correction and be signed in the name of the surety company by the officer who executed the bond and must bear the corporate seal of the surety company.

Specific Instructions

Part I: Enter the name and complete address of the nonresident contractor furnishing the bond. Include the nonresident contractor's Connecticut tax registration number. The name and address of the nonresident contractor appearing on the bond must agree with the name and address on **Form REG-1**, *Business Taxes Registration Application*, filed with DRS. (If the information originally provided on Form REG-1 is now incorrect, you must notify the DRS Registration Unit in writing of the correct information.) If the nonresident contractor is a corporation, the corporate name appearing on the bond must be the same shown in the records of the Office of the Secretary of State, or similar agency of another state if the nonresident contractor is not a Connecticut corporation.

Part II: Enter the name and complete address of the person doing business with the nonresident contractor. If the nonresident contractor is the general contractor, enter the name and address of the owner or tenant of the property who has entered the contract. If the nonresident contractor is a subcontractor, enter the name and address of the general contractor.

Enter the Connecticut tax registration number of the person doing business with the nonresident contractor. If the person doing business with the nonresident contractor does not have a Connecticut tax registration number, enter that person's Federal Employer Identification Number or Social Security Number.

Part III: Enter the name and complete address of the surety company that guarantees this bond. Include the bond number.

Part IV: Check the box if the deposit is for a change order occurring after the bond for the initial contract was furnished to DRS.

Enter the name of the project and the complete address including the street address and the city or town where the project is physically located.

Enter the commencement date of this project or change order.

Enter the date by which the nonresident contractor is expected to complete work on this project or change order.

Enter, in words and figures, the total amount to be paid to the nonresident contractor under the contract. Indicate if this amount is an estimate.

Declarations: An authorized representative for the nonresident contractor and the surety company must sign and date the declaration on Form AU-766. The name of the nonresident contractor and the surety company must be exactly as it appears on the bond. The corporate seal of the surety company must be affixed by its signature on Form AU-766.

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)
) ss.
County of _____)

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

1. I am _____ of _____ herein referred to as the Bidder that has submitted the attached Bid;

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

3. Such Bid is genuine and is not a collusive or sham bid;

4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or, to fix any overhead, profit or cost element in the bid price or the bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Borough of Naugatuck or any person interested in the proposed Contract; and

5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.

(Signed) _____

_____
Title

Subscribed and sworn before me

This _____day of _____, 20__

_____

_____
(Notary Public)

My Commission expires_____

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NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR

State of _____)
) ss.
County of _____)

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

1. I am _____ of _____ herein referred to as the "Subcontractor";

2. I am fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to _____, the Contractor for certain work in connection with the _____Contract pertaining to the _____Project in Naugatuck, Connecticut;

3. Such Subcontractor's Proposal is genuine and is not a collusive or sham Proposal;

4. Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with such Contract, or refrain from submitting a Proposal in connection with such Contract, or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any Bidder, firm or person to fix the price or prices in said Subcontractor's Proposal , or to fix any overhead, profit or cost element of the price or prices in said Subcontractor's Proposal, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Borough of Naugatuck or any person interested in the proposed Contract; and

5. The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.

6. (a) No proposed subcontractor shall be disapproved by the Borough of Naugatuck except for cause.

   (a) The Contractor shall be fully responsible to the Borough of Naugatuck for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by the Contractor.

   (b) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of this Contract for:

   (c) Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the Borough of Naugatuck.

   (d) No proposed subcontractor shall be disapproved by the Borough of Naugatuck except for cause.

(e) The Contractor shall be fully responsible to the Borough of Naugatuck for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by the Contractor.

(f) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of this Contract for: Downtown Sanitary, Stormwater, and Streetscape Improvements, Naugatuck, CT.

(g) Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the Borough of Naugatuck.

OTHER CONTRACTS

The Borough of Naugatuck may award, or may have awarded, other Contracts for additional work, and the Contractor shall cooperate fully with such other Contractors, by scheduling their own work with that to be performed under other Contracts as may be directed by the Borough of Naugatuck. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled.

(Signed) _____

_____
Title

Subscribed and sworn before me

This _____day of _____, 20__

_____

_____
(Notary Public)

My commission expires_____

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 Aet 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)*

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Form C
07-08-2009

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION — Affidavit By Entity For Contracts Valued at $50,000 or More

Documentation in the form of an affidavit signed under penalty of false statement by a chief executive officer, president, chairperson, member, or other corporate officer duly authorized to adopt corporate, company, or partnership policy that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended

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INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut or Connecticut Public Entity valued at $50,000 or more for any year of the contract. Complete all sections of the form. Sign form in the presence of a Commissioner of Superior Court or Notary Public. Submit to the awarding agency prior to contract execution.

AFFIDAVIT:

I, the undersigned, am over the age of eighteen (18) and understand and appreciate the obligations of an oath. I am _____ of _____ , an entity

Signatory's Title Name of Entity

duly formed and existing under the laws of _____.

Name of State or Commonwealth

I certify that I am authorized to execute and deliver this affidavit on behalf of

_____ and that _____

Name of Entity Name of Entity

has a policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1)and 4a-60a(a)(1), as amended.

_____

Authorized Signatory

_____

Printed Name

Sworn and subscribed to before me on this _____ day of _____, 20____.

_____ _____

Commissioner of the Superior Court/ Notary Public **Commission Expiration Date**

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GENERAL REQUIREMENTS

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Index to
GENERAL REQUIREMENTS

DIVISION 1 GENERAL REQUIREMENTS

Downtown Sanitary, Stormwater, and Streetscape Improvements
Naugatuck, CT
Contract FY24-B059

1. Scope of Work

The project consists of full depth roadway reconstruction on Church Street and Maple Steet, installation of sidewalk, curbing, lighting, street trees, and major storm drainage and sanitary sewer modifications along Church Street, Maple Street, Water Street, Elm Street, and Old Firehouse Road. The work shall also conform to such additional Drawings and addenda to these Specifications and Drawings as may be published or exhibited prior to the opening of bid proposals and to such drawings in explanation of details, or as may be furnished by the Engineer from time to time during the construction.

Work and materials which are necessary in the construction, but which are not specifically referred to in the Specification, or shown on the Drawings, but implied by the Contract shall be furnished by the Contractor at their own cost and expense and shall be such as will correspond with the general character of the work as may be determined by the Engineer, whose decisions as to the necessity for and character of such work and materials shall be final and conclusive. It is the intent of these Specifications to produce a complete, operational, and finished project whether shown in every detail or not.

The Borough reserves the right to decrease the Scope of Work to be done under this Contract, select bid or alternate items in its best interest, or to omit any work in order to bring the cost within available funds. Exercise by the Borough of the above rights shall not constitute any grounds or basis of claim for damages or for anticipated profits on work omitted.

2. Standards

Wherever reference is made in this Contract to the Standard of any technical society or other recognized organization, these shall be construed to mean the latest standard adopted and published at the date of advertisement for bids.

Abbreviations are defined as follows:

ASTM --	American Society of Testing and Materials.
ANSI --	American National Standards Institute
ASA --	American Standards Association
ACI --	American Concrete Institute
AASHTO --	American Association of State Highway and Transportation Officials
ASME --	American Society of Mechanical Town of Deep River Inspectors
IEEE --	Institute of Electrical and Electronics Engineers
AWWA--	American Water Works Association
ACPA--	American Concrete Pipe Association

3. Contract Drawings and Working Drawings

The work is shown on the accompanying Contract Drawings. Such additional working drawings, as required because of changes or to provide greater detail, will be provided by the Engineer.

4. Alterations

The Engineer may make alterations to the line, grade, plan, form, dimensions, or materials of the work, or any part thereof, either before or after the commencement of the work. If such alterations increase the quantity of work, such increase will be paid for according to the quantity of such extra work actually done and at the prices stipulated for such work under unit price Items of the Contract. In case no unit price is applicable, the alterations will be paid for as extra work defined in Article XXVIII of the Contract.

5. Planimeter

The use of the planimeter shall be considered satisfactory for estimating quantities where geometric and analytic methods would be comparatively laborious.

6. Contractor's Schedule of Operations

The Contractor shall submit, within ten (10) days of the date of the Notice to Proceed, a preliminary schedule of operations for the project to the Owner for approval. The approved preliminary schedule shall be used to prepare a detailed schedule of the principal construction events including all proposed purchase and delivery dates for items with critical delivery times. A supplemental bar graph shall also be prepared based on this construction schedule. The detailed schedule and supplemental bar graph shall be submitted by the preconstruction meeting.

The status of the project shall be evaluated monthly by the Contractor and shall be compared to the original schedule which shall be revised, if necessary, and reissued.

7. Coordination with Other Contractors and Utilities

During the progress of the work, other contractors and/or utilities may be engaged in performing work in the area. The Contractor shall coordinate the work to be done under this Contract with the work of others.

8. Cost Breakdown

Prior to the first estimate for payment to the Contractor, the Contractor shall submit to the Engineer for approval a detailed schedule of values of the various amounts to be paid for within each Lump Sum Item, as applicable. It shall also include, but not necessarily be limited to, proportional amounts for bonds, insurance and miscellaneous works which are to be paid for throughout the life of the Contract, and which are not specifically included for payment under other Items and/or Division of the Contract.

9. Estimated Quantities

To aid the Owner in determining quantities to be paid for, the Contractor shall, whenever requested, give the Owner access to the proper invoices, bills of lading, or other pertinent documents and shall provide methods and assistance necessary for weighing or measuring materials.

10. Payment for Miscellaneous Work

No direct payment will be made to the Contractor for furnishing and providing miscellaneous temporary works, plants, and services, including Contractor's office, sanitary requirements, water supply, power, tools, equipment, lighting, telephone systems, store houses, store yards, safety devices, permits, insurances, bonds, watchmen, cleanup and the like, or other items specified under these General Requirements, unless payment therefore has been specifically provided. Compensation for the same is understood to be included in the scheduled prices hereinbefore given for the various kinds of work contemplated.

11. Drawings and Information to be furnished by the Contractor

For materials and equipment not supplied by the Owner, the Contractor shall promptly furnish to the Engineer, for their information, three (3) copies of drawings in detail of the materials, equipment, piping, and structural details for any part of the work for which Drawings are not to be issued by the Owner. Before placing orders for any manufactured item or part of structure, they shall also submit three (3) copies, for approval, of detailed lists and descriptions of the various materials, fixtures, fittings and supplies which they propose to use in the work, and also the names of individuals or companies who propose to furnish or manufacture the same. Copies of the results of all tests of materials and equipment shall be furnished by the Contractor immediately following the performance of required tests.

All submittals shall be submitted sufficiently in advance of construction requirements to provide no less than fifteen (15) days, excluding Saturdays, Sundays, and Owner holidays for review from the time received by the Borough's Engineer/Insepctor. For submittals of major equipment, that require more than fifteen (15) days to review, due to its sheer complexity and amount of detail and also requiring review by more than one engineering discipline, a letter will be sent by the Project Manager or his/her designee to the Contractor informing him/her of the circumstances and the date it is expected the submittal will be returned to the Contractor.

Prior to the submittal of shop drawings, the Contractor shall check, approve, initial and date the drawings and shall also indicate by reference the Standard Specification, Special Provision and/or Plan which covers the item. Submittals will be returned to the Contractor if they have not been properly processed by them.

Approval by the Owner of shop drawings for any material, apparatus, device and layout shall not relieve the Contractor from the responsibility of furnishing same of proper dimension, size, quality, quantity and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Approval shall not relieve the Contractor from the

responsibility for errors of any sort on the shop drawings. If the shop drawings deviate from the Contract Documents, the Contractor shall advise the Owner of the deviations in writing, including the reasons for the deviation.

In the event the Contractor obtains the Engineer's approval for the material, manufactured items, or equipment, other than that which is shown on the Plans or specified herein, the Contractor shall, at their own expense, make any changes as required in the structures, buildings, piping, or any other portion of the work necessary to accommodate the approved material, manufactured item, or equipment.

12. Substitution Clause

Whenever in the Contract Documents any item of equipment or material is designated by reference to a particular brand, manufacturer or trade name, it is understood that an approved equal product, acceptable to the Owner, may be substituted by the Contractor, except where expressly noted as "no substitutions."

13. Contract Limits

The Contractor shall confine their activities to within street lines, easements, and right-of-way.

The Contractor shall take particular care to existing walls, protect trees and shrubs and private personal property. The Contractor shall make good any damage to the satisfaction of the Owner.

The Contractor shall not enter upon or make use of any private property along the line of work, outside the limits of the rights-of -way, except when written permission is secured from the owner of said property and a copy delivered to the Owner. The Contractor shall be held responsible for all damages or injury, done by the Contractor or those in the Contractor's employment, to any private or public property of any character during the prosecution of the work. The Contractor shall restore or repair at their own expense, in a manner satisfactory to the Owner, such property as may be damaged by their operations during the prosecution of the work.

In case of failure on the part of the Contractor to restore or repair such property in a manner satisfactory to the Owner, the Owner may, upon 48-hour notice to the Contractor, proceed with such restoration or repair. The expense of such restoration or repair shall be deducted from any monies which are due or may become due the Contractor under this Contract.

14. Work in Easements

The Contractor shall comply with all permanent and temporary construction easements related to the work and shall be responsible for coordinating with property owners where work in easements exists.

15. Cleaning up the Site

During the progress of the work, the Contractor shall keep the construction areas in a neat

condition, free from accumulations of waste materials and rubbish. Lunch papers, bottles, lumber cut-offs, drinking cups and like rubbish shall be removed from the site daily. No alcoholic beverages will be permitted at the construction site(s).

On, or before the completion of the work, and before acceptance and final payment shall be made, the Contractor shall clean and remove, from the site and adjacent property all surplus and discarded materials, rubbish, and temporary structures and restore, in an acceptable manner, all property and leave the whole area in a neat and presentable condition.

16. Storage of Materials

Materials shall be stored so as to ensure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms and covered or stored in a suitable building, as directed by the Owner. Stored materials shall be located so as to facilitate prompt inspections.

Materials and equipment supplied by the Owner shall be jointly inspected by the Owner and the Contractor and shall, upon acceptance by the Contractor, become the Contractor's responsibility to make good any damage to the materials and equipment until they have been incorporated and accepted in the work.

17. Removal of Condemned Materials

The Contractor shall remove from the site of the work, without delay, all rejected and condemned materials of any kind brought to or incorporated in the work. No such rejected or condemned materials shall again be offered for use by the Contractor.

18. Hauling Materials

Before starting any work, the Contractor shall arrange, with the Municipal or State officials having jurisdiction, for the use of routes of travel for hauling materials, including surplus earth and rock, that will result in minimum inconvenience to the traveling public. Routes of travel so scheduled shall be adhered to throughout the course of the work, unless otherwise approved.

19. Accommodation of Traffic

During the progress of the work, all streets shall be kept open for the passage of traffic and pedestrians and shall not be obstructed unless authorized by the authority having jurisdiction over same. Driveways, sidewalks, and areas of roadway shall be closed as short a time as possible while work is in progress and passage shall be restored by the close of work every day, by properly placed backfill or approved bridging. The Contractor shall notify residents prior to working in front of their home or business. The Contractor shall take such measures as may be necessary to keep the street open for traffic and shall give at least 48-hour advance notice to the Fire and Police Departments, and the Board of Education of their proposed street operations. They further agree to be responsible for all legal notices to the public concerning the state of the roads while the work is in progress.

Warning signs shall be provided along all streets while work is in progress and, where traffic direction is required, flag person shall be designated by the Contractor to direct traffic past the equipment, machinery or construction operations. Barricades and lights shall be provided as required to protect life and property. Where trenches have been cut in streets on which traffic may pass at times, warning signs shall be placed at frequent intervals and maintained until the street is safe for travel. All such work and operations shall be in accordance with requirements of the Owner, Standard Specifications and Special Provisions herein. The use of unauthorized or unapproved signs, barricades, or traffic delineators will not be permitted.

The Contractor shall construct, maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary or directed for the purpose of accommodating pedestrians and vehicles. Ingress and egress to private property, satisfactory to the Owner, shall be continuously provided.

Should the Contractor or their employees neglect to set out and maintain barricades or lights, as required in the Specifications, the Owner may immediately and without notice arrange for furnishing, installing and maintaining barricades or lights and any other precaution deemed necessary. The cost thereof shall be borne by the Contractor and may be deducted from any amount due or to become due to the Contractor under this Contract.

The Contractor is required to delineate any raised structures within the travel lanes, so that the structures are visible day and night, unless there are specific Contract plans and provisions to temporarily lower these structures prior to the completion of work.

The Contractor shall be held responsible for any damages that may have to be paid as a consequence of the Contractor's failure to protect the public.

20. Temporary Roads and Driveways

The Contractor shall be responsible for providing and maintaining such temporary access roads, to and along right-of-way. Where temporary roads, necessary for the transportation of materials and equipment are on private property, the Contractor shall obtain permission from the property owners and the Borough for their construction and use and pay all costs pertaining thereto.

21. Dust Control

The Contractor shall take all necessary precautions to prevent and abate nuisance caused by dust arising from their operations. Approved methods applicable to various parts of the work, such as sweeping application of water spray or calcium chloride, shall be employed. This also applies to maintaining temporary paving nuisance-free until permanent paving is placed. The area of construction along roadways shall be broom swept each day after completion of the day's work and the application of water as necessary, all at no additional cost to the owner.

22. Working Conditions

In prosecuting the work of this Contract, the Contractor shall provide working conditions on each operation that shall be as safe and healthful as the nature of the operation permits. The Contractor shall comply with all safety and sanitary rules, laws and regulations.

23. Work in Inclement Weather

During freezing, storm or inclement weather, no work shall be performed except such as can be done satisfactorily and in such manner as to secure first-class construction throughout.

24. Working Hours

The Contractor's working schedule shall be confined to a five (5)-day week, Monday through Friday, and the working day shall be confined between the hours of 7:00 a.m. and 5:00 p.m. current local time, unless otherwise approved by the Engineer.

Unless otherwise permitted by the Owner, no work shall be done between the hours of 5:00 p.m. and 7:00 a.m. except as necessary for the proper care and protection of the work already performed. If it shall become absolutely necessary to perform work at night, this shall be approved by the Owner at least 24 hours in advance, of the beginning of the performance of such work. Only such work shall be done at night as can be done satisfactorily and in a first-class manner. Good lighting and all other necessary facilities for carrying out and inspecting the work shall be provided and maintained at all points where such work is being done.

25. Emergency Work

The Contractor shall file, with the Borough of Naugatuck Engineer, the name and telephone number of a person authorized by them who may be contacted regarding emergency works at the job site that may be required during non-working hours for reasons of public safety.

This person shall be readily available and full Authority to deal with any emergency that may occur.

26. Sedimentation and Erosion Control

The Contractor shall prepare and submit for approval a sedimentation and erosion control plan for the work, prior to the start of construction.

27. Work Near Brook(s) and Stream(s)

Care shall be taken to prevent, or reduce to a minimum, any damage to any water body from pollution by debris, sedimentation, or other material, or from manipulations of equipment and/or materials near such water bodies and on abutting property. Particular care shall be taken to prevent gasoline, diesel fuel, and other oils from entering any water body.

28. Work Within or Near Areas Designated as Inland Wetlands

Care shall be taken to prevent, or reduce to a minimum, any damage to any inland wetland from pollution by debris, sedimentation, or other material, or from manipulations of equipment and/or materials near such water bodies and on abutting property. Particular care shall be taken to prevent gasoline, diesel fuel, and other oils from entering any inland wetland.

29. Soil and Groundwater Conditions

The Owner assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site of the project. The Contractor agrees that they will make no claim for and has no right to additional payment for extension of time for completion of the work, or any other concession because of any interpretations or misunderstanding on their part of this Contract, or because of any failure on their part to fully acquaint themself with all conditions relating to the work.

30. General Sanitary Requirements

Operation of the sewer collection system must be maintained throughout the duration of the project. The Contractor shall develop a sequence of construction and submit it to the Engineer for review. The proposed sequence shall be in accordance with the approved schedule submitted by the Contractor. Sanitary sewer and manhole rehabilitation must be in accordance with the Special Provisions and Borough of Naugatuck Standards.

31. Water Supply and Electrical Energy

Contractor to supply all water and electrical energy required to perform the work at no additional expense to the Owner.

32. Contractor's Office

Refer to the applicable special provision regarding the Contractor's Office.

33. Resident Engineer's Office

Not applicable for this Contract.

34. Explosives and Blasting

Not applicable for this Contract.

35. Sheeting, Shoring, and Bracing

Where necessary, the sides of trenches and excavations shall be supported by adequate sheeting, shoring and bracing. The Contractor shall be held accountable and responsible for the sufficiency of all sheeting, shoring and bracing used and for all damage to persons or property resulting from the improper quality, strength, placing maintaining or removing of the same. Where sheeting is removed, care shall be taken not to disturb the new work or existing utilities and structures. The Contractor shall adhere to all OSHA standards and requirements pertaining to the work.

No sheeting is to be left in place unless expressly permitted by the Engineer. No direct payment will be made for sheeting, shoring, and bracing and compensation for such work and all expenses incidental thereto shall be considered as included in the unit prices bid for the various Items of this Contract.

36. Existing Structures

All known surface and underground structures, except electric and telephone service connections, and water, gas and sewer service pipes, on or immediately adjacent to the work, are shown on the Plans. Sewer, drainage, water and gas mains, manholes and similar structures located in or adjacent to the location of the structures included in this Contract, are shown on the Contract Drawings, which locations should be considered approximate. This information is shown for the convenience of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall explore the route ahead of trenching and shall uncover all known obstructing pipes sufficiently to determine their location. Necessary changes in location may be made by the Engineer to avoid unanticipated obstructions.

Wherever water or gas mains, electric or telephone ducts, or electric or telephone poles are encountered and may be in any way interfered with, the Contractor shall keep the utility company involved fully informed in advance. The Contractor shall cooperate with the utility company in the protection, removal, relocation and replacement of such structures.

The Contractor shall, at their own expense, sustain in their places and protect from direct or indirect injury all utilities, pipes, poles, conduit, walls, buildings and other structures and property in the vicinity of their work, and they shall be responsible for all damage and assume all expense for direct or indirect injury caused by their work to any of them or to any person or property by reason of injury to them.

Guard rails, posts, guard cables, signs, poles, markers, mailboxes, fences, walls and stone walls, and other private improvements, which are temporarily removed, damaged or destroyed during construction, shall be replaced and restored to a condition as good as or better than existed and to the satisfaction of the Owner.

The Contractor shall, at their own expense, retain the services of a licensed surveyor to replace property markers, on or adjacent to privately owned property, which have been disturbed during the course of construction.

37. Marking New Underground Plant

All new underground plant shall be marked with warning tape in accordance with State of Connecticut Public Act 16-345 and DPUC Regulations.

38. Operation of Water Valves

Unless otherwise permitted, existing water valves shall not be operated by the Contractor. Whenever the operation of a water valve is necessary, the Contractor shall make arrangements, at least 24 hours in advance of the need, to have the utility company's forces perform the required operations. Contractor must prepare and distribute customer notices to all affected customers at least 24 hours prior to any shutdown of service.

39. Testing Laboratories

The Contractor shall appoint an independent testing laboratory for all material testing in accordance with the Standard Specifications, which shall included in the cost of the contract. The Contractor shall provide material samples to the laboratory, as required, throughout the duration of the project.

40. Wage Rates

The wages paid on an hourly basis to any mechanic, laborer, or workman employed upon the work herein contracted to be done, and amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in Section 31-53 of the 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 employee welfare fund, shall pay to each employee, as part of their wages, the amount of payment or contribution for their classification on each pay day.

The Contractor shall comply with all Connecticut General Statutes pertaining to the payment of prevailing wages. The Contractor shall provide to the Borough weekly certified payrolls of their employees and any subcontractors employed on the work.

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SUPPLEMENTAL CONDITIONS

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INDEX TO SUPPLEMENTAL CONDITIONS

SUPPLEMENTAL CONDITIONS

These Supplemental Conditions amend or supplement the General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

1. DEFINITIONS

A. The Terms used in these Supplemental Conditions which are defined in the General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions.

B. Wherever used in the Contract Documents, the following words have the meanings indicated, which are applied to both the singular and the plural thereof:

“Plans” – Titled DOWNTOWN SANITARY, STORMWATER, AND STREETSCAPE IMPROVEMENTS – See section 8 of supplemental conditions.

"Project Manual" - shall mean the bound volume containing the following Contract Documents:

Requests For Bids
Information For Bidders
Signed copy of the Bid Proposal Forms, with all attachments required for bidding
Contract Forms
General Requirements
Supplemental Conditions
Special Provisions
Performance Bond and Payment Bond
Certificate of Insurance
Addenda
State Wage Rates
Project Specifications

The word "Remove," where it applies to existing materials, shall mean remove entirely from the site unless material is approved by the Engineer for re-use. In addition, the word "remove" shall imply the permanent patching of all remaining work affected by removal. All existing materials which have been removed shall become the Contractor's property unless otherwise specified.

"As Necessary" or "As Required" - Work referred to as "As Necessary" shall be that work which is required for completed construction, but is not necessarily shown or described in the Contract Documents.

The word "Furnish" or the word "Supply" - shall mean purchase, delivery, and off-loading at the job site including all documentation, storage, and protection.

The word "Install" or the word "Apply" - shall mean set in place complete for normal use or service, all in accordance with the Contract Documents.

The word "Provide" - shall mean furnish (or supply) and install (or apply).

The words "Approved Equal" - shall mean any product which in the opinion of the Engineer is comparable in quality, durability, appearance, strength, performance, design, physical dimension, and arrangement to the product specified, and will function properly in accordance with the design intent.

The word "Product" - shall mean any item of equipment or material provided under the Contract Documents.

2. SCOPE OF WORK

The project consists of full depth roadway reconstruction on Church Street and Maple Steet, installation of sidewalk, curbing, lighting, street trees, and major storm drainage and sanitary sewer modifications along Church Street, Maple Street, Water Street, Elm Street, and Old Firehouse Road. Construction shall be in accordance with the Borough of Naugatuck's Design and Construction Standards, Form 818 (2020), all supplements thereto and special provisions provided herein.

The Borough reserves the right to decrease the Scope of Work to be done under this Contract, select bid or alternate items in its best interest, or to omit any work in order to bring the cost within available funds. Exercise by the Borough of the above rights shall not constitute any grounds or basis of claim for damages or for anticipated profits on work omitted.

3. TIME FOR COMPLETION

The Contractor shall commence work within ten (10) calendar days of the date of the written "Notice to Proceed" from the Owner and the Contractor shall fully complete this Contract within four hundred and sixty (460) days from the date of the written "Notice to Proceed."

4. LIQUIDATED DAMAGES

The Contractor shall proceed with the work at such rate of progress to ensure full completion within the time requirements stated above. It is expressly understood and agreed by and between the Contractor and the Borough that the Contract time for the completion of the work described herein shall be reasonable, taking into consideration the climatic and economic conditions and other factors prevailing in the locality of the work.

If the Contractor shall fail to complete the work within the Contract times, or extension of time granted by the Borough, then the Contractor and their sureties shall be liable for and shall pay to

the Borough for each and every calendar day that they shall be in default in completing any given assignment in the time stipulated above, the sum of $2,000. This sum is hereby agreed upon, not as a penalty, but as fixed liquidated damages which the Owner will suffer by reason of such default, time being of the essence of the Contract and a material consideration thereof. The Owner shall have the right to deduct the amount of any such damages from any monies due the Contractor under this Contract.

5. PAYMENTS AND RETAINAGE

Monthly applications for payment shall be submitted to the Borough Engineer for consideration. Payment shall be made within thirty days after approval of the application for payment by the Borough.

An amount of 95 percent (95%) of the estimated amount due, less any payments previously made and/or any moneys to be held will be paid to the Contractor monthly. The balance will be retained by the Borough until final completion of the work. Final payment will not be made until final completion and acceptance by the Borough of all work covered by the Contract. The Contractor agrees that they will indemnify and save the Borough harmless for all claims growing out of the lawful demands of subcontractors, laborers, suppliers, and assignees.

6. PAYMENT OF WAGES

The Contract Documents contain a copy of the minimum wage rate schedule issued by the State of Connecticut Labor Department. Said wage rate schedule shall be posted at a conspicuous location on the project site.

The Contractor is cautioned that wage rates are continually changing and they shall ensure that the enclosed schedule is the latest issue, this being the Contractor's responsibility.

7. FAIR EMPLOYMENT PRACTICES

The successful Contractor shall agree that neither they nor their subcontractors will refuse to hire or employ or to bar or to discharge from employment an individual, or to discriminate against them in compensation or ill terms, conditions, or privileges of employment because of race, color, religious creed, age, sex, national origin, or ancestry, except in the case of a bona fide occupational qualification or need.

The terms stated above are taken from Section 31-126 of the Connecticut General Statutes "Unfair Employment Practices."

8. CONTRACT DRAWINGS

The Contract Drawings, dated June 2023 are appended to this Contract.

Sheet Title	Sheet in Set	Sheet
General Sheets	01 - 06	GEN
Illustrative	00	ILL
Existing Conditions Plan	00 – 08	EXT
Erosion and Sedimentation Control Plan	00 - 03	ESC
Streetscape Tree Preservation Plan	00 - 09	STP
Alignment & Curb Tie Plan	00 - 06	ALN
Typical Roadway Sections	01 - 03	TYP
Miscellaneous Details Sheets	01 – 46	MDS
Demolition Plan	00 - 08	DMO
Construction Plan	00 – 08	PLN
Grading Plan & Profile	00 - 05	GRD
Detail Grading	01 – 03	GRD – DET
Streetscape Index Plan	00	SIP
Streetscape Layout Plan	02 – 06	SLP
Streetscape Materials Plan	02-06	SMP
Streetscape Paver Layout Plan	02 – 06	SPV
Streetscape Enlargement Plan	02 – 06	ENL
Streetscape Planting Plan	02 – 07	SPP
Drainage Plan & Profile	00 – 10	DRG
Outlet Drainage & Grading Plan	01	OGP
Green Stormwater Infrastructure	01 – 03	GSI
Utility Plan	00 – 08	UTL
Sanitary Sewer Replacement Plan	00 – 03	SAN
Signage and Pavement Markings Plan	00 – 08	SPM
Suggested Construction Sequence Plan	01 – 02	SCS
Temporary Traffic Detour Plan	01 – 04	MPT
Traffic Control Signal Plan	01	TCS
Electrical Site Plan	00 – 07	ELE
Electrical Demolition Plan	02 – 06	ELD

*Refer to Title Sheet for list of Connecticut DOT Standard Drawings.

9. SAFETY

The Contractor shall perform all work in accordance with the latest local, state, and federal governmental laws and regulations including, but not limited to, the governmental safety regulations of the Department of Labor and Office of Safety and Health Administration suggested practices.

10. LINES, GRADES, AND MEASUREMENTS

The controlling lines and grades shall be as shown on the Contract Drawings. Additional batter boards, lines, grades and forms shall be furnished and set by the Contractor if they through willfulness or carelessness removes, or permits to be removed, any reference marks establishing said controlling lines and grades, before the performance of the work requires such removal. The replacement of such reference marks shall be at the Contractor's expense.

The Contractor shall make all measurements and check all dimensions necessary for the proper construction of the work as directed or as called for in the Standard Specifications and Special Provisions.

During the performance of the work, the Contractor shall make all necessary measurements to prevent misfitting in said work and be responsible therefore for the accurate construction of the entire work.

11. BLASTING AND EXPLOSIVES

Not applicable for this Contract.

12. PUBLIC ACCESS

Roads, including driveways, sidewalks, crossings and local businesses shall remain open and passable while work is in progress except as noted. Refer to Section 31 of the Supplemental Conditions.

13. UTILITIES

Utilities may be located within the area and may be adjacent to the construction work. The Contractor shall make all the necessary arrangements with any utility that must be protected or relocated in order to accomplish the work. The Contractor shall be solely responsible for the protection of the operating condition of all active utilities within the areas of construction and they shall take all necessary precautions to avoid damage to existing utilities. Any cost of temporary relocations for the Contractor's convenience shall be paid for by the Contractor.

The Contractor shall avail themself of the Connecticut Underground Utility Protection Plan. The Contractor shall notify “Call Before You Dig” at 811 or visit CBYD.com in accordance with Section 18 of the Supplemental Conditions. The Contractor shall coordinate the construction activities with all utility companies with facilities in the project, including the Borough.

14. TEMPORARY UTILITIES

Unless otherwise provided for in the Standard Specifications or the Special Provisions, the Contractor shall pay the cost of all temporary light, heat, electric power and water required for completion of the Contract. The necessary temporary utilities shall be installed at the start of the project.

15. TOILET ACCOMMODATIONS AND DRINKING WATER

The Contractor shall provide necessary sanitary toilet accommodations and drinking water for the workers. Separate facilities shall be provided for female workers.

16. SEQUENCE OF CONSTRUCTION

Prior to the start of construction, the Contractor shall prepare and submit a sequence of construction for approval by the Engineer. Refer to Drawings SCS for Engineer's suggested construction sequence plan.

17. BEST MANAGEMENT PRACTICES FOR PROTECTION OF THE ENVIRONMENT

a. No construction shall proceed until proper sedimentation and erosion control methods have been installed as the sequence of construction necessitates.

b. No equipment, materials, or machinery shall be stored, cleaned, or repaired within 25 feet of any wetland or watercourse.

c. No construction shall proceed until a method to prevent construction debris, paint, spent blast materials, or other materials from entering the wetland or watercourse has been implemented as the sequence of construction necessitates. These materials shall be collected and disposed of in an environmentally safe manner as determined by Federal, State, and local laws. The applicant shall monitor wind velocities and storm events during the conduct of such work, and shall cause such activity to cease if storm or wind conditions threaten to cause deposits of materials in the waterway.

d. No objectionable materials resulting from any clearing activity shall be disposed of in any wetland or watercourse. This includes but is not limited to: stumps, tree roots, matted roots, wood chips, and other debris.

e. No fill or materials shall be deposited in surrounding wetlands or watercourses.

f. Where dewatering is necessary, the pump shall not discharge directly into the wetland or watercourse. Proper methods and devices shall be utilized, such as pumping the

water into a temporary sedimentation basin, providing surge protection at the inlet and the outlet of pumps, or floating the intake of the pump, or other method to minimize and retain the suspended solids. If the pumping operation is causing turbidity problems, work shall cease until such time that turbidity controlling measures have been implemented.

g. Dumping of oil or other deleterious materials on the ground is forbidden. The applicant shall provide a means of catching, retaining, and properly disposing of drained oil, removed oil filters, or other deleterious material. All oil spills shall be reported immediately to the DEEP/Hazardous Materials office at (860) 424-3338. Failure to do so may result in the imposition of a fine under Section 22a-450 of the Connecticut General Statutes.

h. Every precaution shall be used while working in the vicinity of a waterway to prevent and minimize degradations of the existing water quality. All activities shall conform and be at all times consistent with applicable water quality standards, and management practices of the Federal Clean Water Act (1972), Connecticut's Water Quality Standards and other applicable State laws, and as defined in Form 817, Section 1.10, entitled "Environmental Compliance".

18. CALL-BEFORE-YOU-DIG

The Contractor's attention is called to the fact that they are obligated, by State Law, to notify the Public Utilities Control Authority. The Contractor shall avail themself of the Connecticut Underground Utility Protection Plan. The Contractor shall notify “Call Before You Dig” at 811 or visit CBYD.com at least two full working days prior to the start of any excavation work to request the mark-out of existing utilities. The Contractor shall coordinate the construction activities with all utility companies with facilities in the project, including the Borough. The Contractor assumes all responsibilities for any damage to the various utility services, and all liabilities arising therefrom.

The Contractor shall make the necessary arrangements with the respective utility companies and provide grades for the resetting and adjusting of private utility company manhole and grade boxes, and the relocation of poles and hydrants; all at no additional costs to the Borough. Any delays, which are caused by conflicts with utility lines, shall not be considered as a basis of extending the time for completion.

19. DUST CONTROL

The contractor shall be responsible for controlling dust from its operations, and when ordered by the Engineer shall use whatever methods necessary for dust control, in a manner satisfactory to the Engineer. This work shall be paid for under the appropriate dust control item in the contract.

20. QUALITY CONTROL

All materials furnished and used in the completed work shall be new, of best quality, and recognized as standard in construction practices. Whenever a specification number of reference is given, the subsequent amendments (if any) shall be included. The standards set forth in the selection of materials and supplies are intended to conform to those standards adopted by the Owner. Preference in manufacture shall be given to adopted standards, and the Contractor shall further familiarize themselves with the requirements of the Owner when the occasion or choice of materials or supplies so demands.

21. METHODS OF CONSTRUCTION

No materials shall be used which are known or found to be defective in any way. Notice shall be given to the Owner of any defective or imperfect material. Defective or unfit material, found to have been used, shall be removed and replaced by the Contractor with sound and unobjectionable material without additional expense to the Owner. All materials furnished by the Contractor are subject to thorough inspections and tests by the Owner. The Contractor shall submit samples as stated in the Standard Specifications and Special Provisions or as required by the Owner, of the various materials used on the contract for testing purposes. All ordering lists shall be submitted for approval to the Owner by the Contractor.

22. MOBILIZATION

This item shall consist of all the work necessary for the movement of personnel and equipment to and from the project site, including obtaining any necessary permits.

23. EXISTING CONDITIONS

Before submitting the bid, the Contractor shall examine the site, become familiar with the conditions, and verify the information in the Contract Drawings. Any discrepancy between the information provided in the Contract Documents and actual field conditions, the Contractor shall make a note of it and bring it to the attention of the Engineer prior to bid. No claims for extras will be allowed based upon differences that could have been discovered by the Contractor prior to bid.

24. EXISTING STORM AND SEWER LINES

The Contractor shall be responsible for maintaining and protecting all existing storm drainage and sewer lines encountered in the work under this contract. Hand excavation and adequate bracing and shoring shall be employed where required to insure the structural integrity of said existing structures. The Contractor shall hold the Borough of Naugatuck harmless and shall be solely responsible for any liabilities or damages arising from their work near, under, or through

existing sewers and culverts. The Contractor shall repair and replace, as required by the Borough, any existing sewers or culverts damaged as a result of their work. No payment by the Borough for work covered in this section, unless authorized in writing by the Borough of Naugatuck.

25. SURPLUS EXCAVATED MATERIAL

The Contractor shall take ownership of all surplus excavated material and is responsible for removal of all surplus excavated material from the project site.

26. DAILY CLEANUP

The Contractor shall at the end of each workday, keep the project area clean, and free from debris, excavation materials, or any other items considered as trash. These items shall be disposed of daily in a legal manner at an approved dumping site. No extra payment shall be made for any work involved in this section.

27. CONSTRUCTION SCHEDULE

At the preconstruction meeting held by the Borough, the Contractor shall furnish a detailed anticipated construction schedule for review and approval by the Borough prior to monthly payments to the Contractor. This construction schedule shall be revised to show progress to date and anticipated future progress and submitted to the Borough. In addition, the Contractor shall provide a two-week look-ahead of proposed activities in anticipation of bi-weekly progress meetings.

28. PROJECT MEETINGS

The Borough or its designated agent shall inspect all work performed by the Contractor and regularly scheduled project meetings with Borough staff, the Contractor, and the Engineer will be required on a bi-weekly basis to review progress of the work. Meetings are to be held at a site adjacent to or on the work site as determined by the Borough of Naugatuck. The meetings are to be chaired by a designated representative of the Borough of Naugatuck.

29. UTILITY COORDINATION

The Contractor shall coordinate the construction activities with all utility companies with facilities in the project area, including the Borough's. See Section 13 and 18 of the Supplemental Conditions. Contacts below were involved in design coordination.

Gas: Eversource Gas
Sankar Ganesh, Project Engineer
Office: 860-665-6532
Cell: 314-814-3381
Sankar.Ganesh@eversource.com

Eversource Electric
Jaskaran Singh, Supervisor Distribution Projects and Programs
Office: 203-270-5865
Cell: 860-488-1318
Jaskaran.singh@eversource.com

Crown Castle Fiber
Terence J. Shea, Senior Network Construction Manager
Office: (203) 649-3905
Cell: (860) 402-6471
terence.shea@crowncastle.com

Water: Connecticut Water
Joe Ruzbasan, Project Coordinator
Cell: 860-250-1721
Jruzbasan@ctwater.com

Telecom: Frontier
Naldi Jr, Roger, Engineer
860-212-7620
roger.j.naldi@ftr.com

CT Transit: North East Transportation
Barbara Kalosky, General Manager
860-945-1658
bkalosky@ct-transwb.com

31. BOROUGH EVENTS

The Contractor shall coordinate the construction activities around known events taking place in the Downtown area and provide safe access to the public for all Borough Events. The Contractor shall relocate equipment and cleanup work site to make safe. The Borough will work with all parties to relocate venues where possible to support the construction schedule. Dates of events for 2023 and 2024 are listed below. All dates are subject to change.

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Borough of Naugatuck Events

Spring Festival: 3rd weekend in May (Current location: Church Street)

- May 20 – 21, 2023
- May 18 – 19, 2024

Memorial Day Parade: Preparations previous weekend (Current location: Old Firehouse Road, Maple Street, and Church Street)

- May 27 – 29, 2023
- May 25 – 27, 2024

Duck Day: 1st Sunday in June (Current location: Maple Street)

- June 4, 2023
- June 2, 2024

Independence Day: (Current location: Old Firehouse Road and Vacant lot)

- July 3, 2023; with Rain Date
- 2024 date TBD

Summer Concert Series: Tuesdays mid-June to-Mid August (Current location: Town Green)

- To be relocated to Naugatuck High School

Food Truck Partnership Event: Last weekend in August (Current location: Town Green and Division Street)

- August 26 – 27, 2023
- August 24 – 25, 2024

St. Michael's Fair: 2nd weekend in September (Current location: Town Green)

- September 9 – 10, 2023
- September 14 – 15, 2024

Harvest Moon Festival: 3rd weekend in September (Current location: Town Green)

- September 16 – 17, 2023
- September 21 – 22, 2024

Mission 22 – Fall Festival: (Current location: Church Street)

- September 23, 2023
- September 2024 date to TBD

Christmas Festival: 1st Saturday in December (Current location: Church Street and Town Green)

- December 2, 2023
- December 7, 2024

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NOTICE TO CONTRACTORS

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NOTICE TO BIDDERS – BASE BID AND ALTERNATE BIDS

Due to budgetary considerations, the bid for this project is divided into a "Total Base Bid" and three (3) additive "Alternate Bids". Additive alternate bids for each alternate bid package may be used to increase the base bid to an amount within the funds available for the project. The Alternate Bids are as follows:

Alternate Bid No. 1 Add "Maple Street at Parcel B" limits of work as delineated on plan sheet GEN-04.

Alternate Bid No. 2A Add "Maple Street Bridge" work within the limits identified on plan sheet GEN-05, including work shown on or referenced in the civil, drainage, utility, grading, roadway profile, landscape architecture, sign location, signing and pavement markings, electrical, landscape, sedimentation and erosion control, structural, typical section and details.

Alternate Bid No. 2B Add "Maple Street Bridge" work within the limits identified on plan sheet GEN-05, including work shown on or referenced in the civil, drainage, utility, grading, roadway profile, landscape architecture, sign location, signing and pavement markings, electrical, landscape, sedimentation and erosion control, structural, typical section and details.

Eliminate "Painted Pavement Markings"

Add "Impressed Preformed Thermoplastic" pattern: brick, color: colonial brick to pavement.

Add "Impressed Preformed Thermoplastic" pavement markings.

Bidders are required to submit bids for the **Total Base Bid** and **Alternate Bid Package Nos. 1, 2A and 2B** on the forms provided. Bids which do not include the Base Bid and the Alternate Bids will be considered nonresponsive and subject to rejection in their entirety. The contract will be awarded on the basis of the lowest responsive **Total Base Bid, not including the alternate bids.**

After award of the Contract, any or all of the work identified in the above Alternate Bids may be eliminated from the Contract at the discretion of the Owner. The adjustment of the Contract price shall be based on the bid price(s) for the Alternate Bids. The Contractor will be notified as to whether any or all of the alternates will be excluded from the Contract within fourteen (14) calendar days of the Award of Contract. Contractor will include selected alternative bid items in the required submission of the schedule of values required elsewhere in the contract documents.

No change to the calendar days will be made as a result of the above identified Alternative Bids. All work must be completed within the number of calendar days specified in the Contract Documents.

The Contractor shall review the "Instructions to Bidders - Alternate Bids" included elsewhere in the Contract documents for additional requirements and additional information pertaining to Alternate Bids.

NOTICE TO CONTRACTOR – CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 818

Technical specifications for the Project shall follow the ConnDOT Standard Specifications for Roads, Bridges, and Incidental Construction Form 818, dated 2023, including any Supplementals, and Special Provisions to Form 818 contained herein.

Article 1.01.01 – "Definitions" is amended and supplemented as follows:

Substitute the word "City" for "Department" wherever "Department" appears in the definitions for each of the following terms: Award, Contract, Highway, Plans, and Project.

Substitute the word "Engineer" for "Commissioner" wherever "Commissioner" appears in the definitions for each of the following terms: Subcontractor and Sub-Subcontractors.

Engineer: Delete the definition in its entirety and replace with the following:

The Borough of Naugatuck or authorized representative

State: Delete the definition in its entirety and replace with the following:

The Borough of Naugatuck, Connecticut

Add the following:

Municipal: Of or Relating to the Municipality

Municipality: Borough of Naugatuck, Connecticut

Town: Same definition as Municipality

NOTICE TO CONTRACTOR – VERIFICATION OF EXISTING CONDITIONS

Included in this contract is the modification, alteration, and/or addition to existing drainage structures. The Contractor is cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features as actual conditions may vary from information shown on the design plans, the record plans or contained elsewhere in the Specifications.

The cost for this work and incorporation of information into the working drawings and shop drawings is part of the general cost of the work. Accordingly, no additional payment will be made for this work.

NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS

The Contractor is responsible for verifying all dimensions before any work is begun. Dimensions of the existing structures shown on the plans are for general reference only; they are not guaranteed. The Contractor shall take all field measurements necessary to assure proper fit of the finished work and shall assume full responsibility for their accuracy. When shop drawings and/or working drawings based on field measurements are submitted for approval and/or review, the field measurements shall also be submitted for reference by the reviewer.

In the field, the Contractor shall examine and verify all existing and given conditions and dimensions with those shown on the plans. If field conditions and dimensions differ from those shown on the plans, the Contractor shall use the field conditions and dimensions and make the appropriate changes to those shown on the plans as approved by the Engineer. All field conditions and dimensions shall be so noted on the drawings submitted for approval.

There shall be no claim made against the Department by the Contractor for work pertaining to modifications required by any difference between actual field conditions and those shown by the details and dimensions on the contract plans. The Contractor will be paid at the unit price bid for the actual quantities of materials used or for the work performed, as indicated by the various items in the contract.

NOTICE TO CONTRACTOR - UTILITY COORDINATION

Contractor shall be responsible for contacting utility companies prior to the start of construction in order to coordinate the schedule, prosecution, and progress of proposed utility relocation work.

It is anticipated that multiple utilities, including utility and light poles, telecommunication conduit, water main, and gas main, will need to be relocated due to conflicts with the proposed storm drainage systems and / or curb lines. The Contractor shall determine with the utility owner how the relocation work will occur in conjunction with the proposed roadway reconstruction. The Contractor should note that coordination with Frontier will be of particular importance regarding the relocation of their underground conduit.

The Contractor is hereby notified that all utility specifications contained elsewhere herein shall be made a part of this contract, and that the contractor shall be bound to comply with all requirements of such specifications. The requirements and conditions set forth in the subject specifications shall be binding on the Contractor just as any other specification would be.

After award, the Contractor shall conduct a utility coordination meeting or meetings to obtain contemporaneous scheduling information from the utilities prior to submitting its baseline schedule to the Department in accordance with Section 1.05.08. If deemed necessary by the Contractor or the Borough of Naugatuck, regularly scheduled utility meetings shall be held throughout the course of construction.

NOTICE TO CONTRACTOR - PROTECTION OF EXISTING UTILITIES

The Contractor is hereby notified of the need for protection of the existing underground and overhead utilities throughout construction.

Representatives of the various utility companies shall be allowed access to the work.

The Contractor shall be liable for all damages or claims received or sustained by any persons, corporations, or property in consequence of damage to the existing utilities, their appurtenances, or other facilities caused directly or indirectly by the operations of the Contractor.

Any damage to any existing utility shall be repaired including all materials, labor, etc., to the Engineer's and/or respective utility company's satisfaction at no cost to the Owner.

The Contractor's attention is directed to the requirements of Article 1.07.13 – Contractor's Responsibility for Adjacent Property and Services. The contractor shall provide a minimum three feet nominal cover, and equipment wheel loads shall not exceed 24,000 lbs. where construction equipment traverses watermains.

The Contractor shall notify utility companies by calling the number 1-800-922-4455 (Call Before You Dig) at least forty-eight (48) hours prior to the start of excavation. This notification will enable the utility companies to mark out their facilities in the field.

Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., sewer, gas, 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 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.

NOTICE TO CONTRACTOR – SITE CLEANLINESS

The Contractor is hereby notified that all areas utilized for construction activities including all onsite and offsite facilities shall be maintained so as to be free of rubbish, trash and deleterious construction debris at all times. The use of covered and secured trash receptacles is required. All receptacles will be regularly emptied and maintained.

There will be no direct payment for maintaining the site cleanliness of the construction areas under the contract.

NOTICE TO CONTRACTOR – BITUMINOUS CONCRETE ADJUSTMENTS

Adjustments to bituminous concrete quantities for payment will not be permitted. This includes, but is not limited to, adjustments for density, mixture, weight, thickness, and width.

NOTICE TO CONTRACTOR – BITUMINOUS CONCRETE DENSITY TESTING

In lieu of performing cores to determine density of compacted bituminous concrete material as outlined in Section 4.06 – Bituminous Concrete, the Contractor shall perform in-place nuclear density compaction tests for bituminous concrete.

In the event that the in-place nuclear density test results for bituminous concrete pavement are unsatisfactory, the Contractor shall be required to take cores of the compacted bituminous concrete material. In this case the Borough's inspection staff will randomly locate core locations as specified in Section 4.06. Borough inspection staff will tag and transport the cores to an independent material test lab for analysis.

The completed pavement course on roadways and bridges will have the mat and longitudinal joints tested for compaction in accordance with "Density Testing Procedure" established by the Department's Director of Research and Materials. Each course placed at a depth of one and one-half inches or greater shall have the mat and longitudinal joints compacted to a minimum of 92.0 percent and no more than 97.0 percent density as determined by AASHTO T209 (modified).

All costs associated with obtaining cores for acceptance of testing and dispute resolution are included in the general cost of the Contractor's work.

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TECHNICAL SPECIFICATION - DIVISION I

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SECTION 1.03 - AWARD AND EXECUTION OF CONTRACT

Article 1.03.08 - Notice to Proceed and Commencement of Work:

Change the first paragraph to read as follows:

The Contractor shall commence and proceed with the Contract work on the date specified in a written Notice to Proceed issued by the Engineer to the Contractor. The date specified will be no later than 45 calendar days after the date of the execution of the Contract by the Department, however, the contractor is hereby put on notice that it is the Department's intent to issue the Notice to Proceed no later than 24 calendar days after the date of the execution of the Contract by the Department.

SECTION 1.05 - CONTROL OF THE WORK

Replace Article 1.05.02 *with the following:*

1.05.02—Plans, Working Drawings, Shop Drawings, Product Data, Submittal Preparation and Processing - Review Timeframes, Department's Action:

1. Plans: The plans prepared by the Engineer show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show location, character, dimensions, and details necessary to complete the Project. If the plans do not show complete details, they will show the necessary dimensions and details, which when used along with the other Contract documents, will enable the Contractor to prepare Working Drawings, Shop Drawings or Product Data necessary to complete the Project.

Project submittals shall be delivered to the Department using the Department's project management system COMPASS. The Contractor shall acquire and maintain access to COMPASS for the delivery of submittals as listed herein. The delivery processes and document tracking procedures shall be performed in accordance with this specification and the COMPASS Contractor's User Manual.

2. Working Drawings: When required by the Contract or when ordered to do so by the Engineer, the Contractor shall prepare and submit the Working Drawings, signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut, for review. The Working Drawings shall be submitted sufficiently in advance of the work detailed, to allow for their review in accordance with the requirements specified in 1.05.02-5 (including any necessary revisions, resubmittal, and final review). There will be no direct payment for furnishing any Working Drawings, procedures or supporting calculations, but the cost thereof shall be considered as included in the general cost of the work.

The Contractor is only required to deliver paper copies that have been stamped with "No Exceptions Noted" or "Exceptions as Noted." Guidance to the Contractor for the number of properly sized paper copies will be provided by the Department.

All Working Drawing submission documents shall conform to the following requirements:

a. Drawings:
   i. Delivered in a single multi-page PDF file.
   ii. Shall be sized ANSI D (34 inches × 22 inches).
   iii. Contain a border, title block and a rectangular box, 2.25 inches wide × 1.75 inches high, in the lower right hand corner for the Department's stamp.
   iv. Text height and width shall be 0.125 inch.
   v. All letter characters shall be uppercase.
   vi. Shall be searchable.
   vii. Shall be black and white.
   viii. Cover Page - shall be digitally signed by the Contractor's Professional Engineer.
   ix. All pages shall include a watermark of the Professional Engineer's stamp in a common area.

b. Calculations:
    i. Delivered in a single PDF file
    ii. Shall be sized ANSI A (8.5 inches × 11 inches).
    iii. Cover Page shall be digitally signed by the Contractor's Professional Engineer.
c. Supporting Documentation:
    i. Delivered as an independent single PDF file
    ii. Shall be sized ANSI A (8.5 inches × 11 inches).

d. Working Drawings for Permanent Construction: The Contractor shall supply to the Department a certificate of insurance in accordance with 1.03.07 at the time that the Working Drawings for the Project are submitted.

    i. The Contractor's designer, who prepares the working drawings, shall secure and maintain at no direct cost to the State a Professional Liability Insurance Policy for errors and omissions in the minimum amount of $2,000,000 per error or omission. The Contractor's designer may elect to obtain a policy containing a maximum $250,000 deductible clause, but if the Contractor's designer should obtain a policy containing such a clause, they shall be liable to the extent of at least the deductible amount. The Contractor's designer shall obtain the appropriate and proper endorsement of its Professional Liability Policy to cover the indemnification clause in this Contract, as the same relates to negligent acts, errors or omissions in the Project work performed by them. The Contractor's designer shall continue this liability insurance coverage for a period of
    ii. 3 years from the date of acceptance of the work by the Engineer, as evidenced by a State of Connecticut, Department of Transportation form entitled "Certificate of Acceptance of Work," issued to the Contractor; or
    iii. 3 years after the termination of the Contract, whichever is earlier, subject to the continued commercial availability of such insurance.

e. Working Drawings for Temporary Construction: The Contractor shall submit drawings, calculations, procedures and other supporting data to the Department in accordance with this Specification, with the exception of requirements defined under a. Working Drawings for Permanent Construction.

3. Shop Drawings: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver Shop Drawings to the Department for review.

Shop Drawings shall be submitted sufficiently in advance of the work detailed, to allow for their review in accordance with the requirements specified in 1.05.02-5 (including any necessary revisions, resubmittal, and final review). There will be no direct payment for furnishing any Shop Drawings but the cost thereof shall be considered as included in the general cost of the work.

The Contractor is only required to deliver paper copies that have been stamped with "No Exceptions Noted" or "Exceptions as Noted." Guidance to the Contractor for the number of properly sized paper copies will be provided by the Department.

Shop Drawing submission documents shall conform to the following requirements:

a. Delivered in a single multi-page PDF file.
b. Shall be sized ANSI D (34 inches × 22 inches).
c. Contain a border, title block and a rectangular box, 2.25 inches wide × 1.75 inches high, in the lower right hand corner for the Department's stamp.
d. Text height and width shall be 0.125 inch.
e. All letter characters shall be uppercase.
f. Shall be searchable.
g. Shall be black and white.

4. Product Data: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver Product Data to the Department for review.

Product Data shall be submitted sufficiently in advance of the work detailed, to allow for their review in accordance with the requirements specified in 1.05.02-5 (including any necessary revisions, resubmittal, and final review). There will be no direct payment for furnishing any Product Data but the cost thereof shall be considered as included in the general cost of the work.

The Contractor shall submit the Product Data in a single submittal for each element of construction.

The Contractor shall mark each copy of the Product Data submittal to show applicable choices and options. Where Product Data includes information on several products that are not required, copies shall be marked to indicate the applicable information. Product Data shall include the following information and confirmation of conformance with the Contract to the extent applicable: manufacturer's printed recommendations, compliance with recognized trade association standards, compliance with recognized testing agency standards, application of testing agency labels and seals, notation of coordination requirements, Contract item number, and any other information required by the individual Contract provisions.

The Contractor is only required to deliver paper copies that have been stamped with "No Exceptions Noted" or "Exceptions as Noted." Guidance to the Contractor for the number of properly sized paper copies will be provided by the Department.

Product Data submission documents shall conform to the following requirements:
a. Delivered in a single PDF file
b. Shall be sized ANSI A (8.5 inches × 11 inches).
c. Marked to indicate applicable choices and options.
d. Where non-applicable information and products are included, notations shall be made to clearly delineate applicable from non-applicable information.

5. Submittal Preparation and Processing – Review Timeframes: If the Department deems a submittal incomplete or unacceptable because not all the required documents were attached, documents are incomplete, or are in the incorrect format, the Department will send the submittal back to the Contractor before reviewing. When a submittal is sent back as incomplete, the associated documents have not been reviewed and the review process and any associated timeframe requirements have not begun.

The Contractor shall allow 30 calendar days for submittal review by the Department, from the date receipt is acknowledged by the Department. For any submittals stamped with "Revise and Resubmit" or "Rejected," the Department is allowed an additional 20 calendar days for review of any resubmissions.

An extension of Contract time will not be authorized due to the Contractor's failure to transmit submittals sufficiently in advance of the work to permit processing.

The furnishing of Shop Drawings, Working Drawings or Product Data, or any comments or suggestions by the Designer or Engineer concerning Shop Drawings, Working Drawings or Product Data, shall not relieve the Contractor of any of its responsibility for claims by the State or by third parties, as per 1.07.10.

The furnishing of the Shop Drawings, Working Drawings and Product Data shall not serve to relieve the Contractor of any part of its responsibility for the safety or the successful completion of the Project construction.

6. Department's Action: The Department will review each submittal, mark each with a self-explanatory action stamp, and return the stamped submittal promptly to the Contractor. The Contractor shall not proceed with the part of the Project covered by the submittal until the submittal is marked "No Exceptions Noted" or "Exceptions as Noted" by the Department. The Contractor shall retain sole responsibility for compliance with all Contract requirements. The stamp will be marked as follows to indicate the action taken:

a. If submittals are marked "No Exceptions Noted," the Designer or Engineer has not observed any statement or feature that appears to deviate from the Contract requirements. This disposition is contingent on being able to execute any manufacturer's written warranty in compliance with the Contract provisions.
b. If submittals are marked "Exceptions as Noted," the considerations or changes noted by the Department's Action are necessary for the submittal to comply with Contract requirements. The Contractor shall review the required changes and inform the Department if they feel the changes violate a provision of the Contract or would lessen the warranty coverage.
c. If submittals are marked "Revise and Resubmit," the Contractor shall revise the submittals to address the deficiencies or provide additional information as noted by the Department. The Contractor shall allow an additional review period as specified in 1.05.02-5.
d. If submittals are marked "Rejected," the Contractor shall prepare and submit a new submittal in accordance with the Department's notations. The resubmissions require an additional review and determination by the Department. The Contractor shall allow an additional review period as specified in 1.05.02-5.

SECTION 1.07 – LEGAL RELATIONS AND RESPONSIBILITIES

Delete Article 1.07.07 in its entirety and replace it with the following:

1.07.07—Safety and Public Convenience: The Contractor shall conduct the Project work at all times in such a manner as to ensure the least possible obstruction to traffic. In a manner acceptable to the Engineer, the Contractor shall provide for the convenience and interests of the general public; the traveling public; parties residing along or adjacent to the highway or Project Site; and parties owning, occupying or using property adjacent to the Project Site, such as commuters, workers, tenants, lessors and operating agencies.

Notwithstanding any other Contract provision, the Contractor shall not close to normal pedestrian or vehicular traffic any section of road, access drive, parking lot, sidewalk, station platform, railroad track, bus stop, runway, taxiway, occupied space within a Site, or occupied space within a building, except with the written permission of the Engineer.

All equipment, materials, equipment or material storage areas, and work areas must be placed, located, and used in ways that do not create a hazard to people or property, especially in areas open to public pedestrian or vehicular traffic. All equipment and materials shall be placed or stored in such a way and in such locations as will not create a hazard to the traveling public or reduce sight lines. In an area unprotected by barriers or other means, equipment and materials must not be stored within 30 feet of any traveled way.

The Contractor must always erect barriers and warning signs between any of its work or storage areas and any area open to public, pedestrian, or vehicular traffic. Such barriers and signs must comply with all laws and regulations, including any applicable codes.

The Contractor must arrange for temporary lighting, snow and ice removal, security against vandalism and theft, and protection against excessive precipitation runoff within its Project work and storage areas, and within other areas specifically designated in the Contract.

In addition to meeting the requirements of Section 9.71, the Contractor shall take all precautions necessary and reasonable for the protection of all persons, including, but not limited to, employees of the Contractor or the Department, and for the protection of property, until the Engineer notifies the Contractor in writing that the Project or the pertinent portion of the Project has been completed to the Engineer's satisfaction.

The Contractor shall comply with the safety provisions of applicable laws, including building and construction codes and the latest edition of the CFR. The Contractor must make available for reference in its field office, throughout the duration of the Project, a copy of the latest edition and all supplements of the CFR pertaining to OSHA.

The Contractor shall make available to the Contractor's employees, subcontractors, the Engineer, and the public, all information pursuant to OSHA 29 CFR Part 1926.59 and The Hazard

Communication Standard 29 CFR 1910.1200, and shall also maintain a file on each job site containing all MSDS for products in use at the Project. These MSDS shall be made available to the Engineer upon request.

The Contractor shall observe all rules and regulations of the Federal, State, and local health officials. Attention is directed to Federal, State, and local laws, rules, and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to the worker's health or safety.

Safety Plan: Before starting work on the Project, the Contractor shall submit to the Engineer a written Safety and Health Plan (hereinafter referred to as the "Plan"). The Plan shall meet or exceed the minimum requirements of this Subsection and any applicable State or Federal regulations.

The Plan shall apply to any work under the Contract whether such work is performed, by way of example and not limitation, by the Contractor's forces, subcontractors, suppliers, or fabricators.

The Plan shall be prepared by the Contractor and submitted to the Engineer for review before the actual start of work on the Project. Within ten (10) calendar days of receipt, the Engineer will determine whether or not the Plan meets the requirements of this Specification. If the Plan does not meet the requirements of this Specification, it will be returned for revision. Work on the Project may not proceed until the Engineer has accepted the Plan. Nothing herein shall be construed, however, to relieve the Contractor from responsibility for the prosecution of the Project.

The Plan shall conform to the following general format:

1. **General Introduction.**
    a. **Description.** The general introduction of the Plan shall include a statement by the Contractor describing its commitment to maintain a safe work environment for its employees, Department representatives, and the public. Implementation procedures and company policies relative to safety shall be summarized or referenced in the Plan.
        i. The Plan shall include the names, addresses, and telephone numbers of the Contractor's Project Manager, Project superintendent and/or its designee for safety oversight, all competent persons, and the traffic control coordinator. Any changes to the safety management and oversight for the Project shall be promptly communicated to all concerned.
        ii. The Plan shall provide guidelines for protecting all personnel from hazards associated with Project operations and activities.
        iii. The Plan shall establish the policies and procedures that are necessary for the Project to be in compliance with the requirements of OSHA and other State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the work is in progress.
    b. **Responsibility, Identification of Personnel, and Certifications.** The Contractor is solely responsible for creating, implementing, and monitoring the Plan.

i. The Contractor shall identify and designate on-site supervisory level personnel who shall be responsible for implementing and monitoring the Plan at all times throughout the duration of the Project and shall have authority to take prompt corrective measures to eliminate hazards including the ability to stop work activities.
ii. Documentation of training provided to the on-site supervisory level personnel shall be included as part of the Plan.
iii. For any work activities wherein the Contractor has identified a competent person as defined by OSHA, that person shall be capable of identifying existing and predictable hazards and have the authority to take prompt corrective measures to eliminate the hazards, including the ability to stop work activities.
iv. Documentation of the qualifications of such competent persons identified, including any certifications received, shall be included as part of the Plan.
v. The Contractor shall further identify the qualified safety professional responsible for developing the Plan and shall provide that person's qualifications for developing the Plan which shall include, but not be limited to, education, training, certifications, and experience in developing this type of Plan.
vi. The Plan shall contain a certification executed by the qualified safety professional that developed the Plan, stating that the Plan complies with OSHA and other applicable State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the work is in progress.

2. **Elements of the Plan.** The Plan shall address, but not be limited to, the following elements:
   a. **Management Safety Policy and Implementation Statement.**
      i. The Plan shall describe in detail the means by which the Contractor shall implement and monitor the Plan. Implementation and monitoring shall also mean that the Plan shall be a document with provision for change to update the Plan with new information on a yearly basis at a minimum and shall include new practices or procedures, changing site and environmental conditions, or other situations that could adversely affect site personnel. The Plan shall provide guidelines for protecting all personnel from hazards associated with Project operations and activities.
   b. **Emergency Telephone Numbers.**
   c. **Personnel Responsibilities.**
      i. Management responsibilities
      ii. Responsibilities of Supervisor(s)
      iii. Site safety officer(s) responsibilities
      iv. Employee responsibilities
      v. Competent person(s) as defined by OSHA responsibilities
      vi. d. Training.
   d. **Regulatory**
      i. Documentation
      ii. Site hazard assessment -Daily employee awareness of site operations

e. Safety Rules.
- i. General safety rules
- ii. Personal protective equipment
- iii. Housekeeping

f. Safety Checklists.
- i. Project safety-planning checklist
- ii. Emergency plans and procedures checklist
- iii. Documentation checklist
- iv. Protective materials and equipment checklist

g. Traffic Control Coordinator Inspections.
- i. Responsible person
- ii. Frequency
- iii. Documentation of actions taken

h. Record Keeping.
- i. OSHA 200 log

i. Reporting.
- i. Accident(s)
- ii. On site
- iii. Legal notice requirement
- iv. Public liability
- v. Property damage
- vi. Department of Labor
- vii. Hazard Communications

j. Additional Procedures for Project Specific Situations as Applicable.
- i. Compressed gas cylinders
- ii. Confined spaces
- iii. Cranes
- iv. Crystalline silica (stone, masonry, concrete, and brick dust)
- v. Electrical
- vi. Equipment operators
- vii. Fall protection
- viii. Hand and power tools
- ix. Hearing conservation
- x. Highway safety
- xi. Lead health and safety plan
- xii. Lock out/tag out
- xiii. Materials handling, storage, use, and disposal
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- xvii. Project entry and exit
- xviii. Respiratory protection
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- xx. Signs, signals, and barricades
- xxi. Subcontractors
- xxii. Trenching

3. Appendix for Environmental Health and Safety Plan (HASP). If environmental hazards are identified in the Contract, an Environmental HASP shall be included in an appendix to the Plan, or in a separate document. References to any Environmental HASP shall be included within the Plan, where appropriate.

The Plan shall be kept on the site and shall apply and be available to all workers and all other authorized persons entering the work site. Copies of all updates to the Plan shall be promptly supplied to the Engineer.

If at any time during the Project the Engineer determines that the Contractor is not complying with the requirements of this provision or the updated Plan, the Contractor shall correct such deficiencies immediately. Failure to remediate such deficiencies may result in suspension of the Contractor's operations until the deficiencies have been corrected. Suspensions ordered due to safety deficiencies will not be considered compensable or excusable delays.

The Contractor is responsible for implementation of the Plan. Pursuant to Article 1.07.10, the Contractor shall indemnify, and save harmless the State from any and all liability related to the Plan in proportion to the extent that the Contractor is held liable for same by an arbiter of competent jurisdiction. The Contractor shall allow onto the Project site any inspector of OSHA or other legally responsible agency involved in safety and health administration upon presentation of proper credentials, without delay and without the presentation of an inspection warrant.

Article 1.07.13 - Contractor's Responsibility for Adjacent Property, Facilities and Services is supplemented as follows:

The Contractor shall coordinate with the utilities in the area for the protection of utilities at least 30 days prior to the start of any work on this project involving the respective utility. Refer to Supplemental Conditions Section 29 for utility contact information.

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.04 - Limitation of Operations - Add the following:

In order to provide for traffic operations as outlined in the Special Provision "Maintenance and Protection of Traffic," the Contractor will not be permitted to perform any work which will interfere with the described traffic operations on all project roadways as follows:

All Roadways

Saturday and Sunday between 10:00 a.m. and 6:00 p.m.

Church Street

Contractor shall provide a safe means for pedestrian and vehicle access to business on Church Street throughout Construction.

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TECHNICAL SPECIFICATION - SPECIAL PROVISIONS

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Technical Specifications – Special Provisions

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ELECTRICAL WORK IN THE TOWN GREEN

Description: The work under this item shall include electrical demolition and furnishing all labor, equipment, permits, and materials necessary for the installation of the complete metered electrical system in the Town Green as shown on the plans and directed by the Engineer. This item shall include all permits, utility coordination and scheduling to provide electrical service and furnish and install a complete and operable system. Decorative light pole foundation and decorative light pole and luminaire shall be paid under separate items.

Materials: Electrical materials and equipment shall be UL listed and shall conform to factory mutual standards as applicable.

Construction Methods: Work shall be installed in a neat and professional manner in accordance with the plans. Installation shall comply with the code of the local authority having jurisdiction. Coordinate underground circuit installation with other existing and proposed underground utilities. Engage the services of a utility locating firm prior to excavation.

Furnish the Owner prior to the final payment a certificate from the electrical inspection department having jurisdiction certifying that the electrical work meets requirements of the local inspection authorities and/or the national board of fire underwriters.

Guarantee: The entire electrical installation, material, and workmanship shall be guaranteed for a period of one year from the date of substantial completion.

Measure of Payment: This item is being paid on a lump sum and thus will not be measured for payment. Decorative light pole foundation shall be paid under Item #1002110 and decorative light pole and luminaire shall be paid under Item #1003595. Connection of the decorative lights shall be included in the lump sum cost of this item.

Basis of Payment: This work will be paid for at the Contract lump sum price for the "Electrical Work in the Town Green" which price shall include all permits, utility coordination, demolition, relocations, all materials, equipment, testing, and labor incidental to completion of this item.

Pay Item	Pay Unit
Electrical Work in the Town Green	L.S.

ITEM #0101157A: CONTAMINATED SOIL MANAGEMENT

Description:
Furnish all labor, materials, equipment, and incidentals required to characterize and stage excess soil and fill material. The Contractor shall be experienced and knowledgeable and have the trained and qualified personnel needed to conduct the work. Contractor shall have demonstrated experience in handling and management of soils, including characterization for off-site disposal. In the course of the work, it may be necessary to excavate and manage potentially contaminated soil and fill. The soil and fill management practices specified herein apply to all soil and fill excavated during this contract. Potentially contaminated sites are located within or adjacent to the construction areas as described in the Environmental Conditions Memo appended in the Contract Documents.

Construction Methods:
The Contractor, or their designated environmental professional, shall characterize all excavated soil and fill material prior to off-site reuse or disposal; pre-excavation characterization may be conducted by the Contractor. Characterization requirements may vary depending on the site selected to receive soil suitable for reuse or the disposal facility permits and policies. The Contractor is responsible for final waste characterization and shall determine waste characterization required by the facility. At a minimum, all surplus soils shall be analyzed for the following parameters: Resource Conservation and Recovery Act (RCRA) total metals; volatile organic compounds; semi-volatile organic compounds; extractable total petroleum hydrocarbons; polychlorinated biphenyls (PCBs); pesticides; chlorinated herbicides; corrosivity/pH; ignitability; reactivity; and conductivity. Toxicity Characteristic Leaching Procedure (TCLP) analysis shall be conducted for any analyte for which the mass analysis divided by 20 is greater than or equal to Toxicity Characteristic (TC) thresholds defined in 40 CFR 261.3. The Owner shall not be responsible for costs associated with additional soil characterization. Characterization of soil, fill, and unknown material for disposal/reuse purposes, including field screening and soil management/segregation; temporary storage/staging; and laboratory analysis (as may be necessary for unknown materials and/or for compliance with receiving facility requirements). All laboratory chemical analyses conducted shall utilize currently accepted USEPA and applicable state agency analytical protocols and procedures. The Contractor, or their designated environmental professional, shall complete all required soil profile documentation based upon the waste characterization results. The Contractor will provide the soil profile documentation to the Owner and Engineer for review and signature.

Excavated soil that cannot be re-used on site shall either be loaded directly into containers for off-site reuse/disposal (provided the material has been approved for acceptance at an off-site facility) or temporarily stockpiled at a location determined and secured by the Contractor, pending disposal characterization by the Contractor, or their designated environmental professional. Soil suspected of being hazardous waste, defined as having the characteristics of a hazardous waste or of containing a listed hazardous waste, shall not be removed from the area of contamination, or staged at another location except at the direction of the Engineer. Unless excavated soil is live loaded for disposal, it shall be the responsibility of the Contractor to maintain segregated waste stockpiles in conformance with all applicable federal, state, and local waste disposal regulations. The Contractor shall select the area to facilitate handling of the material and to minimize interference with other

ongoing construction activities. The Contractor shall provide construction details of the proposed staging area(s), including dimensions and protective measures, to the Owner or Engineer prior to construction. Unless the staging area is comprised of an impervious surface material such as asphalt or concrete, the Contractor shall pre-characterize the surface soils (0-6") at the staging area(s) prior to staging any soils to document the existing conditions relative to contamination which may result from using the area to stage excess or unknown materials. A minimum of one composite surface soil sample, consisting of at least five grab samples, for every 2,500 square feet of staging area shall be collected by the Contractor prior to staging materials at the location. The samples will be submitted to a certified laboratory for analysis for: RCRA total metals; volatile organic compounds; semi-volatile organic compounds; extractable total petroleum hydrocarbons; pesticides; chlorinated herbicides; corrosivity/pH; ignitability; reactivity; and conductivity. At the completion of the work, the Contractor shall replicate the pre-staging sampling and analysis protocol to assess impacts to the area from use as a staging area. Stockpiles located within the soil staging areas shall be placed on asphalt or concrete, or on a 20-mil HDPE liner and bermed to minimize the effects of contamination release. Each soil category shall be staged in separate areas with berms constructed a minimum of 2 feet above the existing grade with common fill, hay bales, concrete barriers, or functionally equivalent berm material. Hazardous waste must be disposed off-site within 90 days of excavation. All other waste must be disposed of within 120 calendar days of excavation. Stockpiles are to be segregated based on a review of pre-characterization data and visual and olfactory conditions and field screening results obtained during excavation. Each stockpile must be clearly separated from adjacent stockpiles. Stockpiles shall be limited in size to approximately 500 cubic yards, unless approved by the Engineer. If, because of combining soil piles into larger volumes than 500 cubic yards, soil must be disposed of as a higher cost bid item than would otherwise be required, the Contractor shall be responsible for the additional cost. Stockpiles shall be clearly designated by a signpost or marker which can be cross-referenced with the source location and with samples collected from the pile for characterization purposes. The signs/markers are not to be moved, except by authorized personnel and not until the soil is ready to be either reused on site or loaded for off-site disposal. Excavated soil shall not be added to a stockpile after it has been sampled for characterization. Unknown, potentially hazardous soils/debris and drummed materials encountered during the project shall be in a separate bermed location. The Contractor shall be responsible to inform the Owner if hazardous waste disposal will not be performed within 90 days of hazardous waste characterization. This notification shall take place a minimum of 30 days prior to the 90-day deadline. No hazardous waste stockpiled at the site shall remain on site more than 90 days after it is characterized.

Prior to transporting any soils or fill material to a disposal facility the Contractor shall submit a letter from the disposal facility indicating that the facility has reviewed the available data and the generator's profile of the material and the facility agrees that it meets the facility's acceptance criteria. It is the responsibility of the Contractor to complete all manifests, Bill of Ladings, Material Shipping Records, and supporting documents completely, legibly, and accurately prior to submitting them to the Engineer. The Contractor shall be responsible for coordinating disposal documentation with all parties. Where appropriate the Contractor shall submit waste manifests for all waste disposed off-site to the appropriate Engineer, agency, facility, or person within the time constraints specified by state and federal regulations. Copies of all waste manifests and Bill of Lading documentation including weight slips shall be provided to the Engineer within 10 days of shipment. The Contractor shall reimburse the Engineer for any and all fines associated with

inaccurate, incorrect, or improperly completed waste manifests, including fines resulting from late or untimely submittals.

Method of Measurement:
This item is being paid on a lump sum and thus will not be measured for payment. Transportation and disposal of soil and fill shall be paid for under Item #202310.

Basis of Payment: This item will be paid for at the Contract lump sum price for "Contaminated Soil Management" as required, which price shall include all soil characterization, coordination, equipment, tools, and labor incidental thereto.

Pay Item	**Pay Unit**
Contaminated Soil Management	Lump Sum

ITEM # 0202452A – TEST PIT

Description:
The work covered under this item includes furnishing all labor, equipment, materials, and incidentals necessary to perform all operations in connection with excavating and backfilling by machine and/or by hand exploratory test pits at locations indicated or directed by the Engineer. The purpose of the test pits is for locating and examining soils, groundwater, drains, pipes, rocks, utilities, structure foundations, or any other obstacles.

Construction Methods:
Test pit excavations shall have neat, clean-cut, and vertical sides; hand-digging shall be employed when required by the Engineer. Sawcut shall be performed where necessary and as directed by the Engineer.

It shall be agreed that the Contractor entered into this contract with full knowledge that in any work involving excavation, operation in public highways or adjacent to other developments, obstacles, difficulties, unforeseen soil or groundwater conditions, etc., may be encountered, and that the Contractor has included in the bid and contract obligations the assumptions of the risks and costs to which such obstacles, etc., may be present. Contractor shall "Call Before Dig" before any excavation work.

Perform all work in conformance with local, state, and federal codes.

Dig test pits so as to ensure that underground utilities or structures are not damaged. It shall be the Contractor's sole responsibility for any damages incurred during excavation operations. Any damages shall be repaired or replaced by the Contractor to the satisfaction as directed by the Engineer at the Contractor's own expense.

Contractor shall notify the Engineer of any revealed conflicts which may require design revisions, relocations, and/or adjustments as early as possible to avoid unnecessary delays. The Engineer shall be allowed sufficient time to perform all necessary design revisions. No work shall be started within areas of conflict until so authorized.

Protect each pit with steel plates, other coverings, fences, barriers, or other appropriate materials as deemed necessary. Do not backfill pits until authorized. Compact backfill materials 95% to the sub-grade elevation or as otherwise directed.

The surface of test pit areas shall be restored to a condition equal or better than original as approved by the Engineer. Test pits throughout the project area are to be completed prior to beginning actual construction activities.

Method of Measurement:
Test pits will be measured for payment by the number of each test pit dug within the limits and to the depths as ordered and approved by the Engineer.

Basis of Payment:
The cost of the sawcut, excavation, removal of pavement, restoration of the surface of the test pit areas, and associated construction work will be included in the test pit cost.

Pay Item	**Pay Unit**
Test Pit	ea.

ITEM #0202502A – REMOVAL OF CEMENT PAVERS, POLYMERIC SAND AND DRAINAGE BLANKET

Description: Under this item the Contractor shall carefully remove the existing 3-1/8" cement pavers, 1" polymeric bedding sand and 3/8" drainage blanket on Maple Street (Whittemore Bridge) or as directed.

Construction Methods: The removed cement pavers, polymeric bedding sand and drainage blanket shall be properly disposed of by the Contractor.

Method of Measurement: This work will be measured for payment by the number of Square Yard of surface area for removed and disposed of, complete and accepted.

Basis of Payment: This work will be paid for at the contract unit price for "Removal of Cement Pavers, Polymeric Sand and Drainage Blanket", which price shall include all materials, equipment and work incidental thereto including excavation, removal, backfill when necessary, hauling and disposing of the cement pavers, polymeric sand and drainage blanket.

Pay Item	**Pay Unit**
Removal of Cement Pavers, Polymeric Sand and Drainage Blanket	s.y.

ITEM #0202513A – REMOVAL OF CONCRETE SIDEWALK (CHURCH STREET CROSSWALKS)

Description: Under this item the Contractor shall remove the existing concrete sidewalk located at the crosswalks on Church Street or as shown on the plans or as directed.

Construction Methods: The removed concrete sidewalk shall be properly disposed of by the Contractor.

Method of Measurement: This work will be measured for payment by the number of Square Yard of surface area for removed and disposed of, complete and accepted.

Basis of Payment: This work will be paid for at the contract unit price for "Removal of Concrete Sidewalk (Church Street Crosswalks)" which price shall include all materials, equipment and work incidental thereto including excavation, removal, backfill when necessary, hauling and disposing of the concrete sidewalks.

Pay Item	**Pay Unit**
Removal of Concrete Sidewalk (Church Street Crosswalks)	s.y.

ITEM #0216012A – CONTROLLED LOW STRENGTH MATERIAL

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description: Controlled Low Strength Material (CLSM) is a self-consolidating, ridge setting material to be used in backfills, fills, structural fills, and elsewhere as indicated on the plans, or as directed by the Engineer. The flow and set times characteristics of CLSM shall be designed to meet the job conditions. All CLSM material covered by this specifications shall be designed to be hand excavatable at any time after placement. It shall be composed of a mixture of Portland cement, aggregate, and water with the option of using fly ash, slag cement, air-entraining agents, and other approved admixtures.

Materials: All materials utilized in the CLSM mix design shall be in accordance with the applicable requirements of Article M.03.01.

Composition: The composition of the CLSM shall be in accordance with the requirements set forth in Article M. 03.01-General Composition of Concrete Mixes, as well as the applicable section of ACI 229R. The Contractor shall submit each proposed mix design, with all supporting data, to the Engineer for review and approval at least two weeks prior to its use.

The setting time of CLSM materials shall be designed so as to achieve the strength necessary to comply with the time constraints called for under the Maintenance and Protection of Traffic requirements for the project specifications. The use of chloride accelerators is not permitted.

The minimum compressive strength of the CLSM material shall be 30 pounds per square inch (psi) and the maximum compressive strength of the CLSM shall be 150 pounds per square inch (psi) when tested in accordance with ASTM D4832 after 56 days.

The CLSM mix design shall utilize a nominal maximum size of No. 8 aggregate as specified in M.01.01.

CLSM mixes shall have a minimum of 20% entrained air when tested in accordance with AASHTO T152.

Construction Methods: CLSM shall only be placed when the ambient temperature is at least 32 degrees F and rising. CLSM material shall be deposited within 2 hours of initial mixing.

CLSM may be place by chutes, conveyors, buckets or pumps depending upon the application and accessibility of the site. Should voids or cavities remain after the placement of the CLSM, the Contractor shall modify the placement method or flow characteristics for the CLSM. Voids or cavities which have not been filled properly shall be corrected as directed by the Engineer and at the Contractor's expense.

Method of Measurement: This work will be measured for payment by the actual number of cubic yards of "Controlled Low Strength Material installed and accepted within the pay limits shown on the contract plans or as directed by the Engineer.

Basis of Payment: This work will be paid for at the contract unit price per cubic yard "Controlled Low Strength Material," which price shall include all materials, equipment, tools, labor, and work incidental thereto.

Pay Item	**Pay Unit**
Controlled Low Strength Material	c.y.

0219004.1A – TREE FILTERS - GREEN STORMWATER INFRASTRUCTURE

Description:
Under this item, the Contractor shall complete all work associated with the tree filters – green stormwater infrastructure within the designated pay limits, as depicted on the Contract Plans titled "Tree Filters – Green Stormwater Infrastructure Pay Limits for Major Lump Sum Work" and described in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this Major Lump Sum Item (MLSI).

This item shall include all work required for furnishing and installation of tree filters of the type called for within this specification, complete with components in conformity with plans, details, approved shop drawings and manufacturer's specifications, as the locations shown on the plans, or as directed by the Engineer. The work shall include, but not be limited to, the excavation, backfill material (adjacent to Silvia Cells), support and dewatering, Silva Cell system components, root barrier, geogrid, geotextile, wood blocking, drain pipes, input manifold cleanout, aggregate subbase (below Silva Cell Base), aggregate base course (above Silva Cell deck), erosion and sedimentation control and planting soil.

Any work incidental to another bid item which is not specifically excluded herein from this bid item, but which is required for performance and completion of the work required under the Contract within "Pay Limits for Major Lump Sum Work", shall be considered to be included under this item.

Materials:

All materials shall be as required by the Contract Plans, as described in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this MLSI.

Construction Methods:

All methods of construction shall conform to the requirements as stipulated in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this MLSI.

Method of Measurement: This item being paid on a lump sum will not be measured for payment.

Pay Item	Pay Unit
Tree Filters – Green Stormwater Infrastructure	ls.

0219004.2A – SUBSURFACE INFILTRATION - GREEN STORMWATER INFRASTRUCTURE

Description:
Under this item, the Contractor shall complete all work associated with the subsurface infiltration – green stormwater infrastructure within the designated pay limits, as depicted on the Contract Plans titled "Subsurface Infiltration – Green Stormwater Infrastructure Pay Limits for Major Lump Sum Work" and described in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this Major Lump Sum Item (MLSI).

This item shall include all work required for furnishing and installation of the subsurface infiltration of the type called for within this specification, complete with components in conformity with plans, details, approved shop drawings and manufacturer's specifications, as the locations shown on the plans, or as directed by the Engineer. The work shall include, but not be limited to, all excavation, backfilling, ADS MC-7200 Chambers, end caps, manifold header and stub, inspection port, stone, root barrier, geotextile, drainage pipe, drainage structures, concrete sidewalk, temporary support of foundations, topsoil, seeding, erosion and sedimentation control and temporary chain link fence.

Any work incidental to another bid item which is not specifically excluded herein from this bid item, but which is required for performance and completion of the work required under the Contract within "Pay Limits for Major Lump Sum Work", shall be considered to be included under this item.

Materials:

All materials shall be as required by the Contract Plans, as described in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this MLSI.

Construction Methods:

All methods of construction shall conform to the requirements as stipulated in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this MLSI.

Method of Measurement: This item being paid on a lump sum will not be measured for payment.

Pay Item	Pay Unit
Subsurface Infiltration System – Green Stormwater Infrastructure	ls.

0219004.3A – OUTFALL PLUNGE POOL / SEDIMENT FOREBAY - GREEN STORMWATER INFRASTRUCTURE (GSI)

Description:
Under this item, the Contractor shall complete all work associated with the outfall plunge pool / sediment forebay – green stormwater infrastructure within the designated pay limits, as depicted on the Contract Plans titled "Outfall Plunge Pool / Sediment Forebay – Green Stormwater Infrastructure Pay Limits for Major Lump Sum Work" and described in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this Major Lump Sum Item (MLSI).

This item shall include all work required for furnishing and installation of the outfall plunge pool / sediment forebay of the type called for within this specification, complete with components in conformity with plans, details, approved shop drawings and manufacturer's specifications, as the locations shown on the plans, or as directed by the Engineer. The work shall include, but not be limited to, all clearing and grubbing, excavation, backfilling, removal of existing drainage pipe, geotextile, modified riprap, outlet control structure, drainage pipe, drainage structures, filter fabric, concrete flared end, conservation of seeding for slopes, wet mix (bottom of basin), topsoil, seeding, temporary anti-tracking pad, temporary silt fence, erosion and sedimentation control and temporary chain link fence.

Any work incidental to another bid item which is not specifically excluded herein from this bid item, but which is required for performance and completion of the work required under the Contract within "Pay Limits for Major Lump Sum Work", shall be considered to be included under this item.

Materials:

All materials shall be as required by the Contract Plans, as described in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this MLSI.

Construction Methods:

All methods of construction shall conform to the requirements as stipulated in the CSI-formatted Specifications, and Form 818 formatted Specifications including special provisions that make up this MLSI.

Method of Measurement: This item being paid on a lump sum will not be measured for payment.

Pay Item	Pay Unit
Outfall Plunge Pool / Sediment Forebay – Green Stormwater Infrastructure (GSI)	ls.

ITEM #0219011A – SEDIMENTATION CONTROL AT CATCH BASIN

Description: This work shall consist of furnishing, installing, cleaning, maintaining, replacing, and removing sedimentation control at catch basins at the locations and as shown on plans and as directed by the engineer.

Materials

Sack shall be manufactured from a specially designed woven polypropylene geotextile sewn by a double needle machine, using a high strength nylon thread. Sack shall be manufactured by one of the following or an approved equal:

Siltsack®
SI Geosolutions:
www.sigeosolutions.com
(800)621-0444

Dandy Sack™
Dandy Products Inc.
P.O. Box 1980
Westerville, Ohio 43086
Phone: 800-591-2284
Fax: 740-881-2791
Email: dlc@dandyproducts.com
Website: www.dandyproducts.com

FLeXstorm Inlet Filters
Inlet & Pipe Protection
24137 W. 111th St - Unit A
Naperville, IL 60564
Telephone: (866) 287-8655
Fax: (630) 355-3477

The sack will be manufactured to fit the opening of the catch basin or drop inlet. Sack will have the following features: two dump straps attached at the bottom to facilitate the emptying of sack and lifting loops as an integral part of the system to be used to lift sack from the basin. The sack shall have a restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls, this cord is also a visual means of indicating when the sack should be emptied. Once the strap is covered with sediment, the sack should be emptied, cleaned and placed back into the basin.

Construction Methods:

Installation, removal, and maintenance shall be per manufacturer instructions and recommendations.

Method of Measurement: Sedimentation Control at Catch Basin will be measured as each installed, maintained, accepted, and removed. There will be no separate measurement for maintenance or replacement associated with this item.

Basis of Payment:

"Sedimentation Control at Catch Basin" will be paid for at the contract unit price each complete in place and accepted, which price shall include all maintenance throughout construction, materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
Sedimentation Control System at Catch Basin	ea.

ITEM #0402800A – CLEAN EXISTING CONCRETE SIDEWALK

Description:

1. **Summary:**
   Provide all labor, equipment, materials, tools, and supervision to complete the existing concrete sidewalk cleaning in accordance with these specifications, as detailed on the plans or as directed by the Engineer. The use of a light duty all-purpose cleaner for stone and masonry shall be utilized to clean the existing concrete sidewalk. Provide and install new joint sealant at areas of cleaned existing concrete sidewalk.

2. **Submittals:**
   a) Manufacturer's literature, specifications and application instructions for each product.
   b) Product Data Sheets and MSDS Sheet for each product.

3. **Project Conditions:**
   a) Do not apply when temperature is below freezing or will be overnight. If freezing conditions existed prior to application, let surfaces thaw.
   b) It is the Contractor's responsibility to protect all existing trees and vegetation in the area of cleaning. Any trees or vegetation damaged or killed due to treatment operations shall be replaced by the contractor at no cost to the Owner. Tree and Vegetation replacement will be approved by the City Engineer.

4. **Quality Assurance:**
   a) Mock-up a test area of existing concrete sidewalk. The mock-up shall be performed under the on-site supervision of the product manufacturer's local representative. The test shall determine suitability, dilution rates and desired result. Let surface dry thoroughly before inspection and approval (approx. 3 to 7 days). Approved mock-up shall be maintained for comparison throughout the duration of the project. The same dilution rate, mixing process, application procedures, etc. shall be utilized for the remainder of the project.

Material:

1. **Stone and Masonry Cleaner**
   D/2 Bioligical Solution as manufactured by D/2 Biological solutions, Inc., Westport, MA Phone: (917) 693-7441. E-mail: tkinnari@d2bio.com or approved equal.

   D/2 Biological Solution is a biodegradable, easy to use liquid that removes stains from mold, algae, mildew, lichens and air pollutants. It is effective on marble, granite, limestone, brownstone, travertine, masonry, terra cotta, concrete, stucco, wood, and other architectural surfaces including monuments, sculpture and headstones.

2. Joint Sealant – Match joint sealant material from Item No. 921001A.

Construction Methods:

Treating existing concrete sidewalk shall be in accordance to manufacturer's instructions, guidelines and specifications at locations indicated on the drawings or as directed by the Engineer. Contractor shall notify the Engineer no less than 48 hours prior to treating the existing concrete sidewalk. The contractor shall not proceed with treating the existing concrete sidewalks without Engineer approval.

Method of Measurement:

Measure for this item will be based on the square feet of existing concrete sidewalk cleaned, completed and accepted.

Basis of Payment:

The existing concrete sidewalk cleaning will be paid for at the contract unit price per square feet for "Clean Existing Concrete Sidewalk" which price shall include all materials, equipment, tools and labor incidental thereto.

PAY ITEM	**PAY UNIT**
Clean Existing Concrete Sidewalk	s.f.

ITEM #0402802A – CLEAN EXISTING CONCRETE RETAINING WALL

Description:

1. **Summary:**
   Provide all labor, equipment, materials, tools, and supervision to complete the existing cast in place concrete coping and CMU retaining wall cleaning in accordance with these specifications, as detailed on the plans or as directed by the Engineer, including crack repair and installation of joint sealant. The use of a light duty all-purpose cleaner for stone and masonry shall be utilized to clean the existing concrete retaining wall.

2. **Submittals:**
   a) Manufacturer's literature, specifications and application instructions for each product.
   b) Product Data Sheets and MSDS Sheet for each product.

3. **Project Conditions:**
   a) Do not apply when temperature is below freezing or will be overnight. If freezing conditions existed prior to application, let surfaces thaw.
   b) It is the Contractor's responsibility to protect all existing trees and vegetation in the area of cleaning. Any trees or vegetation damaged or killed due to treatment operations shall be replaced by the contractor at no cost to the Owner. Tree and Vegetation replacement will be approved by the City Engineer.

4. **Quality Assurance:**
   a) Mock-up a test area of existing concrete and CMU retaining wall. The mock-up shall be performed under the on-site supervision of the product manufacturer's local representative. The test shall determine suitability, dilution rates and desired result. Let surface dry thoroughly before inspection and approval (approx. 3 to 7 days). Approved mock-up shall be maintained for comparison throughout the duration of the project. The same dilution rate, mixing process, application procedures, etc. shall be utilized for the remainder of the project.

Material:

1. **Stone and Masonry Cleaner**
   D/2 Bioligical Solution as manufactured by D/2 Biological solutions, Inc., Westport, MA Phone: (917) 693-7441. E-mail: tkinnari@d2bio.com or approved equal.

   D/2 Biological Solution is a biodegradable, easy to use liquid that removes stains from mold, algae, mildew, lichens and air pollutants. It is effective on marble, granite, limestone, brownstone, travertine, masonry, terra cotta, concrete, stucco, wood, and other architectural surfaces including monuments, sculpture and headstones.

2. **Joint Sealant for Horizontal Applications**
   a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.
   b) Color to be selected by Engineer.

3. **Joint Sealant for vertical applications:**
   a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.
   b) Color to be selected by Engineer.

Construction Methods:

Treating existing concrete retaining wall shall be in accordance with manufacturer's instructions, guidelines and specifications at locations indicated on the drawings or as directed by the Engineer. Contractor shall notify the Engineer no less than 48 hours prior to treating the existing concrete retaining walls. The contractor shall not proceed with treating the existing concrete retaining wall without Engineer approval.

Method of Measurement:

Measure for this item will be based on the square feet of existing concrete retaining wall cleaned, completed and accepted.

Basis of Payment:

The existing concrete retaining wall cleaning will be paid for at the contract unit price per square feet for "Clean Existing Concrete Retaining Wall" which price shall include all materials, equipment, tools and labor incidental thereto.

PAY ITEM	**PAY UNIT**
Clean Existing Concrete Retaining Wall	s.f.

ITEM #0507119A – GRANITE CURB CATCH BASIN INLET (SINGLE)
ITEM #0507120A – GRANITE CURB CATCH BASIN INLET (DOUBLE)

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, to the requirements of Section 5.86, and supplemented as follows:

Article 5.86.02 Materials: Add the following:

Granite curb material for catch basin inlets shall conform to M.12.06.

Article 5.86.03 Construction Methods: Add the following:

Granite curbing for catch basin inlets shall be constructed in accordance with the plan details.

Article 5.86.04 Method of Measurement: Add the following:

Furnishing and constructing granite curb inlets for catch basins shall be measured as units for each type.

Article 5.86.05 Basis of Payment:

The work to install granite curb inlets for catch basins shall be paid at the contract unit price each for “Granite Curb Catch Basin Inlet (Single)" or “Granite Curb Catch Basin Inlet (Double)" complete in place, which price shall include furnishing and installation of the granite curb inlet including placement of the mortar bed and all material, equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
Granite Curb Catch Basin Inlet (Single)	ea.
Granite Curb Catch Basin Inlet (Double)	ea.

0507900A – TRENCH DRAIN

Description:

1. **Summary:** This item shall consist of furnishing and installing a trench drain of the type called for within this specification, complete with components in conformity with approved shop drawings and manufacturer's specifications, at the locations shown on the plans or as directed by the Engineer.

2. **Submittals:**
   Prior to fabrication, the Contractor shall submit manufacturer's shop drawings, product data, warranties and maintenance data to the Engineer.

Materials: The materials to be used in the construction shall be in conformance with these specifications, approved shop drawings, and manufacturer's specifications or as directed by the Engineer.

The surface drainage system shall be ACO Drain KlassikDrain K200 with galvanized steel edge rail complete with gratings secured with 'QuickLok' locking as manufactured by ACO, Inc. The trench system shall be sloped channel units and shall be manufactured from polyester polymer concrete.

Grate shall be KlassikDrain Type 676D Longitudinal Ductile Iron Grate and shall comply with requirements of the Americans with Disabilities Act (ADA).

Construction Methods:

Install trench drain in accordance with manufacturer's written instructions and details.

Method of Measurement: This work shall be measured for payment by the number of segments of the type called for installed and accepted.

Basis of Payment: This work will be paid for at the contract unit price for each "Trench Drain" of which includes a complete installation, complete in place, which price shall include all materials, labor, tools, earth excavation, concrete, formwork, reinforcement, conduit, bolts, hardware and equipment.

Pay Item	Pay Unit
Trench Drain	ea.

ITEM #0519003A – WATERPROOFING AT BUILDING WALL AND PAVEMENT INTERFACE

Description:

1. **Summary:**
   Provide all labor, equipment, materials, tools, and supervision to complete the installation of waterproofing at existing building walls and pavement interface, including adhesives, flashing, cold applied waterproofing and joint sealant. Work is to be coordinated with the placement of the pavement, so that waterproofing is installed prior to pavement base materials and that flashing is installed prior to final pavement top course installation.

2. **Submittals:**
   a) Manufacturer's literature, specifications and application instructions for each product.
   b) Product Data Sheets and MSDS Sheet for each product.

3. **Project Conditions:**
   a) Do not apply when the temperature is below freezing or will be overnight. If freezing conditions existed prior to application, let surfaces thaw.
   b) It is the Contractor's responsibility to protect all existing building walls, doors, windows and façades. Any damage to these components shall be replaced by the contractor at no cost to the Owner. Repair and replacement will be approved by the City Engineer.

4. **Quality Assurance:**
   a) Mock-up a test area of existing building foundation wall. The mock-up shall be performed under the on-site supervision of the product manufacturer's local representative. The test shall determine suitability, application procedures and pavement interface options. Approved mock-up shall be documented for comparison throughout the duration of the project. The same waterproofing installation/techniques shall be utilized for the remainder of the project, unless the building foundation wall or conditions require an alternate method of waterproofing.

Material:

1. **Single-Component, Modified Polyurethan Waterproofing: ASTM C836 and coal-tar free.**
   Provide products by one of the following:
   a) CETCO.
   b) Carlisle Coatings and Waterproofing.
   c)Tremco Incorporated.

2. **Flashing – provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual and as follows:**
   a) Stainless Steel: ASTM A240 or ASTM A666, type 304, 0.016 inch thick.
   b) Fabricate through-wall flashing with sealant stop unless otherwise indicated. Fabricate by bending metal back on itself 3/4 inch (19 mm) at exterior face of wall and down into joint 1/4 inch (6 mm) to form a stop for retaining sealant backer rod.

3. **Joint Sealant for Horizontal Applications**
   a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.
   b) Color to be selected by Engineer.

4. **Joint Sealant for vertical applications:**
   a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.
   b) Color to be selected by Engineer.

Construction Methods:

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work. Verify that foundation wall has been cleaned and prepared as recommended in writing by waterproofing manufacturer. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263. Proceed with installation only after unsatisfactory conditions have been corrected.

1. PREPARATION
   a) Clean, prepare, and treat substrates in accordance with manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
   b) Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
   c) Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.

      1) Abrasive blast clean concrete surfaces uniformly to expose top surface of fine aggregate in accordance with ASTM D4259 with a self-contained, recirculating, blast-cleaning apparatus. Remove material to provide a sound surface free of laitance, glaze,

efflorescence, curing compounds, concrete hardeners, or form-release agents. Remove remaining loose material and clean surfaces in accordance with ASTM D4258.

D) Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.

2. INSTALLATION OF WATERPROOFING

a) Apply waterproofing in accordance with manufacturer's written instructions and to recommendations in ASTM C898/C898M and ASTM C1471/C1471M.

b) Start installing waterproofing in presence of manufacturer's technical representative.

c) Apply primer over prepared substrate unless otherwise instructed in writing by waterproofing manufacturer.

d) Unreinforced Waterproofing Applications: Mix materials and apply waterproofing by spray, roller, notched squeegee, trowel, or other application method suitable to slope of substrate.

1) Apply one or more coats of waterproofing to obtain a seamless membrane free of entrapped gases and pinholes, with a dry film thickness of 90 mils (2.25 mm.)

2) Apply waterproofing to prepared wall terminations and vertical surfaces.

3) Verify manufacturer's recommended wet film thickness of waterproofing every 100 sq. ft. (9.3 sq. m).

3. INSTALLATION OF FLASHING

a) General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.

b) Install flashing as follows unless otherwise indicated:

1) Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape **as recommended by flashing manufacturer**.

4. Protection

a) Protect waterproofing from damage and wear during remainder of construction period.

b) Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

Method of Measurement:

Measure for this item will be based on the linear feet of waterproofing at building wall and pavement interface, completed and accepted.

Basis of Payment:

The waterproofing at building wall and pavement interface will be paid for at the contract unit price per linear feet for "waterproofing at building wall and pavement interface" which price shall include all materials, equipment, tools and labor incidental thereto.

PAY ITEM	PAY UNIT
Waterproofing at Building Wall and Pavement Interface	LF

ITEM #0586086A ABANDON DRAINAGE STRUCTURE

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description: The work under this Section shall consist of providing all equipment, labor, and material required to remove or abandonment existing structures or drainpipe in conformity with the lines, grades, dimensions and details shown on the plans, including two bulkheads at each end of pipe being abandoned outside of drainage trench excavation limits.

Materials: Granular fill, if necessary, shall meet the requirements of M.02.01. Protective compound material shall be as specified in M.03.09 and acceptable to the Engineer,

Construction Methods: Perform in accordance with the Contract Drawings and 5.86.03. Backfilling shall be performed in accordance with 2.86.03.

Method of Measurement: Removal or abandonment of drainage structures outside of drainage trench excavation limits, as defined in 2.86.03, will be measured as separate units. There will be no measurement or direct payment for the application of the protective compound material, the cost of this work shall be considered as included in the general cost of the work. Measurement for payment for work and materials involved with installing pipes to connect new drainage structures into a run of existing pipe will be as provided for under the applicable Contract items in accordance with 6.86.04. There will be no measurement or direct payment for plugging existing pipes with cement masonry, the cost of this work will be considered as included in the general cost of the work. Controlled low strength material used to fill abandoned pipe shall be measured and paid for under Item #0216012A.

Basis of Payment: Removal or abandonment of drainage structures outside of drainage trench excavation limits as defined in 2.86.03 will be paid for at the Contract unit price each for "Remove Drainage Structure – 0' to 10' Deep," "Remove Drainage Structure – 0' to 20' Deep," or "Abandon Drainage Structure," which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, and all equipment, tools, and labor incidental thereto.

Pay Item	**Pay Unit**
Abandon Drainage Structure	EA.

ITEM #0586510A DOGHOUSE MANHOLE - 5' DIAMETER

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description: The work under this Section shall consist of furnishing, preparing, and installing doghouse manholes in conformity with the lines, grades, dimensions and details shown on the plans and directed by the Engineer, including modification and connection to the existing drainage pipe. Work includes bypass, excavation, subbase, compaction, backfill, building bench and invert, pipe connections, walls, cone, corbel, riser, frame and cover and all ancillary appurtenances.

Materials: Materials will be in accordance with Article 05.86.02 for the standard specifications, modified according to the "Doghouse Manhole" detail and Item#1401662A Sanitary Manhole as included in contract documents. Manhole cover shall be in accordance with the Borough of Naugatuck Standard Details.

Construction Methods: Construction methods will be specified in Article 05.07.03 and as supplemented by the doghouse manhole detail shown on the plans and the manufacturer's installation instructions. Care shall be taken to prevent damage to the existing pipe and structures. Contractor shall be responsible for repairing and or replacing any damage caused by their work at no additional cost to the Owner.

Method of Measurement: Doghouse manholes shall be measured for each unit installed, connected to existing drainage system, tested, and approved by the Engineer.

Basis of Payment: Payment will be made at the Contract unit price for each "Doghouse Manhole," complete in place, which price shall include all excavation, modifications to existing pipe, backfill, materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
Doghouse Manhole – 5' Diameter	ea.

ITEM #0653100A – CLEAN EXISTING CULVERT – 12” TO 30” DIAMETER

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description: The work included in this item shall consist of furnishing all equipment, tools, labor, and materials and performing all work necessary for cleaning, removing and disposing of all sludge, dirt, sand, gravel, roots, grease, and other debris from existing culverts, throughout the project limits, as directed by the Engineer.

Materials: Vacant

Construction Methods: Selection of the equipment used shall be based on the condition of the lines at the time the cleaning operations commence and shall be approved by the Engineer. The sequence of the Contractor's work shall allow for the proper and adequate maintenance of all functional drainage systems.

Precautions shall be taken to protect the drainage systems at all times. All workmen shall be experienced and skilled in the use of the equipment used. The Engineer reserves the right to prohibit use of any equipment or method deemed inappropriate for the intended work.

Any and all debris resulting from the cleaning operations shall be removed from the job site and disposed of by the Contractor. The Contractor shall make every effort to remove all sludge, dirt, sand, gravel, roots, grease, and other debris from the existing drainage systems including discharge points. Washing sludge, dirt, sand, gravel, roots, grease, and other debris downstream shall not be permitted.

Method of Measurement: Culverts cleaned under this item will be measured for payment by the actual number of linear feet of culvert cleaned.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for “Clean Existing Culvert - 12" To 30" Diameter”, which price shall include all equipment, tools, and labor incidental to the completion of these items. All costs incidental to the disposal of sludge, dirt, sand, gravel, roots, grease, and other debris will be included in the price above.

Pay Item	Pay Unit
Clean Existing Culvert – 12” to 30” Diameter	l.f.

ITEM #0813012A – 5”x18” GRANITE STONE CURBING

ITEM #0813013A – 5”x18” GRANITE CURVED STONE CURBING

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description: This item shall consist of stone curbing, furnished in accordance with the dimensions and details of the plans, and installed to the lines and grades shown on the plans.

Materials: The stone curbing shall meet the requirements of M.12.06.
The mound of concrete required at all stone curbing joints shall meet the requirements of any mix design type listed in Table M.03.02-1.
Mortar shall meet the requirements of M.11.04.
Base material, if required, shall meet the requirements of M.02.01, M.02.02 or M05.01.

Construction Methods:

1. Trim backs of curbs to provide a consistent 1/4 inch joint where installed against unit pavers.
2. Finishes:
   a. Top surface shall be sawed to an approximately true plane, and shall have no projections or depressions greater than 1/8 inch. Curbstones shall be thoroughly cleaned of any iron rust or iron particles.
   b. Front face shall be at right angles to the plane of the top and shall be smooth quarry-split, free from drill holes in the exposed face. There shall be no projections greater than 3/4 inch, or depressions greater than 1/2 inch, measured from the vertical plane of the face through the top arris line for a distance of 8 inches down from the top. For the remaining distance, there shall be no projections or depressions greater than 1 inch measured in the same manner. The arris lines at the ends shall be pitched with no variation from the plane of the face greater than 1/8 inch.
   c. Back surface of the curbstone shall have no projection for 3 inches down from the top which would fall outside of a plane having a batter of 4 inches in 12 inches from the back arris line.
   d. The ends of all stones shall be square with the planes of the top and face and so finished that, when the stones are placed end to end as closely as possible, no space more than 1/2 inch shall show in the joint for the full width of the top or down on the face for 8 inches.
   e. No exposed drill marks.

Method of Measurement: This work will be measured for payment along the top arris line of the curb and will be the actual number of linear feet of stone curbing or curved curbing completed and accepted.

Basis of Payment: Payment for this work will be made at the Contract unit price per linear foot for "5"x18" Granite Stone Curbing" or "5"x18" Granite Curved Stone Curbing," of the type and size specified, complete and accepted in place, which price shall include all excavation, materials, equipment, tools, backfilling, disposal of surplus material and labor incidental thereto. There will be no direct payment for furnishing, placing and compacting base material, beveling or rounding the ends of the curbing and pointing the joints with mortar, but the cost of this work shall be considered as included in the general cost of the work.

Pay Item	**Pay Unit**
5"x18" Granite Stone Curbing	l.f.
5"x18" Granite Curved Stone Curbing	l.f.

ITEM #0814007A – RESET EXISTING GRANITE LAWN CURB

Description:

1. **Summary:**
   Provide all labor, equipment, materials, tools, and supervision to complete the removing and resetting of existing granite lawn curb to the lines and grades given, in accordance with the dimensions and details of the plans or as ordered and in conformity with these specifications.

Material:

Existing granite lawn curbing shall be used. The reset stone curbing shall be in the lengths of the existing stone curbing. Mortar for this work shall conform to Form 818, Article M.11.04.

Construction Methods: The construction methods for this work shall conform to the requirements of Form 818, Article 8.13.03 for stone curbing, as supplemented by the following requirements:

The curbing to be reset shall be removed with care to avoid damage and reset at the locations of the plans.

Once the curbing has been reset, it will be cleaned in accordance with item No. 091009A/

Method of Measurement:

Measure for this item will be based on the actual number of linear feet of existing granite lawn curb, reset and accepted. Measurement shall be made along the top arris line of face of curb.

Basis of Payment:

The resetting of existing granite lawn curb will be paid for at the contract unit price per linear feet for "Reset Existing Granite Lawn Curb" complete in place, which price shall include all materials, equipment, tools and labor incidental thereto and all excavation, backfilling, and disposal of surplus material.

There will be no direct payment for furnishing, placing and compacting granular base, beveling or rounding the ends of the curbing, sealing the joints with mortar, removing the curbing and hauling it to any location on or adjacent to the project as directed by the Engineer; but the cost of this work shall be considered as included in the general cost of the work.

PAY ITEM	PAY UNIT
Reset Existing Granite Lawn Curb	LF

0901006A – REMOVABLE BOLLARD

Description: This item shall consist of furnishing and installing a removable bollard of the type called for within this specification, complete with components in conformity with approved shop drawings and manufacturer's specifications, at the locations shown on the plans, or as directed by the Engineer.

Materials: The materials to be used in the construction shall be in conformance with these specifications, approved shop drawings, and manufacturer's specifications or as directed by the Engineer.

Removable bollard shall be Type R2 – Padlock, Series 150 Century, product number 150-RT Flat Top, 31" Height, 6" OD Neck, 105" PD Base as manufactured by BollardsUSA. Powder coat: Mid-Gloss Black – RDS #0051, Material: ASTM A48 Class 30 Cast Iron.

Eye Bolt shall be 3/8 -16 x 1 S/Stl Shol Eye Bolt. Chain 5/16 quick link chain.

Padlock Mounting shall be SS installation/removable bar, 3/8" SS set screw and caps, weather-resistant padlock, plastic cover for padlock pocket, 1" plastic caps for bar openings.

Construction Methods:

1. Submittals: Prior to fabrication, the Contractor shall submit shop drawings, product data, product samples and maintenance data, including recommended methods for repairing damages to the finish, to the Engineer for approval in accordance with Subarticle 1.20-1.05.02 and the Notice to Contractor, "Submittals".

2. Installation:
    a. Install according to manufacturer's written instruction and details.
    b. Install bollard plumb and securely anchored at locations indicated on the plans.

3. Cleaning and Protection:
    a. Clean bollards as recommended by manufacturer.
    b. Touch-up, repair, or replace damaged bollards before Substantial Completion.

Method of Measurement: This work shall be measured for payment by the number of removable bollards of the type called for installed and accepted.

Basis of Payment: This work will be paid for at the contract unit price for each "Removable Bollard" of which includes a complete installation, complete in place, which price shall include all materials, labor, tools, earth excavation, concrete, formwork, reinforcement, conduit, bolts, hardware and equipment.

Pay Item	Pay Unit
Removable Bollard	ea.

ITEM #0901007A – GRANITE BOLLARD

Description:

1. **Summary:**
   The work included in this item shall consist of furnishing and installing granite bollards on granular fill to match existing granite bollards on the town green, as dimensioned and shown on the plans or as directed by the Engineer.

2. **Submittals:**
   Product Data: Manufacturer's data sheets on each product to be used, including:
   a) Preparation instructions and recommendations.
   b) Storage and handling requirements and recommendations.
   c) Installation methods.

   Shop Drawings: Complete details of layout and assembly, showing member sizes and part identification, fasteners, anchors, and fittings.

   Maintenance/Attic Stock Submittals – submit two (2) granite bollards to the Owner, and deliver to the Owner designated storage location.

   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

   Manufacturers warranties.

Material:

1. **Bollard**

   Granite Bollards: Shall be of hard and durable granite sourced from same quarry, and location in quarry. Granite shall be free from seams which impair its structural integrity, and of a smooth slitting character. Natural color variations characteristic of the deposit will be permitted. Granite shall match the existing granite at the Town Green, similar to Stony Creek or O&G granite MDS 28, and as reviewed and approved by the engineer.

   Color and texture to match existing granite bollards and to be approved by the Engineer.

2. **Processed Aggregate Base**
   Granular fill or reclaimed miscellaneous aggregate for base shall be as specified in M.05.01.

3. **Concrete Footing**

CDOT Form 818 Articles 6.01.01, 6.01.02, and 6.01.03. Finish the top of footing to a smooth uniform elevation and adjust footing dimensions to allow placement of improvements adjacent or above.

Construction Methods:

Install bollard in accordance with manufacturer's instructions at locations indicated on the drawings.

Method of Measurement:

This work will be measured for payment by the number of bollards furnished and installed at locations where proposed, with such work as directed and accepted by the Engineer.

Basis of Payment:

The bollard will be paid for at the contract unit price per each for "GRANITE BOLLARD" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installation.

Pay Item	**Pay Unit**
Granite Bollard	EA

Maintenance/attic stock – paid for granite bollard material, fabrication and delivery only. Contractor to provide delivery/payment receipts to the Owner for verification.

ITEM #0901008A – CLEAN EXISTING GRANITE BOLLARD

Description:

1. **Summary:**
   Provide all labor, equipment, materials, tools, and supervision to complete the existing granite bollard cleaning in accordance with these specifications, as detailed on the plans or as directed by the Engineer. Repair cracks in the existing granite bollards, using a method to be approved by the Engineer. The use of a light duty all-purpose cleaner for stone and masonry shall be utilized to clean the existing granite surfaces. Apply joint sealant to joints between bollards and granite lawn curbing, and as needed to repaired cracks in bollards.

2. **Submittals:**
   a) Manufacturer's literature, specifications and application instructions for each product.
   b) Product Data Sheets and MSDS Sheet for each product.

3. **Project Conditions:**
   a) Do not apply when temperature is below freezing or will be overnight. If freezing conditions existed prior to application, let surfaces thaw.
   b) It is the Contractor's responsibility to protect all existing trees and vegetation in the area of cleaning. Any trees or vegetation damaged or killed due to treatment operations shall be replaced by the contractor at no cost to the Owner. Tree and Vegetation replacement will be approved by the City Engineer.

4. **Quality Assurance:**
   a) Mock-up a test area of two existing bollards. The mock-up shall be performed under the on-site supervision of the product manufacturer's local representative. The test shall determine suitability, dilution rates and desired result. Let surface dry thoroughly before inspection and approval (approx. 3 to 7 days). Approved mock-up shall be maintained for comparison throughout the duration of the project. The same dilution rate, mixing process, application procedures, etc. shall be utilized for the remainder of the project.

Material:

1. **Stone and Masonry Cleaner**
   D/2 Bioligical Solution as manufactured by D/2 Biological solutions, Inc., Westport, MA Phone: (917) 693-7441. E-mail: tkinnari@d2bio.com or approved equal.

   D/2 Biological Solution is a biodegradable, easy to use liquid that removes stains from mold, algae, mildew, lichens and air pollutants. It is effective on marble, granite, limestone, brownstone, travertine, masonry, terra cotta, concrete, stucco, wood, and other architectural surfaces including monuments, sculpture and headstones.

2. **Crack Repair for Existing Granite Bollard**
   Contractor to submit proposed product to repair cracks in the existing granite bollards for review and approval by the Engineer.

3. **Joint Sealant for Horizontal Applications**
   a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.
   b) Color to be selected by Engineer.

4. **Joint Sealant for vertical applications:**
   a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.
   b) Color to be selected by Engineer.

Construction Methods:

Treating existing granite bollards shall be in accordance to manufacturer's instructions, guidelines and specifications at locations indicated on the drawings or as directed by the Engineer. Contractor shall notify the Engineer no less than 48 hours prior to treating the existing granite bollards. The contractor shall not proceed with treating the existing granite bollards without Engineer approval. Repair cracks on bollards utilizing materials and methods approved by the Engineer. Apply joint sealant to joints and cracks as required per the manufacturers recommendation..

Method of Measurement:

Measure for this item will be based on the number of existing granite bollards cleaned, completed and accepted.

Basis of Payment:

The existing granite bollard cleaning will be paid for at the contract unit price per each bollard for "Clean Existing Granite Bollard" which price shall include all materials, equipment, tools and labor incidental thereto.

PAY ITEM	**PAY UNIT**
Clean Existing Granite Bollard	EA

ITEM #0901009A – CLEAN EXISTING GRANITE LAWN CURBING

Description:

1. **Summary:**
   Provide all labor, equipment, materials, tools, and supervision to complete the existing granite lawn curb cleaning in accordance with these specifications, as detailed on the plans or as directed by the Engineer. The use of a light duty all-purpose cleaner for stone and masonry shall be utilized to clean the existing granite surfaces. Repair cracks in existing granite curbs. Apply joint sealant to joints between granite lawn curb segments, and as needed to repaired cracks in the lawn curbs.

2. **Submittals:**
   a) Manufacturer's literature, specifications and application instructions for each product.
   b) Product Data Sheets and MSDS Sheet for each product.

3. **Project Conditions:**
   a) Do not apply when temperature is below freezing or will be overnight. If freezing conditions existed prior to application, let surfaces thaw.
   b) It is the Contractor's responsibility to protect all existing trees and vegetation in the area of cleaning. Any trees or vegetation damaged or killed due to treatment operations shall be replaced by the contractor at no cost to the Owner. Tree and Vegetation replacement will be approved by the City Engineer.

4. **Quality Assurance:**
   a) Mock-up a test area of existing granite lawn curbing. The mock-up shall be performed under the on-site supervision of the product manufacturer's local representative. The test shall determine suitability, dilution rates and desired result. Let surface dry thoroughly before inspection and approval (approx. 3 to 7 days). Approved mock-up shall be maintained for comparison throughout the duration of the project. The same dilution rate, mixing process, application procedures, etc. shall be utilized for the remainder of the project.

Material:

1. **Stone and Masonry Cleaner**
   D/2 Bioligical Solution as manufactured by D/2 Biological solutions, Inc., Westport, MA Phone: (917) 693-7441. E-mail: tkinnari@d2bio.com or approved equal.

   D/2 Biological Solution is a biodegradable, easy to use liquid that removes stains from mold, algae, mildew, lichens and air pollutants. It is effective on marble, granite, limestone, brownstone, travertine, masonry, terra cotta, concrete, stucco, wood, and other architectural surfaces including monuments, sculpture and headstones.

2. **Crack Repair for Existing Granite Lawn Curbing**
   Contractor to submit proposed product to repair cracks in the existing granite curbing for review and approval by the Engineer.

3. **Joint Sealant for Horizontal Applications**

   a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

   b) Color to be selected by Engineer.

4. **Joint Sealant for vertical applications:**

   a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

   b) Color to be selected by Engineer.

Construction Methods:

Treating existing granite lawn curbing shall be in accordance to manufacturer's instructions, guidelines and specifications at locations indicated on the drawings or as directed by the Engineer. Contractor shall notify the Engineer no less than 48 hours prior to treating the existing granite lawn curbing. Repair cracks on granite lawn curbing utilizing materials and methods approved by the Engineer. The contractor shall not proceed with treating the existing granite lawn curbing without Engineer approval. Apply joint sealant to joints and cracks as required per the manufacturers recommendation.

Method of Measurement:

Measure for this item will be based on the linear feet of existing granite lawn curbing cleaned, completed and accepted.

Basis of Payment:

The existing granite lawn curbing cleaning will be paid for at the contract unit price per linear feet for "Clean Existing Granite Lawn Curbing" which price shall include all materials, equipment, tools and labor incidental thereto.

PAY ITEM	**PAY UNIT**
Clean Existing Granite Lawn Curbing	LF

ITEM #0915000A – TREE PROTECTION, PRUNING AND TRIMMING

Description:

1. **Summary:**
   The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to preserve existing trees. Including contracting with a Contract Arborist, excavating using Supersonic Airtool, root pruning, and root collar excavation.

2. **Submittals**
   a. Qualification Data: For qualified arborist and tree service firm.
   b. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
   c. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
   d. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
      i. Use sufficiently detailed photographs or videotape.
      ii. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

3. **Quality Assurance**
   a. Contract Arborist Qualifications: Arborist certified by the State of Connecticut and the International Society of Arboriculture.
   b. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.
   c. All pruning, root pruning, soil excavation around tree roots with air spade, and repair work to trees to remain to be performed under the supervision of an Arborist certified by the State of Connecticut and the International Society of Arboriculture.

4. **Definitions**
   a. Certified Arborist: Credential of an individual arborist issued and administered by the International Society of Arboriculture. This credential must be current and valid to qualify to use the copyrighted designation of "Certified Arborist".
   b. Contract Arborist: Arboricultural firm contracted to implement the approved tree preservation plans on site. All crews conducting arboricultural operations on site shall consist of at least one Certified Arborist who directly oversees all work by the crew. Arboricultural operations include, but are not limited to, pruning, tree

protection device installation and maintenance, root pruning, air tool root excavation / exploration (SSAT), soil care activities, soil testing, mulch application, tree inspections, pesticide / chemical applications and tree removal. Special qualifications submittal is required for review and approval. Contract arborist will be sub-contracted by the general contractor.

c. Critical Root Zone (CRZ): A specific CRZ radius is defined in the Tree Protection Action Key for each identified tree.
d. Structural Critical Root Zone (SCRZ): A specific SCRZ radius is defined in the Tree Protection Action Key for each identified tree.
e. Supersonic Airtool (SSAT): Hand held tool designed to focus highly compressed air (90-125 psi) provided from a large air compressor (185-375 cfm) at speeds close to 1400 mph at the tip of the tool. Widely used by arboricultural firms and consultants for multiple purposes including but not limited to: root collar investigation, CRZ investigation, root pruning (especially large roots >1.5 inch diameter or where existing underground cables or conduits are located), radial mulching and restoration of compacted soils, excavation for utilities within protected CRZs to minimize root damage from constriction.
f. Tree Protection Area (TPA): Any area within the Critical Root Zone radius of any tree to remain.

Materials:

1. **Tree Protection Fence**
   a. Fence shall be 6’ high chain link fence fabric mounted on 8’ x 1.5” diameter galvanized steel pipe line posts. Corner posts shall be 2” diameter. Fence shall be attached to posts using aluminum ties. Plastic zip ties shall not be used.
   b. Tree protection area signs shall be affixed to all tree protection fence at 30’ spacing. Signs shall be bilingual in English and Spanish. Signs shall not be affixed directly to trees.

Construction Methods:

1. **General**
   a. All tree protection measures must be in place prior to commencement of demolition, site clearing or construction, and maintained throughout construction. Tree protection measures may only be removed with the Engineer’s approval.

2. **Tree Protection Fence**
   a. Install after root pruning and prior to clearing and grading.
   b. Silt fence shall be coordinated for installation to enhance protection and avoid unnecessary root cuts by silt fence installation.
   c. Fence may be removed only after all construction and final landscaping is complete and with the Engineer’s approval.

3. **Tree Preservation**
   a. For excavation within pavement at areas of existing trees to remain, the intent is to protect roots and minimize root damage from excavations.

b. Excavation shall be performed using SSAT, hand tools (shovels, etc.), or other approved non-damaging method. Roots shall not be damaged by the excavation.
c. All work shall be directly supervised by ISA Certified Arborist (provided by the Contract Arborist) in collaboration with the Owner's trades and subcontractors.
d. Perform root collar excavation at base of existing trees to reduce the potential of vascular disorders.
e. Perform soil cultivation to eliminate compaction to a depth of 3 inches to approximately the extent of the pavement using a Supersonic Airtool.
f. Roots 1 inch and larger shall be protected during pavement installation. Larger roots may only be cut by the Contract Arborist if no alternative is deemed possible and Contract Arborist judges the tree impact to be acceptable. Any larger roots to be cut shall be documented including photographs and justification for cutting. Smaller roots may be cut by the Contract Arborist. No roots may be cut by the contractor.
g. If no roots over 1 inch in diameter are located within the area of the pavement, the Contract Arborist shall prune the roots and the contractor may proceed with conventional excavation methods. Excavation shall not extend beyond the line where roots were pruned.
h. If roots over 1 inch in diameter are uncovered, they should be protected to the greatest extent possible. Contract arborist shall determine if specific roots of this size can be cut. Roots that are not cut shall be protected and the pavement excavation shall continue with hand excavation methods.
i. Roots over 3 inch in diameter are critical and shall not be cut without approval from the Engineer and Project Arborist.
j. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered.
k. Excavate with Supersonic Airtool along pavement to expose roots for observation and prune roots for construction under the supervision of an Arborist certified by the State of Connecticut and the International Society of Arboriculture.
l. Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
m. Root Pruning:
    i. Purpose of the root pruning is to provide a more suitable cut so as to not rip or tear roots during excavations and grading with standard construction equipment.
    ii. Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
    iii. All root pruning operations shall be performed by the Contract Arborist and directed in the field by an ISA Certified Arborist with documented experience in similar SSAT excavation and root pruning.

4. Construction Monitoring/Inspections

a. A Certified Arborist shall make regular monthly inspections during active construction and demolition and shall provide reports to the Engineer. Reports shall document condition of tree protection devices and provide recommendations for maintenance and additional care.

5. **Tree Protection Requirements**
    a. No toxic materials shall be stored within 100' of tree protection areas.
    b. All work in or near tree protection areas shall be performed in a manner to minimize damage to trees, shrubs, ground cover, soil and root systems.
    c. Mechanized equipment shall not be permitted to enter any tree protection areas.

6. **Canopy Pruning and Support Cables**
    a. Canopy pruning shall be Cleaning Pruning or Restoration Pruning and shall be in conformance with current ANSI A300 Standards and ISA Best Management Practices.
    b. Pruning shall remove only dead, dying, damaged or broken branches greater than 1" in diameter. Pruning of small trees may include removal of limbs to improve structure.
    c. Foliage removal shall not be more than 25% of the total live canopy volume of any tree in any one season. Pruning shall not remove interior branching except as otherwise stated.
    d. Pruning for specific clearance, such as construction access or proposed improvements, shall be reviewed and approved by the Engineer.
    e. Support cables shall be installed in conformance with current ANSI A300 Standards and ISA Best Management Practices.

7. **Special Demolition Procedures**
    a. Demolition of driveways, walks, and curbs within Tree Protection Areas shall be performed by the Contract Arborist or directly supervised by a Certified Arborist.
    b. Mechanized equipment shall not enter the Tree Protection Areas.
    c. Backfill of voids from demolition within the Tree Protection Areas shall be loosely placed topsoil. Only the amount of soil necessary to fill the void without spreading over existing adjacent grades shall be allowed.
    d. Roots encountered during demolition shall be reviewed on a case-by-case basis by the Contract Arborist. The Arborist shall provide appropriate treatment or pruning methods as needed and in general conformance with accepted industry standards and with this specification.

Method of Measurement:

This item will be paid on a lump sum basis which will include tree protection and preservation measures, monthly monitoring, pruning and trimming to maintain and improve tree health and structure as described above within the limits as shown on the drawings.

Basis of Payment:

This work will be paid for at the contract lump sum price for 'Tree Protection, Pruning and Trimming', at the locations indicated, complete in place, which price shall include all materials, tools, equipment and labor incidental thereto, also all cleaning up of the site upon completion of the work.

Pay Item	**Pay Unit**
Tree Protection, Pruning and Trimming	LS

ITEM #0921001A – CONCRETE SIDEWALK
ITEM #0921003A – CONCRETE SIDEWALK REPAIR

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022; as well as CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description:

1. Summary:

The work of this item shall consist of concrete sidewalks and ramps constructed on a processed aggregate base course, with steel reinforcement, reinforcement support, joint filler, and joint sealant, in the locations and to the dimensions and details shown on the plans or as ordered. This pay item also includes the placement of PVC pipe sleeves below walk pavements for future electrical and irrigation connections, and the removal and disposal of the existing materials in the locations of the proposed concrete sidewalk. Contractor to include a mockup panel of concrete sidewalk and ramps for review and acceptance by the Engineer. Detectable Warning Surfaces are installed into wet concrete, but measurement and payment are not included under this item, and can be found under Item 921050-A.

2. Submittals:

a) Product Data: For each type of product.

b) Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.

c) Samples for Verification: For each type of product or exposed finish, prepared as Samples of size indicated below:

d) Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

e) Qualification Data: For qualified ready-mix concrete manufacturer.

f) Material Certificates: For the following, from manufacturer:

g) Cementitious materials.

h) Steel reinforcement and reinforcement accessories.

i) Admixtures.

j) Curing compounds.

k) Applied finish materials.

l) Bonding agent or epoxy adhesive.

m) Joint fillers.

n) Material Test Reports: For each of the following:

o) Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

p) Field quality-control reports.

3. Quality Assurance:

a) Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

b) Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

c) Mockups: Build mockups to verify selections made under 1.6.D. above and to demonstrate aesthetic effects and set quality standards for materials and execution.

d) Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.

e) Build mockups of concrete paving where directed by Engineer and not less than 96 inches (2400 mm) by 96 inches (2400 mm).

f) Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.

g) Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

4. FIELD CONDITIONS

a) Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

b) Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

c) When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

d) Do not use frozen materials or materials containing ice or snow.

e) Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

f) Hot-Weather Concrete Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:

g) Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

h) Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

i) Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

Materials: Materials for this work shall meet the requirements of Form 818, M.03.

1. Portland Cement Concrete
Concrete shall have a minimum compressive strength of 4,400 psi and conform to M.03.02, PCC04462 Standard Portland Cement Concrete.

2. **Liquid Membrane-Forming Curing Compound**
Curing compound shall be as specified in M.03.04-3.

3. **Processed Aggregate Base**
Granular fill or reclaimed miscellaneous aggregate for base shall be as specified in M.05.01.

4. PVC Sleeves

a) 4” PVC pipe and fittings used for sleeves under walks to allow future electrical and irrigation connections. Conform to Item # 1008138.

5. Steel Reinforcement
Steel Reinforcement shall have a postconsumer recycled content plus one-half of preconsumer recycled content not less than 60 percent.

b) Epoxy-Coated Welded-Wire Reinforcement: ASTM A884/A884M, Class A, plain steel.

c) Epoxy-Coated Reinforcing Bars: ASTM A775/A775M or ASTM A934/A934M; with ASTM A615/A615M, Grade 60 (Grade 420) deformed bars.

d) Epoxy-Coated-Steel Wire: ASTM A884/A884M, Class A; coated, deformed.

e) Epoxy-Coated, Joint Dowel Bars: ASTM A775/A775M; with ASTM A615/A615M, Grade 60 (Grade 420) plain-steel bars.

f) Tie Bars: ASTM A615/A615M, Grade 60 (Grade 420); deformed.

g) Hook Bolts: ASTM A307, Grade A (ASTM F568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

h) Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
    1) Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
    2) For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

i) Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

6. Joint Filler

a) Joint Fillers: semi-rigid, closed-cell polypropylene foam, preformed joint filler that meets the following physical property requirements and fully complies with ASTM D8139.
    1) Compression Strength = 30-60 psi per ASTM D 545 or AASHTO T 42
    2) Compression Recovery > 80% per ASTM D 545 or AASHTO T 42
    3) Extrusion < 0.1 in. per ASTM D 545 or AASHTO T 42
    4) Density >3.5 lbs./cu.ft. per ASTM D 545 or AASHTO T 42
    5) Water Absorption < 1.0% per ASTM D 545 or AASHTO T 42
    6) Heat Resistance °F 392˚F± 5˚F per ASTM D 5249
    7) Freeze Thaw Resistance No change per ASTM C 666 (300 cycles)
    8) UV Weathering No changeper ASTM D 4329 (1000 hrs., Cycle A)
    9) Thickness = 3/8 inch typical, 1/2 inch where walk abuts structures

b) Provide cutting tool for pre-scoring the top edge of the joint filler, to allow removal of top portion for sealant application.

7. Joint Sealant for Horizontal Applications

a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

8. Joint Sealant for vertical applications:

j) a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

9. Sealant Backer Rod:

k) Compressible rod stock or polyethylene foam, polyethylene jacketed, butyl rubber foam, or neoprene foam, as recommended by sealant manufacturer where required for back-up of sealant.

Construction Methods:

1. Excavation

Excavation, including removal of any existing sidewalk (bituminous or concrete) and curbing, shall be made to the required depths below the finished grade, as shown on the plans or as directed.

All soft and yielding material shall be removed and replaced with suitable material.

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.

The Contractor shall establish the limits required to achieve grades for each ramp prior to removal of existing sidewalk and ramps. The Contractor shall document and notify the Engineer of any control points that may conflict with the design grades or configuration of ramps shown on the plans. Control points can be but are not limited to ROW, utility poles, drainage structures, buildings, fences, walls, or other features found near the proposed ramp. When control points are encountered within the limits of the ramp, the Engineer will determine if an alternative ramp type is required, or the ramp is to be constructed as shown on the plans.

2. Processed Aggregate Base:

The processed aggregate base shall be placed in layers not to exceed 6 inches deep and to such a depth that after compaction it shall be at the specified depth below the finished

grade of the walk. The base shall be wetted and rolled or tamped after the spreading of each layer.

3. PVC Pipe Sleeves

Install PVC pipe sleeves at the locations indicated on the plans. Sleeves to be located with an invert elevation approximately 30" below the finished grade.

4. Forms

Forms shall be of metal or wood, straight, free from warp and of sufficient strength to resist springing from the pressure of the concrete. If made of wood, they shall be of 2 inch surfaced plank except that at sharp curves thinner material may be used. If made of metal, they shall be of approved section and shall have a flat surface on the top.

Forms shall be of a depth equal to the depth of the sidewalk. Forms shall be securely staked, braced and held firmly to the required line and grade and shall be sufficiently tight to prevent leakage of mortar.

All forms shall be cleaned and oiled or wetted before concrete is placed against them. Sheet metal templates 1/8 inch thick, of the full depth and width of the walk, shall be spaced at intervals of 12 feet or as directed.

If the concrete is placed in alternate sections, these templates shall remain in place until concrete has been placed on both sides of the template. As soon as the concrete has obtained its initial set, the templates shall be removed.

5. Discontinuities:

Vertical surface discontinuities shall be 1/4 inch maximum.

6. Concrete

The concrete shall be proportioned, mixed, placed, etc., in accordance with the provisions of Form 818, 6.01.03, except as modified herein.

7. Finishing

The surface of the concrete shall be finished with a wood float or by other approved means, and shall have a medium broom finish perpendicular to the direction of pedestrian travel.

The outside edges of the slab and all joints shall be edged with a 1/4 inch radius edging tool.

Each slab shall be divided into 2 or more sections as detailed by forming dummy joints with a jointing tool as directed.

8. Curing

Liquid membrane-forming compound shall be applied following finishing as recommended by the manufacturer.

The Contractor shall have on the Project sufficient approved cover sheet of cotton mats for the protection of the sidewalk in case of rain or breakdown of the spray equipment.

The cotton mats shall be maintained in a wet condition during the period of use, as specified in 6.01.03-II-9.

9. Backfilling and Removal of Surplus Material

The sides of the sidewalk shall be backfilled with suitable material thoroughly compacted and finished flush with the top of the sidewalk.

All surplus material shall be removed, and the Site left in a neat and presentable condition to the satisfaction of the Engineer.

10. Detectable Warning Surface

The detectable warning surface for new construction shall be set directly in plastic concrete and each tile shall be weighed down to prevent the tile from floating after placement in wet concrete in accordance with curing procedures.

Install detectable warning surface according to the plans and the manufacturer's requirements, or as directed by the Engineer.

Method of Measurement:

This work will be measured for payment as follows:

1. Concrete Sidewalk or Ramp and Concrete Sidewalk Repair: This work will be measured by the actual number of square feet of completed and accepted concrete sidewalk or ramp. Liquid membrane-forming curing compound, steel reinforcement, joint filler, and joint sealant will not be measured for payment, but the cost shall be included in the price bid for the sidewalk or ramp.

2. Excavation: Excavation below the finished grade of the sidewalk or ramp, backfilling, and disposal of surplus material will not be measured for payment, but the cost shall be included in the price bid for the sidewalk or ramp.

3. Processed Aggregate Base: This work will not be measured for payment, but the cost shall be considered as included in the price bid for the sidewalk or ramp.

4. PVC Pipe Sleeves: This work will be measured on a linear foot basis.

5. Detectable Warning Surface: For new construction (cast in place), the detectable warning surface will be measured for payment under Item 921050-A, by the actual number of square feet of detectable warning surface installed and accepted.

Basis of Payment:

Construction of a concrete sidewalk or ramp will be paid for at the Contract unit price per square foot for "Concrete Sidewalk" and “Concrete Sidewalk Repair” complete and accepted in place, which price shall include all excavation as specified above, backfill, disposal of surplus material, curb removal and any monolithic or separately cast sidewalk curb when required for the sidewalk ramp as shown on the plans, processed aggregate base, steel reinforcement, joint filler, joint sealant, curing compound, equipment, tools, materials and labor incidental thereto.

A new detectable warning surface will be paid for at the Contract unit price per square foot under Item 921050-A.

Pay Item	**Pay Unit**
921001-A Concrete Sidewalk	SF
921003-A Concrete Sidewalk Repair	SF

ITEM #0921008A – BRICK SIDEWALK – BANDING PAVER
ITEM #0921009A – BRICK SIDEWALK – FIELD PAVER
ITEM #0921010A – BRICK SIDEWALK – INSET PAVER

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install brick paver sidewalk as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks or ramps removal and disposal, furnishing and installing the concrete base slab, sidewalk ramp base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, brick banding paver, brick field paver, brick inset paver, joint sand and expansion joints. The concrete base slab will conform to the requirements of Item # 921001-A, including expansion joints, with the exception that broom finish and tooled/control joints are not required.

2. **Submittals:**
   Submit sample units of each paver type representative of size, shape, color and finish, indicating color variation and texture range expected in finished installation. Submit minimum of ½ pallet of 4”x8” brick banding pavers, minimum of ½ pallet of 4”x8” brick field pavers and submit minimum of twelve 8”x8” brick inset pavers. Lay out pavers on site or where directed for the Engineer’s approval. Do not order brick for project until Engineer's approval of the sample units.

   Submit five (5) copies of Manufacturer's Product Data and Installation Instructions for the following items:

   a) Banding pavers
   b) Field pavers
   c) Inset pavers
   d) Polymeric sand joint filler mixture
   e) Neoprene-modified asphalt setting adhesive
   f) Bituminous setting bed
   g) Joint sealant

Submit five (5) copies of the test report of brick pavers and accent brick pavers indicating ASTM C-902 compliance as applicable. Testing shall be done by a qualified independent testing laboratory. Test procedures shall conform to ASTM C-67-03 methods, as applicable. Test report shall indicate, as a minimum, the following:

a) Compressive strength, psi
b) Absorption, 5 hr. submersion in cold water.
c) Absorption, 24 hr. submersion in cold water.
d) Maximum saturation coefficient.
e) Initial rate of absorption (suction).
f) Abrasion index.
g) Freeze-thaw.
h) Tolerance to saline conditions.
i) Efflorescence.

Maintenance/Attic Stock Submittals - submit the following materials to the Owner, and deliver to the Owner designated storage location:

Paver Type/Application	Size	Whitacre-Greer	Belden	Maintenance Attic Stock
Banding Paver	4" x 8" x 2 1/4"	No. 30 Clear Red	Regimental (Red)	1 cube/pallet
Field Paver	4" x 8" x 2 1/4"	Equal percent mix of No. 36 "Red Sunset", No. 32 "Antique", and No. 30 "Clear Red"	Regimental Full Range	2 cubes/pallets
Inset Paver	8" x 8" x 2 1/4"	No. 42	Nutmeg	1 cube/pallet

Each maintenance/attic stock cube shall contain the same paver dimensions and color range as the installed pavers at the project and provide a quantity of pavers to cover approximately 100 square feet of surface area.

3. Quality Assurance

Installer Qualifications: Installer shall have not less than three years experience with at least 75-100,000 square feet installed. Successful completion of five similar clay brick paver installations similar in design which are to be documented. Installer shall include the specified product(s) in their bid and shall have read and understand the contents of ASTM C 902 and/or C 1272 whichever is applicable.

Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

Dimensional Uniformity: The entire order for all material including waste must be ordered and blended at the manufacturer's plant at one time, so that they can be supplied from one production run or sequential production runs to ensure reasonable dimensional uniformity. The manufacturer shall earmark the plant-blended pavers ordered for this Contract.

Inspections: Inspect all materials upon delivery. Colors and size within a given shipment may vary slightly due to subtle changes in clay composition and kiln firing temperatures. Pavers are sealed with a siloxane-based penetrating sealer/water proofer.

Preinstallation Meetings: Conduct pre-installation meeting one week prior to commencing work of this Section to verify project requirements, substrate condition, coordination with other trades, installation instructions, and warranty requirements. Preinstallation meeting shall include the Contractor, Installer, Engineer, Distributor and/or Manufacturer's Representative for the polymeric sand, and other interested parties as appropriate.

Mockup: Construct a mockup of not less than 12' x 12' to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. The Mockup shall include the soldier course banding pattern, the herringbone field pattern, and brick inset pavers. Use mock-up(s) to determine pre-compaction setting bed level, joint sizes, lines, laying patterns, color and texture range, and workmanship. Do not start work until Engineer has approved mock-up. Remove mock-up and dispose of materials at the completion of the work or as directed by Engineer.

Material:

1. **Brick Pavers**
   The brick pavers shall be light–traffic paving brick; ASTM C 902, Class SX, Type I, 4"x8" brick pavers shall be Application PX. Provide brick without frogs or cores in surfaces exposed to view in the completed work.

   The brick paver shall be 4 inches x 8 inches x 2 ¼ inches dry-pressed beveled and lugged pavers as manufactured by Whitacre-Greer or Belden. The color blend for each manufacturer is listed in the table below.

Paver Type/Application	Size	Whitacre-Greer	Belden
Banding Paver	4" x 8" x 2 1/4"	No. 30 Clear Red	Regimental (Red)
Field Paver	4" x 8" x 2 1/4"	Equal percent mix of No. 36 "Red Sunset", No. 32	Regimental Full Range

		"Antique", and No. 30 "Clear Red"	
Inset Paver	8" x 8" x 2 1/4"	No. 42	Nutmeg

All brick pavers shall be rated "not effloresced" when tested according to ASTM C 67.

2. Bituminous Setting-Bed

Primer for Base shall be ASTM D 2028, cutback asphalt, grade as recommended by brick paver manufacturer.

Asphalt cement to be used in the bituminous setting bed shall be Performance Grade binder PG 64-28.

Fine aggregate to be used in the bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coatings, lumps of clay, alkali salts, and organic matter. Aggregate shall be ASTM D 1073, No. 2 or No. 3.

Fine aggregate shall be dried and shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees F at the asphalt plant. The approximate proportion of materials shall be 7% asphalt cement and 93% fine aggregate.

3. Neoprene-Modified Asphalt Setting Adhesive

Neoprene modified asphalt setting adhesive shall meet paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.

4. Concrete Base Slab

Shall conform to Section 0921001A of these specifications with the following additions:

a) All concrete base slabs will receive wire mesh reinforcing below the top of the slab as detailed.

5. Sand for Joints

High Performance Polymeric Jointing Sand for pavers. Color to be selected by Engineer and conform to the ASTM C-144 requirements for joint sand.

a) Mixture of polymer binders and calibrated sand.
b) Water resistant after 90 minutes
c) For surface exposed to heavy foot traffic
d) Applied dry- hardens after being misted
e) Inhibits weed growth
f) Deters ants and other insect infestations
g) Resists erosion – water, frost heaving, wind, power washing, etc.
h) Stabilizes pavers – strengthens interlocking pavers

6. Pea Stone

Crushed stone conforming to CDOT Form 818, Article M.01.01, gradation No. 8.

7. Joint Filler

a) Joint Fillers: semi-rigid, closed-cell polypropylene foam, preformed joint filler that meets the following physical property requirements and fully complies with ASTM D8139.

1) Compression Strength = 30-60 psi per ASTM D 545 or AASHTO T 42
2) Compression Recovery > 80% per ASTM D 545 or AASHTO T 42
3) Extrusion < 0.1 in. per ASTM D 545 or AASHTO T 42
4) Density >3.5 lbs./cu.ft. per ASTM D 545 or AASHTO T 42
5) Water Absorption < 1.0% per ASTM D 545 or AASHTO T 42
6) Heat Resistance °F 392˚F± 5˚F per ASTM D 5249
7) Freeze Thaw Resistance No change per ASTM C 666 (300 cycles)
8) UV Weathering No changeper ASTM D 4329 (1000 hrs., Cycle A)
9) Thickness = 3/8 inch typical, 1/2 inch where walk abuts structures

b) Provide cutting tool for pre-scoring the top edge of the joint filler, to allow removal of top portion for sealant application.

8. Joint Sealant for Horizontal Applications

a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

Construction Methods:

1. Delivery, Storage, and Handling

Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.

Store asphalt cement and other bituminous materials in tightly closed containers.

2. Project Conditions

Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

Weather Limitations for Bituminous Setting Bed:

a) Install bituminous setting bed only when ambient temperature is above 40 deg F and when base is dry.

b) Apply asphalt adhesive only when ambient temperature is above 50 deg F and when temperature has not been below 35 deg F for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.

3. Protection of Finished Surfaces

Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage during construction.

4. Excavation

Work under this item shall consist of removing and disposing of existing sidewalk and foundation to a full depth. Wherever portions of concrete sidewalks or concrete driveway ramps are to be removed, such removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the concrete full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor.

5. Concrete Base Slab Concrete installation shall conform to Section 0921001A of these specifications. Additional requirements for concrete slab are as follows:

All concrete base slabs shall receive wire mesh reinforcing as detailed. Expansion joints shall be installed per 0921001A, but surface broom finish and control joints are not required.

6. Preparation

Core-drill weep holes in concrete substrates at 24-inch centers at lowest elevations, and against curbs, walls, and other permanent structures. Fill holes with washed pea stone and install temporary plugs to prevent ingress of setting bed material or neoprene adhesive during construction. Remove plugs when paving adjacent to weep holes.

Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

7. Bituminous Setting Bed

Bituminous setting bed shall be installed over the fully cured concrete base. Apply primer to concrete slab or binder course immediately before placing setting bed.

Control bars ¾" deep shall be placed approximately 11 feet apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.

Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F. Strike setting bed smooth, firm, even, and not less than 3/4 inch thick. Add fresh bituminous material to low, porous spots after each pass of striking board. After each

panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth-control bars.

The setting bed shall be rolled with a power roller to a nominal depth of ¾" while still hot. The thickness of the setting bed shall be adjusted so that when the bricks are placed and rolled, the top surface of the pavers will be at the required finished grade.

Apply neoprene-modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch. Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.

8. **Brick Pavers**

Do not use brick pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

If pavers are not factory-blended, the installer must blend from a minimum of three pallets of each color in the blend as they are placed to produce uniform blend of colors and textures.

Cut brick pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses, but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.

Pavers shall be set true to the required lines and grades in the pattern detailed on the Drawings. Lay full pavers first and adjust pavers to form straight bond lines and appropriate joint widths. Provide 1/16" to 3/16" sand filled joints between pavers. Do not exceed 1/8-inch unit-to-unit offset from flush (lippage) nor 3/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.

String lines or chalk lines must be used to keep paver bond lines straight and true. The straight and true bond lines shall not deviate more than +/- 1/2″ at the end of 50 feet. Establish a center line working outward setting parallel string lines or chalk lines every 2 to 6 feet, depending on the area, to continuously check and adjust paver bond lines.

Roll or compact bituminous-set pavers to achieve full bond with the setting bed, reduce lippage and improve the overall flatness of the surface. Fill the spaces between pavers in conformance with the polymeric sand producer's installation instructions and recommendations as soon as possible after the pavers have been placed. Clean joints of

all debris with power air blowers or vacuums to ensure full penetration of the jointing sand. Sweep dry joint filling sand over surface of paving until all joints are completely filled. Once the initial filling of the joints is completed, roll the surface of the pavers to fully compact the pavers into place. Utilize a light rubber-tired roller with sufficient pressure to achieve a full bond to the setting bed or a 4-5000 LBF plate tamper with a protective mat attached. Do not operate the roller in a vibrating mode, as this may cause cracking of the pavers. Protect the surface with plywood or other suitable materials to prevent damage to the edges of the pavers. Perform rolling at the warmest part of the day, but prior to final set of the adhesive, taking care to ensure that the alignment is not altered. After rolling, add dry sand to the joints as necessary to ensure that the sand has penetrated to the bottom of the joints. Do not vibrate the pavers after they or the sand have been placed on the setting bed. Roll the surface when the sand shows no sign of further settlement. Add additional sand as necessary. Mist and rinse in conformance with the polymeric sand producer's installation instructions and recommendations.

Do not permit traffic, including construction equipment, on pavers before joint filling. Disturbed areas of pavers should be taken up, the setting bed re-rolled and pavers re-laid. Remove cracked or damaged pavers and replace with new units. Protect areas were joints have not been filled with waterproof covering overnight.

Completed brick paver areas within the path of travel of any construction equipment shall be protected with steel road plates.

Discontinue laying operations when weather conditions are such that pavement performance may be compromised. On laying operations recommencement, verify acceptable setting bed condition before further pavers are laid.

Method of Measurement:

Brick Sidewalk – Banding Paver and Brick Sidewalk – Field Paver will be measured on a per square foot basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Brick Sidewalk – Inset Paver will be measured on a per each 8" x 8" paver basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Prices shall include all materials, equipment, tools and labor incidental thereto including all sawcuts to meet existing and proposed facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks or driveway ramps removal and disposal, furnishing and installing the process aggregate base, concrete base slab, sidewalk ramp base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, brick pavers, expansion joints and expansion joint sealant.

Basis of Payment:

The brick sidewalk will be paid for at the contract unit price per square foot for "BRICK SIDEWALK- BANDING PAVER" and 'BRICK SIDEWALK – FIELD PAVER" and at the contract unit price per each for "BRICK SIDEWALK – INSET PAVER" which prices shall include all materials, equipment, tools and labor incidental thereto including all sawcuts to meet

existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks or driveway ramps removal and disposal, furnishing and installing the processed aggregate base, concrete base slab, sidewalk ramp base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, brick pavers, accent brick pavers, expansion joints and expansion joint sealant.

Unless otherwise indicated, all areas of brick pavers, including but not limited to the soldier course "banding" pattern, the herringbone "field" pattern, the inset brick pavers, within Sidewalk Ramps will be paid under this Item.

The cost of detectable warning pavers in sidewalk ramps will be paid for under the Item "Detectable Warning Cast Iron Paver".

A. GENERAL

1) The unit prices for all items of work shall include the cost of all saw cuts to meet existing facilities, the cost of removing and disposing of all surplus material, excavation, preparation of subgrade and base, base material, concrete (including additives), formwork, welded wire fabric, jointing, shoring, backfill, restoration of adjacent pavement and grassed areas, and all other labor, equipment, and material incidental or necessary to complete the item in accordance with the plans and specifications.

2) Unless otherwise specified, there will be no direct payment for adjusting to grade monuments, valve boxes, manhole frames and covers, hatchways, vaults, or other existing surface structures in any new or reconstructed walk, the cost of this work being considered to be included in the unit price for the item of work.

3) Openings in walk for tree wells and planters shall be determined prior to the start of construction, as well as pedestrian curb ramps. No additional payment for extra formwork, etc. occasioned by these features shall be made, the cost of this work being considered to be included in the unit price for the item of work.

Pay Item	**Pay Unit**
Brick Sidewalk – Banding Paver	SF
Brick Sidewalk – Field Paver	SF
Brick Sidewalk – Inset Paver	EA

Maintenance/attic stock – paid for paver material and delivery only. Contractor to provide delivery/payment receipts to the Owner for verification.

ITEM #0921016A – BRICK PAVER ROADWAY – BANDING PAVER
ITEM #0921017A – BRICK PAVER ROADWAY – FIELD PAVER
ITEM #0921018A – BRICK PAVER ROADWAY – INSET PAVER

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install brick paver roadway as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, pavement and concrete curb and concrete drive ramp removal and disposal, furnishing and installing the concrete base slab and driveway ramp slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, brick paver roadway – banding pavers, brick paver roadway – field pavers, brick paver roadway – inset pavers, joint sand, expansion joints and expansion joint sealant. The concrete base slab will conform to the requirements of Item # 921001-A, including expansion joints, with the exception that broom finish and tooled/control joints are not required. Steel reinforcement will be as detailed for Brick Paver Roadway.

2. **Submittals:**
   Submit sample units of each paver type representative of size, shape, color and finish, indicating color variation and texture range expected in finished installation. Submit minimum of ½ pallet of 4”x8” brick banding pavers, minimum of ½ pallet of 4”x8” brick field pavers and submit minimum of twelve 8”x8” inset brick pavers. Lay out pavers on site or where directed for the Engineer’s approval. Do not order brick for project until Engineer's approval of the sample units.

   Submit five (5) copies of Manufacturer's Product Data and Installation Instructions for the following items:

   a) Banding pavers
   b) Field pavers
   c) Inset pavers
   d) Polymeric sand joint filler mixture
   e) Neoprene-modified asphalt setting adhesive
   f) Bituminous setting bed
   g) Joint sealant

Submit five (5) copies of the test report of brick pavers indicating ASTM C-1272 compliance as applicable. Testing shall be done by a qualified independent testing laboratory. Test procedures shall conform to ASTM C-67-03 methods, as applicable. Test report shall indicate, as a minimum, the following:

a) Compressive strength, psi
b) Absorption, 5 hr. submersion in cold water.
c) Absorption, 24 hr. submersion in cold water.
d) Maximum saturation coefficient.
e) Initial rate of absorption (suction).
f) Abrasion index.
g) Freeze-thaw.
h) Tolerance to saline conditions.
i) Efflorescence.

Maintenance/Attic Stock Submittals - submit the following materials to the Owner, and deliver to the Owner designated storage location:

Paver Type/Application	Size	Whitacre-Greer	Belden	Maintenance Attic Stock
Banding Paver	4" x 8" x 2 3/4"	No. 30 Clear Red	Regimental (Red)	1 cube/pallet
Field Paver	4" x 8" x 2 3/4"	Equal percent mix of No. 36 "Red Sunset", No. 32 "Antique", and No. 30 "Clear Red"	Regimental Full Range	2 cubes/pallets
Inset Paver	8" x 8" x 2 3/4"	No. 42	Nutmeg	1 cube/pallet

Each maintenance/attic stock cube shall contain the same paver dimensions and color range as the installed pavers at the project and provide a quantity of pavers to cover approximately 100 square feet of surface area.

3. Quality Assurance

Installer Qualifications: Installer shall have not less than three years experience with at least 75-100,000 square feet installed. Successful completion of five similar clay brick paver installations similar in design which are to be documented. Installer shall include the specified product(s) in their bid and shall have read and understand the contents of ASTM C 902 and/or C 1272 whichever is applicable.

Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

Dimensional Uniformity: The entire order for all material including waste must be ordered and blended at the manufacturer's plant at one time so they can be supplied from one production run or sequential production runs to ensure reasonable dimensional uniformity. The manufacturer shall earmark the plant-blended pavers ordered for this Contract.

Inspections: Inspect all materials upon delivery. Colors and size within a given shipment may vary slightly due to subtle changes in clay composition and kiln firing temperatures. Pavers are sealed with a siloxane-based penetrating sealer/water proofer.

Preinstallation Meetings: Conduct pre-installation meeting one week prior to commencing work of this Section to verify project requirements, substrate condition, coordination with other trades, installation instructions, and warranty requirements. Preinstallation meeting shall include the Contractor, Installer, Engineer, Distributor and/or Manufacturer's Representative, and other interested parties as appropriate.

Mockup: Construct a mockup of not less than 12' x 12' to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. The Mockup shall include the herringbone pattern. Use mock-up(s) to determine pre-compaction setting bed level, joint sizes, lines, laying patterns, color and texture range, and workmanship. Do not start work until Engineer has approved mock-up. Remove mock-up and dispose of materials at the completion of the work or as directed by Engineer.

Material:

1. **Brick Paver Roadway Pavers**
   The brick paver roadway pavers shall be heavy vehicular paving brick; ASTM C 1272, Type R, Application PX. Provide brick without frogs or cores in surfaces exposed to view in the completed work.

   The brick paver shall be 4 inches x 8 inches x 2 ¾ inches dry-pressed beveled and lugged pavers as manufactured by Whitacre-Greer or Belden. The color blend for each manufacturer is listed in the table below.

Paver Type/Application	Size	Whitacre-Greer	Belden
Banding Paver	4" x 8" x 2 3/4"	No. 30 Clear Red	Regimental (Red)
Field Paver	4" x 8" x 2 3/4"	Equal percent mix of No. 36 "Red	Regimental Full Range

		Sunset", No. 32 "Antique", and No. 30 "Clear Red"	
Inset Paver	8" x 8" x 2 3/4"	No. 42	Nutmeg

All brick paver roadway pavers shall be rated "not effloresced" when tested according to ASTM C 67.

2. Bituminous Setting-Bed

Primer for Base shall be ASTM D 2028, cutback asphalt, grade as recommended by brick paver manufacturer.

Asphalt cement to be used in the bituminous setting bed shall be Performance Grade binder PG 64-28.

Fine aggregate to be used in the bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coatings, lumps of clay, alkali salts, and organic matter. Aggregate shall be ASTM D 1073, No. 2 or No. 3.

Fine aggregate shall be dried and shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees F at the asphalt plant. The approximate proportion of materials shall be 7% asphalt cement and 93% fine aggregate.

3. Neoprene-Modified Asphalt Setting Adhesive

Neoprene modified asphalt setting adhesive shall meet paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.

4. Concrete Base Slab

Shall conform to Section 0921001A of these specifications with the following additions:

a) All concrete base slabs will receive No. 4 steel reinforcing bar a minimum of 2 inches below the top of the slab and as detailed. Steel bar reinforcing shall be epoxy coated, No. 4 spaced 16" on center both ways.

5. Sand for Joints

High Performance Polymeric Jointing Sand for pavers. Color to be selected by Engineer and conform to the ASTM C-144 requirements for joint sand.

a) Mixture of polymer binders and calibrated sand.
b) Water resistant after 90 minutes
c) For surface exposed to heavy foot traffic
d) Applied dry- hardens after being misted
e) Inhibits weed growth
f) Deters ants and other insect infestations
g) Resists erosion – water, frost heaving, wind, power washing, etc.

h) Stabilizes pavers – strengthens interlocking pavers

6. **Pea Stone**
   Crushed stone conforming to CDOT Form 818, Article M.01.01, gradation No. 8.

7. **Joint Filler**

   a) Joint Fillers: semi-rigid, closed-cell polypropylene foam, preformed joint filler that meets the following physical property requirements and fully complies with ASTM D8139.
      1) Compression Strength = 30-60 psi per ASTM D 545 or AASHTO T 42
      2) Compression Recovery > 80% per ASTM D 545 or AASHTO T 42
      3) Extrusion < 0.1 in. per ASTM D 545 or AASHTO T 42
      4) Density >3.5 lbs./cu.ft. per ASTM D 545 or AASHTO T 42
      5) Water Absorption < 1.0% per ASTM D 545 or AASHTO T 42
      6) Heat Resistance °F 392˚F± 5˚F per ASTM D 5249
      7) Freeze Thaw Resistance No change per ASTM C 666 (300 cycles)
      8) UV Weathering No changeper ASTM D 4329 (1000 hrs., Cycle A)
      9) Thickness = 3/8 inch typical, 1/2 inch where walk abuts structures

   b) Provide cutting tool for pre-scoring the top edge of the joint filler, to allow removal of top portion for sealant application.

8. **Joint Sealant for Horizontal Applications**

   a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

   b) Color to be selected by Engineer.

Construction Methods:

1. **Delivery, Storage, and Handling**
   Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

   Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

   Store asphalt cement and other bituminous materials in tightly closed containers.

2. **Project Conditions**
   Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

   Weather Limitations for Bituminous Setting Bed:

a) Install bituminous setting bed only when ambient temperature is above 40 deg F and when base is dry.
b) Apply asphalt adhesive only when ambient temperature is above 50 deg F and when temperature has not been below 35 deg F for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.

3. Protection of Finished Surfaces
Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage during construction.

4. Excavation
Work under this item shall consist of removing and disposing of existing pavements and concrete curbs, including foundations, to their full depth. Removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the pavement full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor.

5. Concrete Base Slab Concrete installation shall conform to Section 0921001A of these specifications. Additional requirements for concrete slab are as follows:
All concrete base slabs shall receive No. 4 steel bar reinforcing a minimum of 2 inches below the top of the slab. Bar shall be placed 16 inches on center both ways. Expansion joints shall be installed per 0921001A, but surface broom finish and control joints are not required.

6. Preparation
Core-drill weep holes in concrete substrates at 24-inch centers at lowest elevations, and against curbs, walls, and other permanent structures. Fill holes with washed pea stone and install temporary plugs to prevent ingress of setting bed material or neoprene adhesive during construction. Remove plugs when paving adjacent to weep holes.

Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

7. Bituminous Setting Bed
Bituminous setting bed shall be installed over the fully cured concrete base. Apply primer to concrete slab or binder course immediately before placing setting bed.

Control bars ¾" deep shall be placed approximately 11 feet apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.

Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F. Strike setting bed smooth, firm, even, and not less than 3/4 inch thick. Add fresh

bituminous material to low, porous spots after each pass of striking board. After each panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth-control bars.

The setting bed shall be rolled with a power roller to a nominal depth of ¾" while still hot. The thickness of the setting bed shall be adjusted so that when the bricks are placed and rolled, the top surface of the pavers will be at the required finished grade.

Apply neoprene-modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch. Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.

8. **Brick Pavers**

Do not use brick pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

If pavers are not factory-blended, the installer must blend from a minimum of three pallets of each color in the blend as they are placed to produce uniform blend of colors and textures.

Cut brick pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.

Pavers shall be set true to the required lines and grades in the pattern detailed on the Drawings. Lay full pavers first and adjust pavers to form straight bond lines and appropriate joint widths. Provide 1/16" to 3/16" sand filled joints between pavers. Do not exceed 1/8-inch unit-to-unit offset from flush (lippage) nor 3/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.

String lines or chalk lines must be used to keep paver bond lines straight and true. The straight and true bond lines shall not deviate more than +/- 1/2″ at the end of 50 feet. Establish a center line working outward setting parallel string lines or chalk lines every 2 to 6 feet, depending on the area, to continuously check and adjust paver bond lines.

Roll or compact bituminous-set pavers to achieve full bond with the setting bed, reduce lippage and improve the overall flatness of the surface. Fill the spaces between pavers in conformance with the polymeric sand producer's installation instructions and

recommendations as soon as possible after the pavers have been placed. Clean joints of all debris with power air blowers or vacuums to ensure full penetration of the jointing sand. Sweep dry joint filling sand over surface of paving until all joints are completely filled. Once the initial filling of the joints is completed, roll the surface of the pavers to fully compact the pavers into place. Utilize a light rubber-tired roller with sufficient pressure to achieve a full bond to the setting bed or a 4-5000 LBF plate tamper with a protective mat attached. Do not operate the roller in a vibrating mode, as this may cause cracking of the pavers. Protect the surface with plywood or other suitable materials to prevent damage to the edges of the pavers. Perform rolling at the warmest part of the day, but prior to final set of the adhesive, taking care to ensure that the alignment is not altered. After rolling, add dry sand to the joints as necessary to ensure that the sand has penetrated to the bottom of the joints. Do not vibrate the pavers after they or the sand have been placed on the setting bed. Roll the surface when the sand shows no sign of further settlement. Add additional sand as necessary. Mist and rinse in conformance with the polymeric sand producer's installation instructions and recommendations.

Do not permit traffic, including construction equipment, on pavers before joint filling. Disturbed areas of pavers should be taken up, the setting bed re-rolled and pavers re-laid. Remove cracked or damaged pavers and replace with new units. Protect areas were joints have not been filled with waterproof covering overnight.

Completed brick paver areas within the path of travel of any construction equipment shall be protected with steel road plates.

Discontinue laying operations when weather conditions are such that pavement performance may be compromised. On laying operations recommencement, verify acceptable setting bed condition before further pavers are laid.

Method of Measurement:

Brick Paver Roadway – Banding Paver and Brick Paver Roadway – Field Paver will be measured on a per square foot basis, Brick Paver Roadway – Inset Paver will be measured on a per unit each 8" x8" basis; complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all materials, equipment, tools and labor incidental thereto including all sawcuts to meet existing and proposed facilities, the removing and disposal of all surplus materials, excavation, pavement and concrete curb removal and disposal, furnishing and installing the process aggregate base, concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, brick paver, expansion joints and expansion joint sealant.

Basis of Payment:

The brick paver roadway will be paid for at the contract unit price per square foot for "BRICK PAVER ROADWAY – BANDING PAVER" and "BRICK PAVER ROADWAY – FIELD PAVER" and at the contract unit prive per each for "BRICK PAVER ROADWAY – INSET PAVER" which price shall include all materials, equipment, tools and labor incidental thereto

including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, pavement and concrete curb removal and disposal, furnishing and installing the process aggregate base, concrete base slab, sidewalk ramp base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, brick paver, expansion joints and expansion joint sealant.

Unless otherwise indicated, all areas of brick paver roadway, including but not limited to the soldier course "banding" pattern, the herringbone "field" pattern, the inset brick pavers, within Sidewalk Ramps will be paid under this Item.

The cost of detectable warning pavers in sidewalk ramps will be paid for under the Item "Detectable Warning Cast Iron Paver".

A. GENERAL

1) The unit prices for all items of work shall include the cost of all saw cuts to meet existing facilities, the cost of removing and disposing of all surplus material, excavation, preparation of subgrade and base, base material, concrete (including additives), formwork, welded wire fabric, jointing, shoring, backfill, restoration of adjacent pavement and grassed areas, painting and cross walk adjustment, and all other labor, equipment, and material incidental or necessary to complete the item in accordance with the plans and specifications.

2) Unless otherwise specified, there will be no direct payment for adjusting to grade monuments, valve boxes, manhole frames and covers, hatchways, vaults, or other existing surface structures in any new or reconstructed roadway, the cost of this work being considered to be included in the unit price for the item of work.

3) Vehicular driveway ramp grades and dimensions shall be determined prior to the start of construction. No additional payment for extra formwork, etc. occasioned by these features shall be made, the cost of this work being considered to be included in the unit price for the item of work.

Pay Item	**Pay Unit**
Brick Paver Roadway – Banding Paver	SF
Brick Paver Roadway – Field Paver	SF
Brick Paver Roadway – Inset Paver	EA

Maintenance/attic stock – paid for paver material and delivery only. Contractor to provide delivery/payment receipts to the Owner for verification.

ITEM #0921029A – GRANITE SEAT WALL – VOLUTE – TYPE 2
ITEM #0921030A – GRANITE SIGN WALL – STRAIGHT
ITEM #0921031A – GRANITE SEAT WALL – STRAIGHT – TYPE 1
ITEM #0921032A – GRANITE SEAT WALL – STRAIGHT – TYPE 2
ITEM #0921033A – GRANITE SEAT WALL – CURVED – TYPE 1
ITEM #0921034A – GRANITE SEAT WALL – CURVED – TYPE 2
ITEM #0921035A – GRANITE SEAT WALL – VOLUTE – TYPE 1
ITEM #0921036A – GRANITE SIGN WALL – VOLUTE
ITEM #0921037A – GRANITE SEAT WALL COPING – STRAIGHT – TYPE 1
ITEM #0921038A – GRANITE SIGN WALL COPING – STRAIGHT
ITEM #0921039A – GRANITE SEAT WALL COPING – CURVED – TYPE 1
ITEM #0921040A – GRANITE SEAT WALL COPING – VOLUTE – TYPE 1
ITEM #0921041A – GRANITE SIGN WALL COPING – VOLUTE

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install Granite Seat Walls and Granite Sign Wall as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all saw cuts to meet existing facilities, the removing and disposal of all surplus materials, excavation and backfilling, dewatering, concrete foundations and stepped footings as required, curved and straight granite wall sections, volutes and copings, corners and end pieces, core holes in wall blocks and water jet cut holes in copings and all incidental work necessary to complete each granite seat wall. Include electrical conduit through concrete foundation and granite wall block to be used for powering a variable message sign.

2. **Submittals:**
   Submit Shop Drawings including plans, sections, and details for each granite seat wall piece to be fabricated. Shop drawings must be based on actual field measurements of the final finished grades and wall locations.

   Submit Product Data for each variety of stone, stone accessories, and manufactured product.

Submit granite samples representative of color and finishes, indicating color variation and texture range expected in finished installation.

Preinstallation Meetings: Conduct pre-installation meeting one week prior to commencing work of this Section to verify project requirements, substrate condition, coordination with other trades, installation instructions, and warranty requirements. Preinstallation meeting shall include the Contractor, Installer, Engineer, Quarry Representative, and other interested parties as appropriate.

Field-Constructed Mock-Up: Before starting granite seat wall work, provide a mock-up using materials, bond, and joint treatments indicated for the project work. Build panel at the site of full thickness and full height x 4' long. Provide the range of color, texture, and workmanship proposed for the work. Correct and rebuild sample panel until Engineer acceptance of the mock-up. Retain during construction as a standard for completed stone masonry work. Mock-up shall not be a permanent section of the seat wall.

Submit detailed photographs to document the progress of the stone fabrication work, and the appearance and workmanship of the finished product. Take and submit photographs at critical intervals before, during, and after completion of the fabrication process. Make granite fabrications available for examination by the Engineer at the fabricator's premises.

Submit mortar and sealant samples for selection of color match to granite seat wall. Make Samples using same sand and mortar ingredients to be used on Project.

Submit proposed mix designs and test data before concrete operations begin. Indicate quantity of each ingredient per cubic yard of concrete. Indicate type and quantity of admixtures proposed or required.

Delegated-Design Submittal: For foundations, footings reinforcement and threaded bar connections for the variable message sign to be placed on the Granite Sign Wall, including analysis data signed and sealed by the qualified professional engineer, licensed in the State of Connecticut, responsible for their preparation.

3. **Quality Assurance**

Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.

Material:

1. **Performance Requirements**

Delegated Design: Engage a qualified Professional Engineer to design foundations, wall sections, reinforcement and threaded bar connections for the variable message sign to be

placed on the Granite Sign Wall. The Professional Engineer shall be legally qualified to practice in jurisdiction where Project is located and shall be experienced in providing engineering services of the kind indicated for this Project. Structural Performance shall be in accordance with the Connecticut State Building Code.

2. Granite Block

Material Standard: Comply with ASTM C 615.

Granite Blocks: Curved and Straight are to match the existing Granite at the Town Green, similar to Stony Creek or O&G granite MDS 28, and as reviewed and approved by the Engineer.

Granite shall be sound, durable, and free of blemishes and defects. Blocks shall be fabricated as detailed and in conformance with approved shop drawings and samples.

Finish:
Wall Blocks and Volutes: To be selected by the Engineer to be either Smooth Quarry Split face or heavy sand blast for all exposed faces. Saw to true dimensions as detailed for sides, top and bottom not exposed.

3. Granite Coping

Material Standard: Comply with ASTM C 615.

Granite Blocks: Curved and Straight are to match the used for the wall blocks.

Granite shall be sound, durable, and free of blemishes and defects. Blocks shall be fabricated as detailed and in conformance with approved shop drawings and samples.

Finish: Thermal finish on all exposed faces, saw cut at abutting coping pieces.

4. Stone Fabrication

Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function. Cut stone to produce pieces of thickness, size, and shape indicated.

a) Curved pieces fabricated to match various radii indicated on the drawings. All Granite Block and Granite Coping to be fabricated to true radius not straight segments.
a) Stone Edges: Radius/eased edge unless otherwise noted.
b) Joint Width: 3/8 inch. Joints between Granite coping and granite Block are to align vertical.

5. Cast-In-Place Concrete:

PCC03360 Concrete conforming to CDOT Form 818, Section M.03.02.

6. Reinforcing Steel:

CDOT Form 818, Article M.06.01.

7. **Dowels / Pin/Coping anchors:**
   Fabricated from type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666 to match shapes and dimensions found in the drawings.

8. **Mortar:**
   CDOT Form 818, Article M.11.04.

9. **Joint Sealant for Horizontal Applications**

   a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

   b) Color to be selected by Engineer.

10. **Joint Sealant for vertical applications:**

    a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

    b) Color to be selected by Engineer.

11. **Sealant Backer Rod:**

    1. Compressible rod stock or polyethylene foam, polyethylene jacketed, butyl rubber foam, or neoprene foam, as recommended by sealant manufacturer where required for back-up of sealant.

12. **PVC Conduit:**
    a) 2" polyvinyl chloride conduit in structure to conform to Item # 1008182.

Construction Methods:

1. **Excavation and Backfill:**
   CDOT Form 818 Articles 2.03.01, 2.03.02, and 2.03.03.

2. **Concrete Foundations:**
   CDOT Form 818 Articles 6.01.01, 6.01.02, and 6.01.03. Finish the top of wall foundation to a smooth uniform elevation, or pour a leveling grout on top of the stem

wall to provide for the precise placement of the granite blocks true to line and grade and aligned flush with each other.

3. **Reinforcing Steel:**
   CDOT Form 818 Articles 6.02.01, 6.02.02, and 6.02.03.

4. **PVC Conduit:**
   Place PVC conduit in concrete footing and align to location of core hole in granite wall block. Place granite wall block to fit over PVC conduit, which is to extend 12" above the surface of the coping for use by the variable message sign Contractor.

5. **Granite Block:**
   Granite blocks are to be installed true to line and grade, with a uniform elevation across the top of the seat wall, and adjacent blocks flush to each other. Core holes in granite sign wall and granite sign wall volute in locations and at dimensions on the drawings. Maintain a consistent joint width of 3/8-inch (± 1/8-inch.) Fill joints with mortar, backer rod and sealant.

   Installation Tolerances:

   (a) Variation in line: Do not exceed 1/8-inch in 96-inches, 1/4-inch in 20-feet, or 3/8-inch maximum.

   (b) Variation in surface plane: Do not exceed 1/8-inch in 10-feet, 1/4-inch in 20-feet, or 3/8-inch maximum from level or slope indicated.

   (c) Variation in plane between adjacent units (lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

6. **Granite Coping:**
   Coping is to be installed true to line and grade, with a uniform elevation across the top of the coping, and adjacent blocks flush to each other. Core holes in granite sign wall coping and granite sign wall volute coping in locations and at dimensions on the drawings. Maintain a consistent joint width of 3/8-inch (± 1/8-inch.) Fill joints with mortar and joint sealant as detailed.

   Installation Tolerances:

   (a) Variation in line: Do not exceed 1/8-inch in 96-inches, 1/4-inch in 20-feet, or 3/8-inch maximum.

   (b) Variation in surface plane: Do not exceed 1/8-inch in 10-feet, 1/4-inch in 20-feet, or 3/8-inch maximum from level or slope indicated.

   (c) Variation in plane between adjacent units (lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

Method of Measurement:

Granite Seat walls, granite sign wall and copings for seat walls and sign wall will be measured individually on a linear foot basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. This includes both straight and curved pieces.
Granite Seat Wall - Volutes and Granite Sign Wall - Volutes as well as Granite Seatwall Coping – Volutes and Granite Sign Wall Coping - Volutes will be measured individually on an each unit basis.

Basis of Payment:

Granite Sign Walls will be paid for at the contract unit price linear feet for each "GRANITE SIGN WALL – STRAIGHT".

Granite Seat Walls will be paid for at the contract unit price linear feet for each "GRANITE SEAT WALL – STRAIGHT - TYPE 1", "GRANITE SEAT WALL – STRAIGHT – TYPE 2" and "GRANITE SEAT WALL – CURVED - TYPE 1" and "GRANITE SEAT WALL – CURVED – TYPE 2".

Granite Seat Wall Volutes will be paid for at the contract unit price each for "GRANITE SEAT WALL - VOLUTE – TYPE 1" and "GRANITE SEAT WALL - VOLUTE – TYPE 2".

Granite Sign Wall Volutes will be paid for at the contract unit price each for "GRANITE SIGN WALL – VOLUTE".

Granite Seat Wall Copings will be paid for at the contract unit price linear feet for each "GRANITE SEAT WALL COPING – STRAIGHT TYPE 1", and "GRANITE SEATWALL COPING – CURVED - TYPE 1".

Granite Sign Wall Copings will be paid for at the contract unit price linear feet for each "GRANITE SIGN WALL COPING – STRAIGHT".

Granite Seat Wall Volute Copings will be paid for at the contract unit price for each "GRANITE SEAT WALL COPING – VOLUTE – TYPE 1".

Granite Sign Wall Volute Copings will be paid for at the contract unit price for each "GRANITE SIGN WALL COPING – VOLUTE.

Prices shall include all materials, equipment, tools and labor incidental thereto including all saw cuts to meet existing facilities, the removing and disposal of all surplus materials,

excavation and backfilling, dewatering, concrete foundations and stepped footings as required, curved and straight granite seat wall sections, delegated design of foundations, and all incidental work necessary to complete each granite seat wall.

Pay Item	**Pay Unit**
Granite Sign Wall – Straight	LF
Granite Seat Wall – Straight – Type 1	LF
Granite Seat Wall – Straight – Type 2	LF
Granite Seat Wall – Curved – Type 1	LF
Granite Seat Wall – Curved – Type 2	LF
Granite Seat Wall – Volute – Type 1	EA
Granite Seat Wall – Volute – Type 2	EA
Granite Sign Wall – Volute	EA
Granite Seat Wall Coping – Straight – Type 1	LF
Granite Sign Wall Coping – Straight	LF
Granite Seat Wall Coping – Curved – Type 1	LF
Granite Seat Wall Coping – Volute – Type 1	EA
Granite Sign Wall Coping – Volute	EA

ITEM #0921042A – GRANITE PAVER BANDING – TYPE "C"
ITEM #0921043A – GRANITE PAVER BANDING – TYPE "R"

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install dimension stone granite paver banding as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, bituminous concrete roadway removal and disposal, furnishing and installing the concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, rectangular and curved dimension stone granite pavers, joint sand and expansion joints.

2. **Submittals:**
   Submit sample dimension stone granite pavers of each paver type representative of size, shape, color and finish, indicating color variation and texture range expected in finished installation. Do not order granite stone pavers for Project until Engineer's approval of field sample panel.

   Submit Product Data for each variety of stone, stone accessories, and manufactured product.

   Submit Shop Drawings including plans, sections, and details for each type of dimension stone paver.

3. **Quality Assurance**
   Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.

   Preinstallation Meetings: As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

   Mockup: As specified in Item 0921016A "Brick Paver Roadway – Banding Paver"..

Material:

1. **Granite**
   Material Standard: Comply with ASTM C 615.

Granite Pavers: Curved and Straight are to match the existing Granite at the Town Green, similar to Stony Creek or O&G granite MDS 28, and as reviewed and approved by the Engineer.

Granite shall be sound, durable, and free of blemishes and defects. Blocks shall be fabricated as detailed and in conformance with approved shop drawings and samples.

Finish: Saw cut edges and Thermal surface.

2. **Stone Fabrication**
   Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function. Cut stone to produce pieces of thickness, size, and shape indicated.

   a) Stone Thickness: 2-3/4 inches gauged to match thickness of brick pavers.
   b) Type "C" Paver Face Size: Curved pieces fabricated to match various radii indicated on the drawings.
   c) Type "R" Paver Face Size: Rectangular pieces 12 inches x 18 inches in dimension.
   a) Stone Edges: Square cut with top corner slightly eased to prevent snipping.
   b) Joint Width: 1/16 inch to 1/8 inch.

3. **Other Materials**
   Bituminous Setting-Bed, Neoprene-Modified Asphalt Setting Adhesive, Concrete Base Slab, Sand for Joints, Pea Stone, and Joint Filler: As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

Construction Methods:

1. **Delivery, Storage, and Handling**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

2. **Project Conditions**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

3. **Protection of Finished Surfaces**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

4. **Excavation**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

5. **Concrete Base Slab**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

6. **Preparation**

As specified in Item 0921016A “Brick Paver Roadway – Banding Paver”.

7. **Bituminous Setting Bed**
   As specified in Item 0921016A “Brick Paver Roadway – Banding Paver”.

8. **Dimension Stone Granite Pavers**
   Conform to the Construction Methods for Brick Pavers as specified in Item 0921016A “Brick Paver Roadway – Banding Paver”.

Method of Measurement:

Granite Paver Banding will be measured on a per square foot basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all materials, equipment, tools and labor incidental thereto including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, bituminous concrete roadway removal and disposal, furnishing and installing the processed aggregate base, concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, granite stone pavers Type “C” or Type “R”, and expansion joints.

Basis of Payment:

The Granite Paver Banding will be paid for at the contract unit price per square foot for “GRANITE PAVER BANDING – TYPE C” or “GRANITE PAVER BANDING – TYPE R” which price shall include all materials, equipment, tools and labor incidental thereto including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, bituminous concrete roadway removal and disposal, furnishing and installing the processed aggregate base, concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, granite stone pavers, and expansion joints.

Pay Item	**Pay Unit**
Granite Paver Banding – Type “C”	SF
Granite Paver Banding – Type “R”	SF

ITEM #0921044A – GRANITE LAWN CURB – TYPE 1 - CURVED
ITEM #0921045A – GRANITE LAWN CURB – TYPE 1 - STRAIGHT
ITEM #0921046A – GRANITE LAWN CURB – TYPE 2 - CURVED

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install Granite Lawn Curbs as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation and backfilling, dewatering, processed aggregate base, curved and straight granite lawn curb sections, and all incidental work necessary to complete the granite lawn curb.

2. **Submittals:**
   Submit Shop Drawings including plans, sections, and details for each granite lawn curb piece to be fabricated. Shop drawings must be based on actual field measurements of the final finished grades and lawn curb locations.

   Submit Product Data for each variety of stone, stone accessories, and manufactured product.

   Submit granite samples representative of color and finishes, indicating color variation and texture range expected in finished installation.

   Preinstallation Meetings: Conduct pre-installation meeting one week prior to commencing work of this Section to verify project requirements, substrate condition, coordination with other trades, installation instructions, and warranty requirements. Preinstallation meeting shall include the Contractor, Installer, Engineer, Quarry Representative, and other interested parties as appropriate.

   Field-Constructed Mock-Up: Before starting granite lawn curb work, provide a mock-up using materials, bond, and joint treatments indicated for the project work. Build curb section at the site of full thickness and full height x 6’ long. Provide the range of color, texture, and workmanship proposed for the work. Correct and rebuild sample panel until Engineer acceptance of the mock-up. Retain during construction as a standard for completed work. Mock-up shall not be a permanent section of the seat wall.

   Submit detailed photographs to document the progress of the stone fabrication work, and the appearance and workmanship of the finished product. Take and submit photographs at critical intervals before, during, and after completion of the fabrication process. Make

granite fabrications available for examination by the Engineer at the fabricator's premises.

Submit mortar and sealant samples for selection of color match to granite seat wall. Make Samples using same sand and mortar ingredients to be used on Project.

3. **Quality Assurance**

Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.

Material:

1. **Granite Block**
Material Standard: Comply with ASTM C 615.

Granite Lawn Curb Blocks: Curved and Straight are to match the existing Granite at the Town Green, similar to Stony Creek or O&G granite MDS 28, and as reviewed and approved by the Engineer.

Granite shall be sound, durable, and free of blemishes and defects. Blocks shall be fabricated as detailed and in conformance with approved shop drawings and samples.

Finish: Thermal finish on all exposed faces, saw cut at abutting pieces.

2. **Stone Fabrication**
Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function. Cut stone to produce pieces of thickness, size, and shape indicated.
    a) Curved pieces fabricated to match various radii indicated on the drawings. All Granite Lawn Curb – Curved pieces are to be fabricated to true radius not straight segments.
    a) Stone Edges: Square cut on inside and end edges, with top corner slightly eased to prevent snipping, 1" radius bull nose on outside edge.
    b) Joint Width: 3/8 inch.
3. **Processed Aggregate Base:**
Conform to Form 818 M.05.

4. **Mortar:**
CDOT Form 818, Article M.11.04.

5. **Joint Sealant for Horizontal Applications**

a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

6. Joint Sealant for vertical applications:

a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

7. Sealant Backer Rod:

1. Compressible rod stock or polyethylene foam, polyethylene jacketed, butyl rubber foam, or neoprene foam, as recommended by sealant manufacturer where required for back-up of sealant.

Construction Methods:

1. Excavation and Backfill:
CDOT Form 818 Articles 2.03.01, 2.03.02, and 2.03.03.

2. Granite Lawn Curb:
Granite Lawn Curb blocks are to be installed true to line and grade, with a uniform elevation across the top of the lawn curb, and adjacent blocks flush to each other. Maintain a consistent joint width of 3/8-inch (± 1/8-inch.) Fill joints with mortar, backer rod and sealant.

Installation Tolerances:

(a) Variation in line: Do not exceed 1/8-inch in 96-inches, 1/4-inch in 20-feet, or 3/8-inch maximum.

(b) Variation in surface plane: Do not exceed 1/8-inch in 10-feet, 1/4-inch in 20-feet, or 3/8-inch maximum from level or slope indicated.

(c) Variation in plane between adjacent units (lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

Method of Measurement:

Granite lawn curbs will be measured individually on a linear foot basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer.

Basis of Payment:

Granite Lawn Curbs will be paid for at the contract unit price linear feet for each "GRANITE LAWN CURB – TYPE 1 – CURVED" and "GRANITE LAWN CURB – TYPE 1 – STRAIGHT" and "GRANITE LAWN CURB – TYPE 2 – CURVED".

Prices shall include all materials, equipment, tools and labor incidental thereto including all saw cuts to meet existing facilities, the removing and disposal of all surplus materials, excavation and backfilling, dewatering, processed aggregate base, curved and straight granite LAWN CURB sections, and all incidental work necessary to complete granite lawn curbs.

Pay Item	**Pay Unit**
Granite Lawn Curb – Type 1 – Curved	LF
Granite Lawn Curb – Type 1 – Straight	LF
Granite Lawn Curb – Type 2 – Curved	LF

ITEM #0921048A – ANTI-SKATEBOARD GUARD

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install Anti-Skateboard Guards as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including the removing and disposal of all surplus materials, drilling of holes for anchors, anchors, epoxy grout, anti-skateboard Guard and cleanup.

2. **Submittals**
   a. Anti-Skateboard Guard
      i. Samples: Submit manufacturer's samples of materials and finishes.
      ii. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations and installation methods.
      iii. Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.
      iv. Warranty: Manufacturer's standard warranty.

3. **Quality Assurance**
   a. Anti-Skateboard Guard
      i. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacturer of Anti-Skateboard Guards for more than 5 years.
      ii. Product Support: Products are supported with complete engineering drawings and design patents.

Material:

1. **Anti-Skateboard Guard: Basis of Design Standard = Raised Block Anti-Skateboard Guards as distributed by BC Site Service Commercial Property Supplies https://www.bcsiteservice.com/product/raised-block-anti-skateboard-guards-kit/**
   The Anti-Skateboard Guards are to be designed for hard-cornered natural stone where a heavy-duty anti-skateboarding deterrent fits in aesthetically with the surrounding architecture. The Guards can be applied to square corners that have an edge radius of 1/8" to 3/8". Anchors secure the guard into both the horizontal and vertical surfaces of the edge. Anti-Skateboard Guards are to be manufactured of 6061-T6 aluminum, and to be 2" wide by 4 1/8" deep by 2 1/2" tall. They are to be secured to the granite using mounting pins and two-part impact resistant epoxy.

2. **Epoxy Adhesive**
   Two-part impact resistant epoxy adhesive.

Construction Methods:

1. **Protection of Finished Surfaces**
   Finished surfaces adjacent to the work shall be adequately protected from staining and other damage during construction.

2. **Cleaning**
   Remove any excess mortar or extraneous materials from the surface.

3. **Measuring and Layout**
   Measure and layout proposed installation locations and confirm prior to drilling any holes for anchoring the guards. Do not install anti-skateboard guards on joints or within 6" of joints.

4. **Installation**
   a. Follow manufacturer's instructions for installation of anti-skateboard guards, utilizing equipment and tools specifically designed for granite stone work.

Method of Measurement:

Anti-Skateboard Guards will be measured on an individual, each basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all materials, equipment, tools and labor incidental thereto including the removing and disposal of all surplus materials, cleaning of surfaces, drilling of anchor holes, anchor pins and epoxy adhesive, anti-skateboard guards and clean-up after installation.

Basis of Payment:

The Anti-skateboard Guard will be paid for at the contract unit price for each "ANTI-SKATEBOARD GUARD" which price shall include all materials, equipment, tools and labor incidental thereto including the removing and disposal of all surplus materials, cleaning of surfaces, drilling of anchor holes, anchor pins and epoxy adhesive, anti-skateboard guards and clean-up after installation.

Pay Item	**Pay Unit**
Anti-Skateboard Guard	EA

ITEM #0921050A – DETECTABLE WARNING CAST IRON PAVER

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install Detectable Warning Cast Iron Paver as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including the removing and disposal of all surplus materials, excavation, furnishing and installing the concrete base slab, detectable warning cast iron pavers, and expansion joints.

2. **Submittals**
   a. Detectable Warning Cast Iron Paver
      i. Samples: Submit manufacturer's samples of materials and finishes.
      ii. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations and installation methods.
      iii. Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.
      iv. Warranty: Manufacturer's standard warranty.

3. **Quality Assurance**
   a. Detectable Warning Cast Iron Paver
      i. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacturer of tactile warning strips for more than 5 years.
      ii. Product Support: Products are supported with complete engineering drawings and design patents.

Material:

1. **Detectable Warning Cast Iron Paver: Basis of Design Standard = Truncated Domes, 100% recycled grey iron with rust conditioner finish as manufactured by Urban Accessories www.urbanaccessories.com.**
   The Detectable Warning Cast Iron Pavers, for new construction, shall be cast iron, 24 inch deep paver as shown on plans. Straight and radial detectable warning cast iron paver plates shall be ADA / ABA compliant, with slip resistant surface. Plate shall be heavy duty grey iron, compliant with ASTM A48 CL35B. The detectible warning cast iron paver shall have a 24 inch depth of tactile warning strip for dimensioned lengths, unless otherwise indicated on plan. Detectable warning cast iron paver shall be manufactured with integral anchor lugs to ensure solid attachment to cast-in-place concrete.

2. **Concrete Base Slab**
   Shall conform to Section 0921001A of these specifications with the following additions:

   a) All concrete base slabs will receive steel reinforcement per 0921001A and as detailed.

Construction Methods:

1. **Protection of Finished Surfaces**
   Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage during construction.

2. **Delivery, Storage, and Handling**
   a. Detectable Warning Cast Iron Paver
      i. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product names and manufacturer.
      ii. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.
      iii. Handling: Protect materials and finish during handling and installation to prevent damage.

3. **Excavation**
   Work under this item shall consist of removing and disposing of existing sidewalk and foundation to a full depth. Wherever portions of concrete sidewalks or concrete driveway ramps are to be removed, such removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the concrete full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor.

4. **Concrete Base Slab** Concrete installation shall conform to Section 0921001A of these specifications.

5. **Detectable Warning Cast Iron Paver:**
   Install detectable warning cast iron paver in accordance with manufacturer's instructions at locations indicated on the drawings. Any cutting required to fit detectable warning to an abutting piece, shall be done making every effort that cut line does not bisect the tactile domes, but falls between them. If cuts do bisect a dome, then the edge of the cut dome must be ground to meet ADA requirements for change in vertical grades. Cut pieces shall be dry fitted to ensure tight butt joint between plates prior to placing tactile

warning in wet concrete. Set plates in wet concrete at final position. Keep wet concrete off of the top surface of the plates at all times. Press tiles into wet concrete to final elevation. Finish brick paving around assembled plates. Plates must be flush with abutting surface and flush curbing.

Method of Measurement:

Detectable Warning Cast Iron Paver will be measured on a per square foot basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all materials, equipment, tools and labor incidental thereto including the removing and disposal of all surplus materials, excavation, furnishing and installing the concrete base slab, detectable warning cast iron pavers, and expansion joints.

Basis of Payment:

The detectable warning iron paver will be paid for at the contract unit price per square foot for "DETECTABLE WARNING CAST IRON PAVER" which price shall include all materials, equipment, tools and labor incidental thereto including the removing and disposal of all surplus materials, excavation, furnishing and installing the concrete base slab, detectable warning iron pavers, and expansion joints.

Pay Item	**Pay Unit**
Detectable Warning Cast Iron Paver	SF

ITEM #0921052A – GRANITE SIGN - POST 8" X 8" X 54.5" WITH 4"X2" NOTCH

ITEM #0921053A – GRANITE SIGN - POST 8" X 8" X 54.5"

ITEM #0921054A – GRANITE SIGN – POST CAP – 10" X 10" X 2"

ITEM #0921055A – GRANITE SIGN - PANEL – 3" THICK X 2'-10" H W/CURVED TOP X 36" WIDE

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install Granite Sign components in the Granite Sign Wall as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, granite sign posts, caps and etched granite panels, and all incidental work necessary to complete the granite sign.

2. **Submittals:**
   Submit Shop Drawings including plans, sections, and details for each granite sign piece to be fabricated. Shop drawings must be based on actual field measurements of the final sign wall layout and post hole locations. Shop drawings to include details of etching for the sign panel.

   Submit Product Data for each variety of stone, stone accessories, and manufactured product.

   Submit granite samples representative of color and finishes, indicating color variation and texture range expected in finished installation.

   Preinstallation Meetings: Conduct pre-installation meeting one week prior to commencing work of this Section to verify project requirements, substrate condition, coordination with other trades, installation instructions, and warranty requirements. Preinstallation meeting shall include the Contractor, Installer, Engineer, Quarry Representative, and other interested parties as appropriate.

   Field-Constructed Mock-Up: Before starting granite sign work, provide samples that represent each component of the granite sign using materials indicated for the project work. Provide the range of color, texture, and workmanship proposed for the work. Correct and rebuild sample panel until Engineer acceptance of the mock-up. Retain

during construction as a standard for completed work. Mock-up shall not be a permanent improvement on the site.
Submit detailed photographs to document the progress of the stone fabrication work, and the appearance and workmanship of the finished product. Take and submit photographs at critical intervals before, during, and after completion of the fabrication process. Make granite fabrications available for examination by the Engineer at the fabricator's premises.

Submit mortar and sealant samples for selection of color match to granite seat wall. Make Samples using same sand and mortar ingredients to be used on Project.

3. **Quality Assurance**

Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.

Material:

1. **Granite Block**
Material Standard: Comply with ASTM C 615.

Granite Posts, Panel and Caps: granite to match the existing granite at the Town Green, similar to Stony Creek or O&G granite MDS 28, and as reviewed and approved by the Engineer.

Granite shall be sound, durable, and free of blemishes and defects. Blocks shall be fabricated as detailed and in conformance with approved shop drawings and samples.

Finish: Thermal finish on all exposed faces, saw cut at abutting pieces.

2. **Stone Fabrication**
Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function. Cut stone to produce pieces of thickness, size, and shape indicated.
   a) Stone Edges: Square cut on edges, with corners slightly eased to prevent snipping.
3. **Mortar:**
CDOT Form 818, Article M.11.04.

4. **Joint Sealant for Horizontal Applications**

a) Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling designed for foot traffic, 2c SL, as manufactured by SIKA, Pecora. Subject to

compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

5. Joint Sealant for vertical applications:

a) Two component polyurethane elastomeric type complying with FS-TT-S-00230, non-sag, 2c NS EZ Mix, as manufactured by SIKA, Pecora. Subject to compliance with requirements, provide the specified product or comparable product of BASF MasterSeal NP2 Sealant or LymTal International Iso-Flex 881 R Sealant.

b) Color to be selected by Engineer.

6. Sealant Backer Rod:

1. Compressible rod stock or polyethylene foam, polyethylene jacketed, butyl rubber foam, or neoprene foam, as recommended by sealant manufacturer where required for back-up of sealant.

Construction Methods:

1. Granite Sign Posts, Caps and Panel:
Granite sign components are to be installed true to line and grade, with a uniform elevation across the top of the sign panel. Maintain a consistent joint width of 3/8-inch (± 1/8-inch.) Fill joints with mortar, backer rod and sealant.

Installation Tolerances:

(a) Variation in line: Do not exceed 1/8-inch in 96-inches, 1/4-inch in 20-feet, or 3/8-inch maximum.

(b) Variation in surface plane: Do not exceed 1/8-inch in 10-feet, 1/4-inch in 20-feet, or 3/8-inch maximum from level or slope indicated.

(c) Variation in plane between adjacent units (lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

Method of Measurement:

Granite sign components will be measured individually as each, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer.

Basis of Payment:

Granite Signs will be paid for at the contract unit price for each "GRANITE SIGN – POST - 8"X8"X54.5" WITH 4"X2" NOTCH","GRANITE SIGN – POST – 8"X8"X54.5", "GRANITE SIGN POST – CAP – 10" X 10" X 2", AND "GRANITE SIGN – PANEL – 3" THICK X 2'-10.5" H W/CURVED TOP X 36" WIDE .

Prices shall include all materials, equipment, tools and labor incidental thereto including all saw cuts to meet existing facilities, the removing and disposal of all surplus materials, granite sign components, mortar, non-shrink/non-metalic grout, and all incidental work necessary to complete granite sign posts, panel and caps.

Pay Item	**Pay Unit**
Granite Sign – Post – 8"x8"x54.5" with 4"x2" Notch	EA
Granite Sign – Post – 8"x8"x54.5"	EA
Granite Sign – Post – Cap – 10" x 10" x 2"	EA
Granite Sigh – Panel – 3" thick x 2'-10 1/2" H w/Curved Top x 36" wide	EA

ITEM #0921097A – GRANITE MEDALLION AT BRICK PAVER ROADWAY

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish and install dimension stone granite paver banding as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, bituminous concrete roadway removal and disposal, furnishing and installing the concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, granite medallion, joint sand and expansion joints.

2. **Submittals:**
   Submit sample of granite with etching, indicating color variation, texture range and finish expected in finished installation. Do not order granite medallion for Project until Engineer's approval of the sample.

   Submit Shop Drawings including plans, sections, and details for each type of dimension stone paver.

3. **Quality Assurance**
   Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.

   Preinstallation Meetings: As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

Material:

1. **Granite**
   Material Standard: Comply with ASTM C 615.

   Granite Medallion: Circular medallion is to match the existing Granite at the Town Green, similar to Stony Creek or O&G granite MDS 28, and as reviewed and approved by the Engineer.

   Granite shall be sound, durable, and free of blemishes and defects. Blocks shall be fabricated as detailed and in conformance with approved shop drawings and samples.

Finish: Saw cut edges and Thermal surface.

2. **Stone Fabrication**
   Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function. Cut stone to produce pieces of thickness, size, and shape indicated.

   a) Stone Thickness: 6 inches.
   b) Diameter: 60 inches
   c) Etching: Depth and pattern per approved shop drawing.

3. **Other Materials**
   Bituminous Setting-Bed, Neoprene-Modified Asphalt Setting Adhesive, Concrete Base Slab, Sand for Joints, Pea Stone, and Joint Filler: As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

Construction Methods:

1. **Delivery, Storage, and Handling**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

2. **Project Conditions**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

3. **Protection of Finished Surfaces**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

4. **Excavation**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

5. **Concrete Base Slab**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

6. **Preparation**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

7. **Bituminous Setting Bed**
   As specified in Item 0921016A "Brick Paver Roadway – Banding Paver".

Method of Measurement:

Granite Medallion at Brick Paver Roadway will be measured on an individual each basis, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all materials, equipment, tools and labor incidental thereto

including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, bituminous concrete roadway removal and disposal, furnishing and installing the processed aggregate base, concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, granite medallion with etching, and expansion joints.

Basis of Payment:

The Granite Medallion at Brick Paver Roadway will be paid for at the contract unit price per each "GRANITE MEDALLION AT BRICK PAVER ROADWAY" which price shall include all materials, equipment, tools and labor incidental thereto including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, bituminous concrete roadway removal and disposal, furnishing and installing the processed aggregate base, concrete base slab, bituminous/sand setting bed, neoprene-modified asphalt setting adhesive, joint sand, granite medallion with etching, and expansion joints.

Pay Item	**Pay Unit**
Granite Medallion at Brick Paver Roadway	EA

ITEM #0921097A – FLEXIBLE PERMEABLE PAVEMENT

Description:

1. **Summary:**
   The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to install Flexible Permeable Pavement es as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, and flexible permeable pavement.

   The Basis of Design Standard for the Flexible Permeable Pavement is "Perk E Pave", Pottstown, PA - www.perkEpave.com and is a flexible porous paving system comprised of combination of three components: recycled passenger car tires, aggregate and urethan binder, that provides a strong, pervious, yet flexible paving. Other manufacturer's/products will be considered if determined to be an Equal Product by the Engineer.

2. **Submittals**
   a. Product data for each component of the Flexible Permeable Pavement.
   b. Installers qualification data.

3. **Quality Assurance**
   a. Flexible Permeable Pavement installer shall be required to be experienced with installation procedures and to have attended the Manufacturer's installation training program.
   b. Flexible Permeable Pavement installer shall employ no less than two Manufacturer-trained "Flexible Porous Paving" technicians on staff who directly oversee and perform the installations during all Flexible Permeable Pavement placement.
   c. At the start of the Flexible Permeable Pavement work, Contractor to ensure that the Manufacturer's representative is onsite for a minimum of 1/2 day supervision of the installation of the Flexible Permeable Pavement.

Material:

1. **Flexible Permeable Pavement**
   a. Base aggregate: #57 stone.
   b. Stone: Triple-washed and dried coarse aggregate (1/4 to 3/8 inch) per ASTM C33. Bagged in 50 lb. quantity. Nominal maximum aggregate size shall not exceed 1/3 of the specified paving thickness.
   c. Rubber: Recycled passenger tires ground to 1/4" nominal with wire remnants removed.

d. Binding Agent: urethane liquid prepolymer based upon DiphenylmethaneDiisocyanate.
e. Mix Design: Using materials mix ratio as acceptable by the Manufacturer for the intended application. The volume by weight of aggregate shall be as required by the Manufacturer for the intended application.
f. Forms: shall be clean and free of debris of any kind, rust, and hardened concrete and make use of a bio-diesel or vegetable oil as a form release.
g. Color: Selected product color to match perkEPave #31, beige stone/tan rubber.

Construction Methods:

1. **Mockup**
   Construct a 6' x 10' display panel size, color, and finish specimen in this Item to illustrate component application including pattern and edge details. Do not start work until Engineer has approved mock-up. Remove mock-up and dispose of materials at the completion of the work or as directed by Engineer.

2. **Protection of Finished Surfaces**
   Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage during construction.

3. **Excavation:**
   Work under this item shall consist of removing and disposing of existing sidewalk and foundation to a full depth. Wherever portions of concrete sidewalks or concrete driveway ramps are to be removed, such removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the concrete full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor. Subgrade to be prepared to receive a thickness of 4" #57 stone and 2" Flexible Permeable Pavement, as detailed to work with tree rootball and trunk.

4. **Flexible Permeable Pavement:**
   a. Install the #57 base stone and 2" Flexible Permeable Pavement layer per the manufacturer's instructions and as detailed to work with tree rootball and trunk.
   b. Follow Manufacturer's Hot- and Cold-weather construction recommendations as required.
   c. Mix the Flexible Permeable Pavement material on site in compliance with Manufacturer's written specifications.
   d. Do not place Flexible Permeable Paving on frozen or wet subgrade or subbase.
   e. Deposit Flexible Permeable Pavement either directly onto the subgrade or subbase by wheelbarrow or by material handler onto the subgrade or subbase, unless otherwise specified.

f. Deposit Flexible Permeable Pavement between the forms to an approximately uniform height.
g. Spread the pervious paving uniformly to the required elevation and screed to achieve a uniform flat surface.
h. Hold back paving material from the tree trunk as detailed and bevel the edge to provide a transition from the surface to the root flare area.
i. Final surface of the flexible permeable pavement shall be smoothed with bull float and magnesium hand floats coated with a form release film.
j. Curing: Completely cover the paving surface with a minimum 4 mil thick polyethylene sheet if rain or sprinklers are imminent. Cure paving for a minimum of 24 uninterrupted hours, unless otherwise specified.
k. Forms: When permanent edging or abutting structures are not present, bevel the edge of the top surface to a 45 degree slope.

Method of Measurement:

Flexible Permeable Pavement shall not be measured for payment under this Pay Item but shall be measured under "FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/STRUCTURAL SOIL" "FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/TREE FILTER".

Basis of Payment:

Flexible Permeable Pavement shall not be paid under this Pay Item but under Flexible Permeable Pavement at New Tree w/Structural Soil or Flexible Permeable Pavement at new Tree W/Tree Filter at the contract unit price per tree pit for "FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/STRUCTURAL SOIL" "FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/TREE FILTER" complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing Flexible Permeable Pavement.

Pay Item	**Pay Unit**
Flexible Permeable Pavement	SF

ITEM #0921098A – FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/STRUCTURAL SOIL

Description:

1. **Summary:**
   The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to install Flexible Permeable Pavement at new trees as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil (630 cubic feet per tree), filter fabric, clean course aggregate stone, 4" PVC perforated pipe with sleeve, biobarrier root control fabric, and Flexible Permeable Pavement.

2. **Submittals**
   a. Product Data for all components of the Flexible Permeable Pavement at New Tree w/Structural Soil.
3. **Quality Assurance**
   a. Qualifications of installing contractor: The work of this section should be performed by a contracting firm which has a minimum of five years experience.

Material:

1. **CU Structural Soil**
   a. Conform to the requirements of Item # 0944105A.

2. **Biobarrier Root Control Fabric**
   Root control fabric shall be 19.5" wide biobarrier root control fabric.

3. **Supplemental Irrigation**
   4" Rigid Polyvinyl Chloride Plastic Solid and Perforated Drain Pipe with filter sleeve, fittings, and slotted drain cap conforming to the requirements of Item # 0751453.

4. **Filter Fabric**
   Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made 100% Spunbonded Polypropylene; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
   a. Tensile Strength: 73(lbs)
   b. Puncture Strength (lbs): 23
   c. Air Opening Size (equivalent sieve): 30/40
   d. Air Opening Size (mm): 0.52
   e. Trap Tear (lbs): 35

f. Air Permeability (cm/sec): $10x10^{-2}$
g. Flux (gal/ft^2/min): 200
h. Permitivity (sec^{-1}): 3.0
i. Color: Black

5. Clean Course Aggregate Stone

a. Crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883.
b. Do not use rounded river gravel.
c. All stone materials shall be washed with less than 1% passing the No. 200 sieve.
d. Base: conforming to ASTM D 448 gradation as shown in Tables below:

ASTM No. 57 Base
Grading Requirements

Sieve Size	Percent Passing
37.5 mm (1 1/2 in.)	100
25 mm (1 in.)	95 to 100
12.5 mm (1/2 in.)	25 to 60
4.75 mm (No. 4)	0 to 10
2.36 mm (No. 8)	0 to 5

6. Flexible Permeable Pavement

Conform to Item # 0921097A.

Construction Methods:

1. Mockup

Construct a 6’ x 10’ display panel size, color, and finish specimen in this Item to illustrate component application including pattern and edge details. Do not start work until Engineer has approved mock-up. Remove mock-up and dispose of materials at the completion of the work or as directed by Engineer.

2. Protection of Finished Surfaces

Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage during construction.

3. Excavation:

Work under this item shall consist of removing and disposing of existing sidewalk and foundation to a full depth. Wherever portions of concrete sidewalks or concrete driveway ramps are to be removed, such removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the concrete full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly

compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor.

4. **Supplemental Irrigation**
   Shall be installed at the line and grade as indicated on the drawings.

5. **Biobarrier Root Control Fabric**
   Biobarrier root control fabric shall be installed where indicated on the drawings and per manufacturer's recommendations.

6. **Planting Procedures, Balled and Burlapped Planting:**
   Shall conform to Section 0949001A of these specifications.

7. **CU Structural Soil**
   a. Install per the requirements of Item #0944105A Structural Soil for Tree Planting.

8. **Filter Fabric:**
   a. Install as shown on the drawings per manufacturers recommendations.

9. **Clean Course Aggregate Stone:**
   a. Install as shown on the drawings compact to 95% compaction per AASHTO T-180.

10. **Flexible Permeable Pavement**
    a. Install per the requirements of Item #0921097A.

Method of Measurement:

Flexible Permeable Pavement at New Tree w/Structural Soil will be measured by the number of flexi-pave tree pits installed, based on 60 square feet per tree, with 630 cubic feet of CU Structural Soil, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil, filter fabric, clean course aggregate stone, biobarrier root control fabric, and KBI flexible permeable pavement.

Basis of Payment:

Flexible Permeable Pavement at New Tree will be paid for at the contract unit price per tree pit for "FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/STRUCTURAL SOIL" complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil, filter fabric, clean course aggregate stone, biobarrier root control

fabric, and flexible permeable pavement, excluding Tree Planting which will be paid under a separate item.

Pay Item	**Pay Unit**
Flexible Permeable Pavement at New Tree W/Structural Soil	EA

ITEM #0921099A – FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/TREE FILTER

Description:

1. **Summary:**
   The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to install Flexible Permeable Pavement at new trees that have tree filter structures as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including the removing and disposal of all surplus materials, and Flexible Permeable Pavement.

2. **Submittals**
   a. Submit to the engineer representative samples, certificates, manufacturer's literature and test results for Flexible Permeable Pavement materials and base as indicated in Item #0921097A.

3. **Quality Assurance**
   a. Qualifications of installing contractor: The work of this section should be performed by a contracting firm meeting the requirements of Item #0921097A.

Material:

1. **Clean Course Aggregate Stone**
   a. Crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883.
   b. Do not use rounded river gravel.
   c. All stone materials shall be washed with less than 1% passing the No. 200 sieve.
   d. Base: conforming to ASTM D 448 gradation as shown in Tables below:

ASTM No. 57 Base
Grading Requirements

Sieve Size	Percent Passing
37.5 mm (1 1/2 in.)	100
25 mm (1 in.)	95 to 100
12.5 mm (1/2 in.)	25 to 60
4.75 mm (No. 4)	0 to 10
2.36 mm (No. 8)	0 to 5

2. **Flexible Permeable Pavement**
   Conform to the requirements of Item #0921097A.

Construction Methods:

1. **Mockup**
   Construct a 6' x 10' display panel size, color, and finish specimen in this Item to illustrate component application including pattern and edge details. Do not start work until Engineer has approved mock-up. Remove mock-up and dispose of materials at the completion of the work or as directed by Engineer.

2. **Flexible Permeable Pavement**
   Construct per the requirements of Item # 0921097A.

Method of Measurement:

Flexible Permeable Pavement at New Tree w/Tree Filter will be measured by the number of flexible permeable tree pits installed at tree filters, based on 60 square feet per tree, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include removing and disposal of all surplus materials, excavation, furnishing and installing the clean coarse aggregate stone, and Flexible Permeable Pavement.

Basis of Payment:

Flexible Permeable Pavement at New Tree will be paid for at the contract unit price per SF for "FLEXIBLE PERMEABLE PAVEMENT AT NEW TREE W/TREEFILTER" complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include the removing and disposal of all surplus materials, excavation, furnishing and installing the clean coarse aggregate stone, and Flexible Permeable Pavement, excluding Tree Planting which will be paid under a separate item.

Pay Item	**Pay Unit**
Flexible Permeable Pavement at New Tree w/Tree Filter	SF

0922050A – DECORATIVE CROSSWALK

Description: This item shall consist of a durable imprinted aggregate reinforced preformed thermoplastic pavement marking system (herein "System") that provides a textured, highly attractive and durable topical treatment to the surface of asphalt pavement. The work shall consist of furnishing, preparing and installing the system in the locations and to the dimensions and details shown on the plans or as ordered and in accordance with these specifications.

Materials: Preformed thermoplastic material must be composed of an ester modified rosin impervious to degradation by motor fuels, lubricants, etc. in conjunction with aggregates, pigments, binders, and anti-skid/anti-slip elements. Pigments and anti-skid/anti-slip elements must be uniformly distributed throughout the material. The material conforms to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, being non-reflective, and being of a color different from white or yellow. The System shall be provided in accordance with and manufactured by TrafficPatternsXD by Ennis Flint, 4161 Piedmont Parkway, Suite 370, Greensboro, NC 27410, 1-800-331-8118, or approved equal. The selected color shall be "Colonial Brick" and the pattern shall be "Offset Brick with Soldier Course".

1. **Pigments:** White pigment material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected. All other color pigment systems must not contain heavy metals nor any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

2. **Skid Resistance:** The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.

3. **Slip Resistance:** The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum static coefficient of friction of 0.6 when tested according to ASTM C 1028 (wet and dry), and a minimum static coefficient of friction of 0.6 when tested according to ASTM D 2047.

4. **Thickness:** The material must be supplied at a minimum thickness of 150 mil (3.8mm).

5. **Environmental Resistance:** The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.

6. **Storage Life:** The material may be stored for 12 months, if stored indoors and protected from the elements.

7. **Transverse Lines to Supplement System Application:** Supplied as white, retroreflective preformed thermoplastic line stripe material in 90 mil (2.3mm) or 125 mil (3.2mm) thicknesses, material is available in 6 in. (.15m), 8 in. (.20m) or 12 in. (.30m) widths. This preformed thermoplastic material may be supplied and applied by the certified applicator in conjunction with the System, and is available from the System manufacturer.

Construction Methods:

1. Specialized Application Equipment

a) **Stamping Templates:** A wire rope template is required in the execution of the System. The template is used for imprinting the defined pattern once the preformed thermoplastic has been applied. The wire rope diameter for the imprinting template used for the specified pattern is 3/8 in. (9.5mm). The stamping templates are distributed by the System manufacturer.

b) **Heating Equipment:** The System manufacturer shall distribute reciprocating infrared heating equipment designed specifically to elevate the temperature of the preformed thermoplastic material and asphalt pavement without adversely affecting it. The primary heating unit must employ a bank of propane-fired infrared heaters, mounted on a track device that allows the heater bank to reciprocate back and forth over a designated area, thereby allowing the operator to monitor the temperature of the preformed thermoplastic at all times during the pavement heating process.

A smaller, mobile infrared heater distributed by the System manufacturer is designed specifically to heat areas such as borders and narrow areas that are inaccessible to the primary heaters. This secondary heater also allows the operator to monitor the temperature of the preformed thermoplastic at all times during the heating process.

An approved hand-held propane heat torch distributed by the System manufacturer shall be used to heat isolated areas of the preformed thermoplastic.

c) **Sealer:** A two-part epoxy sealer specified and distributed by the System manufacturer must be applied to the substrate prior to material application to ensure proper adhesion, and to provide reinforcement for larger volumes of material.

d) **Specialized Sealer Dispensing Gun:** Used to dispense the required two-part epoxy sealer onto the substrate. The sealer dispensing guns are distributed by the System manufacturer.

e) **Hand-Held Finishing Tool:** Enables the applicator to complete the imprinting of the thermoplastic in areas around permanent structures, such as curbs and manhole covers, which may be inaccessible to the stamping template. The hand-held finishing tools are distributed by the System manufacturer.

f) **Aggregate:** Supplemental anti-skid/anti-slip elements to be applied to the surface of the molten thermoplastic as needed, if the factory applied anti-skid/anti-slip elements embed too deeply into the surface of the molten thermoplastic material during the heating process. (Embedded aggregate is exposed upon wear for extended skid resistance.) The aggregate is distributed by the System manufacturer.

g) **Air Powered Spray Hopper:** Used to spray supplemental anti-skid/anti-slip elements (aggregate) on the surface of the molten preformed thermoplastic in a uniform manner. The air powered spray hoppers are distributed by the System manufacturer.

h) **Vibratory Plate Compactor (700-900 lb.):** Shall be used for pressing the 3/8" (9.5mm) wire rope stamping templates into the thermoplastic to create the specified pattern in both the thermoplastic and asphalt substrate. The System manufacturer does not supply vibratory plate compactors.

2. Application (Asphalt Substrate Only):

a) **Manufacturer Certified Applicator Requirement:** The System shall be supplied and applied only by an applicator certified by the System manufacturer. The applicator shall provide proof of current certification before commencing work. The Certified Applicator shall follow the System manufacturer's current published application procedures.

b) **Substrate Condition:** The System must only be applied to a stable, high quality asphalt pavement substrate over a stable base that is free of defects, as per the manufacturer published Substrate Guide. The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

c) **Procedure:** The System is applied to asphalt pavement using proprietary reciprocating infrared heating equipment. The material must be able to be applied at ambient and road temperatures down to 45°F(7°C) without any preheating of the pavement to a specific temperature. A two-part epoxy sealer specified by the manufacturer must be applied to the substrate prior to preformed thermoplastic application. Immediately following sealer application, the panels of aggregate reinforced preformed thermoplastic are positioned properly on the asphalt substrate with the aggregate side facing up. The preformed thermoplastic is then heated to the required melting temperature. Additional aggregate may be applied to the preformed thermoplastic surface as needed following the melting process. As the material is cooling, it is imprinted with a stamping template made from 3/8 in. (9.5mm) flexible wire rope in the required design using a vibratory plate compactor. The preformed thermoplastic material is then allowed to cool thoroughly before being opened to vehicle or pedestrian traffic. (Consult the manufacturer's published application procedures for complete information).

The System shall not be applied to Portland Cement Concrete.

Method of Measurement: This work will be measured for payment by the actual number of square feet of completed and accepted imprinted aggregate reinforced preformed thermoplastic pavement markings.

Basis of Payment: This work will be paid for at the contract unit price per square foot for "Decorative Crosswalk" complete in place.

Pay Item	**Pay Unit**
Decorative Crosswalk	s.f.

ITEM #0944000A – FURNISHING AND PLACING TOPSOIL

9.44.01 – Description:

1. **Summary:** The Work shall consist of testing, screening, amending, placing and finish grading all imported topsoil as shown on the Drawings and specified herein. Provide all imported topsoil and compost and amendments necessary to properly complete all turf establishment, and planting operations. Provide specified depth of topsoil in all turf establishment lawn and planting areas.

2. **Quality Assurance:**
   Topsoil Testing: Representative samples of borrow topsoil and stockpiled topsoil shall be subject to testing analysis to determine: Nutrient analysis using the Modified Morgan extractant for soil available P, K, Ca, and Mg; Soil pH; organic content determined by loss of weight on ignition; and particle size analysis of sand, silt, and clay percentages using the hydrometer or pipette methods of particle size analysis with size fractions based upon size limits established by USDA.

   Topsoil testing shall be performed as directed by Engineer.

3. **Submittals:**
   Submit topsoil for testing/analysis and subsequent or conditional approval based on results.

   Submit materials certificates and product data for compost and soil amendments, clearly marked, to indicate proposed materials. Printed data shall state application rates and amount of product to be added, if applicable.

   Submit delivery tickets for the soil amendments, compost and processed sand, indicating the trade name, the supplier/distributor's name and the amount of product delivered to the contracting firm/project site.

   Submit materials certificate and certified test report for processed sand and gravel.

4. **Product Handling:**
   Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

   Bulk Materials:
   a) Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   b) Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

c) Do not move or handle materials when they are wet or frozen.
d) Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

5. Project Conditions:
Stockpile existing topsoil as required. Review quantity/quality of existing topsoil with Engineer. Verify that storm sewerage system and dry wells are complete and fully functional prior to beginning work of this Section. Protect storm sewerage system and dry wells from failure.

9.44.02 – Materials:

1. Topsoil:
Borrow Topsoil shall be clean, fertile, friable, and well draining; not to contain materials harmful to plant life. All topsoil to be free of any subsoil earth clods, sods, stones over 3/4" in any dimension, sticks, roots, weeds, litter and other deleterious material. Topsoil shall be uniform in quality and texture and contain specified organic matter and mineral elements necessary for sustaining healthy plant growth. Topsoil shall have a pH of 5.5 to 6.5. Topsoil shall have an Organic Matter Content of 5 to 8%. Nutrient levels shall be achieved by the Contractor's addition of amendments to the topsoil to meet the optimum nutrient levels specified in the testing laboratory report. A single source of all import topsoil is required. Topsoil shall meet the USDA Soils Textural Classification percentage of sand, silt and clay for "sandy loam" or "fine sandy loam' classifications. Topsoil shall be free of any toxic chemical, waste or any material or condition that would prevent the establishment of a suitable lawn. Import topsoil shall be from local sources. All textural classes of topsoil with greater than 80% sand content will be rejected.

The Contractor shall notify the Engineer of the location of the topsoil at least 15 calendar days prior to delivery. The topsoil and its source shall be inspected and approved by the Engineer before the material is delivered to the project. Any material delivered to the project, which does not meet specifications or which has become mixed with undue amounts of subsoil during any operation at the source or during placing and spreading, will be rejected and shall be replaced by the Contractor with acceptable material.

2. Amendments:
Soil Amendments shall be as recommended by the Topsoil Test Report.

3. Compost:
Compost shall be derived from organic wastes such as food and agricultural residuals, animal manures, mixed solid wastes and biosolids (treated sewage sludge) that meet all State Environmental Agency requirements. The product shall be well composted, free of viable weed seeds and contain material of a generally humus nature capable of sustaining growth of vegetation, with no materials toxic to plant growth. Compost generator shall also provide minimum available nitrogen and other macro and micro nutrients to

determine fertilizer requirements. Compost shall have the following properties:

Parameters	Range
pH	5.5 – 7.0
Moisture Content	35% - 55%
Soluble Salts	4.0 mnhos (dS)
C:N ratio	15 – 30:1
Particle Size	<1”
Organic Matter Content	>50%
Bulk Density	<1000 lbs./cubic yard
Foreign Matter	<1% (dry weight)

4. **Sand:**
   Sand shall meet ASTM C33 Fine Aggregate.

9.44.03 – Construction Methods:

1. **Topsoil Preparation:**
   Determine quantity of imported topsoil scheduled to be placed. Provide imported topsoil to complete the work of this Section. Based on topsoil testing reports, provide amendments and conditioners to topsoil to bring it in compliance with project requirements. Bulk mix to produce a homogeneous product.

2. **Shaping and Grading of Subsoil at Lawn Areas:**
   At completion of rough grading, shape and grade subgrade areas to lines and levels as noted on the drawings. All approved topsoil is to be spread. Shape subgrade areas to allow placement of uniform depth of topsoil. Provide all shaping adjustments at no additional cost to the owner. Harrow or otherwise loosen the subgrade soil to a depth of 4 inches. Remove all sticks, stones, or foreign material two (2) inches or greater in dimension from surface. Remove debris and stone off-site.

3. **Spreading Topsoil and Topsoil/Compost Mixes:**
   Do not apply topsoil materials to the scarified subgrade without approval of Engineer. No vehicular traffic or rubber tired equipment shall be allowed on finished subgrades. Topsoil materials shall not be spread until topsoil has been amended as required. Topsoil materials shall not be delivered or worked in a frozen or muddy condition. Uniformly distribute and spread topsoil materials over all graded lawn areas to conform smoothly to the lines, grades, and elevations shown or otherwise required. Maintain consistent depths of material throughout the project area. Manually supply topsoil around all trees to remain. Avoid damage to root systems. Depth of topsoil around existing trees to be determined by Engineer.

   Place topsoil in layers that will provide the scheduled thickness after natural settlement and light rolling. Spread topsoil from edges inward toward the middle of areas being topsoiled. Do not allow equipment directly on the loosened subgrade. Do not overcompact the

topsoil. Do not allow rubber-tired equipment on topsoiled areas. Use lightest weight equipment practicable. Sequence operations to minimize the number of equipment passes required. Track topsoiled slopes parallel to the fall line. Place topsoil materials only when it can be immediately followed by seeding operations. Resupply and place topsoil to eroded, settled or damaged areas until all lawn areas are stabilized. Care shall be taken not to damage grass or pavement areas in the replacement to topsoil.

4. **Protection:**
   Remove weeds prior to lawn development operations. No weeds shall be allowed to go to seed. Keep heavy equipment, trucks, etc. off topsoiled areas at all times. If compaction occurs, harrow to the full depth of the topsoil and regrade topsoil.

9.44.04 – Method of Measurement:

This work will be measured for payment by the number of cubic yards of planting soil furnished and placed, completed and accepted.

9.44.05 - Basis of Payment:

This work will be paid for at the contract unit price per cubic yard of "FURNISHING AND PLACING TOPSOIL", completed and accepted, including all equipment, material, tools, labor and incidental expenses thereto.

PAY ITEM	**PAY UNIT**
Furnishing and Placing Topsoil	CY

ITEM #0944105A –STRUCTURAL SOIL FOR TREE PLANTING

Description:

1. **Summary:**
   The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to install CU Structural Soil at new trees as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil (630 cubic feet per tree), filter fabric, 4" PVC perforated pipe with sleeve and biobarrier root control fabric.

2. **Submittals**
   a. At least 30 days prior to ordering materials, the installing contractor shall submit to the engineer representative samples, certificates, manufacturer's literature and test results for materials specified below. No materials shall be ordered until the required samples, certificates, manufacturer's literature, producer's current license and test results have been reviewed and approved by the engineer. The engineer reserves the right to reject any material that does not meet CU-Structural Soil® specifications. Delivered materials shall closely match the approved samples.
   b. Submit from licensed producer, $^1/_2$ cubic foot representative sample of clay loam, one cubic foot representative sample of crushed stone, and one cubic foot representative sample of CU-Structural Soil® mix for approval. In the event of multiple source fields for clay loam, submit a minimum of one set of samples per source field or stockpile. The samples of all clay loam, crushed stone, and CU-Structural Soil® shall be submitted to the engineer as a record of the soil color and texture.
   c. Submit soil test analysis reports for sample of clay loam from an independent soil-testing laboratory. The testing laboratory for particle size and chemical analysis may include a public agricultural extension service agency.

      i. Submit a mechanical analysis of the clay loam sample and particle size analysis including the following gradient of mineral content:
      <u>USDA Designation</u>
      Gravel
      Sand
      Silt
      Clay

      Sieve analysis shall be performed and compared to USDA Soil Classification System.

Sieve analysis shall be done by a combined hydrometer and wet sieving using sodium hexametaphosphate as a dispersant in compliance with ASTM D422 after destruction of organic matter by hydrogen peroxide.

ii. Submit a chemical analysis, performed in accordance with current AOAC Standards, including the following:
    1. pH and buffer pH.
    2. Percent organic matter as determined by the loss of ignition of oven dried samples. Test samples shall be oven dried to a constant weight at a temperature of 230 degrees F, plus or minus 9 degrees.
    3. Analysis for nutrient levels by parts per million.
    4. Soluble salt by electrical conductivity of a 1:2 soil/water sample measured in Millimho per cm.
    5. Cation Exchange Capacity (CEC).
    6. Carbon/Nitrogen Ratio.

d. Submit one cubic foot sample of crushed stone which will be used in production of CU-Soil™.

    i. Provide particle size analysis:
    USDA Designation
    3”
    21/2”
    2”
    11/2”
    1”
    ¾”
    Fine gravel

    ii. Provide the manufacturers analysis of the loose and rodded unit weight
    iii. Losses from LA Abrasion tests- not to exceed 40%
    iv. Minimum 90% with 2 or more fractured faces
    v. Percent pore space analysis

e. At the engineer’s discretion, the sample of CU-Structural Soil® may be tested for the following:
    i. Compaction in accordance with ASTM D698/AASHTO T99 without removing oversize aggregate
    ii. California Bearing Ratio in accordance with ASTM D1883- soaked CBR shall equal or exceed a value of 50
    iii. Measured dry-weight percentage of stone in the mixture

f. The approved CU-Structural Soil® sample shall be the standard.
g. Any deviation from the specified crushed stone and clay loam specifications shall be approved by Amereq, Inc.

3. **Quality Assurance**
    a. Qualifications of installing contractor: The work of this section should be performed by a contracting firm which has a minimum of five years experience.

Material:

1. **CU Structural Soil**
    a. Clay Loam
        i. Soil shall be a "loam" with a minimum clay content of 20% or a "clay loam" based on the "USDA classification system" as determined by mechanical analysis (ASTM D-422) and it shall be of uniform composition, without admixture of subsoil. It shall be free of stones, lumps, plants and their roots, debris and other extraneous matter. It shall not contain toxic substances harmful to plant growth. Clay loam shall contain not less than 2% or more than 5% organic matter as determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230 degrees F., plus or minus 9 degrees.
        ii. Mechanical analysis for the loam or clay loam shall be as follows:

Textural Class	% of Total Weight
Gravel	less than 5%
Sand	20-45%
Silt	20-50%
Clay	20-40%

        iii. Chemical analysis: Meet, or be amended to meet the following criteria:
            1. pH between 5.5 to 6.5.
            2. Percent organic matter 2% - 5% by dry weight.
            3. Adequate nutrient levels.
            4. Soluble salt less than 1.0 mmho/cm.
            5. Cation Exchange Capacity (CEC) greater than 10.
            6. Carbon/Nitrogen ratio less than 33:1.

        iv. Loam or clay loam shall not come from USDA - classified prime farmland.
    b. Fertilizer (if needed)
        i. Should nutrient analysis suggest that the loam or clay loam need additional nutrients, it shall be amended by Amereq's licensed producer.
    c. Sulfur (if needed)
        i. Sulfur shall be a commercial granular, 96% pure sulfur, with material and analysis appearing on the labeled container.
        ii. Sulfur used to lower pH shall be a ferrous sulfate formulation.
        iii. Application rates shall be dependent on soil test results.
    d. Lime (if needed)

i. Agricultural lime containing a minimum of 85% carbonates.
ii. Application rates shall be dependent on soil test results.

e. Crushed Stone
   i. The size of the crushed stone shall be 0.75 inches to 1.5 inches allowing for up to 10% being greater than 1.5 inches, and up to 10% less than 0.75 inches.
   ii. Acceptable aggregate dimensions will not exceed 2.5:1.0 for any two dimensions.
   iii. Minimum 90% with two or more fractured faces.
   iv. Results of Aggregate Soundness Loss test shall not exceed 18%.
   v. Losses from LA Abrasion tests shall not exceed 40%.

f. Hydrogel
   i. Hydrogel shall be a coated potassium propenoate-propenamide copolymer (Gelscape® Hydrogel Tackifier) as manufactured by Amereq, Inc. 800-832-8788.

g. Water
   i. The installing contractor shall be responsible to furnish his own supply of water (if needed) free of impurities, to the site.

h. CU-Structural Soil®
   i. A uniformly blended urban tree mixture of crushed stone, clay loam and Gelscape® Hydrogel Tackifier, as produced by an Amereq-licensed company, mixed in the following proportion:

Material	Unit of Weight
specified crushed Stone	100 units dry weight
specified clay loam	20 – 25 units (to achieve minimum CBR of 50)
Gelscape® Hydrogel Tackifier	0.035 units dry weight
moisture	ASTM D698/AASHTO T-99 optimum moisture

2. Biobarrier Root Control Fabric

Root control fabric shall be 19.5” wide biobarrier root control fabric.

3. Supplemental Irrigation

4” Rigid Polyvinyl Chloride Plastic Perforated Drain Pipe with filter sleeve, fittings, and slotted drain cap.

4. Filter Fabric

Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made 100% Spunbonded Polypropylene; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

a. Tensile Strength: 73(lbs)
b. Puncture Strength (lbs): 23

c. Air Opening Size (equivalent sieve): 30/40
d. Air Opening Size (mm): 0.52
e. Trap Tear (lbs): 35
f. Air Permeability (cm/sec): $10x10^{-2}$
g. Flux (gal/ft^2/min): 200
h. Permitivity (sec^{-1}): 3.0
i. Color: Black

Construction Methods:

1. **Excavation:**
   Work under this item shall consist of removing and disposing of existing sidewalk and foundation to a full depth. Wherever portions of concrete sidewalks or concrete driveway ramps are to be removed, such removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the concrete full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor.

2. **Supplemental Irrigation**
   Shall be installed at the line and grade as indicated on the drawings.

3. **Biobarrier Root Control Fabric**
   Biobarrier root control fabric shall be installed where indicated on the drawings and per manufacturer's recommendations.

4. **Planting Procedures, Balled and Burlapped Planting:**
   Shall conform to Section 0949001A of these specifications.

5. **CU Structural Soil**
   a. Examination of Conditions
      i. All areas to receive CU-Structural Soil® shall be inspected by the installing contractor and the Engineer before starting work and all defects such as incorrect grading, compaction, and inadequate drainage shall be reported to the engineer prior to beginning this work
   b. Delivery, Storage, and Handling
      i. Delivered CU-Structural Soil® shall be at or near optimum compaction moisture content as determined by AASHTO T 99 (ASTM D 698) and should not be placed in frozen, wet or muddy sites. Protect CU-Structural Soil® from exposure to excess water and from erosion at all times. Do not store CU-Soil™ unprotected. Do not allow excess water to enter site prior to compaction. If water is introduced into the CU-Soil™ after grading, allow water to drain to optimum compaction moisture content

c. CU-Soil™ Mixing And Quality Control Testing
    i. All CU-Structural Soil® mixing shall be performed at the licensed producer's yard using appropriate soil measuring, mixing and shredding equipment of sufficient capacity and capability to assure proper quality control and consistent mix ratios. No mixing of CU-Structural Soil® at the project site shall be permitted. Maintain adequate moisture content during the mixing process. Soils and mix components shall easily shred and break down without clumping. Soil clods shall easily break down into a fine crumbly texture. Soils shall not be overly wet or dry. The licensed producer shall measure and monitor the amount of soil moisture at the mixing site periodically during the mixing process.
    ii. Raw materials shall be mixed off-site, only at the licensed producer's facility, on a flat asphalt or concrete paved surface to avoid soil contamination.
    iii. Should the independent laboratory test results of the clay loam reveal a need to amend it, to meet specifications, the amending materials should be added to the clay loam following the rates and recommendations provided by Amereq.

d. Underground Utilities and Subsurface Conditions
    i. The installing contractor shall notify the engineer of any subsurface conditions which will affect the contractor's ability to install the CU-Soil™.
    ii. The installing contractor shall locate and confirm the location of all underground utility lines and structures prior to the start of any excavation.
    iii. The installing contractor shall repair any underground utilities or foundations damaged during the progress of this work.

e. Site Preparation
    i. Do not proceed with the installation of the CU-Structural Soil® material until all curb footings and utility work in the area have been installed. For site elements dependent on CU-Structural Soil® for foundation support, postpone installation of such elements until immediately after the installation of CU-Structural Soil®.
    ii. Excavate and compact the proposed subgrade to depths, slopes and widths as shown on the drawings. Maintain all required angles of repose of the adjacent materials as shown on the drawings. Do not over excavate compacted subgrades of adjacent pavement or structures.
    iii. Confirm that the subgrade is at the proper elevation and compacted as required. Subgrade elevations shall slope parallel to the finished grade and/or toward the subsurface drain lines as shown on the drawings.
    iv. Clear the excavation of all construction debris, trash, rubble and any foreign material. In the event that fuels, oils, concrete washout silts or other material harmful to plants have been spilled into the subgrade material, excavate the soil sufficiently to remove the harmful material.

Fill any over excavation with approved fill and compact to the required subgrade compaction.

v. Do not proceed with the installation of CU-Structural Soil® until all utility work in the area has been installed. All subsurface drainage systems shall be operational prior to installation of CU-Structural Soil®.

vi. Protect adjacent walls, walks and utilities from damage. Use ½" plywood and/or plastic sheeting as directed to cover existing concrete, metal and masonry work and other items as directed during the progress of the work.

1. Clean up all trash and any soil or dirt spilled on any paved surface at the end of each working day.
2. Any damage to the paving or architectural work caused by the installing contractor shall be repaired, as directed by the engineer.

f. Installation of CU-Structural Soil® Material

i. Install CU-Structural Soil® in 6 inch lifts and compact each lift.

ii. Compact all materials to at least 95% Proctor Density from a standard compaction curve AASHTO T 99 (ASTM D 698). No compaction shall occur when moisture content exceeds maximum as listed herein. Delay compaction if moisture content exceeds maximum allowable and protect CU-Structural Soil® during delays in compaction with plastic or plywood as directed by the engineer.

iii. Bring CU-Structural Soil® to finished grades as shown on the drawings. Immediately protect the CU-Structural Soil® from contamination by toxic materials, trash, debris, water containing cement, clay, silt or materials that will alter the particle size distribution of the mix with plastic or plywood as directed by the engineer.

iv. The engineer may periodically check the material being delivered, prior to installation for color and texture consistency with the approved sample provided by the installing contractor as part of the submittal for CU-Structural Soil®. If the engineer determines that the delivered CU-Soil™ varies significantly from the approved samples, the engineer shall contact the licensed producer.

v. Engineer shall ensure that the delivered structural soil was produced by the approved CU-Soil™ licensee by inspecting weight tickets showing source of material.

vi. CU-Soil™ should not be stockpiled long-term. Any CU-Soil™ not installed immediately should be protected by a tarp or other waterproof covering.

g. Fine Grading

i. After the initial placement and rough grading of the CU-Structural Soil® but prior to the start of fine grading, the installing contractor shall request review of the rough grading by the engineer. The installing contractor shall set sufficient grade stakes for checking the finished grades.

ii. Adjust the finish grades to meet field conditions as directed. Provide smooth transitions between slopes of different gradients and direction. Fill all dips with CU-Soil™ and remove any bumps in the overall plane of the

slope. The tolerance for dips and bumps in CU-Structural Soil® areas shall be a 3" deviation from the plane in 10'. All fine grading shall be inspected and approved by the engineer prior to the installation of other items to be placed on the CU-Structural Soil®.

h. Clean-Up
    i. Upon completion of the CU-Structural Soil® installation operations, clean areas within the contract limits. Remove all excess fills, soils and mix stockpiles and legally dispose of all waste materials, trash and debris. Remove all tools and equipment and provide a clean, clear site. Sweep, do not wash, all paving and other exposed surfaces of dirt and mud until the paving has been installed over the CU-Structural Soil® material. Do no washing until finished materials covering CU-Structural Soil® material are in place.

6. Filter Fabric:

a. Install as shown on the drawings per manufacturers recommendations.

7. Clean Course Aggregate Stone:

a. Install as shown on the drawings compact to 95% compaction per AASHTO T-180.

Method of Measurement:

CU Structural Soil will be measured by the number of tree pits installed, based on 630 cubic feet of CU Structural Soil, complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Work shall include all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil, filter fabric and biobarrier root control fabric.

Basis of Payment:

CU Structural Soil will not be paid for under this item number but will be paid for at the contract unit price per tree pit for "FLEXI-PAVE PAVEMENT AT NEW TREE W/STRUCTURAL SOIL" and for "BELGIAN BLOCK PLANTER AT NEW TREES" complete, in-place, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all sawcuts to meet existing facilities, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil, filter fabric and biobarrier root control fabric, under those two pay items, excluding Tree Planting which will be paid under a separate item.

Pay Item	**Pay Unit**
Flexi-Pave Pavement at New Tree W/Structural Soil	EA
Belgian Block Planter at New Tree	EA

ITEM #0947207A – BICYCLE RACK

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work included in this item shall consist of furnishing and installing bike racks and concrete footings as shown on the plans or as directed by the Engineer.

2. **Submittals:**
   Product Data: Manufacturer's data sheets on each product to be used, including:
   a) Preparation instructions and recommendations.
   b) Storage and handling requirements and recommendations.
   c) Installation methods.

   Shop Drawings: Complete details of layout and assembly, showing member sizes and part identification, fasteners, anchors, and fittings.

   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

   Manufacturers warranties.

Material:

1. **Bicycle Rack**
   DuMor 83 Series Loop Bike Rack.
   a) 2-3/8 inches O.D galvanized pipe.
   b) Height: 35-1/2 inches.
   c) Mounting: S-1 Embedment.
   d) Color: Black

2. **Cast-In-Place Concrete:**
   Class A Concrete conforming to CDOT Form 818, Section M.03.

Construction Methods:

Install bicycle rack in accordance with manufacturer's instructions at locations as directed by the Engineer.

Method of Measurement:

This work will be measured for payment by the number of bicycle racks furnished and installed at locations where proposed, with such work as directed and accepted by the Engineer.

Basis of Payment:

The bicycle rack will be paid for at the contract unit price per each for "BICYCLE RACK" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installation.

Pay Item	**Pay Unit**
Bike Rack	EA

ITEM #0949000A – WOOD CHIP MULCH

9.44.01 – Description:

1. **Summary:** The Work shall consist of providing and placing all wood chip mulch as shown on the Drawings and specified herein. Provide all equipment and materials necessary to properly complete mulching operations. Provide specified depth of mulch in all planting areas.

2. **Submittals:**

   Submit materials certificates and product data for wood chip mulch, clearly marked, to indicate proposed materials. Printed data shall state project name and location.

   Submit delivery tickets for the wood chip mulch, indicating the trade name, the supplier/distributor's name and the amount of product delivered to the contracting firm/project site.

3. **Product Handling:**

   Bulk Materials:
   a) Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   b) Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   c) Do not move or handle materials when they are wet or frozen.

4. **Project Conditions:**
   Verify that landscape plantings are complete prior to beginning work of this Section.

9.44.02 – Materials:

1. **Wood Chip Mulch:**
   Wood Chip Mulch shall be free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of the following:

   Type: Double-shredded softwood bark composed primarily of pine and spruce bark, undyed and aged not less than 9 months. Clean and free of foreign matter and disease. Sample to be approved.

   Color: natural, undyed.

9.44.03 – Construction Methods:

1. **Preparation:**
   Planting operations shall be completed prior to installation of wood chip mulch.

2. **Placement:**
   Mulch shall be hand placed and spread to a depth of 3 inches and raked to an even surface over all tree saucer areas for individual trees and shrubs and to a depth of 2 inches over the entire area of shrub beds and elsewhere as directed. Mulch shall not be placed directly against the bark of tree trunks.

3. **Protection:**
   Remove weeds from mulched areas as required by maintenance operations of plantings. No weeds shall be allowed to go to seed.

9.44.04 – Method of Measurement:

This work will be measured for payment by the number of square yards of wood chip mulch furnished and placed, completed and accepted at the specified depths.

9.44.05 - Basis of Payment:

This work shall not be paid for under this pay item, but shall be included in the contract unit price per 949003A "FURNISHING, PLANTING AND MULCHIING TREES, SHRUBS, VINES AND GROUND COVER", completed and accepted, including all equipment, material, tools, labor and incidental expenses thereto.

PAY ITEM	**PAY UNIT**
Furnishing and Placing Topsoil	SY

ITEM #0949003A – FURNISHING, PLANTING AND MULCHING TREES, SHRUBS, VINES AND GROUND COVER

Section 9.49 is being deleted in its entirety and replaced with the following:

9.49.01 - Description:

1. **Summary:**
   Provide all labor, materials, necessary equipment and services to furnish and install plant materials as shown on the Drawings and as specified herein including source inspection; plant pit excavation and preparation and installation of all backfill mixtures; planting all trees, shrubs, perennials, and groundcovers, including finishing operations; mulch for all plant bed and saucer areas; mineral mulch, steel edging and weed barrier fabric for maintenance strip; steel edging for shrub, perennial and groundcover beds; and protection, maintenance and replacement of plant material and related items.

2. **Quality Assurance:**
   All plants shall meet or exceed the specifications of Federal, State and County laws requiring inspection for plant disease and insect control. Quality, size and ball container size shall conform with the current edition of "American Standard and Nursery Stock" by the American Nursery and Landscape Association and its amendments (ANSI Z60.1). All plants shall be certified true to name by the nursery source. Sealed certificates from the nursery source shall be submitted prior to any plant material installation. One plant of each species shall be tagged with the name and size of the plant in accordance with the standards of practice of the American Association of Nurserymen. Botanical names shall take precedence over common names.

   Qualifications of Installers: Provide at least one person who shall be thoroughly familiar with the type of materials being installed and shall direct all work performed under this section.

3. **Nursery Coordination:**
   Each specific plant type shall be provided from a single nursery source unless otherwise approved.

4. **Submittals:**
   Submit product data for the following items, clearly marked, to indicate proposed materials. Printed data shall state application rates and amounts of product to be added, if applicable.
   a) Soil conditioners
   b) Water management polymer
   c) Fertilizers
   d) Anti-Desiccant
   e) Steel Edging
   f) Weed Barrier Fabric

Submit delivery receipts for the following items, indicating the trade name, the supplier/distributor's name and the amount of product delivered to the contracting firm/project site.

a) Water management polymer
b) Fertilizers
c) Soil conditioners

Topsoil: Testing reports/analysis, as per Section 0944001, must be submitted prior to preparation of planting mixtures.

Percolation Test: Test for percolation shall be done to determine positive drainage of plant pits and beds. Soil and drainage conditions detrimental to the growth of plant material shall be identified and a proposal correcting the conditions shall be submitted.

5. Nursery Source Inspection:

All plant material(s) are to be inspected and accepted by Engineer at the nursery source or place of growth. Do not dig plant material until inspected, tagged, and approved by Engineer. Contractor must provide all transportation and shall accompany Engineer for all source inspections. All trees are to be flagged on the north side prior to digging. (Flagged side of tree (north side) to be located to north orientation when planted on site. See Item 3.02 A. 4.)

All plant material when inspected at the nursery source by Engineer is not to be "heeled-in" or "out-ground". Stockpiled material is not acceptable unless otherwise approved by the Engineer.

All plant material is also subject to reinspection and approval by Engineer once the plant material has been delivered to the project site. All plant material shall arrive at the site with Engineer's permanent tags. Any plant material rejected by Engineer shall be immediately removed from the project site and replaced with acceptable plant material at no additional cost.

All plant material must be accompanied by nursery inspection certificates, as required by State or Federal Regulations.

6. Product Handling:

Deliver all items to the job site in their containers with all labels intact and legible at the time of inspection. Root balls shall not be cracked or broken. Notify the Owner's Representative of delivery schedule at least two (2) days in advance so plant material may be inspected upon arrival at job site. Remove unacceptable plant material immediately from job site. Do not prune plants prior to delivery.

Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

Replacements: In the event of damage, immediately make all repairs and replacements necessary to no additional cost to the Owner.

Delivery: Deliver fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, and conformance to state law.

7. **Planting Season:**
Progress with planting only under favorable weather conditions. Planting will not be permitted when ground is frozen or excessively moist. Time of planting is at the discretion of the Contractor except as noted.

Planting Schedule: Contractor shall submit planting scheduling indicating proposed nursery source and anticipated installation schedule for review and approval. Coordinate with approved nurseries to secure and confirm installation dates of all plant material after acceptance of planting schedule.

8. **Job Conditions:**
Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected. Coordinate work with other related site work that is not included in this contract. Maintain proper sequencing of operations. Commencement of work implies acceptance by Contractor of preparatory work by others.

The Contract drawings show the approximate locations of utility structures in the area of proposed landscape development. Exercise care when digging in these areas. The Contractor is responsible for any damage and shall replace or repair any damage at the Contractor's expense. Changes in the locations of plant material due to utility obstructions shall not be cause for extra compensation.

Notify Engineer at least 2 days prior to commencing any of the planting operations included in this Section.

Plant Locations on the Drawings are approximate and are to be used only as a guide. Contractor shall provide all field engineering services to accurately stake out locations for all plants and outlines of plant beds. Do not begin excavation until Engineer has approved specific layout. Relocate the planting, without extra compensation if directed prior to final installation.

Upon Completion of Planting: remove from the site all excess soil, mulch, materials, and debris resulting from work operations of this Section. Restore to original conditions all damaged pavements, structures and lawn areas resulting from landscaping operations. Broom clean all walks and pavements. Dispose of all debris off-site in a satisfactory legal manner.

Maintain the site area in a neat and clean condition at all times.

9. **One-Year Establishment Period:**

All plant material shall be subject to a One-Year Establishment Period. During this time, the Contractor shall use currently accepted horticultural practices to keep all plant material installed in a healthy, vigorous growing condition at the date of final acceptance. The date of final acceptance shall be one full calendar year following the satisfactory completion of the planting activities as confirmed by the Engineer.
An inspection will be held one year from the date of installation with the Contractor and Engineer to determine the acceptability of the plant establishment. An inventory of losses and rejected materials will be made and corrective and necessary clean up measures will be determined at the plant inspection.

9.49.02 – Materials:

1. **Trees, shrubs, ground cover, and perennials:**
Plant varieties shall be nursery grown or plantation grown stock; hardy under climatic conditions similar to those in the locality of the project. The plant material source shall not exceed a 250 mile radius from the project site. Plants shall be typical of their species or variety, with a normal habit of growth. Sound, healthy and vigorous. Well-branched and densely foliated when in leaf, free of disease, harmful insects, eggs, or larvae. Shall have healthy well-developed root systems. All trees shall have straight single trunks with their main leader intact unless otherwise stated. Plants shall be free from sunscald injury, disfigurement and abrasion.

   Substitutions will be permitted only upon approval Engineer.

   Sizes shall conform to the measurement specified on the Drawings. Plants larger than specified on the Drawings may be used if approved Engineer. Use of such plants shall not increase the Contract price.

   Height of Branching: Unless otherwise noted on the planting schedule, shade/street trees shall be free of branches to a height of 7 feet, ornamental/flowering trees shall be free of branches to a height of 6 feet.

   Quantities: If there is a discrepancy between plants shown on the drawings and quantities given, the greater number will prevail. Discrepancies will not entitle the Contractor to an extra.

   Perennial plants shall have been growing in the specified size container for at least one full year prior to installation. Root mass shall completely fill container.

2. **Plant Pit Backfill Mixtures:**
Provide mixtures as required. Bulk mix on-site, no off-site mixing allowed.

   Planting Mixture No. 1 - for Trees and Shrubs:
   1 part dehydrated cow manure
   2 parts peat moss
   5 parts topsoil

Water Management polymers - at manufacturer's rate for specific tree and Shrub size.

Planting Mixture No. 2 - for Perennial and Groundcover Plants.

1 part dehydrated cow manure
2 parts peat moss
4 parts topsoil
Water Management polymers - at manufacturer's rates for specific plant size.

3. **Topsoil:**
   As per Section 0944000A.

4. **Fertilizers:**
   Deliver fertilizers in unimpaired condition, in sealed containers fully labeled according to applicable State Law.

   Bonemeal shall be finely ground commercial raw bonemeal having a minimum analysis of one (1) percent nitrogen and eleven (11) percent phosphoric acid.
   Plant fertilizers shall be a complete plant food with a guaranteed analysis of 10.10.10 unless otherwise approved by Engineer. Fertilizer shall contain 50% slow release nitrogen and 50% quick release nitrogen.

5. **Peat:**
   Conform to Form 818, Article M.13.07.13.

6. **Dehydrated Cow Manure:**
   "Bovung" with a guaranteed analysis of 2:1:1 or approved equal.

7. **Water Management Polymer:**
   Terrasorb AG as distributed by Industrial Services International, Inc., Bradenton, Fla., or approved equal.

8. **Mulch:**
   Conform to 0949000A. Sample to be approved.

9. **Anti-Desiccant:**
   Conform to Form 818, Article M.13.07.14.

10. **Stakes:**
    Conform to Form 818, Article M.13.07.14.

11. **Guy Wire For Staking:**
    Conform to Form 818, Article M.13.07.14.

12. **Turnbuckles:**

Conform to Form 818, Article M.13.07.14.

13. **Friction Guards For Staking:**
    Conform to Form 818, Article M.13.07.14.

14. **Tree Wrapping Material:**
    Conform to Form 818, Article M.13.07.14.

9.49.03 – Construction Methods:

1. **Planting Mixture:**
   Provide planting mixtures for specific plants, shrubs, groundcover, as specified. Thoroughly mix all amendments to topsoil prior to commencing planting operations. Provide planting mixture for backfilling continuously excavated plant beds.

2. **Planting Procedures, Balled and Burlapped Planting:**
   Verify the location of underground utilities. When obstructions below ground or poor drainage affect the planting operation, proposed adjustments to plant location, type of plant, and planting method or drainage correction shall be submitted. Stake all plant locations in the field as per the planting plan. Obtain Engineer approval of all plant locations and orientation.

   Excavate plant pits as detailed, remove excess excavated material. Scarify bottom and sides of each plant pit. Tree pits minimum 24" greater in diameter than the plant ball, and 6" deeper except as detailed. Shrub excavations shall be minimum 12" greater in diameter than ball and 6" deeper.

   All plant pits must be free draining. Notify Engineer if positive drainage does not exist.

   Set all plants in the center of plant pits, plumb and straight and as detailed on the drawings. The side of the trees flagged “North Side” shall be oriented due North prior to backfilling.

   Handle balled and burlapped plants from the ball only.

   Face plants other than trees to give best appearance and as accepted by Engineer.

   Carefully remove only surplus bindings and synthetic materials that do not readily decompose. Fold burlap away from top one third of root ball. Remove portions of any wire baskets, if present.

   Backfill all pits 2/3 their depth with prepared plant backfill mixture, water thoroughly and allow to settle, then tamp around to fill all voids and air pockets. Complete backfilling to conform to required elevation after settlement.

   Form saucer and install mulch over entire plant pit and saucer area as detailed.

3. **Continuous Excavation:**
   All perennial and shrub plant beds are to be continuously excavated to depths required to allow installation of specified backfill mixture. Backfill completely with specified Plant Mix. Protect groundcover and perennial plants from the sun. Soak roots for several hours prior to planting. Remove from container and gently break apart any container-bound root mass. Install plants as specified in this Section.

4. **Fertilizers For Plant Pit Saucers:**
   Conform to Form 818, Article 9.49.03.9.

5. **Finishing Operations:**

   Staking Trees: Conform to Form 818, Article 9.49.03.11.

   Wrapping: Conform to Form 818, Article 9.49.03.12.
   Mulching: Conform to Form 818, Article 9.49.03.15.

   Anti-Desiccant: Conform to Form 818, Article 9.49.03.14.

   Watering Plants: Conform to Form 818, Article 9.49.03.10.

   Pruning: Conform to Form 818, Article 9.49.03.13.

6. **Repair of Lawn Areas:**
   Repair all lawn areas damaged/disturbed during all planting operations. Provide sediment and erosion control measures as required to protect un-established areas from erosion.

7. **Maintenance of Plantings:**
   Period required begins immediately after planting and includes all transplanted material. Continue until the end of the guarantee period.

   Maintenance Requirements: Maintenance responsibilities include cultivating, spraying, weeding, watering, tightening guys, pruning, fertilizing, mulching and any other operations necessary to properly maintain plant viability. Correct defective work as soon as possible. Correct dangerous conditions immediately.

9.49.04 – Method of Measurement:

1. **Planting:**
   The quantity for which payment will be made will be the unit item lump sum of plants in place, planted and accepted.
2. **Mulching:**
   This work will not be measured for payment and shall be included in the unit item lump sum for the specified thickness for the area on which mulch has been completed and accepted.

9.49.05 – Basis of Payment

1. **Planting:**
   Payment for this work will be made at the contract unit price lump sum completed and accepted in place The unit price shall include all materials, equipment, tools, labor, transportation, operations and all work incidental thereto, including the removal of guy wires, hose and tree support stakes after the initial establishment period
2. **Mulching:**
   This work will be included in the unit price lump sum for this pay item.

Pay Item	**Pay Unit**
Furnishing, Planting and mulching trees, shrubs, vines and ground cover	LS

ITEM #0949004A – FURNISHING, PLANTING AND MULCHING TREES, SHRUBS, VINES AND GROUND COVER

Section 9.49 is being deleted in its entirety and replaced with the following:

9.49.01 - Description:

1. **Summary:**
   Provide all labor, materials, necessary equipment and services to furnish and install plant materials as shown on the Drawings and as specified herein including source inspection; plant pit excavation and preparation and installation of all backfill mixtures; planting all trees, shrubs, perennials, and groundcovers, including finishing operations; mulch for all plant bed and saucer areas; mineral mulch, steel edging and weed barrier fabric for maintenance strip; steel edging for shrub, perennial and groundcover beds; and protection, maintenance and replacement of plant material and related items.

2. **Quality Assurance:**
   All plants shall meet or exceed the specifications of Federal, State and County laws requiring inspection for plant disease and insect control. Quality, size and ball container size shall conform with the current edition of "American Standard and Nursery Stock" by the American Nursery and Landscape Association and its amendments (ANSI Z60.1). All plants shall be certified true to name by the nursery source. Sealed certificates from the nursery source shall be submitted prior to any plant material installation. One plant of each species shall be tagged with the name and size of the plant in accordance with the standards of practice of the American Association of Nurserymen. Botanical names shall take precedence over common names.

   Qualifications of Installers: Provide at least one person who shall be thoroughly familiar with the type of materials being installed and shall direct all work performed under this section.

3. **Nursery Coordination:**
   Each specific plant type shall be provided from a single nursery source unless otherwise approved.

4. **Submittals:**
   Submit product data for the following items, clearly marked, to indicate proposed materials. Printed data shall state application rates and amounts of product to be added, if applicable.
   a) Soil conditioners
   b) Water management polymer
   c) Fertilizers
   d) Anti-Desiccant
   e) Steel Edging
   f) Weed Barrier Fabric

Submit delivery receipts for the following items, indicating the trade name, the supplier/distributor's name and the amount of product delivered to the contracting firm/project site.

a) Water management polymer
b) Fertilizers
c) Soil conditioners

Topsoil: Testing reports/analysis, as per Section 0944001, must be submitted prior to preparation of planting mixtures.

Percolation Test: Test for percolation shall be done to determine positive drainage of plant pits and beds. Soil and drainage conditions detrimental to the growth of plant material shall be identified and a proposal correcting the conditions shall be submitted.

5. Nursery Source Inspection:

All plant material(s) are to be inspected and accepted by Engineer at the nursery source or place of growth. Do not dig plant material until inspected, tagged, and approved by Engineer. Contractor must provide all transportation and shall accompany Engineer for all source inspections. All trees are to be flagged on the north side prior to digging. (Flagged side of tree (north side) to be located to north orientation when planted on site. See Item 3.02 A. 4.)

All plant material when inspected at the nursery source by Engineer is not to be "heeled-in" or "out-ground". Stockpiled material is not acceptable unless otherwise approved by the Engineer.

All plant material is also subject to reinspection and approval by Engineer once the plant material has been delivered to the project site. All plant material shall arrive at the site with Engineer's permanent tags. Any plant material rejected by Engineer shall be immediately removed from the project site and replaced with acceptable plant material at no additional cost.

All plant material must be accompanied by nursery inspection certificates, as required by State or Federal Regulations.

6. Product Handling:

Deliver all items to the job site in their containers with all labels intact and legible at the time of inspection. Root balls shall not be cracked or broken. Notify the Owner's Representative of delivery schedule at least two (2) days in advance so plant material may be inspected upon arrival at job site. Remove unacceptable plant material immediately from job site. Do not prune plants prior to delivery.

Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

Replacements: In the event of damage, immediately make all repairs and replacements necessary to no additional cost to the Owner.

Delivery: Deliver fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, and conformance to state law.

7. **Planting Season:**
Progress with planting only under favorable weather conditions. Planting will not be permitted when ground is frozen or excessively moist. Time of planting is at the discretion of the Contractor except as noted.

Planting Schedule: Contractor shall submit planting scheduling indicating proposed nursery source and anticipated installation schedule for review and approval. Coordinate with approved nurseries to secure and confirm installation dates of all plant material after acceptance of planting schedule.

8. **Job Conditions:**
Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected. Coordinate work with other related site work that is not included in this contract. Maintain proper sequencing of operations. Commencement of work implies acceptance by Contractor of preparatory work by others.

The Contract drawings show the approximate locations of utility structures in the area of proposed landscape development. Exercise care when digging in these areas. The Contractor is responsible for any damage and shall replace or repair any damage at the Contractor's expense. Changes in the locations of plant material due to utility obstructions shall not be cause for extra compensation.

Notify Engineer at least 2 days prior to commencing any of the planting operations included in this Section.

Plant Locations on the Drawings are approximate and are to be used only as a guide. Contractor shall provide all field engineering services to accurately stake out locations for all plants and outlines of plant beds. Do not begin excavation until Engineer has approved specific layout. Relocate the planting, without extra compensation if directed prior to final installation.

Upon Completion of Planting: remove from the site all excess soil, mulch, materials, and debris resulting from work operations of this Section. Restore to original conditions all damaged pavements, structures and lawn areas resulting from landscaping operations. Broom clean all walks and pavements. Dispose of all debris off-site in a satisfactory legal manner.

Maintain the site area in a neat and clean condition at all times.

9. **One-Year Establishment Period:**

All plant material shall be subject to a One-Year Establishment Period. During this time, the Contractor shall use currently accepted horticultural practices to keep all plant material installed in a healthy, vigorous growing condition at the date of final acceptance. The date of final acceptance shall be one full calendar year following the satisfactory completion of the planting activities as confirmed by the Engineer.
An inspection will be held one year from the date of installation with the Contractor and Engineer to determine the acceptability of the plant establishment. An inventory of losses and rejected materials will be made and corrective and necessary clean up measures will be determined at the plant inspection.

9.49.02 – Materials:

1. **Trees, shrubs, ground cover, and perennials:**
Plant varieties shall be nursery grown or plantation grown stock; hardy under climatic conditions similar to those in the locality of the project. The plant material source shall not exceed a 250 mile radius from the project site. Plants shall be typical of their species or variety, with a normal habit of growth. Sound, healthy and vigorous. Well-branched and densely foliated when in leaf, free of disease, harmful insects, eggs, or larvae. Shall have healthy well-developed root systems. All trees shall have straight single trunks with their main leader intact unless otherwise stated. Plants shall be free from sunscald injury, disfigurement and abrasion.

   Substitutions will be permitted only upon approval Engineer.

   Sizes shall conform to the measurement specified on the Drawings. Plants larger than specified on the Drawings may be used if approved Engineer. Use of such plants shall not increase the Contract price.

   Height of Branching: Unless otherwise noted on the planting schedule, shade/street trees shall be free of branches to a height of 7 feet, ornamental/flowering trees shall be free of branches to a height of 6 feet.

   Quantities: If there is a discrepancy between plants shown on the drawings and quantities given, the greater number will prevail. Discrepancies will not entitle the Contractor to an extra.

   Perennial plants shall have been growing in the specified size container for at least one full year prior to installation. Root mass shall completely fill container.

2. **Plant Pit Backfill Mixtures:**
Provide mixtures as required. Bulk mix on-site, no off-site mixing allowed.

   Planting Mixture No. 1 - for Trees and Shrubs:
   1 part dehydrated cow manure
   2 parts peat moss
   5 parts topsoil

Water Management polymers - at manufacturer's rate for specific tree and Shrub size.

Planting Mixture No. 2 - for Perennial and Groundcover Plants.

1 part dehydrated cow manure
2 parts peat moss
4 parts topsoil
Water Management polymers - at manufacturer's rates for specific plant size.

3. **Topsoil:**
   As per Section 0944000A.

4. **Fertilizers:**
   Deliver fertilizers in unimpaired condition, in sealed containers fully labeled according to applicable State Law.

   Bonemeal shall be finely ground commercial raw bonemeal having a minimum analysis of one (1) percent nitrogen and eleven (11) percent phosphoric acid.
   Plant fertilizers shall be a complete plant food with a guaranteed analysis of 10.10.10 unless otherwise approved by Engineer. Fertilizer shall contain 50% slow release nitrogen and 50% quick release nitrogen.

5. **Peat:**
   Conform to Form 818, Article M.13.07.13.

6. **Dehydrated Cow Manure:**
   "Bovung" with a guaranteed analysis of 2:1:1 or approved equal.

7. **Water Management Polymer:**
   Terrasorb AG as distributed by Industrial Services International, Inc., Bradenton, Fla., or approved equal.

8. **Mulch:**
   Conform to 0949000A. Sample to be approved.

9. **Anti-Desiccant:**
   Conform to Form 818, Article M.13.07.14.

10. **Stakes:**
    Conform to Form 818, Article M.13.07.14.

11. **Guy Wire For Staking:**
    Conform to Form 818, Article M.13.07.14.

12. **Turnbuckles:**

Conform to Form 818, Article M.13.07.14.

13. **Friction Guards For Staking:**
    Conform to Form 818, Article M.13.07.14.

14. **Tree Wrapping Material:**
    Conform to Form 818, Article M.13.07.14.

9.49.03 – Construction Methods:

1. **Planting Mixture:**
   Provide planting mixtures for specific plants, shrubs, groundcover, as specified. Thoroughly mix all amendments to topsoil prior to commencing planting operations. Provide planting mixture for backfilling continuously excavated plant beds.

2. **Planting Procedures, Balled and Burlapped Planting:**
   Verify the location of underground utilities. When obstructions below ground or poor drainage affect the planting operation, proposed adjustments to plant location, type of plant, and planting method or drainage correction shall be submitted. Stake all plant locations in the field as per the planting plan. Obtain Engineer approval of all plant locations and orientation.

   Excavate plant pits as detailed, remove excess excavated material. Scarify bottom and sides of each plant pit. Tree pits minimum 24" greater in diameter than the plant ball, and 6" deeper except as detailed. Shrub excavations shall be minimum 12" greater in diameter than ball and 6" deeper.

   All plant pits must be free draining. Notify Engineer if positive drainage does not exist.

   Set all plants in the center of plant pits, plumb and straight and as detailed on the drawings. The side of the trees flagged “North Side” shall be oriented due North prior to backfilling.

   Handle balled and burlapped plants from the ball only.

   Face plants other than trees to give best appearance and as accepted by Engineer.

   Carefully remove only surplus bindings and synthetic materials that do not readily decompose. Fold burlap away from top one third of root ball. Remove portions of any wire baskets, if present.

   Backfill all pits 2/3 their depth with prepared plant backfill mixture, water thoroughly and allow to settle, then tamp around to fill all voids and air pockets. Complete backfilling to conform to required elevation after settlement.

   Form saucer and install mulch over entire plant pit and saucer area as detailed.

3. **Continuous Excavation:**
   All perennial and shrub plant beds are to be continuously excavated to depths required to allow installation of specified backfill mixture. Backfill completely with specified Plant Mix. Protect groundcover and perennial plants from the sun. Soak roots for several hours prior to planting. Remove from container and gently break apart any container-bound root mass. Install plants as specified in this Section.

4. **Fertilizers For Plant Pit Saucers:**
   Conform to Form 818, Article 9.49.03.9.

5. **Finishing Operations:**

   Staking Trees: Conform to Form 818, Article 9.49.03.11.

   Wrapping: Conform to Form 818, Article 9.49.03.12.
   Mulching: Conform to Form 818, Article 9.49.03.15.

   Anti-Desiccant: Conform to Form 818, Article 9.49.03.14.

   Watering Plants: Conform to Form 818, Article 9.49.03.10.

   Pruning: Conform to Form 818, Article 9.49.03.13.

6. **Repair of Lawn Areas:**
   Repair all lawn areas damaged/disturbed during all planting operations. Provide sediment and erosion control measures as required to protect un-established areas from erosion.

7. **Maintenance of Plantings:**
   Period required begins immediately after planting and includes all transplanted material. Continue until the end of the guarantee period.

   Maintenance Requirements: Maintenance responsibilities include cultivating, spraying, weeding, watering, tightening guys, pruning, fertilizing, mulching and any other operations necessary to properly maintain plant viability. Correct defective work as soon as possible. Correct dangerous conditions immediately.

9.49.04 – Method of Measurement:

1. **Planting:**
   The quantity for which payment will be made will be the unit item lump sum of plants in place, planted and accepted.
2. **Mulching:**
   This work will not be measured for payment and shall be included in the unit item lump sum for the specified thickness for the area on which mulch has been completed and accepted.

9.49.05 – Basis of Payment

1. **Planting:**
   Payment for this work will be made at the contract unit price lump sum completed and accepted in place The unit price shall include all materials, equipment, tools, labor, transportation, operations and all work incidental thereto, including the removal of guy wires, hose and tree support stakes after the initial establishment period
2. **Mulching:**
   This work will be included in the unit price lump sum for this pay item.

Pay Item	**Pay Unit**
Furnishing, Planting and mulching trees, shrubs, vines and ground cover	LS

ITEM #0950005A TURF ESTABLISHMENT

9.50.01 – Description:

1. **Summary:**
   The Work shall consist of providing and installing all Turf Establishment areas as shown on the Drawings and as specified herein, including, but not necessarily limited to: Fine grading and preparing the seed bed; providing and incorporating amendments necessary for good lawn growth; seeding all proposed lawn areas; providing and installing erosion control fabric or salt hay mulch as necessary; mowing, watering, and maintaining the grass until established and accepted; treating all lawn areas with crabgrass and broadleaf weed controls as needed to insure that lawn is free of weeds and crabgrass at time of acceptance; repair of existing lawn areas damaged by the work of this Contract; and protection and security of seeded lawn areas, and repair of damage until acceptance of all lawn areas.

2. **Quality Assurance:**
   Qualifications of Installers: Provide at least one person who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and who shall direct all work performed under this Section.

   Preservatives and Controls: Prior to the application of the preventatives and controls specified, confirm that each of the materials is permitted in the State of Connecticut.

3. **Product Handling:**
   Seed, fertilizer, lime, and chemical preventatives and controls shall be delivered in standard size unopened containers, showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at the site.

4. **Guaranty:**
   Duration of guaranty shall be until the completion of the specified maintenance period and until Owner's final acceptance of lawn areas.

5. **Schedule:**
   Construct lawns between April 1 and June 1 and between August 15 and October 1 unless otherwise permitted by the Owner's Representative. If an irrigation system is available, seeding between April 1 and October 1 will be permitted.

6. **Existing Work:**
   Verify that topsoil surface is true to grade, smooth, free of irregularities, properly installed to the scheduled thickness and in good condition to receive the work of this Section. Verify that irrigation work is complete. Protect from damage.

7. **Submittals:**

   Provide copies of a material certificate signed by the seed vendor and the Contractor, (stating botanical and common names, percentages by weight, and percentages of purity,

germination and weed seed for each grass seed species) certifying that the seed mixture complies with the specified requirements.

Provide certification by grower of sod type, including percentage of each type of grass in the blend.

Submit materials certificates and product data for the following items, clearly marked, to indicate proposed materials. Printed data shall state application rates and amounts of product to be added, if applicable.

a) Water management polymer
b) Fertilizers
c) Lime
d) Chemical preventatives and controls

Submit delivery tickets for the following items, indicating the trade name, the supplier/distributor's name and the amount of product delivered to the contracting firm/project site.

a) Water management polymer
b) Fertilizers
c) Seed mixes

8. Topsoil Testing:
Ensure that topsoil has been tested in accordance with Section 094101A.

9. Inspection and Acceptance of Seeded Areas:
Submit written notice requesting inspection at least 10 days prior to the anticipated date. Maintenance responsibilities end with final acceptance which shall be a minimum 60 consecutive calendar days from the date of seeding. Seeded areas will not be accepted in 'pieces' unless specifically agreed to by the Owner. No seeded areas will be accepted prior to the substantial completion of this Contract and prior to the completion of a minimum of 5 mowings. A satisfactory stand of acceptable grass is defined as: Consisting of a uniform dense stand of established permanent grass species. Engineer will be the judge. Any part of the lawn that does not show a uniform dense lawn grass shall be reseeded. Lawns must be free of weeds, crabgrass, and other undesirable plants, and with no diseases present.

Final acceptance will not be made until all damaged areas, including areas outside the property limits, have been restored to their original conditions by topsoiling, seeding, and other necessary operations.

Upon stabilization of lawn areas, erosion control devices and protection fencing shall be removed and disposed of off-site.

10. Protection and Security:

Provide protection and security as necessary to prevent damage to lawn areas by any cause, including malicious vandalism and unauthorized usage, prior to acceptance of lawns by Owner.

9.50.02 – Materials:

1. **Lime:**
   Ground limestone, 95% passing through a 100 mesh screen. Calcium carbonate equivalency of 90% or higher.

2. **Fertilizer:**
   Topsoil Fertilizer shall be complete at the ratios recommended in the topsoil test reports. Maintenance Fertilizer shall be high nitrogen complete fertilizer with a guaranteed analysis of 24.5.11 applied at a rate of 1 lb. Nitrogen/1000 SF, after lawn begins to grow, ideally in May or early September, but not before April 15, nor after October 15.

3. **Seed:**
   Provide fresh, clean, new-crop seed; blue tag certified complying with the tolerance for purity and germination established by the Office of Seed Analysis of North America. Provide seed of the grass species, proportions and maximum percentages of weed seed. Provide seed in cleaned, sealed, properly labeled containers. Seed that is wet, moldy, or otherwise damaged will not be accepted. Handle seed in accordance with the manufacturer's recommendations for exposure to extremes of heat, cold, or moisture.

   Unless otherwise specified, the seed mixture shall conform to the following:

Variety	Proportioned by Weight Percent	Min. Purity Percent	Min. Germination Percent
A 34 Kentucky Bluegrass	25	90	30
Georgetown Kentucky Bluegrass	25	90	30
Touchdown Kentucky Ryegrass	25	90	30
Palmer Perennial Ryegrass	8.33	90	90
Pennfire Perennial Ryegrass	8.33	90	90
Fiesta Perennial Ryegrass	8.33	90	90

   Other improved seed varieties of similar type may be substituted upon approval of the Engineer. All seed shall be subject to the testing provisions of the Association of Official Seed Analyst.

4. **Erosion Control Blankets:**
   100 percent straw matrix ultra short-term double-net erosion control blanket conforming to Federal Highway Administration Standard Specifications FP-03, Article 713.17(d), Type 1.D. Include manufacturer's recommended staples.

5. **Mulches**

a) Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
b) Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
c) Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

6. Hydromulch:
Soil Guard Bonded Fiber Matrix as manufactured by Weyerhaueser or approved equal.

7. Pesticides
a) General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
b) Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
c) Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

8. Water:
Potable.

9. Water management polymer:
Terra-Sorb HB as distributed by Industrial Services International, Inc., Bradenton, FL or approved equal.

9.50.03 – Construction Methods:

1. Rates of Application:

a) Topsoil Fertilizer, Lime and Topsoil Conditioners: As recommended by the topsoil test report.
b) Grass Seed: 5 lbs./1,000 S.F.
c) Hydromulch: As recommended by manufacturer.
d) Maintenance Fertilizer: 1 lb. Nitrogen/ 1,000 S.F.
e) Crabgrass Preventative: As recommended by the manufacturer.
f) Lawn Pest/Disease Control: As recommended by the manufacturer.
g) 7. Soil Insect Control: As recommended by the manufacturer.
h) Broad Leaf Weed Control: As recommended by the manufacturer.
i) Water Management Polymer: 3 lbs./1,000 S.F.

2. Seed Bed Preparation:

Apply lime, topsoil fertilizer, and other recommended conditioners at the rates recommended by the topsoil tests in all areas where topsoil and topsoil/compost mix have been installed. Cultivate topsoil to a 4" depth by spring-toothed harrow or other approved methods to thoroughly incorporate amendments into the topsoil. Maintain a loose friable seed bed. At no time will rubber tired loaders or graders having greater compaction than a small farm tractor be allowed on topsoil. Keep all heavy equipment and trucks off prepared topsoil. Do not prepare while ground is wet or frozen. Provide additional topsoil where and as required to properly meet all proposed finish grades. Remove any weeds, debris, foreign matter and stones having any dimension greater than 3/4". Remove from property.

Install water management polymer in all unirrigated lawn areas. Work into upper 2" of topsoil.

Fine grade to a smooth uniform surface. The entire area shall present an even grade with no depressions where water will stand. Grades shall be within 1/2" of designated elevation. Any protective fencing around existing trees shall be removed and disposed of by the Contractor at this time. Topsoil shall be smoothly blended to existing finish grades around trees, erosion control devices and adjacent existing conditions, maintain existing surface drainage patterns. Smoothly round-off all top and toe of slopes. Reinstall erosion control devices and protective fencing as required. Approval of surface by Engineer shall be obtained before seeding operations begin.

Perform bulk density and compaction tests to monitor degree of soil compaction/seed bed friability where directed. Where required, loosen the seed bed to obtain no greater than 70% of the ASTM D-1557 modified optimum density.

3. **Lawn Development:**
   All disturbed areas not developed otherwise shall be developed as lawn as indicated on the drawings and as specified.

4. **Seeding Procedure - Lawn Areas:**
   Seeding shall be done when wind does not interfere with uniform distribution of hydroseeding mixture. Apply starter fertilizer, seed and maximum 10% of mulch in one operation by the use of an approved spraying machine. Avoid spraying mix on adjacent surfaces, walks, building walls, and curbs. Apply remaining 90-100% of the mulch in a second separate application. Mix materials with water. Keep in an agitated state so that the materials are uniformly suspended in the water. Apply all materials at the specified rates. Do not overseed with unapproved quick-germinating species.

5. **Erosion Preventatives:**
   Install erosion control netting on all seeded slopes steeper than one foot (1') vertical to three (3) feet horizontal, or any seeded areas which receive concentrated run-off water, and areas as required by the t or Owner's Representative. Joints in these materials shall overlap no less than one foot (1'), and the material shall be secured as recommended by the manufacturer.

6. **Establishment:**
   Maintain a moist seed bed at all times. Water seed bed so that the topsoil is wet to a depth of 2". Apply complete coverage to the seeded area as necessary to insure proper germination conditions. Protect all lawn areas with barricades, if necessary, to keep all traffic off the area. Repair all damage to lawn areas including topsoil replacement, at no additional cost to Owner. Reseed all areas which have failed to show a uniform stand of grass after the initial plants have appeared. All areas disturbed/prepared for reseeding in spring or summer shall receive crabgrass preventative.

7. **Crabgrass and Broadleaf Weed Control:**
   Treat any lawn areas infested with crabgrass or broadleaf weeds with weed control products in conformance with manufacturer's recommendations, as required after identification of weed/crabgrass presence.

8. **Disease Control:**
   Treat any diseased lawn areas with proper disease control product in conformance with the manufacturer's recommendations, as required after diagnosis of disease organisms.

9. **Maintenance of Lawn Areas:**
   Maintain lawns continuously immediately after seeding and continue until final acceptance. Provide all reseeding, watering, mowing, weeding, insect or disease control, refertilizing, repair of washouts and other maintenance procedures which are necessary to produce a uniform stand of grass. Grass must be maintained at a height of 1 1/2 - 2". Mowing frequency shall be weekly minimum and must be adequate to insure that no more than 1/3 of the grass blade height is removed at any one time. Remove heavy clippings. The Contractor shall provide a minimum of five (5) mowings. Initial mowing shall occur when grass reaches 2 1/2" height.

10. **Project Clean-Up:**
    Upon completion of all lawn areas, remove all excess soil, debris, and other materials resulting from work operations of this Section. Restore all improvements to original condition. Broom-clean all walks and pavements. All clean-up shall be completed at the end of each working day. Upon stabilization of lawn areas, remove all erosion control devices. Reseed as required.

9.50.04 – Method of Measurement:

This work will be measured for payment by the number of square yard of turf area furnished and placed, completed and accepted.

9.50.05 - Basis of Payment:

This work will be paid for at the contract unit price per square yard of "TURF ESTABLISHMENT", completed and accepted, including all equipment, material, tools, labor and incidental expenses thereto.

Pay Item	**Pay Unit**
Turf Establishment	SY

ITEM #0950027A – PLANTER, PRECAST CONCRETE 48L X 30W X 36H
ITEM #0950028A – PLANTER, PRECAST CONCRETE 36L X 36W X 36H

Description:

1. **Summary:**
   The work included in this item shall consist of furnishing and installing precast concrete planters and planting soil as shown on the plans or as directed by the Engineer.

2. **Submittals:**
   Product Data: Manufacturer's data sheets on each product to be used, including:
   a) Preparation instructions and recommendations.
   b) Storage and handling requirements and recommendations.
   c) Installation methods.

   Shop Drawings: Complete details of layout and assembly, showing member sizes and part identification, fasteners, anchors, and fittings.

   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

   Manufacturers warranties.

Material:

1. **Planter, Glass Fiber Reinforced Concrete**
   Tournesol Siteworks, GFRC Planters, Wilshire Collection, Hayward CA (800) 542-2282
   a) Length: 48 inches
   b) Width: 30 inches
   c) Height: 36 inches.
   d) Mounting: 1/2” threaded inserts for anchoring.
   e) Color: manufacturers’ standard color “Clay”.
   f) Texture: finish texture to be acid wash.
   g) Drainage Holes: minimum of two per planter.

2. **Planter, Glass Fiber Reinforced Concrete**
   Tournesol Siteworks, GFRC Planters, Wilshire Collection, Hayward CA (800) 542-2282
   h) Length: 36 inches
   i) Width: 36 inches
   j) Height: 36 inches.
   k) Mounting: 1/2” threaded inserts for anchoring.
   l) Color: manufacturers’ standard color “Clay”.
   m) Texture: finish texture to be acid wash.
   n) Drainage Holes: minimum of one per planter.

3. **Insulation:** R-Tech Rigid, closed cell, expanded polystyrene (EPS) boards (Type 1) complying with ASTM C578, as manufactured by InsulFoam.
   a) Unfaced.
   b) Minimum thickness: 2 inches.
   c) Provide insect and mold resistant treatments.
4. **Drainage Stone:** Washed, open graded, #8 stone.

5. **Filter Fabric:** Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

   Survivability: Class 2; AASHTO M 288.
   Survivability: As follows:

   Grab Tensile Strength: 157 lbf (700 N); ASTM D4632.
   Sewn Seam Strength: 142 lbf (630 N); ASTM D4632.
   Tear Strength: 56 lbf (250 N); ASTM D4533.
   Puncture Strength: 56 lbf (250 N); ASTM D4833.

   Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D4751.
   Permittivity: 0.5 per second, minimum; ASTM D4491.
   UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

6. **Planting Soil:** Planting soil per the requirements of 0944000A – Furnishing and Placing Topsoil. Planter to be filled with topsoil, over the drainage stone to within 4" of the top of planter.

Construction Methods:

Install precast concrete planter in accordance with manufacturer's instructions at locations as directed by the Engineer.

Method of Measurement:

This work will be measured for payment by the number of precast concrete planters furnished and installed at locations where proposed, with such work as directed and accepted by the Engineer.

Basis of Payment:

The precast concrete planters will be paid for at the contract unit price per each for "PLANTER, PRECAST CONCRETE 48L X 30W X 36H" and "PLANTER, PRECAST CONCRETE 36L X 36 W X 36H" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installation of the precast concrete planter with insulation, drainage stone, filter fabric and planting soil.

Pay Item	**Pay Unit**
No. 0950027A Planter, Precast Concrete 48L x 30W x 36H	EA
No. 0950028A Planter, Precast Concrete 36L x 36W x 36H	EA

ITEM #0950040A – CONSERVATION SEEDING FOR SLOPES

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, and supplemented as follows:

Description: The work included in this item shall consist of providing an accepted stand of established conservation grass by furnishing and placing seed as shown on the plans or as directed by the Engineer.

Materials: All conservation grass mixture sources shall be locally obtained within the Northeast USA (New England, New York, Pennsylvania, New Jersey, Delaware, or Maryland.) in order to preserve and enhance the diversity of native conservation grass species.

There qualified conservation seed mixtures are detailed below:

1. **New England Conservation/Wildlife Mix**, New England Wetland Plants, Inc. 820 West Street Amherst, MA 01002, or equal. Rate shall be 1 pound PLS per 17,750 sq. ft.

2. **5311 Conservation Mix**, Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be 3-5 pound PLS per 1,000 sq. ft.

3. **Vermont Conservation and Wildlife**, Vermont Wetland Plant Supply, LLC, P.O. Box153, Orwell, VT 05760, or equal. Rate shall be 1 pound PLS per 2,180 sq. ft.

Fertilizer, if required, shall meet the requirements of Article M.13.03.
Mulch shall meet the requirements of Article M.13.05.
Erosion control matting shall be bio-degradable and meet the requirements of Article M.13.09.

All conservation seed mixture sources shall be reviewed and approved by the Engineer in advance of purchase and prior to application.

The Materials Certificate for all seed mixtures shall have a statement that certifies that the seed mixture does not include any invasive species pursuant to Connecticut General Statutes Sec. 22a-381d or any State Threatened or State Endangered species pursuant to Connecticut General Statutes Sec. 26-303. The seed tags from the bags are to be removed by the Engineer upon delivery and attached to the Materials Certificate. Seeding shall not occur if these requirements are not met.

All approved seed mixtures shall be obtained in sufficient quantities to meet the pure live seed (PLS) application rates as determined by the seed analysis of the mixture.

Construction Methods: Construction Methods shall be those established as agronomically acceptable and feasible and that are approved by the Engineer. The methods described in Article

9.50.03 shall be amended as follows:

Preparation of a clean weed free seed bed shall be provided. If seed is purchased in bulk rather than by PLS, the rate of application must be adjusted to meet the required PLS seeding rate. This seeding rate shall be increased by the appropriate percentage as determined by the following formula based off of the information provided on the seed tags at delivery.

(Germination Percentage X Purity Percentage)/ 100 = Percentage PLS

The Engineer will verify that the seed is applied at a rate that will allow for 100 percent PLS. Mowing will not be allowed within areas that are seeded with conservation seed mix, unless authorized by the Engineer.

The mix may be applied by hydroseeding, by mechanical spreader, or on small sites by hand. Lightly rake, or roll to ensure proper seed to soil contact. Seeding dates are from March 15th – June 1st. The contractor may be directed by the Engineer to soak, scarify or perform other seed germination enhancement treatments. Fertilization is not recommended, unless topsoil testing indicates. An application of Plateau (imazapic) at a rate of 1 lb. per acre may be required right after seeding, or as directed by the Engineer. The seed shall be mulched in accordance with Article 9.50.03.

Method of Measurement: This work will be measured for payment by the number of Square Yards of surface area of accepted established conservation grasses as specified or by the number of Square Yards of surface area of seeding actually covered and as specified.

Basis of Payment: This work will be paid for under Item No. 0219004.3A – Outfall Plunge Pool / Sediment Forebay – Green Stormwater Infrastructure, which price shall include all materials, maintenance, equipment, tools, labor, and work incidental thereto.

ITEM #0952110A – BELGIAN BLOCK PLANTER AT NEW TREE

Description:

1. **Summary:**
   The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to install Belgian Block Planters at new trees as shown on the drawings, as specified herein, and as is additionally required to properly complete the work, including furnishing and installing the granite block edging, concrete bedding, mortar, the removing and disposal of all surplus materials, excavation, concrete sidewalks removal and disposal, furnishing and installing the CU structural soil (630 cubic feet per tree), filter fabric, clean course aggregate stone, 4" PVC perforated pipe with sleeve, biobarrier root control fabric, and planting soil.

2. **Submittals**
   a. Product Data: Manufacturer's data sheets on each product to be used.
   b. Manufacturer's warranties.

Material:

1. **Concrete Bedding**
   Concrete shall conform to Section 0921001A of these specifications.

2. **Mortar**
   Shall conform to Form 816, Section M.11.04.

3. **Biobarrier Root Control Fabric**
   Root control fabric shall be 19.5" wide biobarrier root control fabric.

4. **Supplemental Irrigation**
   4" Rigid Polyvinyl Chloride Plastic Perforated Drain Pipe with filter sleeve, fittings, and slotted drain cap, Conforming to Item #0751453.

5. **Planting Soil**
   Planting Soil shall conform to Section 0944000A of these specifications.

6. **Granite Block Edging:**
   Granite block shall be jumbo granite Belgian blocks nominal 10" x 7" x 4" as shown on the plans and details. Stone for this work shall be hard and durable granite, fundamentally of light color, of general uniform texture, free from seams or imperfections that would impair its structural reliability and containing only such color variations as in the opinion of the Engineer would reasonably be characteristic of the material source.

7. **CU Structural Soil**
    a. Conform to the requirements of Item #0944105A.

8. **Biobarrier Root Control Fabric**
   Root control fabric shall be 19.5" wide biobarrier root control fabric.

Construction Methods:

1. **Mockup**
   Construct a 6' x 10' display panel size, color, and finish specimen in this Item to illustrate component application including pattern and edge details. Do not start work until Engineer has approved mock-up. Remove mock-up and dispose of materials at the completion of the work or as directed by Engineer.

2. **Protection of Finished Surfaces**
   Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage during construction.

3. **Excavation:**
   Work under this item shall consist of removing and disposing of existing sidewalk and foundation to a full depth. Wherever portions of concrete sidewalks or concrete driveway ramps are to be removed, such removals shall be made to neat lines. Partial removals shall generally be to existing joints except when a location other than a joint is identified on the plans or set by the Engineer due to construction staging limits. At removal limits where a joint is not present, the Contractor shall sawcut the concrete full depth to create a neat line. The bottom of the excavation shall be graded smooth and thoroughly compacted to a firm, even surface using a roller weighing not less than five tons or a motor driven vibratory compactor.

4. **Biobarrier Root Control Fabric**
   Biobarrier root control fabric shall be installed where indicated on the drawings and per manufacturer's recommendations.

5. **Supplemental Irrigation**
   Shall be installed at the line and grade as indicated on the drawings.

6. **Concrete Bedding**
   Shall be installed at the line and grade as indicated on the drawings. Concrete installation shall conform to Section 0921001A of these specifications.

7. **CU Structural Soil**
    a. Install per the requirements of Item #0944105A Structural Soil for Tree Planting.

8. **Granite Block Edging**
   The granite edging shall be set as shown on the typical section and settled into place with a heavy wooden hand rammer to the line and grade required, straight and true for the full depth. The top line of the granite edging shall be set straight and true, allowing natural variations in depth of edging to occur at the bottom of the face. The joints of the block edging shall be pointed with mortar for the full depth of the curbing.

9. **Planting Mixture:**
   Shall conform to the Special Provisions for Planting within these specifications.

10. **Planting Procedures, Balled and Burlapped Planting:**
    Shall conform to the Special Provisions for Planting within these specifications.

Method of Measurement:

Belgian Block Planter at New Tree will be measured by the number of Belgian block planter tree pits installed, based on 60 square feet per tree, with 630 cubic feet of CU Structural Soil, as shown on the Drawings, as specified herein, and as directed by the Engineer. Price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installing the granite block edging, concrete bedding, mortar, biobarrier root control fabric, supplemental irrigation, and planting soil excluding Tree Planting and Wood Chip Mulch which will be paid under a separate item.

Basis of Payment:

The Belgian Block Planter at New Trees will be paid for at the lump sum price of each "BELGIAN BLOCK PLANTER AT NEW TREES" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installing the granite block edging, concrete bedding, mortar, and installing the CU structural soil, filter fabric, biobarrier root control fabric, supplemental irrigation, and planting soil excluding Tree Planting and Wood Chip Mulch which will be paid under a separate item.

Pay Item	**Pay Unit**
Belgian Block Planter at New Tree	EA

ITEM #0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – 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 for Section 1.08 - Prosecution and Progress.

All Roadways

The Contractor shall maintain and protect a minimum of one (1) lane of traffic in each direction with each lane on a paved travel path not less than 11 feet in width, with the following exceptions:

1. During the allowable periods and when the Contractor is actively working, the Contractor will be permitted to maintain and protect at least an alternating one-way traffic operation on a paved travel path not less than 11 feet in width and no more than 300 feet in length, unless specified elsewhere in the Contract. There shall be no more than one alternating one-way traffic operation within the Project limits without prior approval of the Engineer.
2. The Contractor shall maintain safe pedestrian access though the site during construction.

Commercial and Residential Driveways

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the Project limits. The Contractor will be permitted to temporarily close affected driveways while actively working with coordination and permission from the owner or proprietor.

Intermediate Term Sidewalk Closures

The Contractor shall maintain and protect existing pedestrian accommodations, or a minimum of 4 feet in width, on all existing sidewalks, sidewalk ramps, and access to pedestrian pushbuttons, with the following exception:

- During the allowable periods and when the Contractor is actively constructing pedestrian amenities or installing signal equipment, the Contractor will be allowed to close pedestrian sidewalks and sidewalk ramps and restrict access to pedestrian pushbuttons for no more than a continuous 120 hour period of time.

No more than two corners of an intersection may be closed for an intermediate term sidewalk closure at any time. Where all four corners of an intersection have sidewalks and sidewalk ramps, diagonal corners shall not be closed at the same time.

During the intermediate term sidewalk closure, all approaches to the sidewalk shall be blocked by Construction Barricade Detectable with Sidewalk Closed signs.

The Contractor shall ensure that traffic control signals with pedestrian phases where access to the pushbuttons cannot be provided are revised at the start of the closure to automatically activate the pedestrian phase every signal cycle.

Intermediate term sidewalk closures may be extended to 144 hours with prior approval of the Engineer.

Article 9.71.03 - Construction Methods *is supplemented as follows:*

General

Unpaved travel paths will only be permitted for areas requiring full depth and full width reconstruction. The unpaved section shall be the full width of the road and shall be perpendicular to the travel lanes. The Contractor will be allowed to maintain traffic on processed aggregate for a duration not to exceed 10 calendar days and opposing traffic lane dividers shall be used as a centerline.

The Contractor is required to delineate any raised structures within the travel lanes, so that the structures are visible day and night, unless there are specific Contract plans and provisions to temporarily lower these structures prior to the completion of work.

The Contractor shall schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway or bridge section by the end of a work shift, or as directed by the Engineer.

When the installation of all intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall then install the final course of bituminous concrete pavement.

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 work shift if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary bituminous concrete traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor, during the course of any active overhead construction work, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken.

At no time shall an overhead sign be left partially removed or installed.

When an existing sign is to be relocated or replaced, the work shall be completed during the same work shift.

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

On limited-access highways, construction vehicles entering travel lanes shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at the posted speed limit, in order to merge with existing traffic.

Existing Signing

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

Requirements for Winter

The Contractor shall schedule a meeting with representatives of the Department, including the offices of Maintenance and Traffic, and the Town/City to determine any interim traffic control measures the Contractor shall accomplish prior to winter to provide safety to 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.

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.

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 a safer and more 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 or is within the clear zone. 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 in order to command respect from the motorist.

Lane reduction tapers should be placed so that the entire length of the taper is installed on a tangent section of roadway and the entire taper area can be seen by the motorist.

All existing conflicting signs shall be removed, covered with an opaque material, or turned so that they are not legible to oncoming traffic prior to implementing a traffic control pattern. The existing signs shall be uncovered or reinstalled once the pattern is removed.

A buffer area should be provided during installation of a traffic control pattern and maintained for the duration of the work. The buffer area shall be free of any equipment, workers, materials, and parked vehicles.

Construction Traffic Control Plans 19 through 25 should be used for moving operations such as line striping, rumble strips, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns are not required for vehicles on an emergency patrol type activity or for a short duration stop of up to one hour, as long as the equipment is contained within the shoulder. Flashing lights, arrow boards, truck-mounted or trailer-mounted impact attenuators, and appropriate Trafficperson(s) shall be used when required.

In a situation not adequately covered by the Construction Traffic Control Plans, the Contractor shall contact the Engineer for assistance prior to setting up a traffic control pattern.

Placement of Signs

Signs shall be placed in a position that allows 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 Construction Traffic Control Plans

The Construction 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.

The proper application of the Construction Traffic Control Plans and installation of traffic control devices is dependent upon actual field conditions.

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.

Adjustments to the Construction Traffic Control Plans shall only be made at the direction of the Engineer.

Table 1 indicates the minimum taper lengths required for a lane closure based on the posted speed limit and lane width of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the Construction Traffic Control Plans cannot be achieved.

Table 1 – Minimum Taper Length

POSTED SPEED LIMIT (MPH)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE (FEET)	
	FREEWAYS	SECONDARY ROADS
30 OR LESS	180	165
35	245	225
40	320	295
45	540	495
50	600	550
55	660	605
65	780	715

1. Work Zone Safety Meetings

1.a) Prior to the commencement of work, a Work Zone Safety Meeting shall be conducted with representatives from DOT Construction, Connecticut State Police (Local Barracks), 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. DOT Traffic Engineering shall be invited to the Work Zone Safety Meeting. 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. Any issues that can't be resolved at these Meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda shall include:

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

2. General

2.a) Traffic control patterns shall only be installed if the required minimum number of signs, traffic cones, traffic drums, and other equipment (i.e. one Arrow Board for each lane closed, two Truck-Mounted or Trailer-Mounted Attenuators (TMAs), Changeable Message Sign, etc.) are on Site.

2.b) The Contractor shall have spare maintenance and protection of traffic equipment (TMAs, Arrow Board, Changeable Message Sign(s), construction signs, traffic cones, traffic drums, etc.) available at all times in case of mechanical failures, etc. Spare maintenance and protection of traffic equipment installed as a result of a sudden equipment breakdown shall be replaced by the Contractor 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 lost time.

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

3. Installing and Removing Traffic Control Patterns

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

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

3.c) Stopping traffic may be allowed within the allowable hours stated in Section 1.08.04:

i. For those activities stated within the Contract.

ii. During paving, milling operations, or similar activities 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 so traffic does not travel across the longitudinal joint or difference in roadway elevation.

iii. To move slow moving equipment across live traffic lanes into the work area.

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

3.e) 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 with or exiting from the mainline traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

3.f) Workers are prohibited from crossing the travel lanes on limited access roadways 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.

4. Implementation of Rolling Road Block (RRB)

4.a) Temporary road closures using a RRB may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:

i. Refer to the Limitation of Operations Chart provided in Section 1.08.04 for the hours allowed for implementing a RRB operation. The Contractor shall only implement a RRB operation within the hours shown in the Chart.

ii. In areas with good sight lines and full shoulders, signs on the side of the road opposite the traffic pattern should be installed in a separate operation.

iii. TMAs equipped with Arrow Boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including TMAs and police vehicles, leave the shoulder or on-ramp and accelerate to normal roadway speeds in each lane. The vehicles will then position themselves side by side and decelerate to the RRB speed on the highway.

iv. A Pre-Warning Vehicle, as specified elsewhere in the Contract, shall be used to advise the motorists that sign pattern installation or removal is underway.

v. The RRB duration shall not exceed 15 minutes from the start of the traffic block until all lanes are opened as designated in the Limitation of Operations chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the District.

vi. RRB shall not be used to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. TMAs (and State Police if available) shall be used to protect the workers installing the taper in the additional lane.

vii. Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days shall be allowed for review and comment by the District.

viii. The Engineer and the Contractor will review and discuss the RRB procedures (including any revisions) in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety Meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, then the work will proceed as recommended by the Department. Any unresolved issues shall be addressed the following day.

5. Use of Arrow Boards

5.a) On limited access roadways, one Arrow Board shall be used for each lane that is closed. The Arrow Board shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the Construction Traffic Control Plans. Additional Arrow Boards shall be deployed if sight distances are limited.

5.b) On non-limited access roadways, the use of an Arrow Board for lane closures is optional. The roadway geometry, sight distance, and traffic volume shall be considered in the decision to use the Arrow Board.

5.c) A vehicle displaying an arrow board shall be equipped with high-intensity rotating, flashing, oscillating, or strobe lights.

5.d) The flashing arrow mode shall be used for lane closure (merge) tapers.

5.e) The flashing arrow mode shall not be used for temporary alternating one-way traffic operations or to laterally shift lanes of traffic.

5.f) The flashing double arrow mode shall only be used for closing a center lane on a multilane roadway where adjacent left and right lanes remain open.

5.g) For shoulder work or roadside work near the shoulder, the Arrow Board shall be positioned in the shoulder and the flashing alternating diamond mode should be used.

5.h) The flashing alternating diamond caution mode should also be used when supplemental Arrow Boards are positioned in an already closed lane.

6. Use of Truck-Mounted or Trailer-Mounted Impact Attenuators (TMAs)

6.a) On limited access roadways, lane closures shall use a minimum of two TMAs to install and remove traffic control patterns. If two TMAs are not available, then the pattern shall not be installed.

6.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 shall be considered in the decision to utilize the TMAs.

6.c) On limited access roadways, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane to establish the advance and transition signing. The Arrow Board mounted on the TMA shall be in the arrow mode when taking the lane. The sign truck and workers shall be at sufficient distance 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 Portable Changeable Message Signs, signs, Arrow Boards, and cones/drums are installed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when traveling in the closed lane.

6.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 Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when in the closed lane.

6.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 Section 18.06. 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) shall be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

6.f) TMAs will be paid for in accordance with how the unit is used. If it is used as a TMA and is in the proper location as specified, then it will be paid for at the specified hourly rate for Truck-Mounted or Trailer-Mounted Impact Attenuator. When the TMA is used as an

Arrow Board, it will be paid for at the daily rate for Arrow Board. If a TMA is used to install and remove a pattern and is also used as an Arrow Board in the same day, then the unit will be paid for as a Truck-Mounted or Trailer-Mounted Impact Attenuator for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as an Arrow Board during the same day, then the unit will only be paid for at the daily rate as an Arrow Board.

7. Use of Traffic Drums and Traffic Cones

7.a) On limited-access highways, ramps, and turning roadways:

i. Traffic drums shall be used for taper channelization.
ii. Traffic drums shall be used to delineate raised catch basins and other hazards.
iii. Traffic cones with a minimum height of 42 inches may be used in place of drums in the tangent section of a closed lane or shoulder.
iv. Traffic cones less than 42 inches in height shall not be used.

7.b) On all roadways:

i. 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.
ii. Traffic cones shall not be left unattended.
iii. Traffic cones with a minimum height of 42 inches shall be used when the posted speed limit is 45 MPH or above.

7.c) Typical spacing of traffic drums and/or cones shown on the Construction Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

8. Use of Barricade Warning Lights

8.a) Barricade Warning Lights may be installed on channelizing devices when used in a merge taper. The Barricade Warning Lights shall flash in a sequential pattern when used in a merge taper. The successive flashing shall occur from the upstream end (beginning) of the merge taper to the downstream end (end) of the merge taper.

8.b) Type C Barricade Warning Lights may be used at night to delineate the edge of the travel way.

c) Type B Barricade Warning Lights shall be used on post-mounted advanced warning signs.

9. Use of Portable Changeable Message Signs (PCMS)

9.a) On limited access roadways, one PCMS shall be used in advance of the traffic control pattern for all lane closures. Prior to installing the pattern, the PCMS shall be installed and in operation, displaying the appropriate lane closure information. The PCMS shall be positioned ½ to 1 mile ahead of the start of the lane closure taper. If the distance to the nearest exit ramp is greater than the specified ½ to 1 mile distance, then an additional PCMS shall be positioned a sufficient distance ahead of the

exit ramp (and before the previous on-ramp where practical) to alert motorists to the work and therefore offer them an opportunity to take the exit.

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

9.c) PCMS should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the PCMS, it should be placed off the shoulder and outside of the clear zone. If a PCMS has to be placed on the shoulder of the roadway or within the clear zone, it should be placed on the paved shoulder with a minimum of five traffic drums placed in a taper in front of it to delineate its position. The taper shall meet minimum distance requirements for a shoulder closure. The PCMS shall be protected if it is used for a continuous duration of 36 hours or more.

9.d) The PCMS shall be removed from the clear zone and have the display screen cleared and turned 90 degrees away from the roadway when the PCMS is no longer required.

9.e) The PCMS should not be used within 1,000 feet of an existing PCMS or Variable Message Sign (VMS).

9.f) A PCMS message shall:

i. consist of no more than two phases;
ii. contain no more than three lines of text per phase;
iii. have no more than eight characters per line, including spaces.

9.g) The PCMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs. The PCMS should not be used for generic messages (ex.: Road Work Ahead, Bump Ahead, Gravel Road, etc.) or for messages that need to be displayed for long periods of time, such as during stage construction. These types of messages should be displayed with construction signs. Special signs shall be coordinated with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.

9.h) Typical messages that are allowed on the PCMS are shown below. Approval must be received from the Office of Construction for any message(s) different than the typical messages shown in Figure 1.

9.i) All messages shall comply with the information provided in Tables 2 and 3.

Message No.	Phase 1	Phase 2	Message No.	Phase 1	Phase 2
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	EXIT XX CLOSED	USE EXIT YY
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	EXIT XX CLOSED USE YY	FOLLOW DETOUR
5	RIGHT LANE CLOSED	MERGE LEFT	13	2 LANES SHIFT AHEAD	USE CAUTION
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	3 LANES SHIFT AHEAD	USE CAUTION
7	RIGHT LANE CLOSED	REDUCE SPEED			
8	2 RIGHT LANES CLOSED	REDUCE SPEED			

Figure 1: Typical PCMS Messages

Table 2: Acceptable Abbreviations

Word Message	Standard Abbreviation	Word Message	Standard Abbreviation
Access	ACCS	Minimum	MIN
Afternoon / Evening	PM	Minor	MNR
Ahead	AHD	Minute(s)	MIN
Alternate	ALT	Monday	MON
Avenue	AVE, AV	Morning / Late Night	AM
Bicycle	BIKE	Mount	MT
Blocked	BLKD	Mountain	MTN
Boulevard	BLVD	National	NATL
Bridge	BR	Normal	NORM
CB Radio	CB	North	N
Center	CTR	Northbound	NBND
Center	CNTR	Oversized	OVRSZ
Chemical	CHEM	Parking	PKING
Circle	CIR	Parkway	PKWY
Compressed Natural Gas	CNG	Pavement	PVMT
Condition	COND	Pedestrian	PED
Congested	CONG	Place	PL
Construction	CONST	Pounds	LBS
Court	CT	Prepare	PREP
Crossing	XING	Quality	QLTY
Crossing (other than highway-rail)	XING	Right	RT
Downtown	DWNTN	Road	RD
Drive	DR	Roadwork	RDWK
East	E	Route	RT, RTE
Eastbound	EBND	Saint	ST
Electric Vehicle	EV	Saturday	SAT
Emergency	EMER	Service	SERV
Entrance, Enter	ENT	Shoulder	SHLDR
Exit	EX	Slippery	SLIP
Express	EXP	South	S
Expressway	EXPWY	Southbound	SBND
Feet	FT	Speed	SPD
Freeway	FRWY, FWY	State, county, or other non-US or non-Interstate numbered route	[Route Abbreviation determined by highway agency]**
Friday	FRI	Street	ST
Frontage	FRNTG	Sunday	SUN
Hazardous	HAZ	Telephone	PHONE
Hazardous Material	HAZMAT	Temporary	TEMP
High Occupancy Vehicle	HOV	Terrace	TER

Highway	HWY	Thruway	THWY
Highway-Rail Grade Crossing	RR XING	Thursday	THURS
Hospital	HOSP	Tons of Weight	T
Hour(s)	HR, HRS	Traffic	TRAF
Information	INFO	Trail	TR
International	INTL	Travelers	TRVLRS
Interstate	I-	Tuesday	TUES
Junction / Intersection	JCT	Turnpike	TPK
Lane	LN	Two-Way Intersection	2-WAY
Left	LFT	Two-Wheeled Vehicles	CYCLES
Liquid Propane Gas	LP-GAS	Upper	UPR
Local	LOC	US Numbered Route	US
Lower	LWR	Vehicle(s)	VEH, VEHS
Maintenance	MAINT	Warning	WARN
Major	MAJ	Wednesday	WED
Maximum	MAX	West	W
Mile(s)	MI	Westbound	WBND
Miles Per Hour	MPH		

** A space and no dash shall be placed between the abbreviation and the number of the route.

Table 3: Unacceptable Abbreviations

Unacceptable Abbreviation	Intended Word	Common Misinterpretation
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong

10. Use of State Police Officers

10.a) State Police may be used only on limited access highways and secondary roadways that are under their primary jurisdiction. A minimum of one Officer may be used per critical sign pattern; however, a State Police presence is not required. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Left lane closures may also be implemented without State Police presence in areas with only moderate traffic and wide, unobstructed medians. It may be desirable to have a State Police presence, when available, under specific situations, such as nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur; however, they are not required.

10.b) If a State Police presence is provided, once the pattern is in place, the State Police Officer should be positioned in a non- hazardous location in advance of the pattern to provide advance warning to the motorist. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall reposition so that they are located prior to the backup. The State Police Officer should not be located immediately behind or within the roll ahead area of any TMA or within the work zone buffer area. The State Police Officer shall not be positioned in such a way that the State Police Officer obstructs any construction warning signs or PCMS from view of the motorist.

10.c) Other functions of the State Police Officer(s) may include:

i. Assisting construction vehicles entering and exiting the work area.
ii. Enforcement of motor vehicle laws within the work area, if specifically requested by the Engineer.

10.d) State Police Officers assigned to a work site shall take direction from the 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 IN ADVANCE 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. TRAFFIC CONES AND PORTABLE CONSTRUCTION SIGNS SHALL NOT BE LEFT UNATTENDED.

5. ALL CONFLICTING 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 48 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 $\leqslant$ 40 MPH).

8. IF THIS PLAN IS TO REMAIN IN OPERATION FROM SUNSET TO SUNRISE, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF MILE 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'
35	245'
40	320'
45	540'
50	600'
55	660'
65	780'

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Tracy L Fogarty Tracy L. Fogarty, P.E. 2019.09.13 08:47:47-04'00'

PRINCIPAL ENGINEER

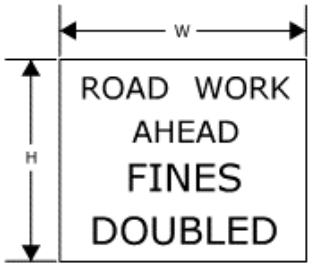
ITEM #0971001A

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 AND MUNICIPAL ROAD IN CONNECTICUT WHERE THERE ARE WORKERS PRESENT ON THE HIGHWAY.

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.

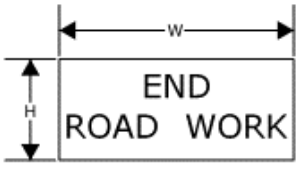
	W	H
31-1906	48"	42"
31-1907	60"	54"



"END ROAD WORK" SIGN

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

	W	H
80-9606	36"	18"
80-9612	48"	24"



CONSTRUCTION TRAFFIC CONTROL PLAN

ROAD WORK AHEAD SIGNS

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

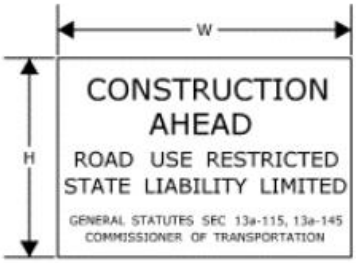
APPROVED

Tracy L. Fogarty, P.E.
2019.09.12 15:54:44-04'00'

PRINCIPAL ENGINEER

ITEM #0971001A

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"

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

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

SIGN 16-E SHALL BE USED ON ALL FREEWAYS AND 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.

CONSTRUCTION TRAFFIC CONTROL PLAN

SERIES 16 SIGNS

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

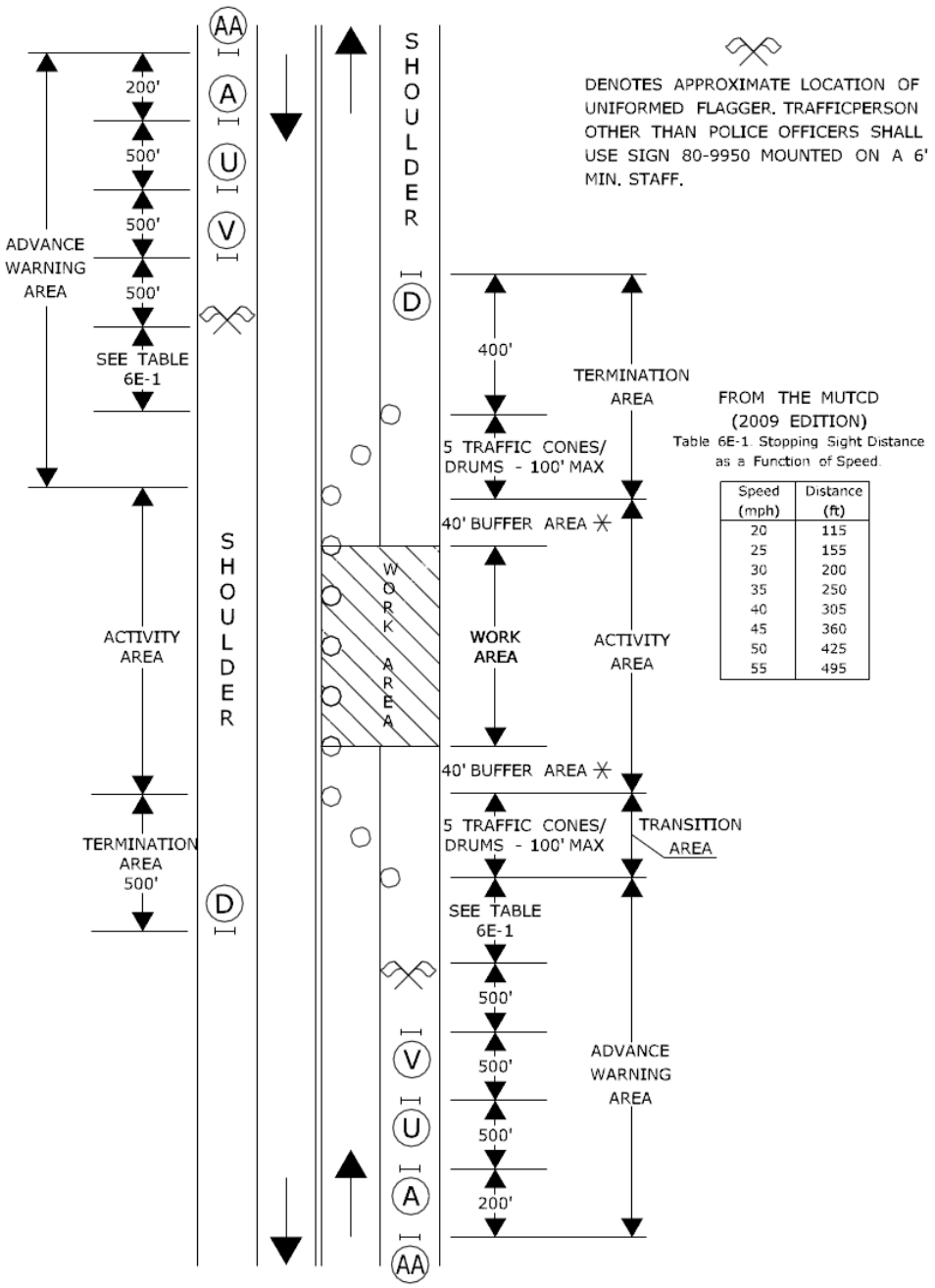
APPROVED

Tracy L. Fogarty, P.E.
2019.10.09 16:30:32-04'00'

PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)

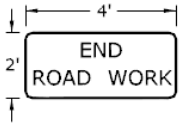


DENOTES APPROXIMATE LOCATION OF UNIFORMED FLAGGER. TRAFFICPERSON OTHER THAN POLICE OFFICERS SHALL USE SIGN 80-9950 MOUNTED ON A 6' MIN. STAFF.

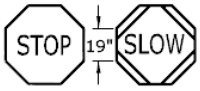
FROM THE MUTCD (2009 EDITION)
Table 6E-1. Stopping Sight Distance as a Function of Speed

Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495

D 80-9612



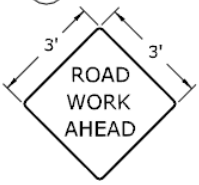
80-9950
SIDE A SIDE B



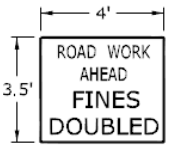
V 80-9803

U 80-9834

A 80-9603



AA 31-1906



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
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:55:23-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

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

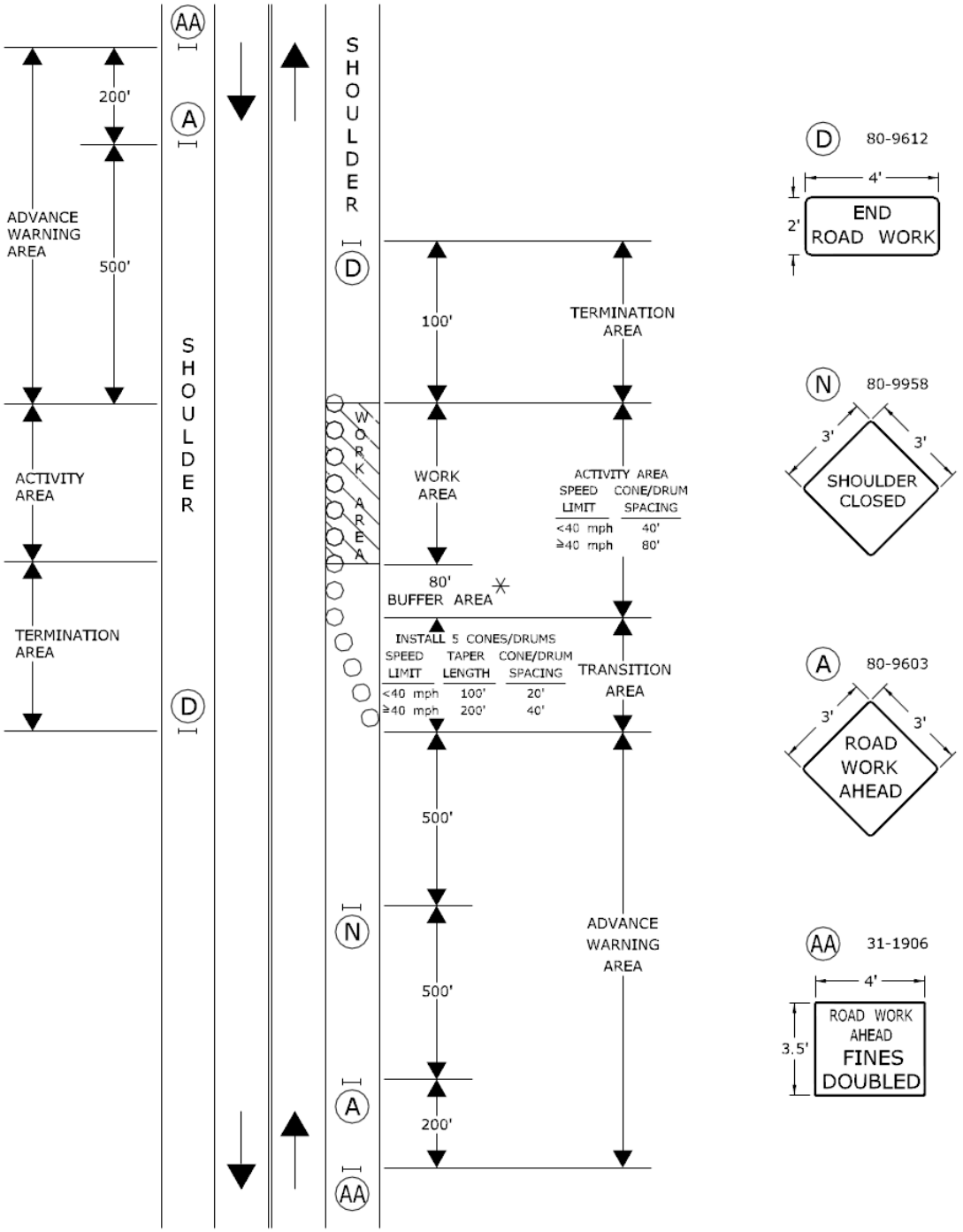
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:55:45-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



D 80-9612

N 80-9958

A 80-9603

AA 31-1906

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

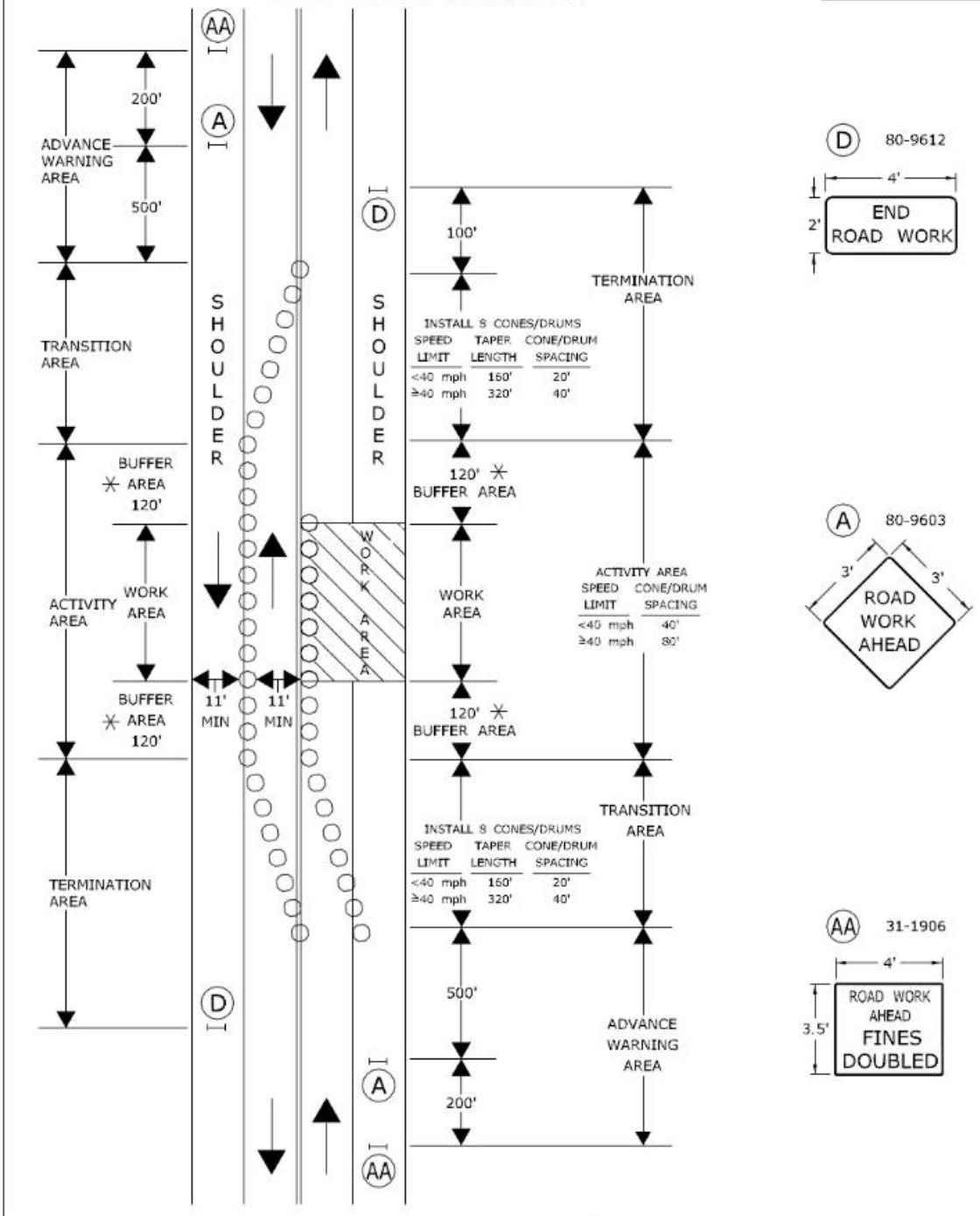
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:09-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)



D 80-9612

A 80-9603

AA 31-1906

○ 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

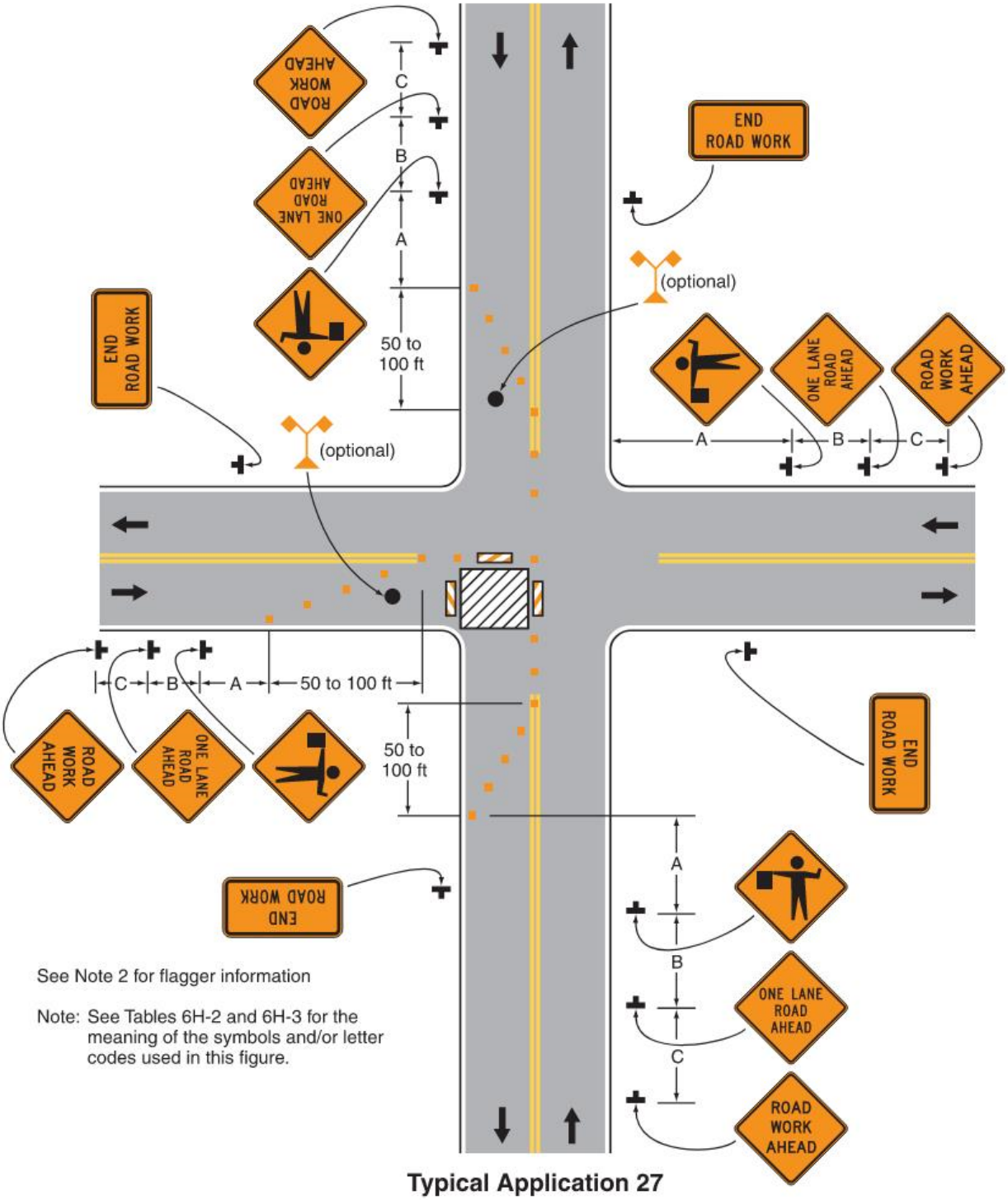
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.08.05 15:56:29-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

Figure 6H-27. Closure at the Side of an Intersection (TA-27)

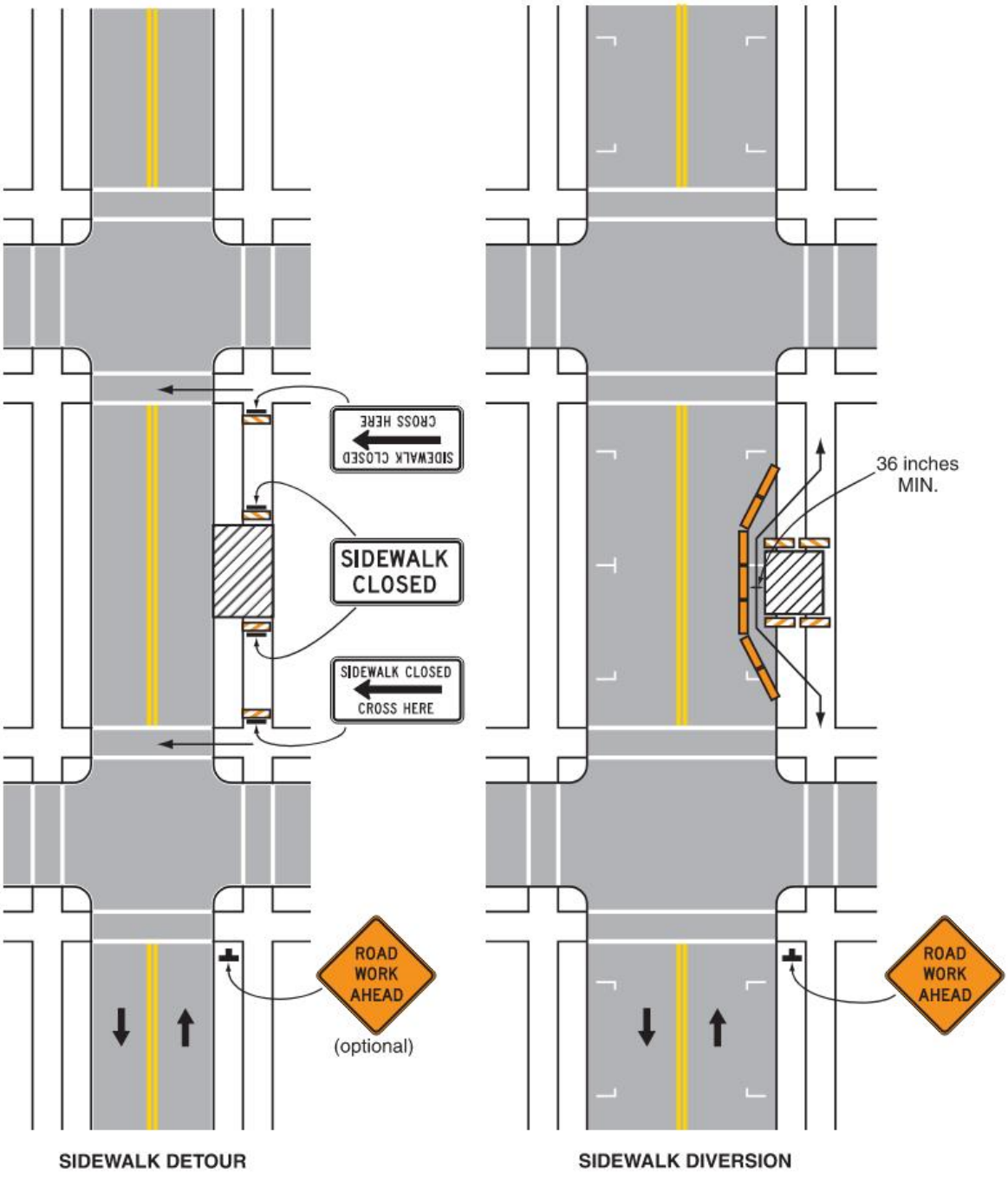


See Note 2 for flagger information

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 27

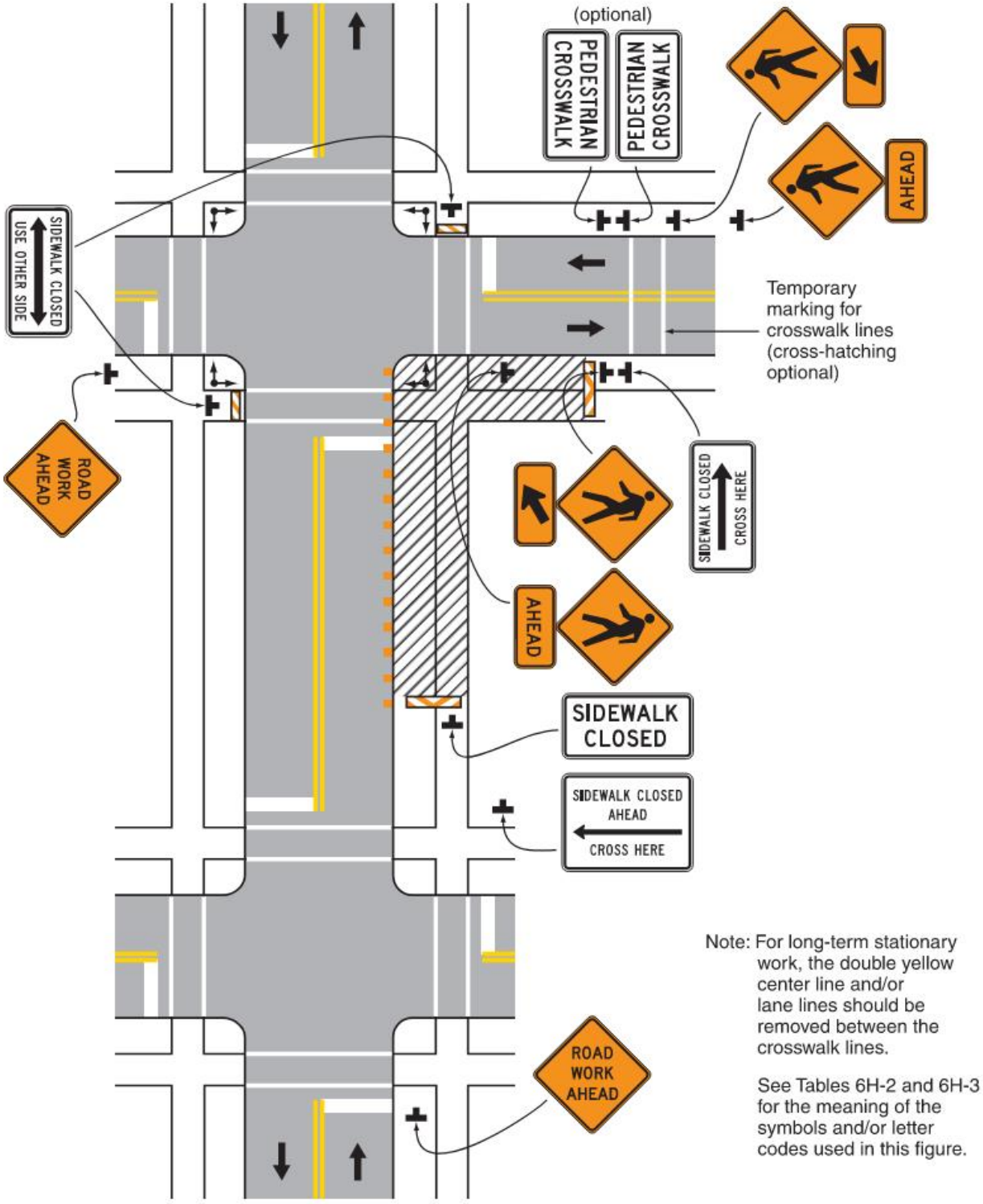
Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)



Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 29

Article 9.71.05 – Basis of Payment *is supplemented by the following:*

DELETE: "Maintenance and Protection of Traffic" does not include the cost of signs, barricades, drums, traffic cones, delineators, or the furnishing and placing of materials such as borrow, gravel, crushed stone, bituminous concrete for patching and pipe. These items will be paid for at their respective Contract unit prices, or in the absence of applicable Contract unit prices, as extra work."

INSERT: "Maintenance and Protection of Traffic includes the cost of signs, barricades, drums, traffic cones, delineators. Maintenance and Protection of Traffic does not include the furnishing and placing of materials such as borrow, gravel, crushed stone, bituminous concrete for patching and pipe. These items will be paid for at their respective Contract unit price."

The temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item "Maintenance and Protection of Traffic".

ITEM #0992090A – BENCH (METAL)

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work included in this item shall consist of furnishing and installing benches and anchor bolts as shown on the plans or as directed by the Engineer.

2. **Submittals:**
   Product Data: Manufacturer's data sheets on each product to be used, including:
   a) Preparation instructions and recommendations.
   b) Storage and handling requirements and recommendations.
   c) Installation methods.

   Shop Drawings: Complete details of layout and assembly, showing member sizes and part identification, fasteners, anchors, and fittings.

   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

   Manufacturers warranties.

Material:

1. **Bench**
   DuMor #58-60 Series. 6' cast bench, steel seat.
   a) End Supports shall be ASTM A48 Class 30 cast iron.
   b) Seat straps shall be manufactured from 1/4" x 1 1/2" ASTM A36 carbon steel flat bar.
   c) Fasteners: Stainless steel.
   d) Seat Height: 16-1/16 inches
   e) Back Height: 31 11/16 inches
   f) Width: 27 9/16 inches
   g) Length: 74 1/4 inches
   h) Mounting: Surface Contractor to provide 1/2 inch by 5-1/2 inch zinc plated expansion anchor bolts with flat washer and hex nut. (Do not use the shorter anchor bolts furnished by the manufacturer.)
   i) Finish:
      a. Powder Coating
         i. All parts are processed through an 8-stage iron phosphorous wash system.

ii. Parts are coated with a zinc-rich epoxy primer to an AVERAGE of 4-5 mils.
iii. Parts are then finished with a topcoat of TGIC-polyester powder to an AVERAGE of 4-5 mils.
iv. Powder is cured at the powder manufacturers specifications using combination of infrared and convection heat for approximately 20 minutes.
v. Finished parts shall comply with the following American Standard Test Method (ASTM) for coating and coating method: ASTM-D-523, ASTM-D-3363, ASTM-D-1737, ASTM-D-3359, ASTM-D-2794, ASTM-B-117 and ASTM-D-3451.

j) Colors: Black

Construction Methods:

Install bench in accordance with manufacturer's instructions at locations indicated on the drawings.

Method of Measurement:

This work will be measured for payment by the number of benches furnished and installed at locations where proposed, with such work as directed and accepted by the Engineer.

Basis of Payment:

The bench will be paid for at the contract unit price per each for "BENCH (METAL)" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installation.

Pay Item	**Pay Unit**
Bench (Metal)	EA

ITEM #0992103A – TRASH RECEPTACLE
ITEM #0992104A – RECYCLE RECEPTACLE

Work under this item shall conform to the requirements of Borough of Naugatuck Streetscape and Sidewalk Amenity Standards and Specifications dated 11/1/2022 supplemented as follows:

Description:

1. **Summary:**
   The work included in this item shall consist of furnishing and installing trash receptacles, recycle receptacles and anchor bolts as shown on the plans or as directed by the Engineer.

2. **Submittals:**
   Product Data: Manufacturer's data sheets on each product to be used, including:
   a) Preparation instructions and recommendations.
   b) Storage and handling requirements and recommendations.
   c) Installation methods.

   Shop Drawings: Complete details of layout and assembly, showing member sizes and part identification, fasteners, anchors, and fittings.

   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

   Manufacturers warranties.

Material:

1. **Trash Receptacle:** DuMor #102-32dm Series. 32 gallon steel trash receptacle.
   a) Receptacle Body shall be manufactured from 1/2" x 1" ASTM A36 carbon steel flat bar, 3/8" thick ASTM
   b) Cover shall be manufactured from 3/8 inch thick ASTM A36 steel plate. Dome Top.
   c) Liner shall be HDPE with 32 gallon capacity.
   d) Overall dimensions: 28 inch diameter x 36 inch height.
   e) Anchoring Fasteners: Stainless steel.
   f) Mounting: Surface Contractor to provide 1/2 inch by 5-1/2 inch zinc plated expansion anchor bolts with flat washer and hex nut. (Do not use the shorter anchor bolts furnished by the manufacturer.)
   g) Finish:
      a. Powder Coating
         i. All parts are processed through an 8-stage iron phosphorous wash system.

ii. Parts are coated with a zinc-rich epoxy primer to an AVERAGE of 4-5 mils.
iii. Parts are then finished with a topcoat of TGIC-polyester powder to an AVERAGE of 4-5 mils.
iv. Powder is cured at the powder manufacturers specifications using combination of infrared and convection heat for approximately 20 minutes.
v. Finished parts shall comply with the following American Standard Test Method (ASTM) for coating and coating method: ASTM-D-523, ASTM-D-3363, ASTM-D-1737, ASTM-D-3359, ASTM-D-2794, ASTM-B-117 and ASTM-D-3451.

h) Colors: Black

2. **Recycle Receptacle:** DuMor #102-22RC Series. 22 gallon steel trash receptacle.
   a) Receptacle Body shall be manufactured from 1/2" x 1" ASTM A36 carbon steel flat bar, 3/8" thick ASTM
   b) Cover shall be manufactured from 3/8 inch thick ASTM A36 steel plate. Dome Top.
   c) Liner shall be HDPE with 22 gallon capacity.
   d) Overall dimensions: 26.5 inch diameter x 32.75 inch height.
   e) Anchoring Fasteners: Stainless steel.
   f) Mounting: Surface Contractor to provide 1/2 inch by 5-1/2 inch zinc plated expansion anchor bolts with flat washer and hex nut. (Do not use the shorter anchor bolts furnished by the manufacturer.)
   g) Finish:
      a. Powder Coating
         i. All parts are processed through an 8-stage iron phosphorous wash system.
         ii. Parts are coated with a zinc-rich epoxy primer to an AVERAGE of 4-5 mils.
         iii. Parts are then finished with a topcoat of TGIC-polyester powder to an AVERAGE of 4-5 mils.
         iv. Powder is cured at the powder manufacturers specifications using combination of infrared and convection heat for approximately 20 minutes.
         v. Finished parts shall comply with the following American Standard Test Method (ASTM) for coating and coating method: ASTM-D-523, ASTM-D-3363, ASTM-D-1737, ASTM-D-3359, ASTM-D-2794, ASTM-B-117 and ASTM-D-3451.
   h) Colors: Black

Construction Methods:

Install receptacle in accordance with manufacturer's instructions at locations indicated on the drawings.

Method of Measurement:

This work will be measured for payment by the number of receptacles furnished and installed at locations where proposed, with such work as directed and accepted by the Engineer.

Basis of Payment:

The receptacle will be paid for at the contract unit price per each for "TRASH RECEPTACLE" and "RECYCLE RECEPTACLE" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installation.

Pay Item	**Pay Unit**
Trash Receptacle	EA
Recycle Receptacle	EA

ITEM #1002110A DECORATIVE LIGHT POLE FOUNDATION

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction, and supplemented as follows:

Description: This item shall consist of designing, furnishing, and installing a light pole foundation of the type called for at the location and to the dimensions and details shown on the plans or as directed by the Engineer. The Contractor shall provide drawings and calculations stamped by a professional engineer registered in the state of Connecticut for a light pole foundation to support the Decorative Light Pole & Luminaire under Item #1003595A.

Materials: The materials for the work shall be as specified in the following:

M.02.01 for Granular Fill
M.03 for Class PCC04460 Concrete
M.04.01 for HMA S0.375 Bituminous Concrete
M.06.01 for Bar Reinforcement
M.08.02-4 for Precast Concrete
M.13.01 for Topsoil
M.13.03 for Fertilizer
M.13.04 for Seed Mixture, if necessary, or as shown on the plans
M.13.05 for Mulch Materials
M.15.02 for Anchor Bolts
M.15.03 for Rock Anchors
M.15.09 for Electrical Conduit
M.15.15-7 for Ground Rods

Construction Method: The light pole foundation shall be constructed in accordance with the pertinent provisions of 6.01.03. They may be precast, or cast-in-place based on accepted design. The final elevation of the top of the light standard foundation shall be as shown on the plans or as directed by the Engineer. The top of the foundation shall be level in all respects. Concrete for foundation shall be placed monolithically against undisturbed soil for poured in place foundations. Necessary electrical conduit, anchor bolts, ground rod sleeves and ground rods shall be placed in proper position and shall be held in place by means of a template. The concrete may be placed against the sides of the excavation; however, the exposed portion of the foundations shall be formed to the neat lines as shown on the plans. When in the judgment of the Engineer, unusual soil conditions prevent excavation to neat lines as shown on the plans, the complete foundation shall be formed.

After the forms have been completely removed, the entire excavation shall be backfilled in accordance with 2.14. All conduits shall be capped with standard pipe caps before placing the concrete and shall remain capped until the cable is installed. Electrical conduit of the size indicated shall extend 2 feet outside the foundation. All portions of the foundations which will remain exposed to view shall be finished to the satisfaction of the Engineer. Forms shall not be removed until after the concrete has hardened properly and not less than 24 hours after the

concrete has been placed. The Contractor shall allow sufficient time for the foundation to cure before placing any strain on the foundation. Steel poles shall not be installed until a minimum of seven days after the concrete has been placed and a minimum of ten days before making span wire attachments thereto. Light poles shall not be installed until 10 days after the concrete has been placed.

Where a foundation is placed within or adjacent to a concrete sidewalk, the entire section of sidewalk between joints shall be replaced in accordance with 9.21, unless otherwise directed by the Engineer.

Method of Measurement: This item shall be measured for payment by the number of units installed and accepted. This measurement shall include the electrical conduit sweeps which shall extend 2 feet outside of the foundation.

Basis of Payment: This work shall be paid for at the Contract unit price each for "Decorative Light Pole Foundation", complete in place, which price shall include design, coordination, all materials, equipment, forms, excavation, disposal of surplus material, concrete, electrical conduit sweeps, conduit caps, ground rod, sleeves, bonding bushings, anchor bolts, backfill, restoration of pavement surfaces, tools, and labor incidental thereto.

Decorative light pole & luminaire shall be paid for under Item #1003595A.

Pay Item	**Pay Unit**
Decorative Light Pole Foundation	ea.

ITEM #1003674A – CATENARY LIGHT POLE – 12’ H (DINNING AREAS)

ITEM #1003675A – CATENARY LIGHT POLE – 16’ H (GATEWAY)

ITEM #1003678A – CATENARY LIGHTING AND SUPPORT CABLE

Description:

1. **Summary:**

   This work shall consist of furnishing and installing Catenary Light Pole -12’ H at dining areas, Catenary Light Pole -16’ H at gateway locations, Catenary Lighting and stainless steel support cable and low-voltage smart transformers for color-changing string lights according to the details, and at the locations shown on the plans or as shown below in the specification.

2. **Submittals:**

Product Data: Manufacturer’s data sheets on each product to be used, including:

a) Preparation instructions
b) Storage and handling requirements and recommendations
c) Installation methods

Shop Drawings for each catenary lighting installation to be provided to the engineer and landscape architect for review and approval prior to installation of mounting cables and string lights.

Materials:

Catenary Light Poles
The catenary light poles shall be manufactured by Lumec.
For Dining area installations, the catenary light pole shall be a 12-ft high round steel pole with cap shall be Lumec model [SPR5V-110]-12-CAP2-GF11-BKTX.

For Gateway installations, the catenary light pole shall be a 16-ft high decorative steel pole with cap shall be Lumec model [R90D-073]-16-BLN1-CAP1-GFII-[TN-165]-BKTX.

Catenary Lighting and Support Cable
Catenary Lighting – see Light Fixture Schedule shown below. Cable shall be stainless steel.

Low-Voltage Smart Transformer
The low-voltage smart transformer shall be manufactured by Dals products or approved equal. The low-voltage smart transformer shall be model DCP-TR-200 or approved equal and compatible with Dals Connect PRO devices.

Luminaires

The luminaire shall be manufactured by HADCO Lighting. Refer to the Lighting Fixture Schedule shown on Contract Plan Sheet ELE-07 and below. Electrical components shall be as described in the Drawings.

Light Fixture Schedule

LIGHTING FIXTURE SCHEDULE								
FIXT. ID	MANUFACTURER AND MODEL#	DESCRIPTION	VOLTAGE	LAMP			MTG.	REMARKS
				LUMENS	INPUT WATTS	TYPE		
CT1	DALS LIGHTING ORION #DCP-STG48	COLOR CHANGING STRING LIGHTS, 48FT LENGTH, 15 LANMS PER STRING, RGW + 2200K - 4000K, BLUETOOTH DIMMABLE AND COLOR CONTROL, WETT LCATION RATED, BLACK FINISH	120	1200	24	LED	POLE	PROVIDE STAINLESS STEEL MOUNTING CABLES AND HARDWARE FOR POLE INSTALLATION. PROVIDE ALL TRANSFORMERS AND ACCESSORIES AS REQUIRED FOR COMPLETE SYSTEM

Construction Methods: The catenary lights shall be constructed to the manufacturer's specifications. The light pole & fixture shall be attached complying to Article 10.03.03 and 10.04.03 and approved by the Engineer. The contractor shall coordinate with all appropriate parties such as the power provider and the Borough before installation commences.

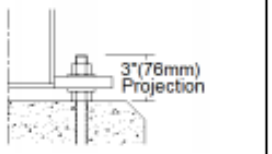
Method of Measurement: This work shall be measured for payment by the number of catenary light pole 12' high and catenary light pole 16' high installed and accepted of the type specified. The work shall be measured for payment by the linear footage of catenary lighting and support cable installed and accepted of the type specified.

Basis of Payment: This work shall be paid for at the contract unit price each for "Catenary Light Pole 12' H", "Catenary Light Pole 16' H", "Catenary Lighting and Support Cable" complete in place, which price shall include all materials, including lights, cable, transformers, fixture, pole, washers, nuts, bolts, brackets, all electrical components, service from handhole to fixture, luminaire wiring, ground rod, grounding conductor, conduit, components, coordination, equipment, tools, and labor incidental thereto.

Pay Item	**Pay Unit**
Catenary Light Pole 12' H	ea.
Catenary Light Pole 16' H	ea.
Catenary Lighting and Support Cable	l.f.

NAUGATUCK STREETSCAPE - DOWNTOWN SANITARY ZIP 06770 A & F (85126)

Base & Bolts Information



Comes with 4 steel anchor bolts, 3/4" X 17" + 3" J Type Bolts, 8 nuts and 8 washers. Important: Do not obstruct space between anchor plate and concrete base.

Anchor Plate

-Bolt Circle:
12 1/2" (318mm)

- Thickness:
3/4"(19mm)

- NOTE:
Bolt Circle Allowed:
8" to 12 1/2"
203mm to 318mm

		Type	**B1**
Qty	**1**	Pole	**[SPR5V-110]-12-CAP2-GFII-BKTX**

Description of Components:

Pole Shaft: Shall be made from a 5" (127mm) round high tensile carbon steel tubing, having a 0.250" (6.4mm) wall thickness, welded to both the bottom and top of the anchor plate.
Pole shaft complete with one (1) eyelet Through bolt for string light by others.
•One (1) eyelet at 180°, 3" from the top of the pole.

Maintenance Opening: The pole shall have a 2" x 4 1/2" (51mm x 114mm) maintenance opening centered 20" (508mm) from the bottom of the anchor plate, complete with a weatherproof aluminum cover and a copper ground lug.

Base Cover: Two-piece square base cover made from formed aluminum, mechanically fastened with stainless steel screws.

Pole Options: (**CAP2**) Optional Decorative Spheric Pole Cap, Overlap type. (GFI) Duplex receptacle, WR Weather Resistant, 120 volts, ground fault interrupter, **complete with an in-use weatherproof aluminum painted cover**. Possibility of padlock (Padlock not included). **15 amp., NEMA 5-15R.**

Note: A tenon will be provided when the luminaire or bracket does not fit directly on pole shaft. Tenon not shown on the drawing.

IMPORTANT: Lumec strongly recommends the installation of the complete lighting assembly with all of its accessories upon the anchoring of the pole. This will ensure that the structural integrity of the product is maintained throughout its lifetime.

Pole Weight: 150 lbs (68.2 kg)

LUMEC

Miscellaneous

Description of Components:

Hardware: All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Anchor Bolts: Anchor bolts made of ASTM F1554 grade 55 steel with a minimum yield strength of 55,000 psi. Nuts made of ASTM F1554-99 grade A steel or better. The thread adjustment is ANSI class 2B regardless of the diameter of the bolts. Washers made of ASTM grade F-844 steel or better. All galvanized parts are hot-dip galvanized with minimum requirement the ACNOR G-164 standard.

Finish: Color to be **black textured RAL9005TX (BKTX)** and in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

Warning: IMPORTANT 120 volt line needed on site for (GFI).

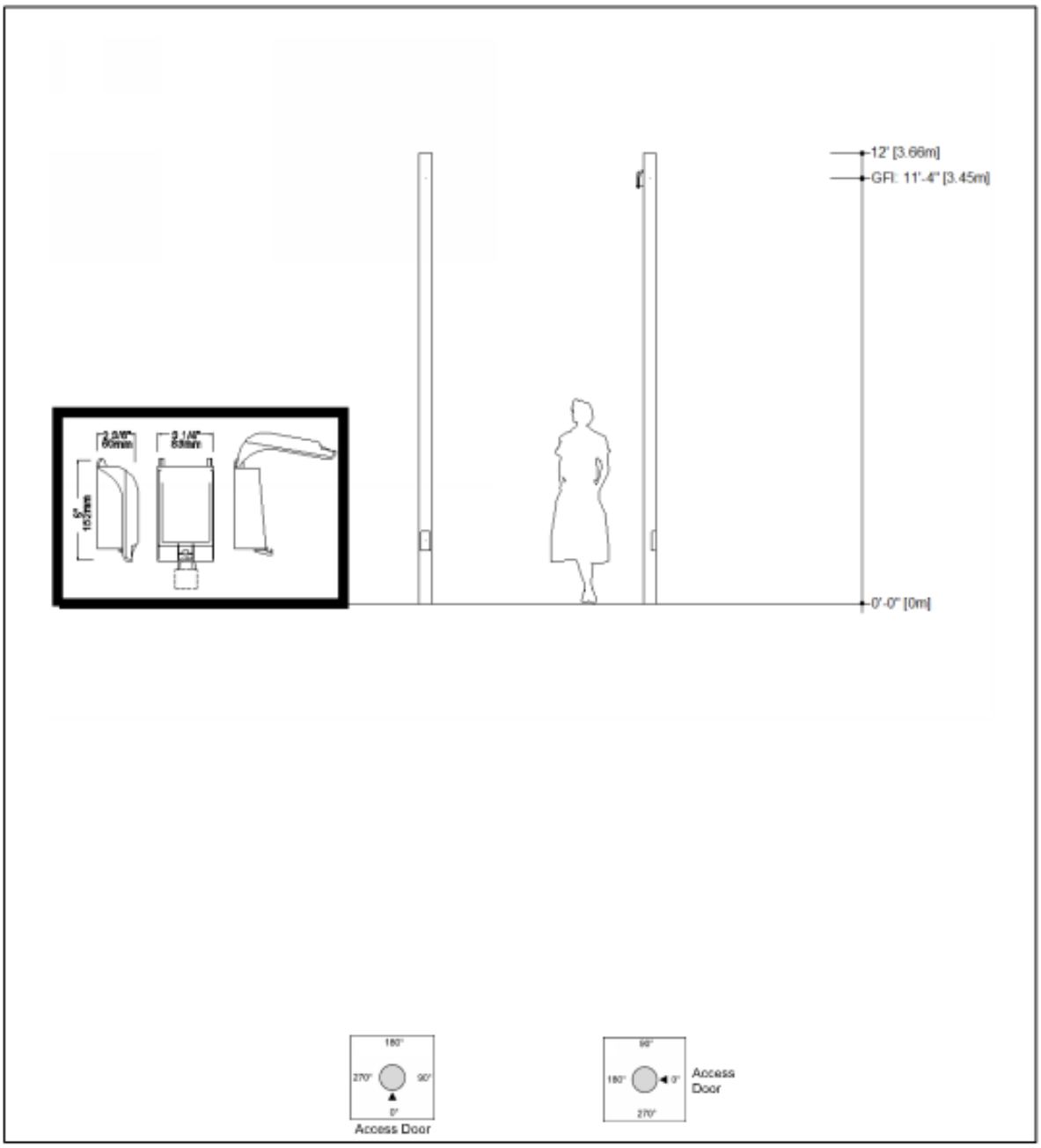
Quality Control: The manufacturer must provide a written confirmation of its ISO 9001 and ISO 14001 International Quality Standards Certification.

Mechanical resistance: This design information is intended as a general guideline only. The customer is solely responsible for proper selection of pole, luminaire, accessories and foundation under the given site conditions and intended usage. The addition of any other item to the pole may dramatically impact the wind load on that pole. It is strongly recommended that a qualified professional be consulted to analyze the loads given the user's specific needs to ensure proper selection of the pole, luminaire, accessories, and foundation. Lumec assumes no responsibility for such complete analysis or product selection. Failure to ensure proper site analysis, pole selection, loads and installation can result in pole failure, leading to serious injury or property damage.

Web site information details: / CSA Pole Certification

Parametric Options Illustration

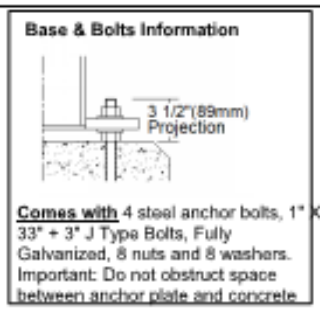
(schematic pole shown, for actual pole representation please refer to previous pages)

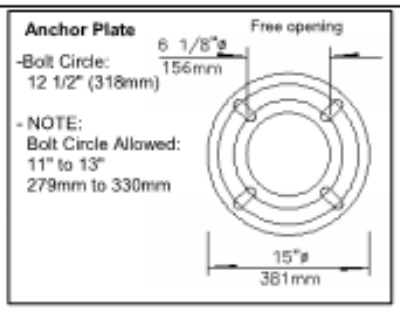


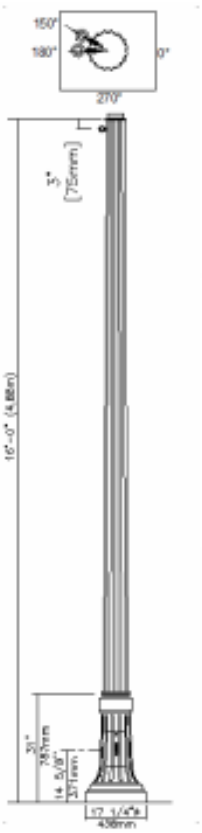
LUMEC

ITEM #1003676A, #1003677A, 1003678A

NAUGATUCK STREETSCAPE - DOWNTOWN SANITARY ZIP 06770 A & F (85126)







Qty	1	Type Pole	F1 **[R90D-073]-16-BLN1-CAP1-GFII-[TN-165]-BKTX**

Description of Components:

Pole Shaft: Shall be made from a 16 fluted round mandrel formed high tensile carbon steel tapered shaft, having a 0.120" (3.0mm) wall thickness, welded to the pole base.
Pole shaft complete with two (2) eyelets Through bolts for string lights by others.
•One (1) eyelet at 180°, 3" from the top of the pole.
•One (1) eyelet at 150°, 3" from the top of the pole.

Pole Base: Shall be made from a 6 5/8" (168mm) round high tensile carbon steel tubing base having a 0.180" (4.6mm) wall thickness, welded to both the bottom and top of the anchor plate.

Maintenance Opening: The pole shall have a 4 1/2" x 10" (114mm x 254mm) maintenance opening (without door), centered 14 5/8" (371mm) from the bottom of the anchor plate, and a copper ground lug.

Base Cover: Two piece round base cover made from cast 356 aluminum, complete with a cast-in access door, mechanically fastened with stainless steel screws.

Pole Options: (**BLN1**) Anchor plate accepting 1" (25mm) O.D. bolts.
(**CAP1**) Decorative Flat Pole Cap, Overlap type. (GFI) Duplex receptacle, WR Weather Resistant, 120 volts, ground fault interrupter, **complete with an in-use weatherproof aluminum painted cover**. Possibility of padlock (Padlock not included). **15 amp., NEMA 5-15R. (TN-165)**, comes with a 4" (102mm) OD by 1" (25mm) long tenon.

IMPORTANT: Lumec strongly recommends the installation of the complete lighting assembly with all of its accessories upon the anchoring of the pole. This will ensure that the structural integrity of the product is maintained throughout its lifetime.

Pole Weight: 130 lbs (59.1 kg)

LUMEC

ITEM #1003676A, #1003677A, 1003678A

Miscellaneous

Description of Components:

Hardware: All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Anchor Bolts: Anchor bolts made of ASTM F1554 grade 55 steel with a minimum yield strength of 55,000 psi. Nuts made of ASTM F1554-99 grade A steel or better. The thread adjustment is ANSI class 2B regardless of the diameter of the bolts. Washers made of ASTM grade F-844 steel or better. All galvanized parts are hot-dip galvanized with minimum requirement the ACNOR G-164 standard.

Finish: Color to be **black textured RAL9005TX (BKTX)** and in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

Warning: IMPORTANT 120 volt line needed on site for (GFI).

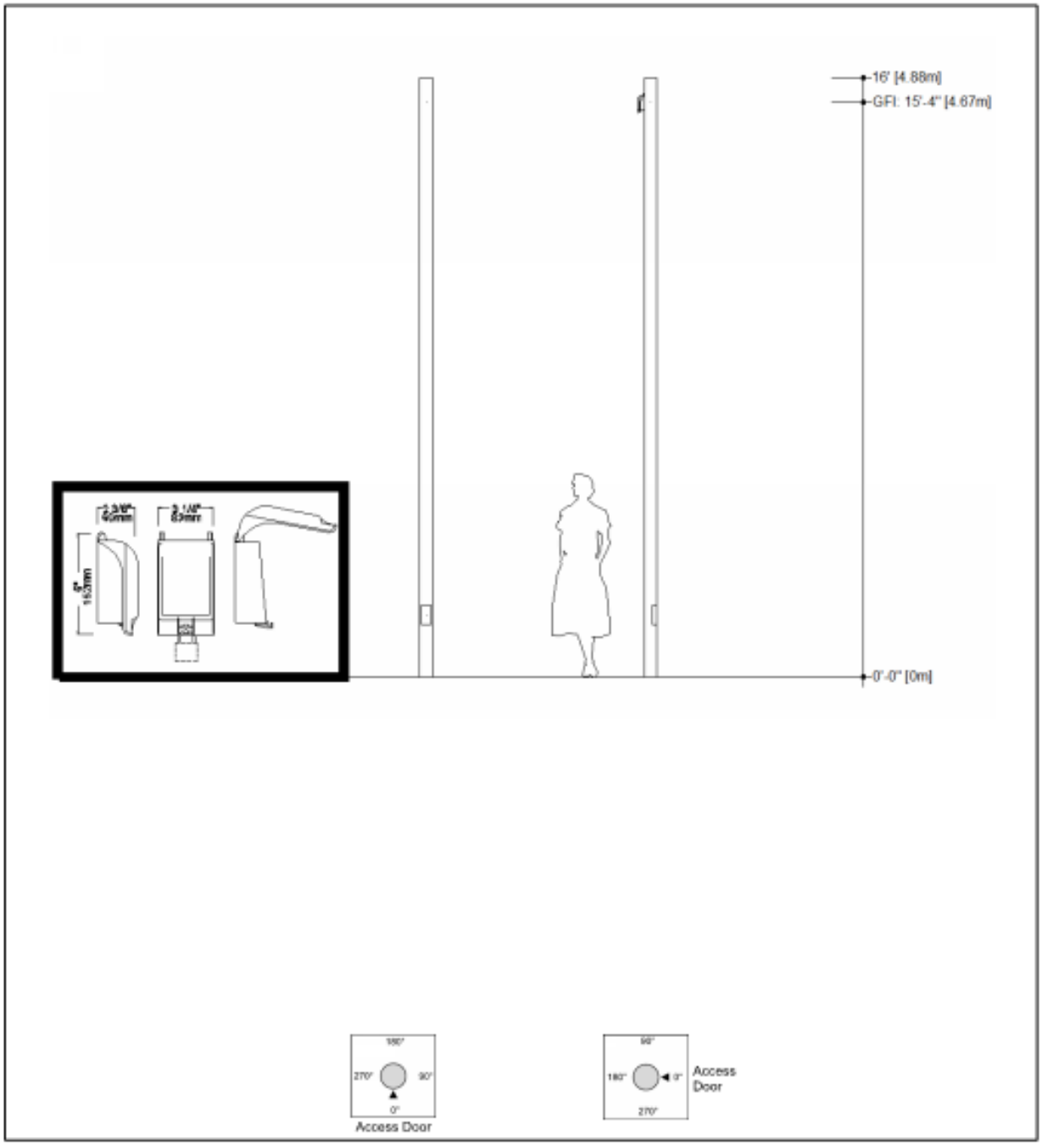
Quality Control: The manufacturer must provide a written confirmation of its ISO 9001 and ISO 14001 International Quality Standards Certification.

Mechanical resistance: This design information is intended as a general guideline only. The customer is solely responsible for proper selection of pole, luminaire, accessories and foundation under the given site conditions and intended usage. The addition of any other item to the pole may dramatically impact the wind load on that pole. It is strongly recommended that a qualified professional be consulted to analyze the loads given the user's specific needs to ensure proper selection of the pole, luminaire, accessories, and foundation. Lumec assumes no responsibility for such complete analysis or product selection. Failure to ensure proper site analysis, pole selection, loads and installation can result in pole failure, leading to serious injury or property damage.

Web site information details: / CSA Pole Certification

Parametric Options Illustration

(schematic pole shown, for actual pole representation please refer to previous pages)



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ITEM #1003676A, #1003677A, 1003678A

Core

NEW

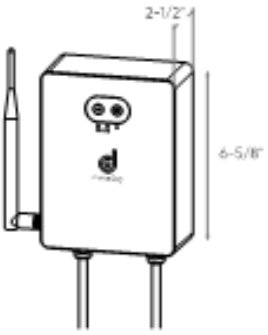
The heart of your connected landscape system. By adding the Core, you unleash the full potential of smart lighting.

ITEM #1003676A, #1003677A, 1003678A

Model

DCP-TR60

60W low-voltage smart transformer



Specifications

Constant voltage mode power supply
Protection: short circuit / Over voltage
Input voltage: 120VAC 60Hz
Output voltage: 24V DC
Output Power: 60W
Maximum recommended load: 80%
Operating temperature: -30°C to 45°C
Control with the Dals Connect app
Integrated Hub
Number of supported smart devices per hub: 128
Can be controlled locally (without internet)
Works with Dals Connect PRO devices
Secure connection
Can be used with a voice-controlled assistant
Supports Wi-Fi and BLE Mesh protocols
5-year warranty

Finish

BK Black

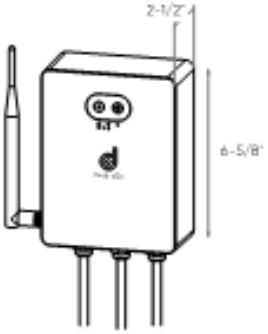
Download the Dals Connect app

Create groups
Set schedules
Remote access
Compatible with Google Assistant and Amazon Alexa

Model

DCP-TR200

200W low-voltage smart transformer



Specifications

Constant voltage mode power supply
Protection: short circuit / Over voltage
Input voltage: 120VAC 60Hz
Output voltage: 24V DC
Output Power: 2x 100W outputs
Maximum recommended load: 80%
Operating temperature: -30°C to 45°C
Control with the Dals Connect app
Integrated Hub
Number of supported smart devices per hub: 128
Can be controlled locally (without internet)
Works with Dals Connect PRO devices
Secure connection
Can be used with a voice-controlled assistant
Supports Wi-Fi and BLE Mesh protocols
5-year warranty

Finish

BK Black

Download the Dals Connect app

Create groups
Set schedules
Remote access
Compatible with Google Assistant and Amazon Alexa

ITEM #1003676A, #1003677A, 1003678A

ITEM #1003676A CATENARY LIGHT POLE FOUNDATION (12' H POLE)

ITEM #1003677A CATENARY LIGHT POLE FOUNDATION (16' H POLE)

Work under this item shall conform to the CTDOT Form 818 Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction, and supplemented as follows:

Description: This item shall consist of designing, furnishing, and installing a catenary light pole foundation of the type called for at the location and to the dimensions and details shown on the plans or as directed by the Engineer. The Contractor shall provide drawings and calculations stamped by a professional engineer registered in the state of Connecticut for a catenary light pole foundation to support the Catenary Light Pole & Luminaire -12' H under Item #1003674A and Catenary Light Pole & Luminaire -16' H under Item #1003675A.

Materials: The materials for the work shall be as specified in the following:

M.02.01 for Granular Fill
M.03 for Class PCC04460 Concrete
M.04.01 for HMA S0.375 Bituminous Concrete
M.06.01 for Bar Reinforcement
M.08.02-4 for Precast Concrete
M.13.01 for Topsoil
M.13.03 for Fertilizer
M.13.04 for Seed Mixture, if necessary, or as shown on the plans
M.13.05 for Mulch Materials
M.15.02 for Anchor Bolts
M.15.03 for Rock Anchors
M.15.09 for Electrical Conduit
M.15.15-7 for Ground Rods

Construction Method: The catenary light pole foundation shall be constructed in accordance with the pertinent provisions of 6.01.03. They may be precast, or cast-in-place based on accepted design. The final elevation of the top of the catenary light standard foundation shall be as shown on the plans or as directed by the Engineer. The top of the foundation shall be level in all respects. Concrete for foundation shall be placed monolithically against undisturbed soil for poured in place foundations. Necessary electrical conduit, anchor bolts, ground rod sleeves and ground rods shall be placed in proper position and shall be held in place by means of a template. The concrete may be placed against the sides of the excavation; however, the exposed portion of the foundations shall be formed to the neat lines as shown on the plans. When in the judgment of the Engineer, unusual soil conditions prevent excavation to neat lines as shown on the plans, the complete foundation shall be formed.

After the forms have been completely removed, the entire excavation shall be backfilled in accordance with 2.14. All conduits shall be capped with standard pipe caps before placing the concrete and shall remain capped until the cable is installed. Electrical conduit of the size

indicated shall extend 2 feet outside the foundation. All portions of the foundations which will remain exposed to view shall be finished to the satisfaction of the Engineer. Forms shall not be removed until after the concrete has hardened properly and not less than 24 hours after the concrete has been placed. The Contractor shall allow sufficient time for the foundation to cure before placing any strain on the foundation. Steel poles shall not be installed until a minimum of seven days after the concrete has been placed and a minimum of ten days before making span wire attachments thereto. Light poles shall not be installed until 10 days after the concrete has been placed.

Where a foundation is placed within or adjacent to a concrete sidewalk, the entire section of sidewalk between joints shall be replaced in accordance with 9.21, unless otherwise directed by the Engineer.

Method of Measurement: This item shall be measured for payment by the number of units installed and accepted. This measurement shall include the electrical conduit sweeps which shall extend 2 feet outside of the foundation.

Basis of Payment: This work shall be paid for at the Contract unit price each for "Catenary Light Pole Foundation (12' H Pole)", "Catenary Light Pole Foundation (16' H Pole)", complete in place, which price shall include design, coordination, all materials, equipment, forms, excavation, disposal of surplus material, concrete, electrical conduit sweeps, conduit caps, ground rod, sleeves, bonding bushings, anchor bolts, backfill, restoration of pavement surfaces, tools, and labor incidental thereto.

Catenary Light Pole & Luminaire -12' H shall be paid under Item #1003674A
Catenary Light Pole & Luminaire -16' H shall be paid under Item #1003675A.

Pay Item	**Pay Unit**
Catenary Light Pole Foundation (12' H Pole)	ea.
Catenary Light Pole Foundation (16' H Pole)	ea.

ITEM #103906A – REMOVE LIGHT STANDARD

Description: Under this item the Contractor shall remove and existing light standard with transformer base, bracket, and luminaire as indicated on the plans or as directed by the Engineer. The light standard, transformer base, bracket, luminaire, and associated wire, conduit, and handholes removed shall remain the property of the Borough.

Construction Methods: The Contractor shall disconnect power and make safe, remove a light standard, transformer base, bracket, and luminaire, where required. The removed material shall remain the property of the Borough.

Method of Measurement: This work will be measured for payment by the number of light standards with associated equipment removed and provided to the Borough.

Basis of Payment: This work will be paid for at the contract unit price for "Remove Light Standard" complete, which price shall include the removal of a light standard with associated transformer base, bracket, luminaire, lamp, cable and hardware, delivering, hauling, and including all materials, tools, equipment, labor and work incidental thereto.

Pay Item	Pay Unit
Remove Light Standard	ea.

ITEM #103912A – REMOVE CONCRETE LIGHT STANDARD BASE

Description: Under this item the Contractor shall remove the existing concrete light standard base where shown on the plans or as directed, including all conduit, handholes, and wiring. The removed concrete base shall remain the property of the Contractor.

Construction Methods: The Contractor shall disconnect power and make safe. The Contractor shall remove a concrete light standard base where required. The removed base shall be properly disposed of by the Contractor. The hold shall be backfilled and graded to match surroundings, unless otherwise noted on the plans.

Method of Measurement: This work will be measured for payment by the number of concrete light standard bases removed and disposed of, complete and accepted.

Basis of Payment: This work will be paid for at the contract unit price for "Remove Concrete Light Standard Base", which price shall include all materials, equipment and work incidental thereto including excavation, removal, backfill when necessary, hauling and disposing of the concrete base.

Pay Item	Pay Unit
Remove Concrete Light Standard Base	EA.

ITEM #1050114A – HIGH RESOLUTION LED FULL COLOR VARIABLE MESSAGE SIGN 3'X5' SINGLE SIDED

Description:

1. **Summary:**
   The work included in this item shall consist of furnishing and installing a single sided high resolution LED full color variable message sign 3' x 5' nominal dimensions as shown on the plans or as directed by the Engineer, including structural frame, cabinet, electrical power supply, conduit and wiring, meter, and remote access connection.

2. **Submittals:**
   Product Data: Manufacturer's data sheets on each product to be used, including:
   a) Preparation instructions and recommendations.
   b) Storage and handling requirements and recommendations.
   c) Installation methods.
   d) Instructions for use.

   Shop Drawings: Complete details of layout and assembly, showing member sizes and part identification, fasteners, anchors, and fittings.

   Delegated-Design Submittal: For structural frame support of the variable message sign and threaded bar connections for the variable message sign structural support frame to be placed on the Granite Sign Wall, including analysis data signed and sealed by the qualified professional engineer, licensed in the State of Connecticut, responsible for their preparation.

   Manufacturer's Certificates: Certify products meet or exceed specified requirements.

   Manufacturer's warranties.

Material:

1. **Variable Message Sign, single face, full color 8mm LED:** Basis of Design Standard is Model GT6X-90x80-8-RGB-SF as manufactured by Daktronics, Bookings, SD www.daktronics.com

   a) Cabinet Dimensions: 2'-11" H x 5'-1" W x 7" D
   b) Including cabinet frame, power supply, conduit, wiring and meter.
   c) Remote access device for programming.

2. **Sign frame/support structure**
   a) Structural framework to support the sign as dimensioned in the drawings and as provided by the delegated design engineer.

b) Framework to be constructed from steel angle iron.
c) Structural connection of sign frame to be anchored through granite sign wall coping into granite sign wall block.
d) Anchor bolts to be stainless steel threaded rod, anchored a minimum of 12" into the granite wall base block, and secured with a non-shrink, non-metallic epoxy grout.

3. **Sign frame skin**
   a) sign frame structure to be covered in a skin of 1/8" sheet metal, covering the top, back and sides of the sign support frame.
   b) skin to be primed and painted with two coats of paint to match the Borough of Naugatuck standard "Garnet Red" color.

Construction Methods:

Construct sign support structure per the plans and details and per the delegated design engineer's requirements.

Install variable message sign in accordance with manufacturer's instructions at location as directed by the Engineer.

Method of Measurement:

This work will be measured for payment as lump sum for high resolution LED full color variable message sign 3' x 5' single sided furnished and installed at location where proposed, with such work as directed and accepted by the Engineer, including the support structure and anchoring.

Basis of Payment:

The variable message sign will be paid for at the contract lump sum for "HIGH RESOLUTION LED FULL COLOR VARIABLE MESSAGE SIGN 3'X5' SINGLE SIDED" which price shall include all materials, equipment, tools and labor incidental thereto including furnishing and installation.

Pay Item	**Pay Unit**
HIGH RESOLUTION LED FULL COLOR VARIABLE MESSAGE SIGN 3'X5' SINGLE SIDED	LS

ITEM#1106003A- 1 WAY PEDESTRIAN SIGNAL PEDESTAL MOUNTED WITH PUSHBUTTON

Description: This item shall consist of:

1. Removal of existing pedestrian signal, pushbutton, and sign from span pole, including coordination with utility, electrical and control wiring disconnect and removal, decommissioning, sealing penetrations, and delivering equipment to the Owner or disposal as directed by the Engineer;

2. Furnishing and installing a functional pedestal mounted pedestrian signal and foundation with pedestrian pushbutton and sign complete, as shown on the drawings, including electrical and control conduit, tie-in to existing power and control wiring, commissioning, and testing as directed by Engineer.

Materials: 1 Way Pedestrian Signal for this work shall meet requirements of M.16.07 and contract drawings. The pushbutton and sign shall meet the requirements of M.16.08, CTDOT Standard Details, and contract drawings.

Construction Methods: Each completely assembled pedestrian signal until shall be installed as follows:

Each pedestrian signal shall be erected vertically in accordance with the specific type of mountings shown on the plans. Each signal face shall be pointed in the direction of the approaching pedestrian traffic it is intended to control.

During construction, and until the signals are placed in actual operation, the signal housing shall be hooded. Every part of the signal head shall be at least 12 inches behind outer edge of the shoulder of the road.

The audible pedestrian signal shall be attached to a traffic signal assembly, using standard hardware as shown on the plan. The volume shall be adjusted to a minimum sound level that can be heard throughout the intersection, or as directed by the Engineer. The 120 VAC signal output shall be connected to a conflict monitor input and shall conflict against all opposing movements.

A pushbutton advisory sign 9 inches × 12 inches shall be attached to the saddle as indicated in the case of the pedestal mounted pushbutton or directly to the controller cabinet in the case of a surface mounted pushbutton installed on the side of a controller cabinet. The pushbutton and sign shall be installed on the crosswalk side of a pole or pedestal perpendicular to the direction of walking. A 1/8 inch aluminum backing plate measuring 9 inches × 12 inches shall be used with all pole or pedestal mounted advisory signs that have a pushbutton casting which is smaller in dimension than the 9 inch × 12 inch sign that is being attached. The backing plate shall conform exactly to the shape of the sign. When the pushbutton casting is as large as the 9 inch × 12 inch sign being attached, the aluminum backing plate will not be required. All buttons shall be

furnished with enough No. 16 AWG THWN or THHN stranded wire to make a connection in the walk fixture or in the base of the aluminum pedestal, whichever applies.

Warranty: Provide a warranty five years from date ownership is accepted.

Method of Measurement: The quantity to be paid for this item will be the number of pedestrian signal pedestal mounted with push button and sign installed complete, of the type specified, operating, and accepted.

Basis of Payment: This work will be paid for at the Contract unit price each for "1 Way Pedestrian Signal Pedestal Mounted with Pushbutton" which price shall include all materials, housing, optical unit, visor, pushbutton, sign, pedestal, foundation, conduit and wiring, electrical and control, miscellaneous fittings and parts, equipment, paint and painting, labor, removal and disposal of existing and work incidental thereto.

Pay Item	**Pay Unit**
1 Way Pedestrian Signal Pedestal Mounted with Pushbutton	Ea.

ITEM NO. 1206023A - REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Article 12.06.01 – 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.

Article 12.06.03 – 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 Town.

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.

Article 12.06.04 – 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.

Article 12.06.05 – 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.

Pay Item	Pay Unit
Removal and Relocation of Existing Signs	l.s.

1209431A – IMPRESSED THERMOPLASTIC PAVEMENT LINE – 4" WHITE

1209441A – IMPRESSED THERMOPLASTIC PAVEMENT LINE – 4" YELLOW

1209467A – IMPRESSED THERMOPLASTIC LEGENDS, ARROWS AND MARKINGS

1210105A – IMPRESSED PREFORMED THERMOPLASTIC PATTERN

Description: This item shall consist of a durable imprinted aggregate reinforced preformed thermoplastic pavement marking system (herein "System") that provides a textured, highly attractive and durable topical treatment to the surface of asphalt pavement. The work shall consist of furnishing, preparing and installing the system in the locations and to the dimensions and details shown on the plans or as ordered and in accordance with these specifications.

Materials: Preformed thermoplastic material must be composed of an ester modified rosin impervious to degradation by motor fuels, lubricants, etc. in conjunction with aggregates, pigments, binders, and anti-skid/anti-slip elements. Pigments and anti-skid/anti-slip elements must be uniformly distributed throughout the material. The material conforms to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, being non-reflective, and being of a color different from white or yellow. The System shall be provided in accordance with and manufactured by TrafficPatternsXD by Ennis Flint, 4161 Piedmont Parkway, Suite 370, Greensboro, NC 27410, 1-800-331-8118, or approved equal.

The "Impressed Preformed Thermoplastic Pattern" selected color shall be "Colonial Brick" and the pattern shall be "Offset Brick with Soldier Course".

1. **Pigments:** White pigment material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected. All other color pigment systems must not contain heavy metals nor any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

2. **Skid Resistance:** The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.

3. **Slip Resistance:** The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum static coefficient of friction of 0.6 when tested according to ASTM C 1028 (wet and dry), and a minimum static coefficient of friction of 0.6 when tested according to ASTM D 2047.

4. **Thickness:** The material must be supplied at a minimum thickness of 150 mil (3.8mm).

5. **Environmental Resistance:** The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.

6. **Storage Life:** The material may be stored for 12 months, if stored indoors and protected from the elements.

7. **Transverse Lines to Supplement System Application:** Supplied as white, retroreflective preformed thermoplastic line stripe material in 90 mil (2.3mm) or 125 mil (3.2mm) thicknesses, material is available in 6 in. (.15m), 8 in. (.20m) or 12 in. (.30m) widths. This preformed thermoplastic material may be supplied and applied by the certified applicator in conjunction with the System, and is available from the System manufacturer.

Construction Methods:

1. Specialized Application Equipment

a) **Stamping Templates:** A wire rope template is required in the execution of the System. The template is used for imprinting the defined pattern once the preformed thermoplastic has been applied. The wire rope diameter for the imprinting template used for the specified pattern is 3/8 in. (9.5mm). The stamping templates are distributed by the System manufacturer.

b) **Heating Equipment:** The System manufacturer shall distribute reciprocating infrared heating equipment designed specifically to elevate the temperature of the preformed thermoplastic material and asphalt pavement without adversely affecting it. The primary heating unit must employ a bank of propane-fired infrared heaters, mounted on a track device that allows the heater bank to reciprocate back and forth over a designated area, thereby allowing the operator to monitor the temperature of the preformed thermoplastic at all times during the pavement heating process.

A smaller, mobile infrared heater distributed by the System manufacturer is designed specifically to heat areas such as borders and narrow areas that are inaccessible to the primary heaters. This secondary heater also allows the operator to monitor the temperature of the preformed thermoplastic at all times during the heating process.

An approved hand-held propane heat torch distributed by the System manufacturer shall be used to heat isolated areas of the preformed thermoplastic.

c) **Sealer:** A two-part epoxy sealer specified and distributed by the System manufacturer must be applied to the substrate prior to material application to ensure proper adhesion, and to provide reinforcement for larger volumes of material.

d) **Specialized Sealer Dispensing Gun:** Used to dispense the required two-part epoxy sealer onto the substrate. The sealer dispensing guns are distributed by the System manufacturer.

e) **Hand-Held Finishing Tool:** Enables the applicator to complete the imprinting of the thermoplastic in areas around permanent structures, such as curbs and manhole covers, which may be inaccessible to the stamping template. The hand-held finishing tools are distributed by the System manufacturer.

f) **Aggregate:** Supplemental anti-skid/anti-slip elements to be applied to the surface of the molten thermoplastic as needed, if the factory applied anti-skid/anti-slip elements embed too deeply into the surface of the molten thermoplastic material during the heating process. (Embedded aggregate is exposed upon wear for extended skid resistance.) The aggregate is distributed by the System manufacturer.

g) **Air Powered Spray Hopper:** Used to spray supplemental anti-skid/anti-slip elements (aggregate) on the surface of the molten preformed thermoplastic in a uniform manner. The air powered spray hoppers are distributed by the System manufacturer.

h) **Vibratory Plate Compactor (700-900 lb.):** Shall be used for pressing the 3/8" (9.5mm) wire rope stamping templates into the thermoplastic to create the specified pattern in both the thermoplastic and asphalt substrate. The System manufacturer does not supply vibratory plate compactors.

2. Application (Asphalt Substrate Only):

a) **Manufacturer Certified Applicator Requirement:** The System shall be supplied and applied only by an applicator certified by the System manufacturer. The applicator shall provide proof of current certification before commencing work. The Certified Applicator shall follow the System manufacturer's current published application procedures.

b) **Substrate Condition:** The System must only be applied to a stable, high quality asphalt pavement substrate over a stable base that is free of defects, as per the manufacturer published Substrate Guide. The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

c) **Procedure:** The System is applied to asphalt pavement using proprietary reciprocating infrared heating equipment. The material must be able to be applied at ambient and road temperatures down to 45°F(7°C) without any preheating of the pavement to a specific temperature. A two-part epoxy sealer specified by the manufacturer must be applied to the substrate prior to preformed thermoplastic application. Immediately following sealer application, the panels of aggregate reinforced preformed thermoplastic are positioned properly on the asphalt substrate with the aggregate side facing up. The preformed thermoplastic is then heated to the required melting temperature. Additional aggregate may

be applied to the preformed thermoplastic surface as needed following the melting process. As the material is cooling, it is imprinted with a stamping template made from 3/8 in. (9.5mm) flexible wire rope in the required design using a vibratory plate compactor. The preformed thermoplastic material is then allowed to cool thoroughly before being opened to vehicle or pedestrian traffic. (Consult the manufacturer's published application procedures for complete information).

The System shall not be applied to Portland Cement Concrete.

Method of Measurement: This work will be measured for payment by the actual number of Linear Feet of completed and accepted Impressed Thermoplastic Pavement Line – 4" White, Linear Feet of completed and accepted Impressed Thermoplastic Pavement Line – 4" Yellow, Square Feet of completed and accepted Impressed Thermoplastic Legend, Arrows and Markings and Square Feet of completed and accepted Impressed Preformed Thermoplastic Pattern.

Basis of Payment: This work will be paid for at the contract unit price per:
Linear Feet for "Impressed Thermoplastic Pavement Line – 4" White" complete in place,
Linear Feet for "Impressed Thermoplastic Pavement Line – 4" Yellow" complete in place,
Square Feet for "Impressed Thermoplastic Legend, Arrows and Markings" complete in place,
Square Feet for "Impressed Preformed Thermoplastic Pattern" complete in place.

Pay Item	**Pay Unit**
Impressed Thermoplastic Pavement Line – 4" White	l.f.
Impressed Thermoplastic Pavement Line – 4" Yellow	l.f.
Impressed Thermoplastic Legend, Arrows and Markings	s.f.
Impressed Preformed Thermoplastic Pattern	s.f.

ITEM #1302047A – RESET GATE BOXES

Description: The Contractor shall adjust to final grade, the gate boxes and cover appurtenant to the water and gas mains as required and furnish and install extension rings, extension stems, air valve extensions, covers, and additional top and bottom section id necessary, as shown on the Contract Drawings or as directed by the Engineer in accordance with these specifications.

Connecticut Water Company and Eversource Gas shall be contacted a minimum of 48 hours prior to initiating the adjustment of any water or gas gate boxes so that an inspector can be provided for this work. The Contractor shall contact Connecticut Water Company and Eversource Gas to arrange an inspector for this work.

Materials: The Contractor shall furnish standard Connecticut Water Company and Eversource 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 valve boxes, remove the box if necessary, reinstall the present valve box if useable, 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 valve box.

Extension stems will be required if the gate box is raised 24-inches or more. Extension stems shall be fabricated according to Connecticut Water Company and Eversource Gas standards.

Any damage done to Connecticut Water Company or Eversource Gas facilities by the Contractor shall be repaired ore 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, cover, and additional top of 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 for "Reset Gate Boxes" complete in place, which price shall include the cost for 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.

Pay Item	Pay Unit
Reset Gate Boxes	ea.

ITEM #1400201.1A SANITARY LATERAL INSPECTION AND CLEANING (AS DIRECTED)

Description: Work under this item consists of:

1. Furnishing all plant, labor, equipment and materials, as well as performing all operations associated with pipeline cleaning within the pipelines indicated on the Drawings in accordance with these provisions.

2. Furnishing all plant, labor, equipment and materials, as well as performing all operations associated with pre and post construction closed-circuit television inspection in NASSCO LACP format of the pipelines indicated on the Drawings in accordance with these provisions.

3. Coordinating with the Engineer to rehabilitate service laterals based on the inspection findings.

Materials:

1. Cleaning

   A. Contractor shall use mechanical, hydraulically-propelled, and/or high-velocity cleaning equipment, which does not exert internal pressures great enough to damage the pipelines and associated structures. Selection of the cleaning equipment shall be based on the condition of the pipeline at the time work is scheduled to commence.

   B. Equipment shall include, at a minimum, the following:

      1. Motorized equipment complete with belt booster clutch, overload clutch or other means or devices that shall prevent damage to the pipeline and associated structures. Direct drive shall not be permitted.

      2. Standard mechanical equipment including a combination of rodding machines, boring machines, bucket machines, hydraulic balls, B-liners, cones, ferrets or similar equipment. Direct drive shall not be permitted.

      3. High pressure, hydraulically-propelled equipment and chemical compounds as approved by the Engineer.

      4. Mechanical cutting devices suitable for the removal of roots, gaskets, protruding lateral connections, etc.

      5. Footage metering devices for location of all equipment, devices and points of reference on measuring target that is known at all times at the ground level.

2. Closed-Circuit Television Inspection

A. Camera and vehicle assembly:

1. Industry standard for internally inspecting pipelines within the range of diameters applicable to this project.

2. Remote–controlled, robotic assembly capable of viewing 360^{o} of pipeline interiors. At areas of interest, camera shall be capable of rotating its lens to obtain a more direct viewing angle.

3. Capable of operation in 100 percent humidity conditions.

4. Capable of being moved through the pipeline in either direction at a slow rate by means of manual cable winches or motorized mechanical equipment of indirect drive type.

5. Capable of slowing down and stopping at areas of interest.

6. Provide high intensity light feature for recording purposes.

7. Capable of measuring the camera's position within the pipeline accurate 0.10 feet.

B. During the internal inspection of pipelines, the Owner and the Engineer shall have the ability to view the pipe interior as it is being inspected on a TV monitor set up in a remote location.

C. Electronic Video and Voice Recording:

1. Video and data recordings must, by electronic means, display continuously and simultaneously generated transparent digital information to include the date, time, pipeline section number, corresponding station numbers and direction of camera relative to flow. Data shall be collected and submitted in NASSCO LACP format.

Example: Time: 4:14:08 PM
Date: 5/7/02

ELM ST.
MH #2 to MH #3 (Downstream)
PIPEID
STATION 2+50.7

2. Inspections shall be documented digitally and transferable by digital methods. The CCTV camera and illumination system shall be capable of providing a clean, accurate color and in-focus record of the sewers internal condition.

D. Advanced technologies:

1. Contractor may utilize an alternative method of internal inspection, such as digital systems, provided the method meets the minimum requirements indicated herein and provided it is acceptable to the Owner and the Engineer.

Construction Methods:

1. Quality Assurance:

   A. The Contractor cleaning and internally inspecting the pipeline shall have completed at least three (3) projects of similar size and complexity as this project in the United States within the past three (3) years. Contractor may employ the services of a subcontractor that specializes in this work to fulfill this requirement.

   B. CCTV operator shall have a current certification by NASSCO in Lateral Assessment Certification Program (LACP).

   C. Rejection of any subcontractor and/or manufacturer by the Engineer due to insufficient qualifications shall not be grounds for modifications to the Contract Documents such as change in scope, time of completion or contract amount.

   D. All Contractor's personnel entering pipeline or access structures shall be Confined Space Entry trained per OSHA, Title 29 CFR 1910.46 and shall have a copy of their certification available on site at all times.

2. General Requirements:

   A. Contractor shall perform all work in accordance with municipal, state and federal requirements including OSHA.

   B. Contractor shall obtain relevant permits required to perform work prior to the commencement of construction at no additional cost to the Owner.

   C. Contractor shall locate, uncover and open all manholes and/or access structures required to complete the work.

   D. Contractor shall maintain existing flows around the work during cleaning and inspection operations.

3. Pipeline Cleaning:

   A. Contractor shall clean the pipeline to facilitate inspection and construction.

   B. Contractor shall protect the pipeline from damage that could be inflicted by use of cleaning equipment. Any damage inflicted, regardless of technique, shall be repaired by the Contractor to the satisfaction of the Owner, at no additional cost to the Owner.

C. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials that may cause an obstruction or impede the inspection and/or construction shall be removed and disposed off site during cleaning operations in watertight containers in conformance with all applicable federal, state and municipal laws and regulations, at no additional cost to the Owner. This shall also include all materials that will not cause an obstruction or impede the inspection and/or construction.

D. If during cleaning operations an obstruction is encountered, the Contractor shall prosecute cleaning operations from both the upstream and downstream directions. Should the obstruction prevent the pipeline from being cleaned, the Engineer shall be notified immediately. If, in the opinion of the Engineer, a point repair is required to facilitate cleaning, Contractor shall perform the repair and clean through said repair upon its completion. No additional compensation shall be paid to the Contractor for any portion of the pipe which requires re-cleaning after successful completion of the repair.

E. Contractor shall limit the use of water from hydrants to operations pertaining only to pipeline cleaning or other operations allowed in these provisions. If water from fire hydrants is deemed necessary by the Contractor to avoid delay in normal work procedures, the water shall be conserved.

F. No fire hydrants shall be obstructed at any time, nor shall a hydrant be used for the work described in these Contract Documents, unless a reduced pressure backflow preventor is furnished and installed by the Contractor and prior approvals have been obtained from the Owner and Municipal Fire Department. The Contractor shall be responsible for all related costs for the set-up, including the cost of water usage unless prior approvals have been obtained from the Owner and Municipal Fire Department and say otherwise.

G. Contractor shall re-clean the pipeline, if in the opinion of the Engineer, materials have washed into the pipeline after acceptance of the cleaning and prior to construction at no additional cost to the Owner.

4. Closed Circuit Television Inspection

A. Sewer inspection camera operators shall have successfully completed the NASSCO Pipeline Assessment Certification and provide copies of completion certificates to the Engineer.

B. Contractor shall inspect and record sewer pipe and assess the condition of the pipe according to NASSCO Pipeline Assessment defect coding standards. Contractor shall stop and focus the camera at locations where one or more of the following points of interest are observed, but not limited to:

1. Inflow/Infiltration sources.

2. Construction defects, discolorations, wrinkles, etc.

3. Structural defects including broken pipe, collapsed pipe, cracks or abnormalities.

4. Abnormal joint conditions such as root intrusion, protruding lateral connections, in-line pipe size changes and/or material changes.

5. Mineral deposits, grease, obstructions, etc.

6. Lateral connections; plugged or open.

7. Offset joints or misalignments:

    a. Manholes, access structures, etc.

8. Any other locations where the conditions may affect construction operations.

9. Any other location as required by the Engineer.

C. If, in the opinion of the Engineer, certain conditions may impede construction, Contractor shall perform a point repair.

D. The Contractor shall provide and maintain access to the system, including inflow control and dewatering within pipelines and associated structures as well as all other work required to perform the internal inspections to the satisfaction of the Engineer.

5. Inspection Reports

A. At the conclusion of each internal inspection, the Contractor shall provide a summary report highlighting results of the investigations and summarizing conditions and points of interest as specified herein. All documentation shall be cross-referenced by stationing to enable the reviewer to identify a particular location.

B. The post construction inspection report shall detail the condition of constructed items and describe recommendations for repairs of any defects.

1. All areas where the construction is defective due to workmanship, chemical deterioration, or other, shall be identified by the Contractor.

2. If repairs are required, the Contractor shall produce a second post construction inspection report.

6. Acceptance

A. Acceptance of the pipeline cleaning shall be made upon the successful completion of the television inspection. If, in the opinion of the Engineer, cleaning has not been completed in accordance with these provisions, the Contractor shall be required to re-clean and re-inspect the pipe until the cleaning is shown to be satisfactory, at no additional cost to the Owner. The Engineer may require the Contractor to pull a double squeegee (with each squeegee the same diameter as the pipe) through each manhole section as evidence of adequate cleaning.

B. Internal inspection operations, both pre and post construction, shall be considered for acceptance upon receipt by the Engineer of the following:

1. Two (2) hard copies of the internal inspection reports.

2. Two (2) electronic copies of the internal inspection reports (PDF) showing pipelines and associated structures as well as video inspections.

Method of Measurement:

This work will be measured for payment by the linear foot of pipe as directed and accepted by the Engineer measured along the invert of the existing pipe. Rehabilitation directed as a result of inspection findings shall be measured and paid for under the corresponding pay item(s).

Basis of Payment:

This work will be paid for by the linear foot of "Sanitary Lateral Inspection and Cleaning (As Directed)". Payment will not be made for inspection performed but not directed by the Engineer.

Pay Item	**Pay Unit**
Sanitary Lateral Inspection and Cleaning (As Directed)	l.f.

ITEM #1400201.2A CURED-IN-PLACE LATERAL LINING 4" (SANITARY SEWER – AS DIRECTED)

ITEM #1400201.3A CURED-IN-PLACE LATERAL LINING 6" (SANITARY SEWER – AS DIRECTED)

Refer to Item #1400201.1A for Service Lateral Inspection and Cleaning.

Description: Work under this item consists of the following as shown on the plans and as directed by the Engineer:

1. Measuring the interior of the lateral pipe to be lined.

2. Grout sealing of leaks which may interfere with installation and/or curing of the lines. Sealing shall include all required materials including packers.

3. Furnishing all plant, labor, equipment and materials as well as performing all operations associated with the installation of cured-in-place pipelining (CIPP) inside the existing lateral pipeline where indicated on the Drawings and in accordance with municipal, state and federal requirements, including OSHA, and these Specifications.

4. Performing the work in a sequence that is the least disruptive to vehicular and pedestrian traffic and in a manner that shall protect the public from damage to persons and property within the limits and for the duration of the work.

5. Handling and disposal of discharge water from the CIPP curing operation.

Quality Assurance:

1. The Contractor shall have a minimum five (5) year history of satisfactory performance in the CIPP lateral lining industry, and a minimum of two (2) years continuous experience installing CIPP lateral lining in service pipes of similar size, length, and configuration as proposed in this project.

2. Supervisory personnel shall have a minimum of five (5) years' experience and shall have completed at least three (3) projects of similar size and complexity as this project in the United States within the past five (5) years. Resume information shall include, at a minimum, educational background, the number of years in a supervisory capacity and a list of completed projects within the past five (5) years, including project description, complexity and contract total amounts.

3. Rejection of any subcontractor and/or manufacturer by the Engineer due to insufficient qualifications shall not be grounds for modifications to the Contract Documents such as change in scope, time of completion or contract amount.

4. Designated supervisory personnel shall be directly involved with and used on this project. Substitutions of personnel will not be allowed without written authorization of the Engineer.

5. All Contractor's personnel entering pipeline or access structures shall be Confined Space Entry trained per OSHA, Title 29 CFR 1910.46 and shall have a copy of their certification available on site at all times.

Submittals:

A. Product data submittals required for all rehabilitation lateral lining systems proposed for installation under this contract shall include Shop drawings and/or manufacturer's descriptive literature indicating materials, equipment and methods to complete lateral CIPP operations.

1. System material type and manufacturer to be used including: catalog data sheets, ASTM references, material composition, manufacturers recommended specifications, component physical properties and chemical resistance.

2. Manufacturer's detailed description of the recommended procedures for handling and storing materials.

3. Manufacturers detailed description of the recommended system installation process.

4. Copies of independent testing performed on the CIPP liner composite verifying the product meets the requirements as specified in these contract documents and the manufacturers design.

5. Submittal of all quality assurance documentation and test reports for system installed. (After Rehabilitation Completion)

6. CIPP wall thickness design calculations based upon ASTM F1216 assuming Fully Deteriorated conditions, as specified by the Owner. The designs will be stamped by a Professional Engineer registered in the State of Massachusetts.

7. Wetout/cure logs per liner providing details pertaining to the resin type and quantity, catalyst type and quantity, tube type, installation pressures, temperatures and times (as applicable to the curing lateral lining system utilized), and pertinent Owner/User project specific data.

8. Material Safety Data Sheets (MSDS's) for all materials used during preparation and installation.

9. Certification stating that the Contractor is fully licensed by the lateral CIPP manufacturer (if different).

10. Method(s) and equipment for repairs of any uncured areas, defects, test sample section repairs or other deformities in the completed product.

11. Certified copies of all test reports on the properties of the selected resin by the material manufacturer indicating that the supplied materials conform with the design criteria.

12. Third party testing of the physical properties, corrosion resistance and sealing method.

13. Description of odors anticipated as a result of the curing process and methods to mitigate odors to prevent migration outside of the pipeline.

14. Confined Space Entry Certifications for all Contractor's personnel entering pipeline or access structures.

15. Health and Safety plan detailing the site specific safety requirements.

16. Qualifications of the proposed system to meet the requirements of the Contract.

B. Contractor shall submit complete documentation of qualifications as specified herein.

C. Contractor shall submit a work plan to include the following items:

1. Name, business address and telephone number of the CIPP installer and/or manufacturer (if different from the Contractor) and certification from the CIPP manufacturer that the Contractor is licensed/certified for installation of the product.

2. List of names and phone numbers of all supervisory personnel involved with the CIPP installation including at least one employee that is available 24 hours a day, seven days a week.

3. Details and description of construction methods and any intended variances from the specified methods, materials, equipment, and process description, including on-site or off-site tube wet out, insertion procedure, curing and cool down procedure, access structures details, water sources and method of cure-water/steam discharge, if applicable.

4. Proposed procedures for quality control, product sampling and testing shall be defined.

5. Proposed methods for product performance controls, including method of and frequency of product sampling and testing as applicable.

6. Description of surface activities including access structures and staging.

7. Construction method(s) and equipment used to penetrate blockages and/or partially collapsed sections of the existing pipeline.

8. Method(s) of repair for each location requiring a point repair.

7. Detailed action plan and description of techniques and equipment used in the event of odor migration into public and/or private property (indoors as well as outdoors).

8. Traffic and pedestrian management plan.

9. Plan for By-Pass Flow Handling.

10. Supervisory personnel resume. Resume information shall include, at a minimum, educational background, the number of years in a supervisory capacity and a list of completed projects within the past five (5) years, including project description, responsibilities, complexity and contract value amounts. Refer to Paragraph 1.4B for requirements.

11. A written description of curing water or steam condensate disposal method, if applicable.

12. Proposed resident notifications

D. The Contractor shall furnish, at his expense, the results of testing of the proposed materials by an independent laboratory in conformance with these specifications. All submitted test data shall have been performed on field installed samples within the last twelve (12) months. Testing by an independent laboratory shall verify that the products to be used meet all minimum strength standards as set forth in ASTM F1216, Table 1. Testing shall also verify that any product to be used on the project meets the minimum chemical resistance requirements as established in ASTM F1743, Table 2, where the testing is in accordance with Section 7.2.1 of ASTM F1743.

E. Contractor shall submit the names, address, and EPA identification number of the transporter and disposal facility in the event a treatment or disposal facility is used for cure water discharge. Test results and disposal documentation from the facility shall also be submitted.

F. Contractor shall submit curing logs within 24 hours of cool-down completion for each inversion indicating temperature readings at sensors in intervals of at least 1/2 hour.

G. Contractor shall submit final lateral CIPP testing reports and post construction inspection videos and reports as specified herein.

1.

Materials:

A. Lateral Lining System

1. The lateral lining system shall be a seamless one-piece product affixed to the walls of the lateral pipe and the junction between the pipe and the mainline sewer. The junction between the collar and the lateral sleeve must be watertight and will consist of a lateral portion and a mainline portion. The sectional liner

within the mainline portion shall be full wrap style, or tee. The lateral liner portion shall be a continuous liner extending to the specified length.

2. The lateral lining system shall be one that is normally installed without excavation and installed from within the mainline sewer.

3. The lateral lining system required can be one of the following:

    a. Tee/full wrap section with a full circumferential CIPP liner inside the main pipe and a tube which shall extend continuously from the sewer main into the lateral to the location where the material of the pipe transitions to cast iron near the building foundation.

    b. A similar system that is acceptable to the Owner.

4. The system shall extend an Owner specified length into the lateral.

5. The installation of the system will require the product to be capable of installing without access to the upstream side of the lateral pipe and capable of navigating bends or other transitions in alignment as identified by the owner in the contract bid documents.

6. The installation of an upstream cleanout as an integral step in the lateral lining system is not allowed. The installation of a cleanout if necessary, will only be allowed by the Engineer on a case-by-case basis.

7. Cleanouts shall not be installed in basements.

8. The system shall be capable of sealing a combination of “tees” and “wyes” of varying angles. The resin shall be cured to form the tube into a hard impermeable pipe-within-a-pipe.

9. When cured, the system shall seal the connection of the lateral to the mainline in a continuous tight-fitting, watertight pipe-within-a-pipe to eliminate any visible leakage between the lateral and mainline and shall provide a leak-proof seal to prevent root intrusion, infiltration, and ex-filtration between the liner and host pipe.

10. Systems that use polyester and vinylester resins shall include a method of sealing the connection and the end of the laterals liner as recommended by the manufacturer of the system. The product used in the sealing method shall be installed in accordance with manufacturer’s recommendations. The sealing method shall be tested by simulating groundwater pressure using a third party and stamped by an engineer.

11. Systems that use silicate or epoxy shall prepare the host pipe in accordance with manufacturer's recommendations. Third party testing shall be provided to prove the bond strength between the resin and surface it is to bond to.

B. References

1. ASTM F1216-17 – Standard practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube.

2. ASTM D790 – Test methods for flexural properties of unreinforced and reinforced plastics and electrical insulating materials.

3. ASTM D5813 – Specification for cured in place thermosetting resin sewer piping systems.

4. ASTM 2290 – Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.

5. NASSCO Guideline Specification for the installation of cured in place pipe (June 2011).

6. NASSCO Guideline Specifications for cleaning and televising pipelines.

C. Materials

1. Non-woven fabric tube

   a. The fabric tube shall consist of one or more layers of absorbent non-woven felt fabric, felt/fiberglass or fiberglass and meet the requirements of ASTM F1216-17, & ASTM D5813. The fabric tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments, and stretch to fit irregular pipe sections.

   b. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.

   c. The fabric tube shall be manufactured to a size that when installed will tightly fit the internal circumference, meeting applicable ASTM standards or better, of the original pipe or the existing lined pipe. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends. The Contractor shall determine the minimum tube length necessary

to effectively span the designated run. The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin, to ensure that the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the inside diameter of the existing pipelines in the field prior to ordering liner so that the liner can be installed in a tight-fitted condition.

d. The outside and/or inside layer of the fabric tube (before installation) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wetout) procedure.

e. No material shall be included in the fabric tube that may cause de-lamination in the cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the tube fabric and the activated resin containing a colorant.

f. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue of the color shall be dark enough to distinguish a contrast between the fully resin saturated felt fabric and dry or resin lean areas.

g. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813.

h. The outside of the fabric tube shall be marked with the name of the manufacturer of the CIPP lateral lining system, manufacturing lot and/or production footage, as applicable. The print must be visible during final CCTV inspection.

i. The minimum length of the fabric tube shall be that deemed necessary by the installer to effectively span the distance specified by the Owner.

j. The nominal fabric tube wall thickness shall be constructed, as a minimum, to the nearest 0.5 mm increment. Wall thickness transitions, in 0.5 mm increments or greater as appropriate, may be fabricated into the fabric tube between installation entrance and exit access points. The quantity of resin used in the impregnation shall be sufficient to fill all of the felt voids for the nominal felt thickness.

k. The liner shall be constructed with transitions where applicable.

2. Resin

a. The resin shall be a corrosion resistant polyester, vinyl ester, silicate or epoxy resin and catalyst system and hardener system that, when properly cured within the tube composite, meets the requirements of ASTM F1216, the physical properties herein, and those, which are to be utilized in the design of the CIPP for this project. The resin shall produce CIPP, which will comply with or exceed the structural and chemical resistance requirements of this specification.

b. The method of cure may either be from a manufacturer recommended heat source, light cure or by ambient temperature. Method of cure instructions along with a cure log shall be on-site at all times.

c. The resin to tube ratio, by volume, shall be furnished as recommended by the manufacturer.

3. Structural requirements

a. The physical properties and characteristics of the finished liner will vary considerably, depending on the types of resin and tube used. It shall be the responsibility of the Contractor to provide a CIPP lateral lining system which meets or exceeds the minimum properties specified herein.

b. The thickness of the CIPP liner shall be designed per ASTM F1216. The CIPP liner thickness design shall assume no bonding to the original pipe wall.

c. The lateral CIPP shall be designed assuming the following minimum design data, unless otherwise modified by the Owner:

i. Factor of Safety = 2
ii. Soil Modulus = 1,000 psi
iii. Soil Density = 120 pcf
iv. Live Load = H20
v. Depth of Cover = as specified
vi. Groundwater = at ground surface
vii. Ovality = 2%

d. The design engineer shall set the long term (50 year extrapolated) Creep Retention Factor at 50% of the initial design flexural modulus as determined by ASTM D-790 test method. This value shall be used unless the Contractor submits long term test data (ASTM D2990) to substantiate a different retention factor.

e. The cured pipe material (CIPP) shall, at a minimum, meet or exceed the structural properties, as listed below.

Mechanical Property	Minimum Standard Polyester Resin	Vinylester/Epoxy
Flexural Strength (ASTM D790)	4,500 psi	5,000
Flexural Modulus of Elasticity (ASTM D790)	250,000 psi	400,000

4. The structural performance of the finished pipe shall be adequate to accommodate all anticipated loads throughout its design life. No cured-in-place pipe rehabilitation technology will be allowed that requires bonding to the existing pipe for any part of its structural strength.

Construction Methods:

1. General

A. Contractor shall perform all work in accordance with municipal, state and federal requirements.

B. Contractor shall obtain all permits required to perform work prior to the commencement of construction.

C. The Contractor shall verify the lateral internal pipe diameter/dimension(s) and lengths in the field prior to liner manufacture.

D. All work associated with CIPP operations shall be accomplished without excavation from existing ground surface, except in areas specifically designated on the Drawings or as approved by the Engineer.

E. Contractor shall clean and CCTV inspect the existing pipe prior to commencement of CIPP operations, including flow diversion as necessary, and provide the Engineer the opportunity to verify the condition of the pipe for CIPP operations.

F. Contractor shall commence CIPP operations at the beginning of a period of at least three (3) days of anticipated dry weather or otherwise directed by the Owner and as directed by the Engineer.

2. Preparation

A. Contractor shall perform all preparation operations, including but not limited to cleaning, inspection, disposal of debris and public notification.

B. It is required that the service lateral be inactive during the time of installation. The Contractor shall notify individual property owners at least 72 hours in advance, giving the date, start time and estimated completion time for the work being conducted and advise against water usage until the mainline is back in service. Example resident notifications are attached at the end of this specification section for reference.

C. Contractor shall clear the line of obstructions such as solids, dropped joints, or collapsed pipe that will hinder the installation and/or prevent proper installation of the liner. If inspection reveals an obstruction that cannot be removed by conventional cleaning equipment, then the Contractor shall make a "point repair" excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Engineer prior to the commencement of the work. Point repairs shall be defined as repairs to the existing pipeline that are required to facilitate renewal work. Point repairs shall be identified during internal inspection. The Contractor shall perform point repairs after cleaning and pre-installation internal inspection has been complete. The Contractor shall notify the Engineer not less than 48 hours in advance of making any such point repairs.

D. The Contractor shall make use of commercially available industry standard cleaning equipment to prepare the pipe for system installation. Precaution shall be taken, by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe.

E. Upon completion of the cleaning, the Contractor shall then perform a Post-Cleaning CCTV Inspection, which typically acts as the Pre-rehabilitation CCTV Inspection. Only PACP/LACP certified personnel trained in locating breaks, obstacles and service connections by closed circuit television shall perform the inspection.

F. Contractor shall inspect the interior of the pipelines to determine locations of any conditions which may prevent proper installation of the liner. Inspections shall note collapsed/crushed pipe, large bends and reductions in cross-sectional area that could impact lining of the pipe. Contractors shall submit to the Engineer in writing all locations that exhibit conditions which may prevent proper installation of the liner.

G. The Contractor shall provide the Owner a copy of the pre-cleaning and post-cleaning video and suitable log, and/or in digital format for review prior to installation of the CIPP and for later reference by the Owner.

H. Contractor shall grout seal visible points of infiltration prior to installation of the liner material.

I. All point (or spot) repairs of the host pipe shall be approved in writing by the Engineer and completed by the contractor, prior to CIPP lining.

J. All preparation shall be in accordance with the manufacturer's written installation procedures.

K. The Contractor shall coordinate with CT Water and the Borough of Naugatuck for access to hydrants.

3. Safety

A. Contractor shall perform all work in accordance with municipal, state and federal requirements.

B. The Contractor shall conform to all work safety requirements of pertinent regulatory agencies and shall secure the site for working conditions in compliance with the same. The Contractor shall erect such signs and other devices as are necessary for the safety of the work site.

C. The Contractor shall perform all of the Work in accordance with applicable OSHA safety standards. Emphasis shall be placed upon the requirements for entering confined spaces.

D. The Contractor shall have on the job site at all times at a minimum the following safety equipment:

1. Gas monitor capable of testing and detecting for combustible gas, oxygen deficiency and hydrogen sulfide.

2. Confined space access and retrieval winch system.

3. Ventilating fans with large diameter ventilating hose.

4. Safety harness and life lines.

5. Other equipment as may be required for a specific project.

6. All equipment to be available for use, in sufficient quantity, by the Contractor, Engineer and Owner for the duration of the project.

E. All entries into or work within confined spaces shall be conducted in accordance with the U.S. Department of Health and Human Services/National Institute for Occupational Safety and Health [DHHS (NIOSH)] Publication No. 87-113, A Guide to Safety in Confined Spaces.

4. Installation

A. The Contractor shall designate a location where the liner tube will be impregnated prior to installation. The Contractor shall allow the Engineer to inspect the materials and wet-out procedure before loading.

B. The entire liner shall be wetout using vacuum impregnation including the lateral and mainline portions.

C. The system shall be loaded inside and/or on a pressure apparatus. The pressure apparatus, attached to a robotic device, shall be positioned in the mainline pipe at the service connection. The robotic device, together with a CCTV camera, shall be used to align the lateral portion of the system with the service connection opening. Air pressure, supplied to the pressure apparatus through an air hose, shall be used to invert or expand the resin impregnated CIPP into the lateral pipe, and push the main-line portion of the system against the main-line pipe. The pressure shall be adjusted to the manufacturer's recommended installation pressure to fully install the CIPP into the lateral pipe and hold the system tight to the pipe walls. Care shall be taken during the curing process not to over-stress the tube.

D. The CIPP of the lateral shall extend from the mainline to the location where the material of the pipe transitions to cast iron near the properties foundation.

E. After lateral CIPP installation is completed, manufacturer's recommended pressure is maintained on the impregnated CIPP for the duration of the curing process. Curing method shall be compatible with the resin selected and shall be in accordance with manufacturer's recommendations. The initial cure shall be deemed to complete when the CIPP has been exposed to the UV light, heat source or held in place for the time period specified by the manufacturer.

F. The Contractor shall cool (if heat cured) the hardened CIPP before relieving the pressure in the apparatus. Cool-down may be accomplished by the introduction of cool air into the pressure apparatus. Care shall be taken to maintain proper pressure throughout the cure and cool-down period.

G. If cured by ambient-cure process, the Contractor shall maintain bladder pressure until CIPP has completely cured per manufacturer's recommendations before relieving the pressure in the pressure apparatus.

H. Contractor shall mitigate all odors onto public or private property due to renewal operations immediately after notification from the Owner or the Engineer including, but not limited to, forced-air ventilation and/or chemical cleaning of buildings at no additional cost to the Owner.

I. If odors persist on public or private property to a point that air sampling and/or associated testing is required by the Owner, the Engineer or a regulatory agency, the Contractor shall perform this work at no additional cost to the Owner.

J. After completion of pipeline curing, the Contractor shall dispose of curing water/steam condensate in accordance with all federal, state, and local requirements.

K. Contractor shall verify with the Owner that discharging the cure-water/steam condensate directly into the existing system is acceptable. If deemed unacceptable, Contractor shall collect and convey cure-water/steam condensate to a location to be determined by the Contractor and approved by the Owner at no additional cost.

L. The finished CIPP shall be free of dry spots, lifts and de-lamination. The system shall not inhibit the closed-circuit television post video inspection of the mainline or service lateral pipes. Frayed ends of the system shall be removed prior to acceptance.

M. Contractor shall repair all uncured areas, defects, test sample section repairs or other deformities in the liner during inversion operations in accordance with the manufacturer's recommendations.

N. Contractor shall maintain a visible, written log of all activities in accordance with manufacturers' recommendations and shall include time/location of wet out, time of insertion, time/location of lateral insertion, bladder pressure requirements, required cure time, actual cure time, and cool down duration.

O. During the warranty period, any defects which will affect the integrity of strength of the system and allow leaks shall be repaired at the Contractor's expense in a manner mutually agreed upon by the Manufacturer, Town and the Contractor.

P. After the work is completed, the Contractor will provide the Town with the specified video format showing the completed work including the restored conditions.

Acceptance:

A. CCTV inspection will be required one (1) year after substantial completion (Warranty Period). If the Contractor were to perform the CCTV at the one (1) year mark or shortly after, they are still liable to repair any defects that are discovered. Retainage will be held in accordance with the Agreement until the CCTV has been completed, submitted and accepted by the Engineer.

B. Prior to final acceptance, any defects that may affect the integrity or strength of the pipeline in the opinion of the Engineer shall be repaired by the Contractor at no additional cost to the Owner. Wrinkles or fins in the bottom half of the lined pipe shall not exceed 2% of nominal pipe diameter and shall not have an adverse effect on the flow. If in excess, the liner shall be repaired and/or removed and replaced at no additional cost to the Owner.

C. The installed system shall be continuous over the specified length of the sewer line section (including main-line and lateral) and be free of visual foreign inclusions, dry spots, pinholes, major wrinkles, de-lamination, bulges, sags, protrusions, wrinkles transverse to the flow, deflections, offset joints, leaking joints, or other visible infiltration, or other defects that would impair the intended use of the completed pipeline.

D. The system shall provide a watertight seal at the connection to the main-line pipe and for the length of the lateral CIPP lined. The following methods/materials are recommended for ensuring a water tight seal:

1. A resin or epoxy-based adhesive bond between the system and the host pipe, installed/applied per the manufacturer's recommendations.

2. Hydrophilic materials installed/applied per the manufacturer's recommendations

E. Branch lateral connections or any other pre-existing connection to the service lateral shall be reinstated by a remote controlled robotic cutting device, either from within the pipeline or externally through a cleanout. The reinstated connection shall be brushed to allow for a smooth edge.

F. Cured samples of the CIPP may be required for testing physical properties in accordance with the requirements specified herein. The test shall be performed by an independent 3rd party laboratory.

G. Final acceptance of work shall not be granted until all defective areas are repaired in accordance with the CIPP manufacturer's recommendations and to the Owner's satisfaction.

H. Any repairs required by the Engineer as a result of the post construction internal inspection shall be performed by the Contractor.

I. Contractor shall perform a post construction internal inspection. Final acceptance of the work shall not be granted until post installation inspection has been reviewed and approved by the Engineer.

J. Contractor shall perform testing as specified. Final acceptance of the work shall not be granted until the appropriately formatted testing results have been reviewed and approved by the Engineer.

Method of Measurement:

This work will be measured for payment by the linear foot of installed liner as directed and accepted by the Engineer measured along the invert of the installed liner.

Basis of Payment:

This work will be paid for by the linear foot of "Cured-in-Place Lateral Lining" complete in place including all materials, bypassing, labor, equipment and incidentals thereto.

Pay Item	Pay Unit
Cured in Place Lateral Lining 4” (Sanitary Sewer – As Directed)	l.f.
Cured in Place Lateral Lining 6” (Sanitary Sewer – As Directed)	l.f.

1401643.1A 4'' POLYVINYL CHLORIDE LATERALS (SANITARY SEWER) (AS DIRECTED)

1401643.2A 6'' POLYVINYL CHLORIDE LATERALS (SANITARY SEWER) (AS DIRECTED)

Description: This item shall consist of furnishing of all plant, labor, equipment, appliances, and materials, and performing all operations in connection with the removal of existing, bypassing existing flow, and furnishing, installing, and testing of pipe, pipe fittings, jointing materials, and accessories of various materials, sizes, classes, joints, and types and appurtenant work, complete in place.

Materials: Service connections shall be either 4-inch or 6-inch polyvinyl chloride pipe. The polyvinyl chloride pipe and fittings, including those required for stubs, shall conform to ASTM Standard Specifications for Type PSM PVC Sewer Pipe and Fittings, Designation ASTM D3034, latest revision, for sizes 4"-15".

The pipe shall be tested by the flat plate deflection method at a minimum of 45 psi at 5 percent deflection in accordance with ASTM D 2412. Standard laying lengths shall be either 13 feet or 20 feet.

Specials, if required, shall conform to the Specifications for straight pipe insofar as applicable and to the details indicated on the Drawings or bound into the back of the Specifications.

Joints: Joints for the polyvinyl chloride pipe shall be push on bell and spigot joints using elastomeric ring gaskets. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, as well as petroleum products (oil, gasoline, etc.) and groundwater, and which will endure permanently under the conditions of the proposed use. The joints shall conform to ASTM Standard Specifications for Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals, Designation D3212.

Service Location Marker: The service connection pipe shall terminate at the street boundary line, as determined by the Engineer. A permanent metal service connection marker shall be placed directly above the capped end of sewer service pipes that are not connected to existing services.

Inspection, Test, and Acceptance: All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the above-mentioned ASTM Specifications. In addition, the pipe shall be subject to thorough inspection and tests, as deemed necessary by the Engineer.

All tests shall be made in accordance with the methods prescribed by the above mentioned ASTM Specifications, and the acceptance or rejection shall be based on the test results.

The Contractor shall furnish all labor to assist the Engineer in inspecting the pipe. Pipe will be inspected upon delivery, and such as does not conform to the requirements of this contract shall be rejected and shall immediately be removed from the project site by the Contractor.

If the visual inspection of the completed pipe or any part thereof shows any pipe, manhole or joint which allows infiltration of water in a noticeable stream or jet, the defective work or material shall be replaced or repaired as directed. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem without additional compensation.

Construction Methods: Lateral replacement will be as directed by the Engineer after cleaning and inspection under Item #1400201.1A.

Locations of wyes and lengths of each service connection will be determined by the Engineer at the time of construction. Pipe shall be laid accurately on line, with a uniform grade of 1/4 inch per foot (2 percent slope). Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16-inch per foot of length. If a piece of pipe fails to meet this requirement for straightness, it shall be rejected and removed from the site. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit. Contractor shall provide all couplings and adaptors as required to make connections.

All pipe shall be stored at the site until installation in a manner which will keep the pipe at ambient outdoor temperatures. Temporary shading shall be provided as required to meet this requirement. Simply covering the pipe which allows temperature build up when exposed to direct sunlight will not be permitted. Care shall be taken to avoid damaging the pipe and fittings.

Installation: Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16-inch per foot of length. If a piece of pipe fails to meet this requirement for straightness, it shall be rejected and removed from the site. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Crushed stone and sand shall be as specified in contract documents.

Suitable bell holes shall be provided, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material. Special care shall be taken to hold the trench width at the crown of the pipe to the maximum width indicated in the Trench Detail on the Contract Drawings.

All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.

Pipe and fittings shall be installed to the lines and grades indicated on the Drawings. Care shall be taken to ensure true alignments and gradients.

Before any joint is made, the previously installed unit shall be checked to assure that a close joint with the adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.

All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.

Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.

Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.

Details of gasket installation and joint assembly shall follow the directions of the manufacturers of the joint materials and of the pipe, all subject to review by the Engineer. The resulting joints shall be watertight and flexible.

All premolded gasket joint polyvinyl chloride pipe of a particular manufacturer may be rejected if there are more than five unsatisfactory joint assembly operations or "bell breaks" in 100 consecutive joints, even though the pipe and joint conform to the appropriate ASTM Specifications as hereinbefore specified. If the pipe is unsatisfactory, as determined above, the Contractor shall, if required, remove all pipe of that manufacturer of the same shipment from the work and shall furnish pipe from another manufacturer which will conform to all of the requirements of these specifications.

Open ends of pipe and branches shall be closed with polyvinyl chloride stoppers secured in place in an acceptable manner.

After each pipe has been properly bedded, enough bedding material shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes, provided for jointing, shall be filled with bedding material and compacted, and then bedding material shall be placed and compacted to complete the pipe bedding.

The Contractor shall take all precautions to prevent flotation of the pipe in the trench.

At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.

If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.

Pipelines shall not be used as conductors for trench drainage during construction.

During backfilling operations, a brightly colored polyethylene tape manufactured specifically for warning and identification of buried utility lines shall be buried 2 feet below the ground surface along the entire length of the pipe from the pumping station to the point of discharge. Tape shall be provided in rolls, 6-inches minimum width, color coded for intended service with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be "CAUTION BURIED SEWAGE PIPE BELOW" or similar wording. Code and letter coloring shall be permanent, unaffected by moisture and other substances contained the trench backfill material.

Allowable Pipe Deflection:

Pipe provided under this Specification shall be so installed as to not exceed a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

Upon completion of a section of pipe, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer, and be reviewed by the Engineer. The section of pipe must be placed and backfilled for a minimum of 90 days before the deflection can be measured.

Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem without additional compensation.

Cleaning:

Care shall be taken to prevent earth, water and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water and debris from entering any existing pipe.

Testing of Pipe:

If the visual inspection of the completed pipe or any part thereof shows any pipe, manhole or joint which allows infiltration of water in a noticeable stream or jet, the defective work or material shall be replaced or repaired as directed.

After completing installation and backfill of pipe, the Contractor shall, at his expense, conduct a line acceptance test using low pressure air.

Equipment used shall meet the following minimum requirements.

Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.

All air used shall pass through a single control panel.

Three individual hoses shall be used for the following connections.

1. From control panel to pneumatic plugs for inflation.

2. From control panel to sealed line for introducing the low pressure air.

3. From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to the manufacturer's recommended inflation pressure. The sealed pipe shall be pressurized to 5 psig. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

After a manhole to manhole reach of pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psig. Low pressure air shall be introduced into this

sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any groundwater that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.

After the stabilization period (3.5 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any groundwater that may be over the pipe) is not less than the time shown for the given diameter in the following table.

Pipe Diameter	Time
Inches	Minutes
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

In areas where groundwater is known to exist, the Contractor shall install a 1/2-inch diameter capped pipe nipple, approximately 10-inches long, through the manhole wall adjacent to one of the sewer lines entering the manhole. This shall be done at the time the line is installed. Immediately prior to the performance of the Line Acceptance Test, the groundwater shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-1/2 feet, then the added pressure will be 5 psig. This increases the 3.5 psig to 8.5 psig, and the 2.5 psig to 7.5 psig. The allowable drop of one pound and the timing remain the same). In no case shall the starting pressure exceed 9.0 psig.

Pipe Deflection Test:

Pipe provided shall be installed as to not exceed a maximum deflection of 7.5%. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

Upon completion of a section of pipe, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section, as directed by the Engineer. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be reviewed by the Engineer.

1. The section of pipe must be placed and backfilled for a minimum of 90 days before the deflection can be measured.

Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem without additional compensation.

Test Failure:

If the section of pipe fails to pass the leakage and pressure test, or if there is any visible leakage, the Contractor shall locate, uncover and repair or replace the defective pipe fitting or joint and retest all at his own expense. Pipe will be considered passing only when the leakage does not exceed the above standard. Passing the test does not absolve the Contractor from his responsibility if leaks develop later within the period of warranty.

Method of Measurement: This work will be measured for payment by the number of linear feet of pipe completed, tested, and accepted in place and measured through all fittings.

Basis of Payment: This work shall be paid for at the Contract unit price per linear foot for "Polyvinyl Chloride Laterals" of the type specified, tested and completed in place, which price shall include all materials, fittings, equipment, tools, labor, testing, and work incidental thereto.

Pay Items	**Pay Unit**
1401643A 4" POLYVINYL CHLORIDE LATERALS	lf.
1401643A 6" POLYVINYL CHLORIDE LATERALS	lf.

ITEM #1401662A SANITARY MANHOLE (4' DIA.) 0' TO 10' DEEP

Description: This work shall consist of furnishing, preparing, and installing sanitary sewer manholes (and also the removal, abandonment, alteration, reconstruction, or conversion of such existing structures) in conformity with the lines, grades, dimensions and details shown on the plans. Work includes bypass, excavation, subbase, compaction, backfill, building bench and invert, pipe connections, walls, cone, corbel, riser, frame and cover and all ancillary appurtenances.

Materials:

PORTLAND CEMENT: ASTM C150, Type II

HYDRATED LIME: ASTM C207, Type S

SAND: Fine Aggregate for mortar, but passes No. 8 Sieve.

BRICK: ASTM C32, Grade SS, but mean of five tests for absorption not to exceed 8 percent by weight.

FRAMES AND COVERS shall be in accordance with Borough of Naugatuck Standard Details, 24" Campbell Construction Castings Pattern No 1007D Heavy Duty with 8" deep frame.

RISERS: Precast reinforced concrete grade rings.

BITUMINOUS WATERPROOFING MATERIAL:

1. No. 46-449 Heavy Duty Black made by Tnemec Company, Inc., North Kansas City, MO.
2. No. 35-J-10 Hi-Build Bituminous Coating made by Valspar Corporation, Short Hills, NJ.
3. Bitumastic Super Service Black made by Kop-Coat Company, Inc., Pittsburgh, PA.
4. Or acceptable equivalent product.

PLASTIC COATED STEEL STEPS:

1. Minimum dimensions: Step width 12 inches, distance from manhole wall 5 inches after installation. Equal to: PS2-PF-SL Manhole Steps made by M.A. Industries, Inc., Peachtree City, GA.

    a. Part number is for steps to be driven into preformed holes; for steps to be driven into embedded plastic inserts, shape of exposed parts to be like part number, but other ends to suit inserts.

b. The copolymer polypropylene conforming to ASTM D4101-82 PP200B33454 with a minimum carbon black content of 1/2% by weight or other demonstrated equivalent sunlight protection system.

2. Steps capable of resisting following loads without loosening or damaging:

a. Minimum horizontal pull out load 1600 pounds (800 pounds per leg).

b. Minimum vertical load 800 pounds.

PRECAST CONCRETE BASES

1. The precast bases shall be supported on a compacted level foundation of crushed stone at least 6 inches thick.

2. The precast bases shall be manufactured to contain wall openings of the minimum size, to receive the ends of the pipes and such openings shall be accurately set to conform with line and grade of the sewer. Subsequent cutting or tampering in the field, for the purpose of creating new openings or altering existing openings, will not be permitted. Connection of sewer pipe to manholes shall be made using the mechanical connections.

3. Precast bases shall be at least 6 inches thick for 4-foot diameter manholes.

4. Base to have integral buoyancy collar designed to resist buoyancy forces assuming groundwater depth at rim elevation.

PRECAST CONCRETE SECTIONS

1. All precast concrete sections shall conform to the ASTM "Tentative Specifications for Precast Reinforced Concrete Manhole Sections," Designation C478 with the following exceptions and additional requirements:

a. The Contractor shall verify the incoming and outgoing pipes in the field prior to manhole ordering and manufacture.

b. The barrel shall be at least 48 inches inside diameter with not less than 5 inch thick wall, or as indicated.

c. Cement: ASTM C150, Type II, otherwise as directed by Engineer.

d. Joints between sections: Butyl rubber-based sealants.

e. Cure by subjecting to saturated steam at temperature between 100 and 130 degrees F. for 12 hours or more. Do not ship sections until at least 5 days after having they have been cast.

f. Cast or drill only two lift holes in each section.

g. Clearly mark date of manufacture and name or trademark of manufacturer on insides of walls on all sections.

h. The concrete for precast manhole risers and tops shall have an average strength of 4,000 psi at 28 days. Strength shall be determined by tests on 6 inch by 12 inch vibrated test cylinders cured in the same manner as the manhole risers and tops, cores cut from the manhole risers and tops, or by other approved methods. Not less than two concrete strength tests shall be made for each 100 linear feet of manhole risers and tops and the test results submitted to the Engineer. Testing may be conducted at the manufacturer's plant or at an approved testing laboratory and shall be the responsibility of the Contractor, at no additional expense to the Owner.

i. Accept on basis of material tests and product inspection.

j. For the precast concrete sections being used, the tops of the bases shall be suitably shaped by means of accurate bell ring forms to receive the barrel sections.

k. The top conical section shall have a wall thickness not less than 6 inches at the bottom and wall thickness of 8 inches at the top.

l. Flat tops and landing platforms shall have a minimum thickness of 8 inches and shall have tongue and groove joints. Reinforcement for flat tops shall be designed for H 20 loading. Shop Drawings showing reinforcement shall be submitted to the Engineer for review.

m. The Engineer reserves the right to reject any precast section which does not meet these requirements.

2. Cones and Conical Transitions similar in design and construction to riser sections. Use flat slab tops only where indicated.

3. Cast and build into bases during manufacture:

   a. Resilient connectors for pipe connections

   b. Holes for future pipe connections

   c. Buoyancy collar.

4. Set steps accurately as indicated.

JOINTS

1. Between precast sections: Butyl rubber-based sealants per Type B, AASHTO M198, but no bitumen content.

2. Resilient connectors for pipes to precast sections: ASTM C923, and to manufacturer's standards. Do not use connectors using castings and bolts with non-resilient bearing.

3. Rubber ring waterstops for use in pipe-to-manhole joints: Rings of resilient material that will fit snugly over pipes, held firmly against pipe surface by means of a mechanical take-up device which when tightened will compress resilient material or by a stretch fit. Waterstop designed and installed so that leakage between pipe and manhole is minimized.

    a. Materials and manufacture of waterstops: ASTM C923.

4. Non-shrink mortar for pipe connections to existing manholes:

    a. Masterflow 713 Grout made by Master Builders, Cleveland, OH.

    b. Five Star Grout made by U.S. Grout Corp., Old Greenwich, CT.

    c. Upcon made by Upco Co., Cleveland, OH.

    d. Or acceptable equivalent product.

MIXES

1. Concrete: Cast-in-place, Class A.

2. Mortar:

    a. For Brickwork: Mix Portland cement, hydrated lime and sand in proportion by volume of 1: 1/2: 4-1/2. Use sufficient water to form workable mixture to make mortar damp, just short of "balling".

    b. For Plugging lift holes: Mix Portland cement and sand in proportion by volume of 1: 1-1/2, with sufficient water.

Construction Methods:

BYPASSING

1. The Contractor shall maintain flows throughout construction and design, plan, install and maintain adequate to bypass while executing work. Submit bypass plan to the Engineer for review and acceptance at least 2 weeks in advance of start of work.

SETTING PRECAST SECTIONS

1. Manhole risers and tops shall be installed using approved butyl rubber polymer type gasket for sealing joints of manhole risers and tops; jointing shall be performed in accordance with the manufacturer's recommendations, and as approved. Manhole risers and tops shall be installed level and plumb. Water shall not be permitted to rise over newly made joints, nor until after inspection as to their acceptability. All jointing shall be done in a manner to insure watertight joints. Openings shall be provided in the precast concrete manhole risers to receive entering pipes and these openings shall be made at the place of manufacture. Connection of pipes to manholes shall be by means of a flexible manhole sleeve cast into the manhole wall. Sleeves shall be resistant to sewage, industrial wastes, petroleum products, and groundwater. The serrated flange is cast into the manhole base and/or wall to form a tight waterstop. The pipe is secured in the sleeve using a stainless steel strap, clamp, draw bolt and nut.

2. Care shall be taken to assure that the openings are made to permit setting of the entering pipe at its correct elevation as indicated or directed. Manhole risers and tops shall be installed so that the manhole steps shall be in alignment.

3. Plug holes for handling with non-shrink grout. Hammer mortar into hole until dense and excess of paste appears, then smooth flush with adjoining surface.

LAYING BRICKWORK AND GRADING RINGS

1. Moistening grading rings NOT PERMITTED.

2. Lay grading rings in full bed and joint of mortar without subsequent grouting, flushing or filling; bond thoroughly.

BRICKWORK

1. Brickwork shall be required for inverts and penetrations as required. Brick and mortar shall not be used to adjust frame and grates to finished grades.

2. Remove defective bricks immediately from work. Only clean bricks shall be used in brickwork for manholes.

3. Moisten bricks by suitable means, until dry as to neither absorb water from mortar nor wet as to be slippery when laid.

4. Do not moisten concrete masonry units.

5. Lay each brick in full bed and joint of mortar without requiring subsequent grouting, flushing or filling; bond thoroughly.

6. Lay each masonry unit in full bed of mortar; bond thoroughly. Fill vertical keyways completely with mortar.

JOINTING AND CONNECTIONS

1. Use joints between precast sections, and between pipes and precast sections conforming to related standards and manufacturer's instruction.

2. Hold rubber ring water stops for pipe-to-manhole firmly against pipe surface by mechanical take-up device to compress resilient material when tightened. Install to minimize leakage.

3. Apply non-shrink mortar according to manufacturer's instruction.

4. Close openings for future connection with brick masonry bulkhead.

COATING

1. Apply two heavy coats of bituminous waterproofing material to exterior surfaces, by brush or spray according to manufacturer's instructions.

SETTING FRAMES AND COVERS

1. Set frames with top conforming to finished ground or pavement surface as indicated.

2. Set circular frames concentric with top of masonry.

3. Set frames in full bed of mortar to fill and make watertight the space between masonry top and bottom flange of frame.

4. Place thick ring of mortar extending to outer edge of masonry, around bottom flange. Finish mortar smoothly and give a slight slope to shed water away from frame.

5. Place a 12” deep by 12” wide concrete collar around frame when placing permanent pavement leaving 1.5 inches for bituminous concrete binder course.

6. If riser ring(s) are installed to bring the manhole rim to the required elevation or if visible leaks and areas showing evidence of leakage are discovered, these areas shall be sealed utilizing chemical grout sealing and sealed both inside and out, as specified herein, with hydraulic cement, or other means acceptable to the Engineer and in conformance with the lining manufacturer’s recommendations.

7. Place covers in frames on completion of work.

INSTALLING STEPS

1. Embed plastic coated steel steps during casting or attach after casting: Drive into holes formed during casting, or into embedded plastic inserts.

CLEANING

1. All excess material including dirt, loose concrete, bricks, grit, stones and any other material, shall be removed from all manholes prior to final review by the Engineer.

LEAKAGE TESTS

1. Visual Inspection

2. The Contractor shall visually inspect each of the sewer manholes rehabilitated during this project in the presence of the Engineer. The Contractor shall repair any defects found until there are no defects or visible leaks.

3. Inspect for visible leakage after backfill with ground water at normal level.

4. Locate visible leakage and repair.

5. All inspecting, testing, and reworking within the warranty period shall be provided at no additional cost to the owner.

Method of Measurement: Sanitary manholes shall be measured for each unit installed, connected to existing drainage system, tested, and approved by the Engineer. In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for the type of structure being installed. Additionally, bypassing shall not be measured for payment but shall be included in Contract unit price for the type of structure being installed, removed, or replaced.

Basis of Payment: Payment will be made at the Contract unit price for each "Sanitary Manhole," complete in place, which price shall include all bypassing, excavation, modifications to existing pipe, backfill, materials, equipment, tools, and labor incidental thereto.

Pay Item	**Pay Unit**
Sanitary Manhole (4’ Dia.) 0' to 10' Deep	ea.

ITEM #1403501A – RESET MANHOLE (SANITARY SEWER)

Description: The Contractor shall adjust to final grade the manhole frames and covers of the Sanitary Sewer as shown, specified, or directed. Also included is furnishing and installing additional manhole riser sections and brick masonry, where indicated on the plans, or as directed by the Engineer. Sanitary Sewer

Materials: Materials will be specified in Article 05.07.02 for the standard specifications and comply with the Borough of Naugatuck Standard Details.

Construction Methods: Construction methods will be specified in Article 05.07.03 and as supplemented by the following:

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 frames, covers and tops shall be reset as shown on the plans or as directed by the Engineer.

The Contractor shall carefully excavate the manhole frame and cover and add or delete brick masonry as necessary to reset the frame and cover to the established final grade.

The Contractor may be required to "un-stack" the existing cone section so that riser sections can be added or removed, where the change in grade is greater than 12 inches.

Any material damaged by the Contractor shall be repaired or replaced by the Contractor at no additional cost to the Borough.

Where the change in grade is 3 inches or less, metal manhole extension rings shall be used to raise and support the existing manhole covers to grade of the proposed roadway surface without disturbing the existing manhole frame.

Method of Measurement: The work will be measured for payment by the number of manholes adjusted to grade and accepted by the Engineer that are not included for payment under Item #1401662A.

Basis of Payment: This work will be paid for at the contract unit price for each bid "Reset Manhole (Sanitary Sewer)", complete in place, which price shall include all materials, equipment, tools, labor necessary to incorporate the manhole 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, pumping, and temporary and permanent resurfacing of the disturbed areas.

Pay Item	Pay Unit
Reset Manhole (Sanitary Sewer)	ea.

ITEM #2020310.1-3 A: TRANSPORTATION AND DISPOSAL OF SOIL AND FILL

Description:
Furnish all labor, materials, equipment, and incidentals required to transport excess soil and fill material off-site, and dispose, reuse, or recycle at a licensed facility approved by the Owner. All solid waste shall be disposed in accordance with all applicable federal, state, and local laws and regulations, as well as all other state laws through which the waste material is being transported. Potentially contaminated sites are located within or adjacent to the construction areas as described in the Environmental Conditions Memo appended to the Contract Documents.

Construction Methods:
The Contractor shall reuse, recycle or dispose of all excess soil and wastes resulting from excavation activities in accordance with federal, state and local regulations and these specifications. Transport shall be performed by a permitted and licensed waste transporter. Prior to disposal, it shall be the responsibility of the Contractor to maintain segregated waste stockpiles in conformance with all applicable federal, state, and local waste disposal regulations and as specified in Item #0101157: CONTAMINATED SOIL MANAGEMENT

No truck shall be allowed to exit the site until all free liquids are drained from soil/fill or other solid waste being transported off-site. Material shall be covered at all times. The vehicle in which the waste is transported shall be driven directly to the intended destination without any stops or detours in between, except those necessary in response to road conditions, vehicle service needs, or emergencies. Discharge or release of material during transport shall be immediately reported to the Owner. Transporters shall clean up any discharge that occurs in transit, at the Contractor's expense.

Manifesting of solid waste shall be required and shall include vehicle identification; date of loading and disposal; tonnage, as measured at the disposal site; and signature of the Owner and/or its representative, transporter, and disposal facility's representative. Transportation of the wastes shall be accompanied by the appropriate manifests, such as a Material Shipping Record (MSR), Bill of Lading (BOL), or by a Uniform Hazardous Waste Manifest. Where paper documents are utilized, the original shall be returned to the Owner, and/or their representative, within ten working days of disposal.

Class A is any soil or fill material, not including sediments, which has concentrations of chemicals below the Regulations of Connecticut State Agencies 22a-133k-1-3 (inclusive). Any excavated soil/fill material which is not reused within the area of excavation, must be characterized prior to reuse. Class A soil may be reused as fill material provided it is geotechnically suitable. Class A soil may be used in gravel processing facilities provided the soil analytical data is comparable to materials being used by the facility and such use is approved by the Engineer. Class A soil may be reused at a permitted landfill, provided that in all cases, the excavated soil analyte concentrations meet the acceptance criteria established by the facility. Class A soil not exhibiting evidence of contamination or soils determined through laboratory chemical analysis to be Class A soils may also be reused in the area of excavation.

Class B is any soil or fill material that contains oil or hazardous materials at concentrations equal to or greater than (≥) Regulations of Connecticut State Agencies 22a-133k-1-3 (inclusive), or soils exhibiting either petroleum or chemical odor or visual indications of oil or hazardous materials. Any excavated soil/fill material which is not reused within the area of excavation, must be characterized prior to reuse. Class A soil may be reused as fill material at the discretion of the Owner or Engineer provided it is geotechnically suitable. Surplus soil/fill which may be contaminated shall be segregated by the Contractor. Potentially contaminated soils shall not be mixed with soils not exhibiting either petroleum or chemical odor or visual indications of oil or hazardous materials. Soil/fill which has been staged and characterized can be reused within the area of excavation or elsewhere on site provided the material has been characterized by laboratory analysis and has equal or less contamination than the point where it is to be reused. Class B soil that cannot be reused on-site shall be reused off-site, recycled, or disposed of at a permitted facility. Class B soil/fill must be removed from the site within 120 days of generation.

Class C is soil or fill material having or suspected of having the characteristics of a hazardous waste or of containing a listed hazardous waste shall not be removed from the excavation or staged at another location except at the direction of the Owner. Class C soil and fill shall not be reused on site. Class C soil/fill must be removed from the site with 90 days of generation. Class C wastes are not anticipated and will be managed as a change order.

Special Waste is any solid waste that is determined not to be hazardous waste and that exists in such quantity or in such chemical or physical state, or any combination thereof, so that particular management controls are required to prevent an adverse impact from the collection, transport, transfer, storage, processing, treatment or disposal of the solid waste. Special Waste shall not be reused on site. Asbestos and PCB-contaminated soils/fill (at regulated concentrations) are examples of special waste categories. Special Waste must be removed from the site within 90 days of generation. Special Wastes are not anticipated and will be managed as a change order.

Method of Measurement:
Unit price payment items are for transporting and disposing of soils and fill material. Measurement for payment shall be on the basis of tons of waste actually disposed, as measured at the disposal facility by certified scale, and documented on the return manifest or certified weight slip. No payments will be made in cases of incomplete documentation of disposal. The pay item includes loading, transportation, and disposal of soil at a facility in accordance with the facility's acceptance criteria and any fees and/or taxes. Loading, transportation, and disposal of bituminous concrete and construction debris are excluded.

Basis of Payment: This material will be paid for at the Contract unit price per ton for transportation and disposal of soils specified, which price shall include all materials, equipment, tools, and labor incidental thereto.

Pay Item	**Pay Unit**
02020310.1 Class A Transportation and Disposal	per TON
02020310.2 Class B Transportation and Disposal	per TON
02020310.3 Class C Transportation and Disposal	per TON

WAGE RATES-STATE OF CONNECTICUT

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Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 23-49900

Connecticut Department of Labor
Wage and Workplace Standards

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: FY24-B059 Project Town: Naugatuck
State#: FAP#:

Project: Downtown Sanitary, Stormwater and Streetscape Improvements

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	45.21	29.05
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	39.92	34.47
2) Carpenters, Piledrivermen	37.61	27.61
2a) Diver Tenders	37.61	27.61
3) Divers	46.07	27.61
03a) Millwrights	38.02	28.41
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	56.25	25.15
4a) Painters: Brush and Roller	37.62	24.55
4b) Painters: Spray Only	40.62	24.55

As of: July 6, 2023

4c) Painters: Steel Only	39.62	24.55
4d) Painters: Blast and Spray	40.62	24.55
4e) Painters: Tanks, Tower and Swing	39.62	24.55
4f) Elevated Tanks (60 feet and above)	46.62	24.55
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)	43.4	32.07+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	42.37	40.02 + 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)	48.28	35.50
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	33.5	25.59
8) Group 1a: Acetylene Burners (Hours worked with a torch)	34.5	25.59
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	33.75	25.59
10) Group 3: Pipelayers	34.0	25.59
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	34.0	25.59

As of: July 6, 2023

12) Group 5: Toxic waste removal (non-mechanical systems)	35.5	25.59
13) Group 6: Blasters	35.25	25.59
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	36.5	25.59
Group 8: Traffic control signalmen	20.1	25.59
Group 9: Hydraulic Drills	34.25	25.59
Group 10: Toxic Waste Removers A or B With PPE	36.5	25.59
----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	35.73	25.59 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	34.76	25.59 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	34.76	25.59 + a
15) Form Erectors	35.09	25.59 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		

As of: July 6, 2023

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	34.76	25.59 + a
17) Laborers Topside, Cage Tenders, Bellman	34.65	25.59 + a
18) Miners	35.73	25.59 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	42.22	25.59 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	42.02	25.59 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	40.04	25.59 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	42.81	25.59 + a
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	32.16	30.51 + a
Three Axle Trucks; Two Axle Ready Mix	32.27	30.51 + a
Three Axle Ready Mix	32.33	30.51 + a
Four Axle Trucks	32.39	30.51 + a
Four Axle Ready-Mix	32.44	30.51 + a

As of: July 6, 2023

Heavy Duty Trailer (40 tons and over)	34.66	30.51 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	32.44	30.51 + a
Heavy Duty Trailer (up to 40 tons)	33.39	30.51 + a
Snorkle Truck	32.54	30.51 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)	52.78	27.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	48.37	27.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	52.41	27.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	51.51	27.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer).	48.0	27.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	47.1	27.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).	46.64	27.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps;	45.92	27.80 + a

Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)		
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	45.92	27.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	45.55	27.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	45.14	27.80 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	44.67	27.80 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	44.14	27.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	41.69	27.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	41.69	27.80 + a
Group 12: Wellpoint Operator.	41.61	27.80 + a
Group 13: Compressor Battery Operator.	40.92	27.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	39.54	27.80 + a

As of: July 6, 2023

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	39.06	27.80 + a
Group 16: Maintenance Engineer.	38.28	27.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	43.46	27.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	40.54	27.80 + 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

As of: July 6, 2023

26) Heavy Equipment Operators	37.1	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

Welders: Rate for craft to which welding is incidental.

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

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

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

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

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

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

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

As of: July 6, 2023

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

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

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

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

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

As of: July 6, 2023

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

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

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

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

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

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

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

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

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

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

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

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

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

_____
Signed

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

_____
Notary Public

Return to:

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

Rate Schedule Issued (Date): _____

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

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

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

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

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

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

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

12/9/2013
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

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

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

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

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

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

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

Section A:

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

a) The records submitted are true and accurate;

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

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

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

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

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

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

_____ _____ _____

(Signature) (Title) Submitted on (Date)

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

Weekly Payroll Certification For
Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

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 / 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				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				S	M	T	W	TH	F	S					FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER		
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

*IF REQUIRED

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

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

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

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

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

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

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

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

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

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

7/13/2009
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER 1 OF 2

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

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

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

Please specify the type of benefits provided:

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

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

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

CERTIFIED STATEMENT OF COMPLIANCE

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

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

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

Section A:

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

a) The records submitted are true and accurate;

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

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

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

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

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

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

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

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

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

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

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

Information Bulletin
Occupational Classifications

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

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

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

- ***ASBESTOS WORKERS***

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

- ***ASBESTOS INSULATOR***

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

- ***BOILERMAKERS***

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

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

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

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

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

- **LABORER, CLEANING**

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

- **DELIVERY PERSONNEL**

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

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

- ***ELECTRICIANS***

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

- ***ELEVATOR CONSTRUCTORS***

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

- ***FORK LIFT OPERATOR***

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

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

- ***GLAZIERS***

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

- ***IRONWORKERS***

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

- ***INSULATOR***

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

- ***LABORERS***

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

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

- ***PAINTERS***

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

- ***LEAD PAINT REMOVAL***

• Painter's Rate

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

• Laborer's Rate

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

- ***PLUMBERS AND PIPEFITTERS***

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

- ***POWER EQUIPMENT OPERATORS***

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

- ***ROOFERS***

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

- ***SHEETMETAL WORKERS***

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

- ***SPRINKLER FITTERS***

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

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

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

- **TRUCK DRIVERS**

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

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

For example:

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

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

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.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

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

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

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

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

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

Elevator Constructors: Mechanics

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

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

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

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

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

Ironworkers

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

Laborers (Tunnel Construction)

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

Roofers

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

Sprinkler Fitters

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

Truck Drivers

(Heavy and Highway Construction & Building Construction)

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

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APPENDIX A – WETLANDS PERMIT

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BOROUGH OF NAUGATUCK

229 Church Street
Land Use Office-2nd floor
Naugatuck, CT 06770
TEL (203) 720-3396
FAX (203) 720-5026

Final Wetlands Permit
Naugatuck Land Use Office

April 19, 2023

Project Name/Permit #	Activities associated with Application IW #23-01 Downtown Sanitary and Stormwater Improvements
Plans Reviewed:	Site Development Plans entitled "Inland Wetland Application, Downtown Sanitary and Stormwater Improvements, Borough of Naugatuck", Preliminary Design (60%), Dated: 2/16/2023, by Kleinfelder and Landscape Architect, Richter & Cegan Inc.

On Wednesday March 1, 2023, the Naugatuck Inland Wetlands Commission approved IW #23-01 with the following condition:

1. Add a medallion to the catch basin details on the plan and the permit.

In addition, the following general conditions:

2. This permit shall expire simultaneously with the date of the zoning or planning approval for the application. Any request to renew or extend the expiration date of a permit shall be filed in accordance with the Inland Wetlands Regulations of the Borough of Naugatuck.
2. The permittee or any successor there to, shall notify the WEO a minimum of 48 hours prior to the commencement of work and also upon its completion.
3. All work and all regulated activities conducted pursuant to this authorization shall be consistent with the terms and conditions of this permit. Any construction, excavation, fill, obstructions, encroachments or regulated activities not specifically identified and authorized herein shall constitute a violation of this permit and may result in its modification, suspension, or revocation.
4. In evaluation of this application, the Commission has relied on information provided by the applicant. If such information subsequently proves to be false, incomplete or misleading, this permit may be modified, suspended or revoked and the permittee may be subject to any other remedies or penalties provided by law.
5. The permittee shall employ best management practices, as described in the Connecticut State Department of Energy and Environmental Protection (DEEP) Guidelines for Soil Erosion and Sediment Control dated 2002, or as updated or amended, and is consistent with the terms and conditions of this permit, to control

storm water discharges and to prevent erosion and sedimentation and to otherwise prevent pollution of wetlands and watercourses. In the event that the permittee causes or discovers additional wetlands disturbance, which occurs during the course of the development, the permittee shall immediately cease work and inform the WEO of the nature and extent of the additional disturbance.

6. This permit is subject to all public and private rights and to all applicable federal, state and local law. The permit does not derogate any rights or powers of the Borough of Naugatuck and conveys no property rights or exclusive privileges.
7. Except as authorized by the permit, the permittee may not cause pollution or otherwise impair or destroy the inland wetlands and watercourses of Naugatuck.
8. If the activity authorized by the inland wetland permit also involves activity or a project which requires zoning or subdivision approval, special permit, variance or special exception, no work pursuant to the wetland permit may begin until all such approvals are obtained.
9. Sedimentation and erosion control measures must be installed prior to commencement of site activity and the Land Use office must be notified within 48 hours of installation. Said measures must be regularly inspected by applicant within 24 hours after a major storm event. All measures must be maintained during construction and be properly removed with all affected land restored prior to requesting final inspection. The applicant must designate an authorized representative, responsible for all sedimentation and erosion control measures, must be registered with the Naugatuck Land Use office, in addition to being listed on the drawings (a name, address, business telephone number, off-hours telephone number and other pertinent contact information must be included on the plan). All sedimentation and erosion control measures must be provided and installed in accordance with the Connecticut State Department of Energy and Environmental Protection (DEEP) Guidelines for Soil Erosion and Sediment Control dated 2002, or as updated or amended.
11. Applicant shall submit reports, as determined by the commission, with the status of the construction to the WEO.
12. Prior to the issuance of the wetland permit, all Inland Wetland Development Fees and Regulated Area Fees shall be paid to the Borough of Naugatuck.
13. Wetlands flagging must be maintained throughout the project.
14. Applicants shall supply a written and detailed maintenance plan. Inorganic fertilizers or pesticides are not allowed.

Lori Rotella

Lori Rotella, Town Planner/WEO
Naugatuck Land Use

APPENDIX B – ENVIRONMENTAL CONDITIONS MEMO

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KLEINFELDER
Bright People. Right Solutions.

M E M O R A N D U M

TO: James Stewart, Borough of Naugatuck Department of Public Works

FROM: Lisa Stone
Eric Henry, LEP, LSP

DATE: June 26, 2023

SUBJECT: Environmental Conditions Summary
Downtown Sanitary and Sewer Improvements
Naugatuck, Connecticut

CC: Nick Keenan, Kleinfelder

This memo summarizes environmental conditions and provides recommendations for soil and groundwater management in the areas associated with the improvements to the sanitary sewer collection system and stormwater collection system in downtown Naugatuck hereafter referred to as the Site or the Project Area.

Data used in support of this memorandum include information presented in databases maintained by state and federal agencies including aerial photos, city directories, and Sanborn fire insurance maps, as well as publicly available reports associated with the Connecticut Department of Energy and Environmental Protection (CT DEEP) contaminated or potentially contaminated sites.

Environmental Database Review

Kleinfelder contracted a commercial database service, Environmental Data Resources, Inc (EDR), of Milford, Connecticut to perform a government database search for listings within the Project area, and to provide historical photographs and maps. A description of the types of information contained in each of the databases reviewed and the agency responsible for compiling the data is included in the EDR Radius Map™ Report with GeoCheck®. The EDR database search results are presented in **Appendix A**.

Aerial Photographs
The EDR report included historical aerial photographs of the Project Area for the years 1934, 1949, 1950, 1955, 1963, 1966, 1972, 1980, 1985, 1991, 1995, 2005, 2008, 2012, and 2016. These photographs were reviewed to identify conditions posing potential environmental risks within the Project Area. The aerial photographs depict the project area as a primarily commercial/ industrial that is already heavily developed as of 1934. Aerial photographs show that the Project Area has not seen many changes over the years.

Historical Topographic Maps

The EDR report included historical topographic maps of the area for the years 1889, 1891, 1893, 1904, 1943, 1951, 1954, 1955, 1964, 1968, 1972, 1984, 2012, 2015, and 2018. These maps were reviewed to identify conditions posing potential environmental risks within the Project Area. Topographic maps show the slow development of the area with residential/commercial neighborhoods and the development of roads. Other than the changes listed above, the maps do not show conditions that could be potentially harmful to the environment and surrounding area.

Sanborn Maps

The EDR Report included historical Sanborn maps of the Project area for the years 1887, 1892, 1897, 1904, 1910, 1923, 1960, and 1968. Sanborn Maps of the project area show increased development in the area of commercial and residential buildings between 1887 and 1968. Sanborn maps focusing on Church Street and Rubber Avenue show a former clothing mill on Church Street from 1887 to 1910, with a coal and wood supply company to the south. The 1923 map shows this area as a Goodyear India Rubber Glove Factory with the coal and wood supply company remaining to the south. The 1960 map shows this area has been cleared as a parking lot and an auto sales repair shop and Naugatuck Fuel Company occupies the lot. There are three labeled tanks: gasoline, kerosene, and fuel oil present on the lot. South of this lot, across Smith Lane, is a filling station. The 1968 map shows that the fuel oil company and repair shop are no longer present; however, the building remains with an addition, and it's labeled as a store. Also, Smith Lane and the filling station are no longer present and are now part of a parking lot. On the Southeastern portion of the map, Dunham Hosiery Company occupies the area from 1887 to 1923. From 1960 to 1968, the area is occupied by lofts and a filling station to the east at Elm Street and Rubber Avenue. Also, to note, in the southeast portion of the Sanborn maps, on the eastern side of Elm Street at Rubber Avenue is the Goodyear Metallic Rubber Shoe Company, which occupied the area from approximately 1923 to at least 1968. Prior to 1923, offices were present in this area.

Sanborn map coverage of Old Firehouse Road at Maple Street shows the campus of US Rubber Company extends to Maple Street on the east side of Old Firehouse Road from the late 1880s until at least 1968. Beginning in 1910, the Naugatuck Fire Department station is present on the east side of Old Firehouse Road at Maple Street.

City Directories

The EDR Report included city directories of the project area for the years 1941, 1946, 1951, 1956, 1961, 1968, 1992, 1995, 2000, 2005, 2010, 2014, and 2017. Businesses of potential environmental concern along the Project Area were noted for these years. The 1941 city directory lists Reliable Grain and Fuel Company at 5 Church Street, Naugatuck Fuel Company at 59 Church Street and 87 Church Street, and cleaners at 72 Church Street (Shalett Cleaner) and 78 Church Street (Kievman SJ Cleaner) among other businesses present along the Project Area. By 1946, the dry cleaner at 78 Church Street was the only one present. In 1951, the Naugatuck Fuel Company and the dry cleaner at 78 Church Street are the only businesses present of the aforementioned in the 1941 and 1946 directories. The Naugatuck Fuel Company at 87 Church Street was present until approximately 1961. The dry cleaner at 78 Church Street was present until at least 1968. In later years, primarily small businesses of lesser environmental concern are listed along the Project route.

Records Review

The purpose of the records review is to obtain and review records that would help to evaluate potential environmental concerns in connection with the Project Area and surrounding properties. Federal, State and local regulatory agencies publish databases or "lists" of businesses and properties that handle hazardous materials or hazardous waste or are the known location of a release of hazardous substances to soil and/or groundwater. These databases were reviewed through the EDR report. EDR utilizes a geographical information system to plot the locations of reported spills, leaks, incidents, etc. Kleinfelder reviews this information to help establish if the subject property, or nearby properties, have been included in the noted databases and lists. The EDR report includes two maps that show the locations of the listed properties in the vicinity of the Project Area, along with a summary of pertinent information for these properties. For each listed property, the summaries include the name of the responsible party, the property address, the distance and direction from the subject property, and the databases and lists on which the listed property appears. Additional details regarding listed properties may be found following the Executive Summary and maps. Database dates are also included in the EDR report.

CT DEEP Contaminated or Potentially Contaminated Sites

The information was compiled from the listings presented in the EDR Report and an online search of records available through CT DEEP. Property addresses for listed releases within or adjacent to the Project Area with the potential to impact the Project areas are discussed below, listed in **Table 1**, and shown on **Figure 1**.

US/CT Brownfields Sites:

6 Rubber Avenue, 0 Maple Street, and 58 Maple Street properties all comprise the former US Rubber Company property and are all listed as CT and US Brownfields sites.

The 6 Rubber Avenue property is referred to as “Parcel A” and according to a Phase III Investigation Report Addendum dated 2017, remedial actions had been proposed to facilitate redevelopment of the property for residential and commercial use. Contaminants of concern in soil include polycyclic aromatic hydrocarbons (PAH) and metals as a result of the presence of historic fill material which also included demolition debris, and polychlorinated biphenyls (PCBs) which have also been identified in the fill material, as well as volatile organic compounds (VOCs) and petroleum hydrocarbons. Petroleum hydrocarbons, PAH, VOC and metals have also been identified in groundwater. According to the report, a remedial excavation was proposed as a remedial option for the property which would remove surficial contamination, followed by the implementation of an environmental land use restriction (ELUR) to render contamination isolated below four feet below the ground surface. According to the EPA, cleanup for this property has not yet been completed.

0 Maple Street is referred to as “Parcel B”. PCB-contaminated soils that exceed the allowable levels for high occupancy use under EPA’s 40 CFR Section 761.61(a) have been identified in areas of this parcel and a proposal was submitted to EPA to remove all soil with concentrations greater than 50 parts per million PCB’s in accordance with the regulations. An approval to

proceed letter from EPA is on file from March 2022. It is unknown whether this excavation has been completed.

58 Maple is referred to as “Parcel C”. The goal for this property is to reduce soil and groundwater concentrations to levels via remedial excavation that will allow for unrestricted use on a portion of the property planned for redevelopment with an ELUR for the remainder of the property. According to the EPA, cleanup for this property has not yet been completed.

Based on available reports for each of the parcels, it appears that the contamination associated with the former US Rubber Company has been adequately defined and limited to the property boundaries. However, the potential exists for encountering impacted soil within the Project Area in the vicinities of these three properties.

LUST Sites:

32 Rubber Street - The 32 Rubber Avenue property is the location of a former gasoline filling station and is listed as having a leaking underground storage tank (LUST) reported in 1989 during the removal of underground storage tanks (USTs). According to the CT DEEP list of contaminated or potentially contaminated sites, the LUST associated with this property is completed. This property was also listed in the historical auto database as a gasoline filling station from 1972 to 1993.

69 Rubber Avenue is just outside of Project Area but listed as having a LUST associated with gasoline USTs. According to available information, this property, currently operating as Cumberland Farms, is under investigation and no further information is available.

229 Church Street is the location of Naugatuck Town Hall, which is just outside of the Project Area and was listed as a LUST in 2001 upon the removal of a gasoline UST. According to the CT DEEP list of contaminated or potentially contaminated sites, remediation has started at this property; however, no further information is available.

Based on locations and current status, these three properties do not appear likely to affect the Project Area.

Other Sites of Potential Concern:

63 Rubber Avenue is located just outside of the Project Area and was listed as a historical dry cleaner between 1982 and 2005. There were no listed releases for this property.

7 Rubber Avenue is also located just outside of the Project Area and is listed as a historical gas station between 1987 to 1995. There were no listed releases for this property.

Discussion and Recommendations

Based on available information, the Project Area has been developed since at least the late 1800s by commercial and industrial properties. Historic properties with the potential to pose an

environmental concern within the Project Area include a former rubber manufacturing company campus, a clothing and shoe manufacturing company, a coal and wood supply company and a fuel company. There are also current and former gasoline filling stations along the Project Area. There are three US/CT Brownfields sites present along the Project Area all related to the former rubber manufacturing company that occupied the area until at least the late 1960s, as well as three listed LUST sites. All of these properties are in various stages of assessment and/or remediation.

Based on the usage and environmental history of the Project Area, there is a potential for encountering soil and/or groundwater contamination related to the previously mentioned properties. Prior to construction activities, it is recommended that soil samples be collected for laboratory analysis to determine soil disposal requirements. If evidence of soil contamination is noted, the soil should be segregated and not reused in other locations; however, can be reused in the area of origin. If surplus soils with concentrations equaling or exceeding a CT DEEP threshold are identified during construction, these soils will require proper management in accordance with State regulations. Confirmation of contaminant concentrations should be made following excavation due to the variability found in fill soils. It is recommended that material related to a former UST be screened and inspected for contamination.

Installation of groundwater monitoring wells is recommended if any planned excavation is likely to extend into the groundwater table. Based on the depth to groundwater noted at properties in the vicinity, the need for excavation dewatering is unlikely; however, if dewatering is needed, it may be discharged near the point of origin via an adjacent excavation, following appropriate characterization and under the required permit. If this is infeasible, groundwater may be pumped to an adjacent stormwater system, under a required National Pollution Discharge Elimination System (NPDES) Construction General Permit. The Contractor will be responsible for obtaining applicable permits, performing required sampling, designing any necessary pretreatment, and ensuring compliance with the permit(s). Alternatively, water may be stored in a fractionation tank or tanker truck and disposed of at a licensed facility. If evidence of groundwater contamination is encountered, work in this area should be performed in accordance with applicable regulations.

FIGURE

KLEINFELDER
Bright People. Right Solutions.

200 Corporate Place, Suite 310
Rocky Hill, CT 06067
phone: 860-563-7775
www.kleinfelder.com

FIGURE 1

REPORTED RELEASE SITES

NAUGATUCK, CT

N

0 30 60 Feet

1:720

ORIGINAL DRAWING SIZE IS 22 X 34

DOWNTOWN STORM & SEWER IMPROVEMENTS NAUGATUCK, CT

BOROUGH OF NAUGATUCK INCORPORATED 1844 CONNECTICUT

PROJECT NO.	20225069.001A
ISSUE DATE	
CURRENT REVISION	
DESIGNED BY	AD
DRAWN BY	AD
CHECKED BY	MP
APPROVED BY	NK

15

Legend

- Proposed Storm Manhole Rehabilitation
- New Proposed Storm Manhole
- Proposed Storm Pipe Rehabilitation
- New Proposed Storm Pipe
- New Proposed Sanitary Manhole
- Proposed Sanitary Manhole Rehabilitation
- Proposed Sanitary Pipe Rehabilitaiton
- Storm Pipe
- Disconnected Storm Pipe
- Sanitary Pipes
- Project Boundary

TABLES

TABLE 1

Listed Releases with the Potential to Impact the Project Areas

Site Name or Location Aid	Site Address	Notification Date	Compliance Status	Contaminants of Concern	Depth to Groundwater (ft bgs)	Adjacent to project area?	Comments
General Datacom Inc	6 Rubber Avenue	2001	Voluntary Remediation	VOCs, PAHs, ETPH, PCBs and Metals (arsenic/lead)	4 - 22.5 feet	Yes	Groundwater flow towards the Naugatuck River, away from the Project Area.
UniRoyal Parcel B	0 Maple Street	2001	Voluntary Remediation	VOCs, PAHs, ETPH, PCBs and Metals (arsenic/lead)	4 - 22.5 feet	Yes	Groundwater flow towards the Naugatuck River, away from the Project Area.
UniRoyal Parcel C	58 Maple Street	2011	Voluntary Remediation	VOCs, PAHs, ETPH, PCBs and Metals (arsenic/lead)	N/A	Yes	
TMC Realty Company (former Charlie Clark's Service Station)	32 Rubber Avenue	8/1/1989	LUST - Completed	Gasoline	Unknown	Yes	
Cumberland Farms	69 Rubber Avenue	1/13/1998	Site Investigation	Gasoline	Unknown	yes	
Naugatuck Town Hall	229 Church Street	5/152001	Cleanup Initiated	Gasoline	Unknown	yes	

APPENDIX A
ENVIRONMENTAL DATABASE REPORT

Naugatuck
Naugatuck
Naugatuck, CT 06770

Inquiry Number: 7147837.2s
October 14, 2022

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NAUGATUCK
NAUGATUCK, CT 06770

COORDINATES

Latitude (North):	41.4905610 - 41ˆ 29' 26.01''
Longitude (West):	73.0553650 - 73ˆ 3' 19.31''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	662336.5
UTM Y (Meters):	4594829.0
Elevation:	216 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	11730123 NAUGATUCK, CT
Version Date:	2018
North Map:	11730151 WATERBURY, CT
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140717
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
NAUGATUCK
NAUGATUCK, CT 06770

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	LAUREL PARK, INC.	HUNTERS MTN RD	NPL, SEMS, US ENG CONTROLS, ROD, PRP, CONSENT	Same	4434, 0.840, SW
A1	UNIROYAL PARCEL C -	58 MAPLE STREET	US BROWNFIELDS, FINDS	Lower	1 ft.
A2	TOWN OF NAUGATUCK DP	58 MAPLE ST	CT ENG CONTROLS, CT ASBESTOS	Lower	1 ft.
A3	PARCEL C BUILDING 25	58 MAPLE STREET	CT BROWNFIELDS, CT SPILLS	Lower	1 ft.
B4	CHARLES F. CLARK (FO	32 RUBBER AVE	CT UST	Lower	1 ft.
B5	GENERAL DATACOMM, IN	6 RUBBER AVE	CT BROWNFIELDS, CT PROPERTY, CT AIRS, CT NPDES	Lower	1 ft.
B6	GENERAL DATACOMM IND	6 RUBBER AVE	CT MANIFEST	Lower	1 ft.
B7	TMC REALTY (FORMER C	32 RUBBER AVE.	CT LUST, CT CPCS	Lower	1 ft.
B8	GENERAL DATA COMM	6 RUBBER AVE	CT ASBESTOS, CT MANIFEST	Lower	1 ft.
B9	NAUGATUCK MANUFACTUR	6 RUBBER AVE	CT UST	Lower	1 ft.
B10	GENERAL DATACOMM, IN	6 RUBBER AVE	RCRA-SQG, CT SDADB, US AIRS, FINDS, ECHO, CT CPCS	Lower	1 ft.
B11	MXI ENV HHHWC	6 RUBBER AVE	RCRA-VSQG	Lower	1 ft.
B12	CLARK CHARLES F	32 RUBBER AVE	EDR Hist Auto	Lower	1 ft.
B13	T.F. BUTTERFIELD INC	56 & 32 RUBBER AVENU	CT SDADB, CT PROPERTY, CT CPCS, CT LWDS	Lower	1 ft.
B14	GENERAL DATACOMM	6 RUBBER AVE	CT MANIFEST	Lower	1 ft.
B15	DOWNTOWN NAUGATUCK -	6 RUBBER AVENUE	CT BROWNFIELDS	Lower	1 ft.
B16	6 RUBBER AVE	6 RUBBER AVE	US BROWNFIELDS, FINDS	Lower	1 ft.
B17	MELCHIONE CARMEN T	63 RUBBER AVE	EDR Hist Cleaner	Lower	1 ft.
A18	TOWN HALL - BOROUGH	229 CHURCH ST	CT UST	Higher	2, 0.000,
A19		229 CHURCH ST	CT LUST, CT SPILLS	Higher	2, 0.000,
A20	NAUGATUCK TOWN OF	229 CHURCH ST	CT MANIFEST	Higher	2, 0.000,
B21	NAUGATUCK TEXACO	7 RUBBER AVE	EDR Hist Auto	Lower	2, 0.000,
22	HERITAGE BANK (SALEM	173 CHURCH ST	CT UST	Lower	7, 0.001, South
A23	FIRE DEPT HEADQUARTE	41 MAPLE ST	CT SPILLS, CT MANIFEST, CT NPDES	Higher	26, 0.005, SE
B24	LEWIS ENGINEERING	52 RUBBER AVENUE	CT LWDS	Lower	31, 0.006, SSW
C25	DOOVAL TOOL & MFG	35 ELM ST	RCRA NonGen / NLR, FINDS, ECHO	Lower	79, 0.015, South
C26	DOOVAL TOOL & MFG	35 ELM ST	CT MANIFEST	Lower	79, 0.015, South
C27	DOOVAL TOOL & MFG.,	35 ELM STREET	CT SDADB, CT LWDS	Lower	79, 0.015, South
28	VARANELLI ORAL SURGE	159 MEADOW ST	CT MANIFEST	Lower	83, 0.016, WNW
D29	CUMBERLAND FARMS	69 RUBBER AVE	CT MANIFEST	Lower	165, 0.031, SSW
D30		69 RUBBER AVE	CT LUST, CT SPILLS	Lower	165, 0.031, SSW
D31	CUMBERLAND FARMS #66	69 RUBBER AVE	CT UST	Lower	165, 0.031, SSW
D32	CUMBERLAND FAMRS	69 RUBBER RD	CT MANIFEST	Lower	165, 0.031, SSW
D33	RITE AID 1375	56 RUBBER AVE	RCRA-VSQG, FINDS, ECHO	Lower	190, 0.036, SSW
D34	RITE AID #1375	56 RUBBER AVE	CT SPILLS, CT MANIFEST, CT NPDES	Lower	190, 0.036, SSW
E35	RICK'S AUTO SERVICE	27 SOUTH MAIN STREET	CT LUST, CT SPILLS	Lower	231, 0.044, ESE
E36	RICK'S AUTO SERVICE	27 SOUTH MAIN STREET	CT SDADB, CT CPCS	Lower	231, 0.044, ESE
E37	SCHELTHE WILLIAM	27 S MAIN ST	EDR Hist Auto	Lower	231, 0.044, ESE
E38	BILL SCHEITHE SERVIC	27 S MAIN ST	CT UST	Lower	231, 0.044, ESE

MAPPED SITES SUMMARY

Target Property Address:
NAUGATUCK
NAUGATUCK, CT 06770

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
C39	GUERRERA RJ INC	51 ELM ST	CT MANIFEST	Lower	235, 0.045, South
C40	R.J. GUERRERA, INC.	51 ELM ST	CT UST	Lower	235, 0.045, South
C41	GUERRERA R J INC	51 ELM ST	RCRA NonGen / NLR, FINDS, ECHO, RI MANIFEST	Lower	235, 0.045, South
C42	RJ GUERRERA	51 ELM ST	CT MANIFEST, CT NPDES	Lower	235, 0.045, South
E43		109 SOUTH MAIN STREE	CT LUST	Lower	248, 0.047, ESE
E44	CHARLIES SERVICE STA	109 SOUTH MAIN ST	CT MANIFEST	Lower	248, 0.047, ESE
E45	CHARLIE'S SERVICE ST	109 S MAIN ST	CT UST	Lower	248, 0.047, ESE
E46	JAZINA CHARLES	109 SOUTH MAIN ST	EDR Hist Auto	Lower	248, 0.047, ESE
E47	JAZINA CHARLES	106 S MAIN ST	EDR Hist Auto	Lower	283, 0.054, ESE
48	NAUGATUCK GUARD ARMO	RUBBER AVE.	CT LUST, CT SPILLS, CT CPCS	Lower	301, 0.057, SSE
D49	DECARLOS AUTO REPAIR	5 MEADOW ST	EDR Hist Auto	Lower	310, 0.059, SSW
D50	DECARLO AUTOMOTIVE	5 MEADOW ST	CT UST	Lower	310, 0.059, SSW
51	NAUGATUCK RAILROAD	102 WATER ST	CT MANIFEST	Lower	335, 0.063, ENE
D52	DECARLO AUTOMOTIVE	5 MEADOW ST	RCRA NonGen / NLR, FINDS, ECHO	Lower	361, 0.068, SSW
F53	NAUGATUCK TOWN BD OF	51 HILLSIDE AVE	CT SPILLS, CT MANIFEST	Higher	387, 0.073, WNW
F54	NAUGATUCK BOE	51 HILLSIDE AVE	CT ASBESTOS, CT MANIFEST	Higher	387, 0.073, WNW
G55		38 CHERRY ST	CT LUST, CT SPILLS	Lower	438, 0.083, SSW
E56	UNIROYAL PARCEL B	0 MAPLE STREET	US BROWNFIELDS, FINDS	Lower	450, 0.085, ESE
G57	GOUVIAS GARAGE	25-30 CHERRY ST	EDR Hist Auto	Lower	464, 0.088, SSW
58	FISHER RONALD	111 RUBBER AVE	EDR Hist Auto	Lower	490, 0.093, SSW
59	ANTHONY COSTA	167 MAPLE STREET	CT SPILLS, CT CPCS	Lower	522, 0.099, ESE
H60	YMCA	284 CHURCH ST.	CT CPCS	Higher	570, 0.108, North
H61	NAUGATUCK YMCA	284 CHURCH ST	CT MANIFEST	Higher	570, 0.108, North
H62	YMCA	284 CHURCH ST.	CT LUST, CT SPILLS	Higher	570, 0.108, North
H63	NAUGATUCK YMCA	284 CHURCH ST	CT UST	Higher	570, 0.108, North
I64	HOBSON BUILDING	CHURCH ST (174-210)	CT UST	Lower	575, 0.109, South
H65	NAUGATUCK POST OFFIC	285 CHURCH ST	CT UST	Higher	588, 0.111, NNE
J66	NAUGATUCK MAINTENANC	ROUTE #8 N/B	CT UST	Lower	603, 0.114, SSE
I67	ROTELLA MADELINE	23 SCOTT ST	CT MANIFEST	Lower	669, 0.127, South
H68	SNET	295 CHURCH STREET	CT SDADB, CT PROPERTY	Higher	699, 0.132, NNE
H69	SOUTHERN NEW ENGLAND	295 CHURCH ST	RCRA NonGen / NLR, FINDS, ECHO	Higher	699, 0.132, NNE
H70	NAUGATUCK C.O. #1551	295 CHURCH ST	CT UST	Higher	699, 0.132, NNE
K71	STEVEN GRANDE	20 GEORGE STREET	NY MANIFEST	Higher	706, 0.134, West
K72	STEVE GRANDY	20 GEORGE ST	CT MANIFEST	Higher	706, 0.134, West
L73	NAUGATUCK TRAIN STAT	195 WATER STREET	CT BROWNFIELDS	Lower	728, 0.138, NE
74	TRIPLE A REFRIGERATI	46 HOTCHKISS ST	CT MANIFEST	Lower	774, 0.147, SSE
J75	HOTCHKISS HOLDING IN	26 HOTCHKISS ST	CT UST	Lower	781, 0.148, SE
J76	WASOKA CHARLES	26 HOTCHKISS ST	CT SDADB, CT PROPERTY, RCRA NonGen / NLR, FINDS,...	Lower	781, 0.148, SE
J77	SALEM CHEVROLET	125 S MAIN ST	CT UST	Lower	800, 0.152, SE

MAPPED SITES SUMMARY

Target Property Address:
NAUGATUCK
NAUGATUCK, CT 06770

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
J78	SALEM CHEVROLET	125 S MAIN ST	RCRA NonGen / NLR, FINDS, ECHO, CT MANIFEST	Lower	800, 0.152, SE
J79	SALEM CHEVROLET	125 SOUTH MAIN STREE	CT AUL, CT PROPERTY, CT SPILLS, CT NPDES	Lower	800, 0.152, SE
H80	LAWRENCE TANNENBAUM	305 CHURCH ST	CT MANIFEST	Lower	808, 0.153, NNE
L81	LEONE PROPERTY	202 WATER STREET	CT LUST, CT ENF	Lower	828, 0.157, NE
M82	CONNECTICUT WATER CO	250 MEADOW	CT LUST, CT SPILLS, CT MANIFEST	Higher	855, 0.162, North
M83	CONNECTICUT WATER CO	250 MEADOW ST	CT UST, CT CPCS	Higher	855, 0.162, North
M84	CONNECTICUT WATER CO	250 MEADOW ST	CT SPILLS, CT MANIFEST	Higher	855, 0.162, North
N85	FABRICATED METAL PRO	1 RISDON ST	CT SPILLS, RCRA NonGen / NLR, CT CPCS, CT LWDS, CT...	Lower	865, 0.164, SW
N86	FIRST HARTFORD CAPIT	1 RISDON STREET	CT ASBESTOS, CT MANIFEST	Lower	865, 0.164, SW
N87	RISDON-AMS (USA), IN	1 RISDON WAY	CT SDADB, RCRA NonGen / NLR, ICIS, US AIRS, CT...	Lower	865, 0.164, SW
N88	FABRICATED METAL PRO	1 RISDON ST	CT MANIFEST	Lower	865, 0.164, SW
N89	FABRICATED METAL PRO	1 RISDON ST	CT MANIFEST	Lower	865, 0.164, SW
N90	FABRICATED METAL PRO	1 RISDON ST	CT UST	Lower	865, 0.164, SW
O91	SAINT FRANCIS CHURCH	318 CHURCH ST	CT UST	Higher	946, 0.179, North
O92	ST FRANCIS OF ASSISI	318 CHURCH ST	CT MANIFEST	Higher	946, 0.179, North
93	DASILVA PROPERTY	35-37 ELMWOOD STREET	CT LUST	Higher	996, 0.189, NW
94	SHELL		CT LWDS	Higher	1124, 0.213, SSW
95	AVENUE CLEANERS	160 RUBBER AVE	RCRA NonGen / NLR, FINDS, ECHO	Higher	1147, 0.217, SW
96	RAM WELDING INC	151 ELM ST	RCRA NonGen / NLR, FINDS, ECHO, CT MANIFEST	Lower	1188, 0.225, South
P97	WESSON TEXACO STATIO	240 SOUTH MAIN ST. (	CT LUST, CT CPCS	Higher	1217, 0.230, SE
Q98	CAR KENYON TECHNOLOG	238 WATER STREET	CT MANIFEST	Lower	1279, 0.242, NNE
Q99	GAR KENYON TECHNOLOG	238 WATER STREET	CT MANIFEST	Lower	1279, 0.242, NNE
Q100	LEWIS ENGINEERING CO	238 WATER ST	CT UST, RCRA NonGen / NLR, US AIRS, FINDS, ECHO,...	Lower	1279, 0.242, NNE
Q101	LEWIS ENGINEERING CO	238 WATER STREET	CT SDADB	Lower	1279, 0.242, NNE
Q102	GARKENYON TECHNOLOGI	238 WATER STREET	CT MANIFEST	Lower	1279, 0.242, NNE
P103		282 SOUTH MAIN ST	CT LUST, CT SPILLS	Lower	1407, 0.266, SE
R104	RISDON MFG. FABRICAT	1 ANDREW ST.	CT LUST, CT CPCS	Higher	1665, 0.315, WSW
R105	226 RUBBER AVENUE	226 RUBBER AVENUE	CT VCP	Higher	1765, 0.334, WSW
S106	27 ANDREW AVE	27 ANDREW AVENUE	CT BROWNFIELDS	Higher	1801, 0.341, WSW
S107	27 ANDREW AVE	27 ANDREW AVE	US BROWNFIELDS	Higher	1801, 0.341, WSW
S108	BOROUGH OF NAUGATUCK	34 ANDREW AVE.	CT SWRCY	Higher	1815, 0.344, SW
T109	NAUGATUCK PUBLIC WOR	246 RUBBER AVE	CT SWF/LF, CT SWRCY, CT MANIFEST	Higher	1931, 0.366, WSW
T110	251 RUBBER AVE	251 RUBBER AVE	US BROWNFIELDS	Higher	1945, 0.368, WSW
111	UNIROYAL, INC.	ELM STREET	CT SPILLS, CT CPCS	Higher	2085, 0.395, South
112	UNIROYAL CHEMICAL CO	ELM STREET	CT LUST, CT SPILLS, CT CPCS	Lower	2402, 0.455, SSE
113	FLABEG TECHNICAL GLA	451 CHURCH ST	CT SDADB, CT LUST, CT UST, CT SPILLS	Higher	2465, 0.467, North
U114	LANXESS CORPORATION	280 ELM ST	CORRACTS, RCRA-TSDF, RCRA-LQG, US FIN ASSUR, 2020..	Lower	2718, 0.515, South
U115	UNIROYAL CHEMICAL CO	280 ELM STREET	CT SHWS, CT SDADB, CT CPCS	Lower	2718, 0.515, South
116	LAUREL PARK LANDFILL	HUNTERS MOUNTAIN ROA	CT SHWS, CT SDADB, CT SPILLS, CT CPCS, CT NPDES	Higher	4777, 0.905, SW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US INST CONTROLS ---------- Institutional Controls Sites List

Federal ERNS list

ERNS ---------- Emergency Response Notification System

Lists of state and tribal leaking storage tanks

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

Lists of state and tribal registered storage tanks

FEMA UST ---------- Underground Storage Tank Listing
CT AST ---------- Marine Terminals and Tank Information
INDIAN UST ---------- Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
CT CDL	Clandestine Drug Lab Listing
US CDL	National Clandestine Laboratory Register
CT PFAS	PFAS Contamination Site Listing

Local Land Records

CT LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CT SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
EPA WATCH LIST	EPA WATCH LIST
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
RMP	Risk Management Plans
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing

CT DRYCLEANERS ---------- Drycleaner Facilities
CT LEAD ---------- Lead Inspection Database
CT SEH ---------- List of Significant Environmental Hazards Report to DEEP
CT UIC ---------- Underground Injection Control Listing
MINES MRDS ---------- Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---------- EDR Proprietary Manufactured Gas Plants

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

CT RGA HWS ---------- Recovered Government Archive State Hazardous Waste Facilities List
CT RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 07/26/2022 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LAUREL PARK, INC. Cerclis ID:: 100232 EPA Id: CTD980521165	***HUNTERS MTN RD***	***SW 1/2 - 1 (0.840 mi.)***	***0***	***8***

EXECUTIVE SUMMARY

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 06/20/2022 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LANXESS CORPORATION EPA ID:: CTD001449826	***280 ELM ST***	***S 1/2 - 1 (0.515 mi.)***	***U114***	***570***

Lists of Federal RCRA generators

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 06/20/2022 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL DATACOMM, IN EPA ID:: CTD981071822	***6 RUBBER AVE***	***0 - 1/8 (0.000 mi.)***	***B10***	***102***

RCRA-VSQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-VSQG list, as provided by EDR, and dated 06/20/2022 has revealed that there are 2 RCRA-VSQG sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MXI ENV HHHWC EPA ID:: CTP000034518	6 RUBBER AVE	0 - 1/8 (0.000 mi.)	B11	144
RITE AID 1375 EPA ID:: CTD002592517	***56 RUBBER AVE***	***SSW 0 - 1/8 (0.036 mi.)***	***D33***	***249***

Lists of state- and tribal hazardous waste facilities

CT SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Environmental Protection's Inventory of Hazardous Disposal Sites.

A review of the CT SHWS list, as provided by EDR, and dated 04/23/2010 has revealed that there are 2 CT SHWS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LAUREL PARK LANDFILL State ID: 251 EPA ID: CTD980521165	***HUNTERS MOUNTAIN ROA***	***SW 1/2 - 1 (0.905 mi.)***	***116***	***774***

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNIROYAL CHEMICAL CO State ID: 252 EPA ID: CTD001449826	***280 ELM STREET***	***S 1/2 - 1 (0.515 mi.)***	***U115***	***771***

CT SDADB: Site Discovery and Assessment Database.

A review of the CT SDADB list, as provided by EDR, and dated 04/23/2010 has revealed that there are 9 CT SDADB sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SNET Facility Id: 4554	***295 CHURCH STREET***	***NNE 1/8 - 1/4 (0.132 mi.)***	***H68***	***361***
FLABEG TECHNICAL GLA Facility Id: 2774	***451 CHURCH ST***	***N 1/4 - 1/2 (0.467 mi.)***	***113***	***563***

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL DATACOMM, IN Facility Id: 4550	***6 RUBBER AVE***	***0 - 1/8 (0.000 mi.)***	***B10***	***102***
T.F. BUTTERFIELD INC Facility Id: 769	***56 & 32 RUBBER AVENU***	***0 - 1/8 (0.000 mi.)***	***B13***	***147***
DOOVAL TOOL & MFG., Facility Id: 1943	***35 ELM STREET***	***S 0 - 1/8 (0.015 mi.)***	***C27***	***206***
RICK'S AUTO SERVICE Facility Id: 2690	***27 SOUTH MAIN STREET***	***ESE 0 - 1/8 (0.044 mi.)***	***E36***	***263***
WASOKA CHARLES Facility Id: 4555	***26 HOTCHKISS ST***	***SE 1/8 - 1/4 (0.148 mi.)***	***J76***	***381***
RISDON-AMS (USA), IN Facility Id: 3375	***1 RISDON WAY***	***SW 1/8 - 1/4 (0.164 mi.)***	***N87***	***444***
LEWIS ENGINEERING CO Facility Id: 1597	238 WATER STREET	NNE 1/8 - 1/4 (0.242 mi.)	Q101	521

EXECUTIVE SUMMARY

Lists of state and tribal landfills and solid waste disposal facilities

CT SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Department of Environmental Protection's Inventory of Hazardous Disposal Sites.

A review of the CT SWF/LF list, as provided by EDR, and dated 01/31/2022 has revealed that there is 1 CT SWF/LF site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NAUGATUCK PUBLIC WOR	***246 RUBBER AVE***	***WSW 1/4 - 1/2 (0.366 mi.)***	***T109***	***542***

Lists of state and tribal leaking storage tanks

CT LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Protection's Leaking Underground Storage Tank List.

A review of the CT LUST list, as provided by EDR, and dated 07/05/2022 has revealed that there are 16 CT LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported LUST Id: 59196	***229 CHURCH ST***	***0 - 1/8 (0.000 mi.)***	***A19***	***183***
YMCA LUST Id: 28484	***284 CHURCH ST.***	***N 0 - 1/8 (0.108 mi.)***	***H62***	***349***
CONNECTICUT WATER CO LUST Id: 31203	***250 MEADOW***	***N 1/8 - 1/4 (0.162 mi.)***	***M82***	***410***
DASILVA PROPERTY LUST Id: 61019	35-37 ELMWOOD STREET	NW 1/8 - 1/4 (0.189 mi.)	93	467
WESSON TEXACO STATIO LUST Id: 30713	***240 SOUTH MAIN ST. (***	***SE 1/8 - 1/4 (0.230 mi.)***	***P97***	***484***
RISDON MFG. FABRICAT LUST Id: 28485	***1 ANDREW ST.***	***WSW 1/4 - 1/2 (0.315 mi.)***	***R104***	***534***
FLABEG TECHNICAL GLA LUST Id: 36227	***451 CHURCH ST***	***N 1/4 - 1/2 (0.467 mi.)***	***113***	***563***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TMC REALTY (FORMER C LUST Id: 28482	***32 RUBBER AVE.***	***0 - 1/8 (0.000 mi.)***	***B7***	***83***
Not reported LUST Id: 59019	***69 RUBBER AVE***	***SSW 0 - 1/8 (0.031 mi.)***	***D30***	***210***
RICK'S AUTO SERVICE LUST Id: 35611	***27 SOUTH MAIN STREET***	***ESE 0 - 1/8 (0.044 mi.)***	***E35***	***256***
Not reported LUST Id: 61858	109 SOUTH MAIN STREE	ESE 0 - 1/8 (0.047 mi.)	E43	299
NAUGATUCK GUARD ARMO	***RUBBER AVE.***	***SSE 0 - 1/8 (0.057 mi.)***	***48***	***311***

LUST Id: 28486				
Not reported	***38 CHERRY ST***	***SSW 0 - 1/8 (0.083 mi.)***	***G55***	***337***
LUST Id: 59781				
LEONE PROPERTY	***202 WATER STREET***	***NE 1/8 - 1/4 (0.157 mi.)***	***L81***	***406***
LUST Id: 60795				
Not reported	***282 SOUTH MAIN ST***	***SE 1/4 - 1/2 (0.266 mi.)***	***P103***	***523***
LUST Id: 59192				
UNIROYAL CHEMICAL CO	***ELM STREET***	***SSE 1/4 - 1/2 (0.455 mi.)***	***112***	***559***
LUST Id: 31749				

Lists of state and tribal registered storage tanks

CT UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Protection's "Town Inventory" UST Listing.

A review of the CT UST list, as provided by EDR, and dated 05/17/2022 has revealed that there are 20 CT UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
TOWN HALL - BOROUGH Facility Id: 88-5393 Tank Status: Permanently Closed	229 CHURCH ST	0 - 1/8 (0.000 mi.)	A18	179
NAUGATUCK YMCA Facility Id: 88-5325 Tank Status: Permanently Closed Tank Status: Currently In Use	284 CHURCH ST	N 0 - 1/8 (0.108 mi.)	H63	355
NAUGATUCK POST OFFIC Facility Id: 88-5400 Tank Status: Permanently Closed	285 CHURCH ST	NNE 0 - 1/8 (0.111 mi.)	H65	357
NAUGATUCK C.O. #1551 Facility Id: 88-10767 Tank Status: Permanently Closed	295 CHURCH ST	NNE 1/8 - 1/4 (0.132 mi.)	H70	367
CONNECTICUT WATER CO Facility Id: 88-5380 Tank Status: Permanently Closed	***250 MEADOW ST***	***N 1/8 - 1/4 (0.162 mi.)***	***M83***	***415***
SAINT FRANCIS CHURCH Facility Id: 88-5367 Tank Status: Currently In Use Tank Status: Permanently Closed	318 CHURCH ST	N 1/8 - 1/4 (0.179 mi.)	O91	462

Lower Elevation	Address	Direction / Distance	Map ID	Page
CHARLES F. CLARK (FO Facility Id: 88-5407 Tank Status: Permanently Closed	32 RUBBER AVE	0 - 1/8 (0.000 mi.)	B4	64
NAUGATUCK MANUFACTUR Facility Id: 88-8514	6 RUBBER AVE	0 - 1/8 (0.000 mi.)	B9	93

Tank Status: Permanently Closed				
HERITAGE BANK (SALEM Facility Id: 88-11107 Tank Status: Permanently Closed	173 CHURCH ST	S 0 - 1/8 (0.001 mi.)	22	190
CUMBERLAND FARMS #66 Facility Id: 88-5387 Tank Status: Permanently Closed Tank Status: Currently In Use	69 RUBBER AVE	SSW 0 - 1/8 (0.031 mi.)	D31	233
BILL SCHEITHE SERVIC Facility Id: 88-5385 Tank Status: Permanently Closed	27 S MAIN ST	ESE 0 - 1/8 (0.044 mi.)	E38	266
R.J. GUERRERA, INC. Facility Id: 88-5362 Tank Status: Permanently Closed	51 ELM ST	S 0 - 1/8 (0.045 mi.)	C40	276
CHARLIE'S SERVICE ST Facility Id: 88-5383 Tank Status: Permanently Closed	109 S MAIN ST	ESE 0 - 1/8 (0.047 mi.)	E45	300
DECARLO AUTOMOTIVE Facility Id: 88-5333 Tank Status: Permanently Closed	5 MEADOW ST	SSW 0 - 1/8 (0.059 mi.)	D50	315
HOBSON BUILDING Facility Id: 88-11266 Tank Status: Permanently Closed	CHURCH ST (174-210)	S 0 - 1/8 (0.109 mi.)	I64	356
NAUGATUCK MAINTENANC Facility Id: 88-5405 Tank Status: Permanently Closed	ROUTE #8 N/B	SSE 0 - 1/8 (0.114 mi.)	J66	358
HOTCHKISS HOLDING IN Facility Id: 88-12944 Tank Status: Permanently Closed	26 HOTCHKISS ST	SE 1/8 - 1/4 (0.148 mi.)	J75	380
SALEM CHEVROLET Facility Id: 88-5398 Tank Status: Permanently Closed	125 S MAIN ST	SE 1/8 - 1/4 (0.152 mi.)	J77	387
FABRICATED METAL PRO Facility Id: 88-5355 Tank Status: Permanently Closed	1 RISDON ST	SW 1/8 - 1/4 (0.164 mi.)	N90	460
LEWIS ENGINEERING CO Facility Id: 88-11076 Tank Status: Permanently Closed	***238 WATER ST***	***NNE 1/8 - 1/4 (0.242 mi.)***	***Q100***	***492***

State and tribal institutional control / engineering control registries

CT ENG CONTROLS: An Engineered Control is a permanent physical structure designed to safely isolate pollutants which would otherwise not comply with the self-implementing remedial options allowed in the Connecticut Remediation Standard Regulations (RSRs). The ECGD includes a description of what is eligible to be considered as an Engineered Control under section 22a-133k-2(f)(2) of the RSRs, a description of the information necessary for the preparation of complete and approvable applications, a step-by-step outline of the review and approval process, and supplemental resources provided in the appendices.

A review of the CT ENG CONTROLS list, as provided by EDR, and dated 05/26/2022 has revealed that

there is 1 CT ENG CONTROLS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
TOWN OF NAUGATUCK DP	***58 MAPLE ST***	***0 - 1/8 (0.000 mi.)***	***A2***	***61***
Remediation Id: 9332				

CT AUL: Environmental Land Use Restriction sites .

A review of the CT AUL list, as provided by EDR, and dated 05/26/2022 has revealed that there is 1 CT AUL site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SALEM CHEVROLET	***125 SOUTH MAIN STREE***	***SE 1/8 - 1/4 (0.152 mi.)***	***J79***	***399***
Status: Certificate of Title				
Facility Id: 12313				

Lists of state and tribal voluntary cleanup sites

CT VCP: Sites involved in the Voluntary Remediation Program.

A review of the CT VCP list, as provided by EDR, and dated 05/26/2022 has revealed that there is 1 CT VCP site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
226 RUBBER AVENUE	226 RUBBER AVENUE	WSW 1/4 - 1/2 (0.334 mi.)	R105	537

Lists of state and tribal brownfield sites

Brownfields Inventory From Connecticut Brownfields Redevelopment Authority.

A review of the CT BROWNFIELDS list, as provided by EDR, has revealed that there are 5 CT BROWNFIELDS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
27 ANDREW AVE	27 ANDREW AVENUE	WSW 1/4 - 1/2 (0.341 mi.)	S106	539
Database: BROWNFIELDS 2, Date of Government Version: 08/03/2017				

Lower Elevation	Address	Direction / Distance	Map ID	Page
PARCEL C BUILDING 25	***58 MAPLE STREET***	***0 - 1/8 (0.000 mi.)***	***A3***	***62***
Database: BROWNFIELDS 2, Date of Government Version: 08/03/2017				
GENERAL DATACOMM, IN	***6 RUBBER AVE***	***0 - 1/8 (0.000 mi.)***	***B5***	***72***
Database: BROWNFIELDS 2, Date of Government Version: 08/03/2017				
DOWNTOWN NAUGATUCK -	6 RUBBER AVENUE	0 - 1/8 (0.000 mi.)	B15	158
Database: BROWNFIELDS, Date of Government Version: 02/24/2022				
NAUGATUCK TRAIN STAT	195 WATER STREET	NE 1/8 - 1/4 (0.138 mi.)	L73	378
Database: BROWNFIELDS, Date of Government Version: 02/24/2022				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: The EPA's listing of Brownfields properties from the Cleanups in My Community program, which provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

A review of the US BROWNFIELDS list, as provided by EDR, and dated 02/23/2022 has revealed that there are 5 US BROWNFIELDS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
27 ANDREW AVE ACRES property ID: 177222 Cleanup Completion Date: -	27 ANDREW AVE	WSW 1/4 - 1/2 (0.341 mi.)	S107	540
251 RUBBER AVE ACRES property ID: 241628 Cleanup Completion Date: -	251 RUBBER AVE	WSW 1/4 - 1/2 (0.368 mi.)	T110	545

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNIROYAL PARCEL C - ACRES property ID: 92762 Cleanup Completion Date: -	***58 MAPLE STREET***	***0 - 1/8 (0.000 mi.)***	***A1***	***23***
6 RUBBER AVE ACRES property ID: 170608 Cleanup Completion Date: -	***6 RUBBER AVE***	***0 - 1/8 (0.000 mi.)***	***B16***	***159***
UNIROYAL PARCEL B ACRES property ID: 138261 Cleanup Completion Date: -	***0 MAPLE STREET***	***ESE 0 - 1/8 (0.085 mi.)***	***E56***	***342***

Local Lists of Landfill / Solid Waste Disposal Sites

CT SWRCY: List of Department of Environmental Protection's Recycling Facilities

A review of the CT SWRCY list, as provided by EDR, and dated 06/06/2022 has revealed that there are 2 CT SWRCY sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOROUGH OF NAUGATUCK	34 ANDREW AVE.	SW 1/4 - 1/2 (0.344 mi.)	S108	542
NAUGATUCK PUBLIC WOR	***246 RUBBER AVE***	***WSW 1/4 - 1/2 (0.366 mi.)***	***T109***	***542***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA)

of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/20/2022 has revealed that there are 11 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SOUTHERN NEW ENGLAND EPA ID:: CTD980523047	***295 CHURCH ST***	***NNE 1/8 - 1/4 (0.132 mi.)***	***H69***	***364***
AVENUE CLEANERS EPA ID:: CTR000010793	***160 RUBBER AVE***	***SW 1/8 - 1/4 (0.217 mi.)***	***95***	***471***

Lower Elevation	Address	Direction / Distance	Map ID	Page
DOOVAL TOOL & MFG EPA ID:: CTD001186733	***35 ELM ST***	***S 0 - 1/8 (0.015 mi.)***	***C25***	***193***
GUERRERA R J INC EPA ID:: CTD067080648	***51 ELM ST***	***S 0 - 1/8 (0.045 mi.)***	***C41***	***277***
DECARLO AUTOMOTIVE EPA ID:: CTD000840413	***5 MEADOW ST***	***SSW 0 - 1/8 (0.068 mi.)***	***D52***	***323***
WASOKA CHARLES EPA ID:: CTD001186774	***26 HOTCHKISS ST***	***SE 1/8 - 1/4 (0.148 mi.)***	***J76***	***381***
SALEM CHEVROLET EPA ID:: CTD018725440	***125 S MAIN ST***	***SE 1/8 - 1/4 (0.152 mi.)***	***J78***	***388***
FABRICATED METAL PRO EPA ID:: CTD983870924	***1 RISDON ST***	***SW 1/8 - 1/4 (0.164 mi.)***	***N85***	***419***
RISDON-AMS (USA), IN EPA ID:: CTD001166479	***1 RISDON WAY***	***SW 1/8 - 1/4 (0.164 mi.)***	***N87***	***444***
RAM WELDING INC EPA ID:: CTD001186444	***151 ELM ST***	***S 1/8 - 1/4 (0.225 mi.)***	***96***	***473***
LEWIS ENGINEERING CO EPA ID:: CTD001449453	***238 WATER ST***	***NNE 1/8 - 1/4 (0.242 mi.)***	***Q100***	***492***

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 07/26/2022 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LAUREL PARK, INC. EPA ID:: CTD980521165	***HUNTERS MTN RD***	***SW 1/2 - 1 (0.840 mi.)***	***0***	***8***

CONSENT: Major Legal settlements that establish responsibility and standards for cleanup at NPL (superfund) sites. Released periodically by U.S. District Courts after settlement by parties to litigation matters.

A review of the CONSENT list, as provided by EDR, and dated 06/30/2022 has revealed that there is 1 CONSENT site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LAUREL PARK, INC.	***HUNTERS MTN RD***	***SW 1/2 - 1 (0.840 mi.)***	***0***	***8***

CT CPCS: A list of Contaminated or Potentially Contaminated Sites within Connecticut. This list represents the "Hazardous Waste Facilities," as defined in Section 22a-134f of the Connecticut General Statutes (CGS). The list contains the following types of sites: Sites listed on the Inventory of Hazardous Waste Disposal Sites; Sites subject to the Property Transfer Act; Sites at which underground storage tanks are known to have leaked; Sites at which hazardous waste subject to the RCRA; Sites that are included in EPA's (CERCLIS); Sites that are the subject of an order issued by the Commissioner of DEP that requires investigation and remediation of a potential or known source of pollution; and Sites that have entered into one of the Department's Voluntary Remediation Programs.

A review of the CT CPCS list, as provided by EDR, and dated 02/17/2022 has revealed that there are 15 CT CPCS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
YMCA Lust Status: LUST Completed (DEP's significant hazard definition)	284 CHURCH ST.	N 0 - 1/8 (0.108 mi.)	H60	348
CONNECTICUT WATER CO Lust Status: Cleanup Initiated	***250 MEADOW ST***	***N 1/8 - 1/4 (0.162 mi.)***	***M83***	***415***
WESSON TEXACO STATIO Lust Status: Cleanup Initiated	***240 SOUTH MAIN ST. (***	***SE 1/8 - 1/4 (0.230 mi.)***	***P97***	***484***
RISDON MFG. FABRICAT Lust Status: LUST Completed (DEP's significant hazard definition)	***1 ANDREW ST.***	***WSW 1/4 - 1/2 (0.315 mi.)***	***R104***	***534***
UNIROYAL, INC.	***ELM STREET***	***S 1/4 - 1/2 (0.395 mi.)***	***111***	***557***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TMC REALTY (FORMER C Lust Status: Cleanup Initiated	***32 RUBBER AVE.***	***0 - 1/8 (0.000 mi.)***	***B7***	***83***
GENERAL DATACOMM, IN	***6 RUBBER AVE***	***0 - 1/8 (0.000 mi.)***	***B10***	***102***
T.F. BUTTERFIELD INC	***56 & 32 RUBBER AVENU***	***0 - 1/8 (0.000 mi.)***	***B13***	***147***
RICK'S AUTO SERVICE Lust Status: Cleanup Initiated	***27 SOUTH MAIN STREET***	***ESE 0 - 1/8 (0.044 mi.)***	***E36***	***263***
NAUGATUCK GUARD ARMO Lust Status: LUST Completed (DEP's significant hazard definition)	***RUBBER AVE.***	***SSE 0 - 1/8 (0.057 mi.)***	***48***	***311***
ANTHONY COSTA Lust Status: LUST Completed (DEP's significant hazard definition)	***167 MAPLE STREET***	***ESE 0 - 1/8 (0.099 mi.)***	***59***	***346***
FABRICATED METAL PRO	***1 RISDON ST***	***SW 1/8 - 1/4 (0.164 mi.)***	***N85***	***419***
RISDON-AMS (USA), IN	***1 RISDON WAY***	***SW 1/8 - 1/4 (0.164 mi.)***	***N87***	***444***
LEWIS ENGINEERING CO	***238 WATER ST***	***NNE 1/8 - 1/4 (0.242 mi.)***	***Q100***	***492***
UNIROYAL CHEMICAL CO Lust Status: Cleanup Initiated	***ELM STREET***	***SSE 1/4 - 1/2 (0.455 mi.)***	***112***	***559***

EXECUTIVE SUMMARY

CT LWDS: The Leachate and Waste Water Discharge Inventory Data Layer (LWDS) includes point locations digitized from Leachate and Wastewater Discharge Source maps compiled by the Connecticut DEP.

A review of the CT LWDS list, as provided by EDR, and dated 07/17/2009 has revealed that there are 5 CT LWDS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SHELL Leachate and Wastewater Number: 6917008		SSW 1/8 - 1/4 (0.213 mi.)	94	470

Lower Elevation	Address	Direction / Distance	Map ID	Page
T.F. BUTTERFIELD INC Leachate and Wastewater Number: 6917009	***56 & 32 RUBBER AVENU***	***0 - 1/8 (0.000 mi.)***	***B13***	***147***
LEWIS ENGINEERING Leachate and Wastewater Number: 6917005	52 RUBBER AVENUE	SSW 0 - 1/8 (0.006 mi.)	B24	193
DOOVAL TOOL & MFG., Leachate and Wastewater Number: 6900067	***35 ELM STREET***	***S 0 - 1/8 (0.015 mi.)***	***C27***	***206***
FABRICATED METAL PRO Leachate and Wastewater Number: 6917007	***1 RISDON ST***	***SW 1/8 - 1/4 (0.164 mi.)***	***N85***	***419***

CT MANIFEST: Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

A review of the CT MANIFEST list, as provided by EDR, and dated 05/08/2022 has revealed that there are 33 CT MANIFEST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NAUGATUCK TOWN OF EPA Id: CTP000025894	229 CHURCH ST	0 - 1/8 (0.000 mi.)	A20	188
FIRE DEPT HEADQUARTE EPA Id: CTP000012164	***41 MAPLE ST***	***SE 0 - 1/8 (0.005 mi.)***	***A23***	***191***
NAUGATUCK TOWN BD OF EPA Id: CTP000028840	***51 HILLSIDE AVE***	***WNW 0 - 1/8 (0.073 mi.)***	***F53***	***329***
NAUGATUCK BOE EPA Id: 40CFRPART761	***51 HILLSIDE AVE***	***WNW 0 - 1/8 (0.073 mi.)***	***F54***	***335***
NAUGATUCK YMCA EPA Id: CTP000024046	284 CHURCH ST	N 0 - 1/8 (0.108 mi.)	H61	348
STEVE GRANDY EPA Id: CTP000027260	20 GEORGE ST	W 1/8 - 1/4 (0.134 mi.)	K72	377
CONNECTICUT WATER CO EPA Id: CTP000020301	***250 MEADOW***	***N 1/8 - 1/4 (0.162 mi.)***	***M82***	***410***
CONNECTICUT WATER CO EPA Id: CTP000005977	***250 MEADOW ST***	***N 1/8 - 1/4 (0.162 mi.)***	***M84***	***417***
ST FRANCIS OF ASSISI EPA Id: CTP000022027	318 CHURCH ST	N 1/8 - 1/4 (0.179 mi.)	O92	466

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL DATACOMM IND	6 RUBBER AVE	0 - 1/8 (0.000 mi.)	B6	82

EPA Id: CTD981071922				
GENERAL DATA COMM EPA Id: CTP000007559	***6 RUBBER AVE***	***0 - 1/8 (0.000 mi.)***	***B8***	***87***
GENERAL DATACOMM EPA Id: CTD981071822	6 RUBBER AVE	0 - 1/8 (0.000 mi.)	B14	151
DOOVAL TOOL & MFG EPA Id: CTD001186733	35 ELM ST	S 0 - 1/8 (0.015 mi.)	C26	199
VARANELLI ORAL SURGE EPA Id: CESQG	159 MEADOW ST	WNW 0 - 1/8 (0.016 mi.)	28	208
CUMBERLAND FARMS EPA Id: CTP000027598	69 RUBBER AVE	SSW 0 - 1/8 (0.031 mi.)	D29	209
CUMBERLAND FAMRS EPA Id: CTP000026041	69 RUBBER RD	SSW 0 - 1/8 (0.031 mi.)	D32	247
RITE AID #1375 EPA Id: CESQG99999	***56 RUBBER AVE***	***SSW 0 - 1/8 (0.036 mi.)***	***D34***	***252***
GUERRERA RJ INC EPA Id: CTD067080648	51 ELM ST	S 0 - 1/8 (0.045 mi.)	C39	269
RJ GUERRERA EPA Id: CTP000002025	***51 ELM ST***	***S 0 - 1/8 (0.045 mi.)***	***C42***	***294***
CHARLIES SERVICE STA EPA Id: CTP000011115	109 SOUTH MAIN ST	ESE 0 - 1/8 (0.047 mi.)	E44	299
NAUGATUCK RAILROAD EPA Id: CTP000029499	102 WATER ST	ENE 0 - 1/8 (0.063 mi.)	51	322
ROTELLA MADELINE EPA Id: CTP000022641	23 SCOTT ST	S 1/8 - 1/4 (0.127 mi.)	I67	360
TRIPLE A REFRIGERATI EPA Id: CTP000028939	46 HOTCHKISS ST	SSE 1/8 - 1/4 (0.147 mi.)	74	379
SALEM CHEVROLET EPA Id: CTD018725440	***125 S MAIN ST***	***SE 1/8 - 1/4 (0.152 mi.)***	***J78***	***388***
LAWRENCE TANNENBAUM EPA Id: CT$000030460	305 CHURCH ST	NNE 1/8 - 1/4 (0.153 mi.)	H80	405
FIRST HARTFORD CAPIT EPA Id: CTD983870924	***1 RISDON STREET***	***SW 1/8 - 1/4 (0.164 mi.)***	***N86***	***436***
FABRICATED METAL PRO EPA Id: CTD983070924	1 RISDON ST	SW 1/8 - 1/4 (0.164 mi.)	N88	457
FABRICATED METAL PRO EPA Id: CTD983970924	1 RISDON ST	SW 1/8 - 1/4 (0.164 mi.)	N89	459
RAM WELDING INC EPA Id: CTD001186444	***151 ELM ST***	***S 1/8 - 1/4 (0.225 mi.)***	***96***	***473***
CAR KENYON TECHNOLOG EPA Id: CESQG	238 WATER STREET	NNE 1/8 - 1/4 (0.242 mi.)	Q98	490
GAR KENYON TECHNOLOG EPA Id: CESQG	238 WATER STREET	NNE 1/8 - 1/4 (0.242 mi.)	Q99	491
LEWIS ENGINEERING CO EPA Id: CTD001449453	***238 WATER ST***	***NNE 1/8 - 1/4 (0.242 mi.)***	***Q100***	***492***
GARKENYON TECHNOLOGI	238 WATER STREET	NNE 1/8 - 1/4 (0.242 mi.)	Q102	522

EPA Id: CTP000032544

NY MANIFEST: Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

A review of the NY MANIFEST list, as provided by EDR, and dated 01/01/2019 has revealed that there are 2 NY MANIFEST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
STEVEN GRANDE EPA ID: CTP000027260	20 GEORGE STREET	W 1/8 - 1/4 (0.134 mi.)	K71	377

Lower Elevation	Address	Direction / Distance	Map ID	Page
LEWIS ENGINEERING CO EPA ID: CTD001449453	***238 WATER ST***	***NNE 1/8 - 1/4 (0.242 mi.)***	***Q100***	***492***

RI MANIFEST: Hazardous waste manifest information

A review of the RI MANIFEST list, as provided by EDR, and dated 12/31/2020 has revealed that there are 2 RI MANIFEST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
GUERRERA R J INC EPA Id: CTD067080648 Manifest Document Number: CTF1005319	***51 ELM ST***	***S 0 - 1/8 (0.045 mi.)***	***C41***	***277***
LEWIS ENGINEERING CO EPA Id: CTD001449453 Manifest Document Number: RIS0065668	***238 WATER ST***	***NNE 1/8 - 1/4 (0.242 mi.)***	***Q100***	***492***

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 8 EDR Hist Auto sites within approximately 0.125 miles of the target property.

EXECUTIVE SUMMARY

Lower Elevation	Address	Direction / Distance	Map ID	Page
CLARK CHARLES F	32 RUBBER AVE	0 - 1/8 (0.000 mi.)	B12	146
NAUGATUCK TEXACO	7 RUBBER AVE	0 - 1/8 (0.000 mi.)	B21	189
SCHELTHE WILLIAM	27 S MAIN ST	ESE 0 - 1/8 (0.044 mi.)	E37	265
JAZINA CHARLES	109 SOUTH MAIN ST	ESE 0 - 1/8 (0.047 mi.)	E46	310
JAZINA CHARLES	106 S MAIN ST	ESE 0 - 1/8 (0.054 mi.)	E47	310
DECARLOS AUTO REPAIR	5 MEADOW ST	SSW 0 - 1/8 (0.059 mi.)	D49	315
GOUVIAS GARAGE	25-30 CHERRY ST	SSW 0 - 1/8 (0.088 mi.)	G57	345
FISHER RONALD	111 RUBBER AVE	SSW 0 - 1/8 (0.093 mi.)	58	346

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there is 1 EDR Hist Cleaner site within approximately 0.125 miles of the target property.

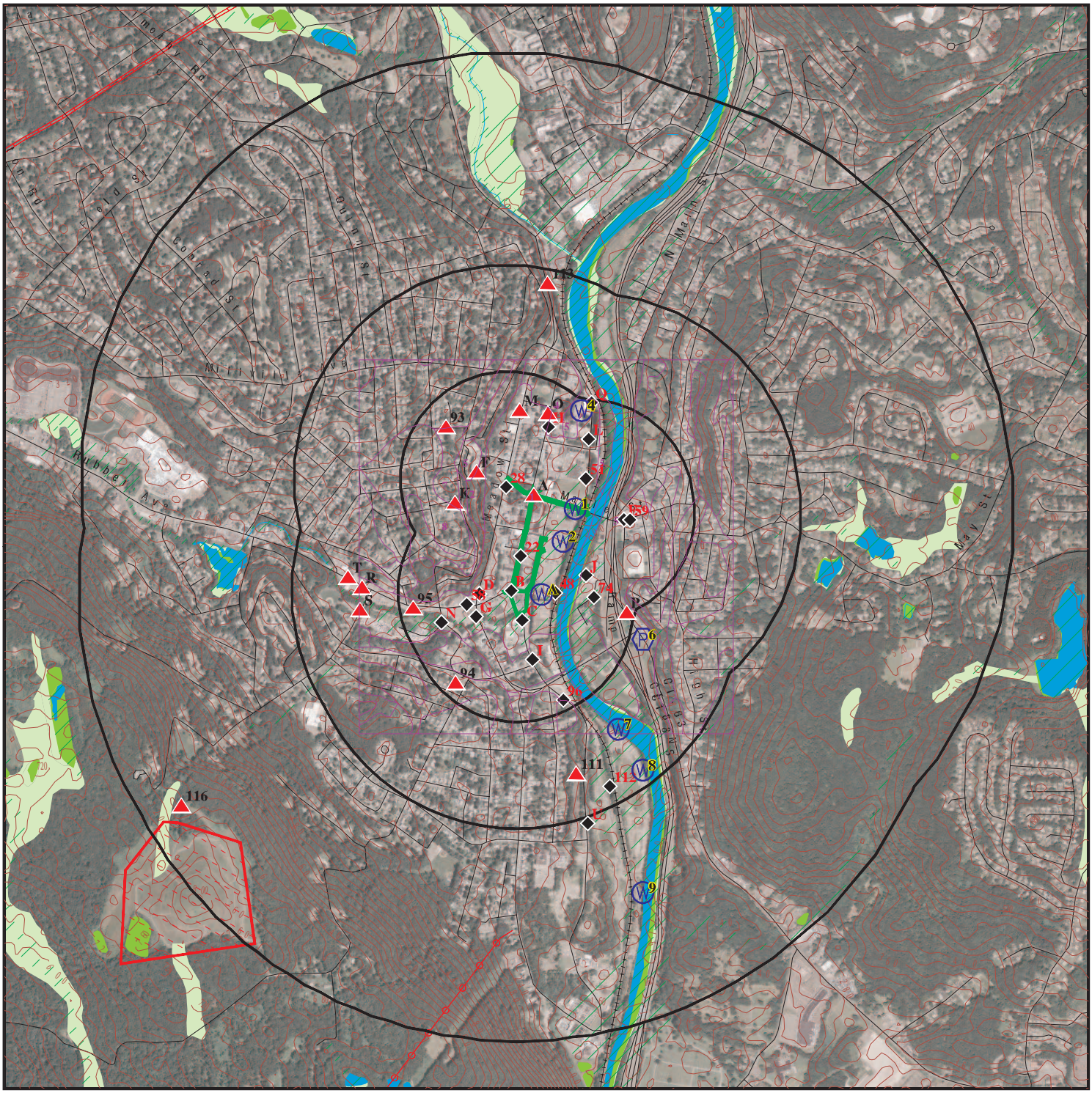
Lower Elevation	Address	Direction / Distance	Map ID	Page
MELCHIONE CARMEN T	63 RUBBER AVE	0 - 1/8 (0.000 mi.)	B17	178

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 14 records.

Site Name	Database(s)
BOROUGH OF NAUGATUCK	CT ASBESTOS
NAUGATUCK GLASS CO.	PRP
UNIROYAL CHEMICAL COMPANY	PRP
COLE SCREW MACHINE PRODUCTS, INC.	PRP
NAUGATUCK BOROUGH "PARCEL C"	CT VCP, CT CPCS
NAUGATUCK BUROUGH OF	CT MANIFEST
BUREAU OF NAUGATUCK PARCE	CT MANIFEST
NAUGATUCK BOROUGH OF	NY MANIFEST
	CT SWF/LF
NU SPILL - NAUGATUCK	FINDS
RISDON CORPORATION (FORMER)	CT VCP
NAUGATUCK BOROUGH "PARCEL C"	CT SDADB
NAUGATUCK GUARD ARMORY	CT RGA LUST
NAUGATUCK ARMORY	CT RGA LUST

OVERVIEW MAP - 7147837.2S

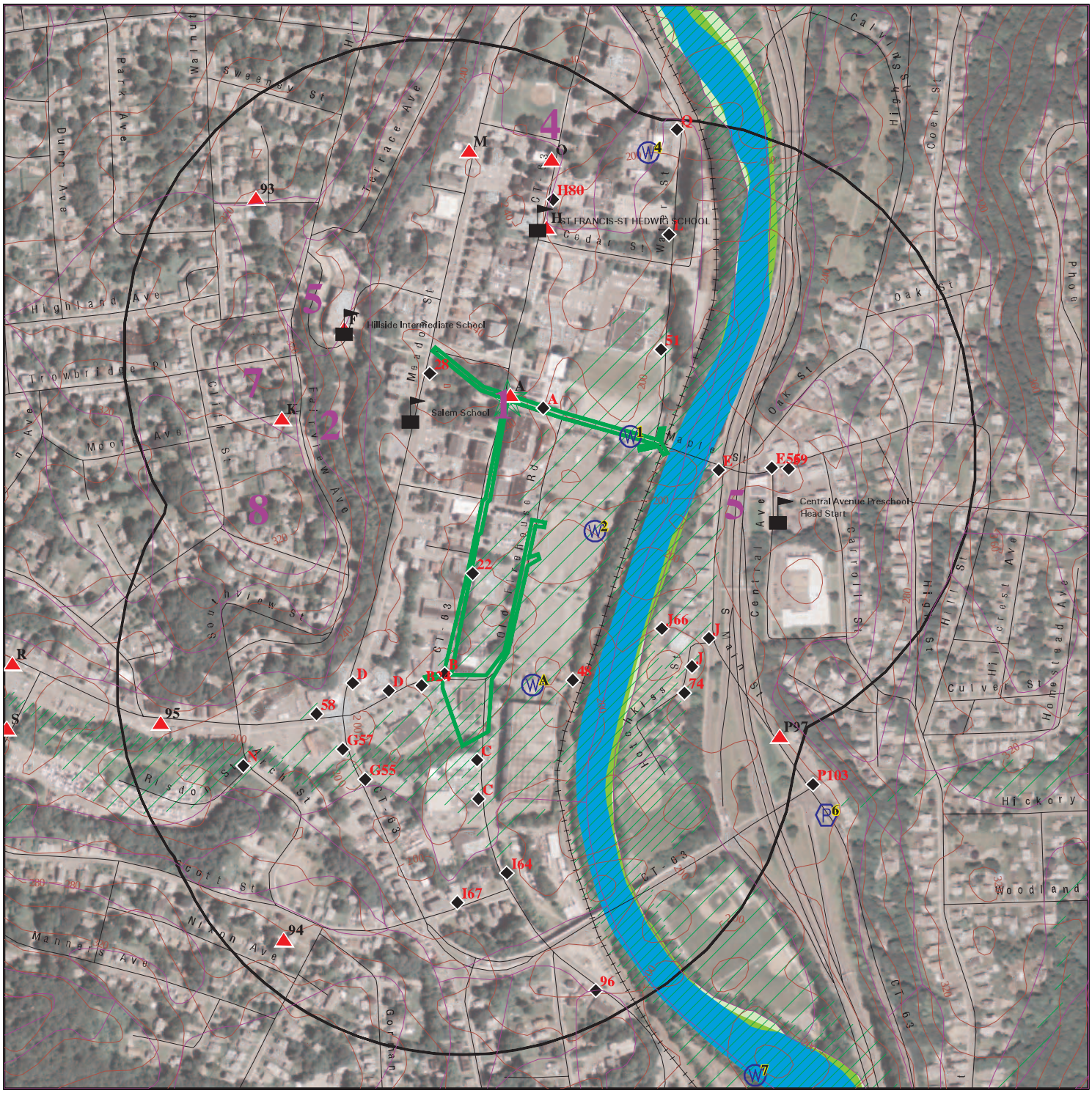


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Naugatuck ADDRESS: Naugatuck Naugatuck CT 06770 LAT/LONG: 41.490561 / 73.055365	CLIENT: Kleinfelder SEA CONTACT: Lisa Stone INQUIRY #: 7147837.2s DATE: October 14, 2022 12:20 pm

DETAIL MAP - 7147837.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory
State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Naugatuck	CLIENT:	Kleinfelder SEA
ADDRESS:	Naugatuck Naugatuck CT 06770	CONTACT:	Lisa Stone
LAT/LONG:	41.490561 / 73.055365	INQUIRY #:	7147837.2s
		DATE:	October 14, 2022 12:21 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	1	NR	1
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	1	NR	1
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		1	0	NR	NR	NR	1
RCRA-VSQG	0.250		2	0	NR	NR	NR	2
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
Lists of state- and tribal hazardous waste facilities								
CT SHWS	1.000		0	0	0	2	NR	2
CT SDADB	0.500		4	4	1	NR	NR	9
Lists of state and tribal landfills and solid waste disposal facilities								
CT SWF/LF	0.500		0	0	1	NR	NR	1
Lists of state and tribal leaking storage tanks								
CT LUST	0.500		8	4	4	NR	NR	16

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
CT UST	0.250		13	7	NR	NR	NR	20
CT AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
CT ENG CONTROLS	0.500		1	0	0	NR	NR	1
CT AUL	0.500		0	1	0	NR	NR	1
Lists of state and tribal voluntary cleanup sites								
CT VCP	0.500		0	0	1	NR	NR	1
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
CT BROWNFIELDS	0.500		3	1	1	NR	NR	5
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		3	0	2	NR	NR	5
Local Lists of Landfill / Solid Waste Disposal Sites								
CT SWRCY	0.500		0	0	2	NR	NR	2
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CT CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
CT PFAS	0.500		0	0	0	NR	NR	0
Local Land Records								
CT PROPERTY	TP		NR	NR	NR	NR	NR	0
CT LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CT SPILLS	TP		NR	NR	NR	NR	NR	0
CT SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		3	8	NR	NR	NR	11

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	1	NR	1
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	1	NR	1
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CT AIRS	TP		NR	NR	NR	NR	NR	0
CT ASBESTOS	TP		NR	NR	NR	NR	NR	0
CT CPCS	0.500		7	5	3	NR	NR	15
CT DRYCLEANERS	0.250		0	0	NR	NR	NR	0
CT ENF	TP		NR	NR	NR	NR	NR	0
CT Financial Assurance	TP		NR	NR	NR	NR	NR	0
CT LEAD	TP		NR	NR	NR	NR	NR	0
CT LWDS	0.250		3	2	NR	NR	NR	5
CT MANIFEST	0.250		17	16	NR	NR	NR	33
NY MANIFEST	0.250		0	2	NR	NR	NR	2
RI MANIFEST	0.250		1	1	NR	NR	NR	2
CT NPDES	TP		NR	NR	NR	NR	NR	0
CT SEH	0.500		0	0	0	NR	NR	0
CT UIC	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		8	NR	NR	NR	NR	8
EDR Hist Cleaner	0.125		1	NR	NR	NR	NR	1
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
CT RGA HWS	TP		NR	NR	NR	NR	NR	0
CT RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	75	51	15	6	0	147

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

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