TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT

NOTICE OF BID

Reconstruction of Guernseytown Road
Watertown Public Works Department
Project Number L153-0003

Sealed bids are invited and will be received by the Purchasing Agent of the Town of Watertown at the office of the Purchasing Agent, Town Hall, 61 Echo Lake Road, Watertown, Connecticut, until **11.00 a.m., Wednesday April 26th, 2023** at which time and place they will be publicly opened and read aloud for furnishing materials, labor and equipment for the Reconstruction of Guernseytown Road.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, Performance and Payment Bonds, and other contract documents may be obtained or examined at the office of the Purchasing Agent, Town Hall, 61 Echo Lake Road, Watertown, Connecticut 06795 or by accessing the Town of Watertown's website at http://www.watertownct.org. Proposals must be submitted on the forms provided and in a sealed envelope plainly marked **"Bid – Reconstruction of Guernseytown Road".**

There will be a **MANDATORY PRE-BID MEETING on Wednesday, April 12th, 2023 at 10:00 a.m.** The meeting will be held on site.

To receive consideration bids must be in the hands of the Purchasing Agent or his authorized representative no later than the day and hour mentioned above.

The Purchasing Agent reserves the right to accept or reject any or all bids; to waive any informality; or to accept any bid deemed in the best interests of the Town of Watertown.

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

All bids will be considered valid for a period of sixty (60) days.

Donna Ford
Purchasing Agent
Town of Watertown

INFORMATION FOR BIDDERS

TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT

Reconstruction of Guernseytown Road
Watertown Public Works Department
Project Number L153-0003

BID OPENING: 11:00 a.m., Wednesday, April 26th, 2023

PROPOSALS RECEIVED

All bids must be in a sealed envelope and received prior to **11:00 a.m., Wednesday April 26, 2023** at the office of the Purchasing Agent, 61 Echo Lake Road, Watertown, Connecticut 06795.

PREPARATION OF PROPOSALS
Proposals must be made upon forms contained herein. The blank spaces in the Proposal must be filled in correctly where indicated. The Bidder must state the prices for which he proposes to do each item of the work contemplated. In case of discrepancy where both words and the numerals are requested, the words shall govern. In case of discrepancy where unit price multiplied by quantity is not equal to total price, the total price shall govern. Ditto marks are not considered writing or printing and shall not be used. The Bidder shall sign his Proposal correctly. If the Proposal is made by an individual, his name, post office address and telephone number 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 and telephone number of the firm, partnership, or corporation. Failure to do so may disqualify the bid.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, post office 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: The Purchasing Agent, Town Hall Annex, 424 Main Street, Watertown, CT 06795.

All information shall be entered in ink or by typewriter. Mistakes may be crossed out and corrections inserted before submission of your bid. The person signing the bid shall initial corrections in ink.

Corrections and/or modifications received after the closing time specified will not be accepted.

SUBMISSION OF PROPOSALS
All proposals and literature shall be submitted **IN DUPLICATE** on the proposal form, which is a part of these specifications.

Descriptive literature containing complete specifications must accompany each bid. If a bidder wishes to furnish additional information, more sheets may be added.

Adobe Acrobat® Reader is required to view electronic documents on-line. If you do not have Adobe Acrobat® Reader, you may down load it for free from Adobe

at http://www.adobe.com/products/acrobat/readstep.html.

Response summaries will be available online at http://www.watertownct.org. on the day of the bid opening.

Responses delivered via fax are received subject to the following qualifications and limitations:

1. The Town is not responsible for the confidentiality of the information transmitted.

2. The Town cannot guarantee that its fax equipment will be operational and able to receive transmittals by a particular time and date. It is the Bidder's responsibility to ensure that quotations are received in their entirety and on time at the required location. It is recommended that vendors be advised to call immediately after transmitting a document electronically to confirm complete and accurate receipt by the Town. The Town assumes no liability in the event that a bidder's electronic transmission is not received by the Town in a timely fashion, or is not received either in its entirety or error-free.

3. Bids transmitted electronically which have a bond requirement are subject to the same submittal requirements as those responses delivered via traditional means, such as mail or hand delivery, or as otherwise stipulated by appropriate authority.

INCURRING COSTS
The Town of Watertown is not liable for any cost incurred for the preparation of proposals or submission of samples by the firms submitting proposals for the work requested in this bid document or request for proposals.

FAMILIARITY WITH THE WORK
Each bidder is considered to have examined the work to fully acquaint himself with the exact existing conditions relating to the work and has fully informed himself as to the work involved and the difficulties and restrictions attending the performance of this bid. Failure to do so will not relieve a bidder of his obligation to furnish all equipment, labor and materials necessary to carry out the work for the consideration set forth in this bid. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.

Where borings or other exploration data is shown on the Plans and/or specifications or made available to the Bidder, it is understood that such data where 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 data has been correctly indicated, and the Bidder is cautioned to take into account that conditions 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 relating to this project. The Bidder agrees that he shall make no claim for and has no right to additional payment or extension of time for completion of the work, or any other concession, because of any interpretations or misunderstanding on his part of this bid, or because of any failure on his part to fully acquaint himself with all conditions relating to the work. Permission for making borings, test pits, destructive tests or other investigations of subsurface conditions will be arranged for by the Owner upon receipt of a written request therefor.

CONSIDERATION OF PRIOR SERVICE
Previous performance, quality of service and merchandise will be considered.

ADDENDA AND INTERPRETATIONS & ALTERNATE PROPOSALS
Addenda information will be available online at http://www.watertownct.org. Adobe Acrobat® Reader may be required to view this document. We strongly suggest that you check for any addenda a minimum of forty-eight hours in advance of the bid deadline.

At the time of the opening of bids each bidder will be presumed to have inspected the work and to have read and to be thoroughly familiar with all of the Contract Documents (including all addenda). The failure or omission of any bidder to receive or examine any form, instruction or document shall in no way relieve any bidder from any obligation in respect to his bid.

If any person contemplating submitting a proposal is in doubt as to the true meaning of any part of these specifications, he may submit a written request for an interpretation to the Purchasing Agent. No interpretations as to the meaning of the plans, specifications or other Contract Documents will be made to any bidder orally.

Every request for such interpretation should be emailed to the Town of Watertown, Purchasing Agent, Donna Ford, ford@watertownct.org to be given consideration, must be received at least five (5) days prior to the date fixed for the opening of Bids. Any and all such interpretations and any supplementary instructions will be in the form of written Addenda to the Specifications which, if issued, will be emailed to all prospective bidders at the respective addresses furnished for such purposes, not later than three (3) 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 any bidder from any obligations under his bid as submitted. All Addenda so issued shall become part of the Contract Documents. Oral explanations will not be binding on the Town.

The specifications listed are to be interpreted as meaning the minimum acceptable by the Town of Watertown. Bidders are requested to submit quotations on the basis of these specifications. Alternative bids providing a broader scope and/or services than requested in these specifications may receive consideration providing such equipment and/or service is clearly explained. Any exceptions to the specifications requested herein must be clearly noted in writing and are to be included as a part of your bid proposal. If none are included it will be assumed that there are none.

Definition of the word "complete" means that each unit of the equipment proposed shall include all appurtenances, fasteners, parts, accessories, and services ordinarily catalogued.

An item equal to that named or described in the specifications may be furnished by the Bidder, except where expressly noted as “no substitutions.” The naming of any commercial name, trademark, or other identification shall not be construed to exclude any item of any manufacturer not mentioned by name, nor limit competition, but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if:

A. It is at least equal in quality, durability, appearance, strength and design.

B. It will perform at least equally the function imposed by the design for the work being contracted for or the material being purchased.

C. It conforms substantially, even with deviations, to the detailed requirements for the item in the specifications.

The Bidder shall hold the Town of Watertown, its officers, agents, servants, and employees, harmless from liability of any nature or kind because of use of any copyrighted or uncopyrighted compositions, secret process, patented or unpatented inventions, articles or appliances furnished or used under this bid, and agrees to defend, at his own expense, any and all actions brought against the Town of Watertown or himself because of the unauthorized use of such articles.

QUOTATION LIMITATION
Bidders shall offer only **ONE ITEM AND PRICE** for each line item bid. If an or equal item is to be bid, the bidder is to select the brand and model that meets or exceeds the specified item, and submit his bid for that item.

ESTIMATE OF WORK
For bidding purposes, the work has been subdivided into unit price items. The quantities shown are to be considered as approximate only. The Purchasing Agent does not expressly or by implication agree that the actual quantity will correspond therewith, but reserves the right to increase or decrease the amount of any item or portion of the work as deemed necessary.

SAMPLES
Samples of articles, when required shall be furnished free of cost of any sort to the Town of Watertown. Samples received may be retained by the Town for future comparison. Samples which are not destroyed by testing, or which are not retained for future comparison will be returned upon request at the bidder's expense.

WITHDRAWAL OF BID
Bidders may withdraw their proposals at any time prior to the bid date. No agent/broker shall withdraw or cancel their proposal for a period of sixty (60) days after the bid closing date of **11:00 a.m., Wednesday, April 26th, 2023**. The successful agent/broker shall not withdraw, cancel or modify their proposal.

PERFORMANCE BONDS / PAYMENT BONDS
A performance bond is required and shall be in the amount of 100% of the bid award, in the name of the "Town of Watertown", in the form and with a surety company approved by the State Commissioner of banking and insurance, and issued within ten (10) calendar days of the bid award date. 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. This financial instrument shall be for the faithful performance of the contract, and shall be used at the sole discretion of the Town of Watertown to pay liquidated Damages for failure or refusal to perform in accordance with the contract. No withdrawals shall be made until after five (5) calendar days' notice of noncompliance with the contract is sent by certified U.S. Mail. This in no way limits further actions the Town of Watertown may take.

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.

EXECUTION OF CONTRACT

The party to whom the Contract is awarded, or his authorized representative, will be required to attend at the office of the Purchasing Agent of the Town of Watertown, with the sureties offered by him or 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 his failure or neglect so to do, the Town may, at its option, 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 Town. 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.

SUBCONTRACTORS

A. Each bidder contemplating the use of any subcontractor shall submit a list of subcontractors as listed on the Bid Form.

B. The apparent low bidder shall file with the Town of Watertown, within five (5) days after the date of bid opening, a complete list of the names and addresses of competent, responsible and qualified subcontractors who are actually to perform major portions of the work. This in no way restricts or limits the requirement that all subcontractors must be approved by the Town.

C. Subcontractors listed on the Bid Form or those previously approved may not be changed without the approval of the Town of Watertown.

Local subcontractors, material suppliers, and labor in the Town of Watertown should be considered and sought insofar as is practical in the performance of this project.

QUALIFICATION OF BIDDER

In determining the qualifications of a bidder, the Town may consider his record in the performance of any contracts for similar work into which he may have previously entered; and the Town expressly reserves the right to reject the bid of such bidder if such record discloses that such bidder, in the opinion of the Town, has not properly performed such contracts or has habitually, and without just cause, neglected the payment of bills or has otherwise disregarded his obligations to subcontractors, suppliers, state or local codes, men or employees of subcontractors.

The Town may make such investigation as it deems necessary to determine the ability of the bidder to perform the work and the bidder shall furnish to the Town all such information and data for this purpose as the Town may request. The Town reserves the right to reject any bid if the evidence submitted by or the investigation of such bidder fails to satisfy the Town that such bidder is properly qualified, or that such bidder misrepresented material facts in the bid documents.

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 of work contemplated.

DELIVERY

Inasmuch as this work concerns a needed public improvement, the provisions of this bid relating to the time of delivery, performance and completion of the work are of the essence of this bid. Accordingly, the successful bidder shall commence work **upon receipt of the signed Purchase Order** unless the Town shall authorize or direct a further delay, and shall proceed with the work diligently so as to permit completion no later than **two hundred and forty (240) calendar days after receipt of the Town's Purchase Order.**

Time of delivery shall be stated as the number of calendar days following receipt of the Purchase Order by the Bidder to receipt of the goods or services by the Town of Watertown.

Prices quoted must include delivery to the Town of Watertown as specified on the Purchase Order. No charges will be allowed for parking, crating, freight, express or cartage unless specifically stated and included in this bid.

Time of delivery may be considered in the award.

PAYMENT

The successful bidder shall execute three (3) copies of the contract agreements. Monthly payments to the Bidder shall be made on ninety-five percent (95%) of the value of work completed, materials and supplies delivered to the site and properly stored. The successful Bidder for this project shall be required to submit a Mechanics Lien Waiver, acceptable to the Town, with each progress payment, and at time of final payment, prior to any payment made.

The Town, after inspection and acceptance of workmanship, and in consideration of the faithful performance by the Bidder of all and singular his covenants, promises, and agreements contained herein, agrees to pay the Bidder for the full completion by him of the work embraced in this Contract, within (30) Thirty Days of the receipt of the final invoice. When subcontractors or suppliers are utilized, the successful Bidder for this project shall be required to submit a Mechanics Lien Waiver, acceptable to the Town, with each progress payment and/or at time of final payment prior to any payment being made.

Time, in connection with any discount offered, will be computed from the date of delivery to the Town or from the date a correct invoice is received by the Town's Finance Department, if the latter date is later than the date of delivery.

Prices will be considered as **NET**, if no cash or payment discount is shown.

The successful bidder shall submit invoices to the following address:

Town of Watertown

Engineering Department
61 Echo Lake Rd.
Watertown, CT 06795

IT IS UNDERSTOOD AND AGREED THAT SHOULD A BID BE ACCEPTED, IT WILL AUTOMATICALLY BECOME THE CONTRACT OR AN ADDENDUM TO ANY CONTRACT AGREED UPON.

Notification of the bid award will be made by issuance of a purchase order. Bidders are to list their bids on the appropriate attached sheets. Bidders may attach a letter of explanation. A clear notification should be made on the standard bid sheets at the appropriate point of explanation that there is a letter of explanation attached. All bids must be NET prices.

The successful bidder shall submit an itemized invoice to the Town of Watertown for the work as described herein.

The bidder shall be required to submit a Mechanics Lien Waiver, acceptable to the Town of Watertown, with each progress payment and at time of final payment prior to any payment being made.

At the time of award the successful bidder shall be required to supply the Town of Watertown a Certificate of Good Standing, certifying that the corporation is in fact a valid corporation and presently licensed to conduct business in the State of Connecticut.

SALES TAX
Certain materials and supplies incorporated in the work of this project are exempt from Connecticut Sales Tax. The Bidder shall familiarize himself 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 Town will furnish the successful Bidder sales tax exemption authorization.

CARE AND PROTECTION OF PROPERTY
The Bidder shall take particular care to avoid damages to all private and public property and to private or public improvements within the Town's right of way. He shall make good any damages to the satisfaction of the Town. There shall be no additional compensation for the repair or restoration of private or public property improvements.

COMPLIANCE WITH FEDERAL, STATE AND LOCAL CODES
The Bidder shall be responsible for full compliance with any Federal, State and/or Local codes, laws, regulations and standards, as applicable.

AWARD
The Town of Watertown reserves the right to accept or reject any bid to best serve its interests, or to hold the bids for sixty (60) days before decision.

The Town reserves the right to reject any and all bids (or any part thereof), to waive defects in proposals, or to accept any proposal deemed to be in its best interest.

Exceptions will be considered to the specification provided, providing they are listed and fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS"

Each exception will be considered as to its degree of impact and total effect on the bid. The purchaser shall determine which (if any taken) exceptions are acceptable, and this determination shall be final.

The Town of Watertown reserves the right:

1) To award bids received on the basis of individual items, or groups of items, or on the entire list of items.

2) To reject any or all bids, or any part thereof.

3) To waive any informality in the bids.

4) To accept the bid that is in the best interest of the Town of Watertown. The Purchasing Agent's decision shall be final.

INSURANCE

A. General:

The Bidder shall be responsible for maintaining insurance coverage in force for the life of the contract of the kinds and adequate amounts to secure all of the Bidder's obligations under the contract with an insurance company with an AM Best Rating of A - VII or better licensed to write such insurance in Connecticut and acceptable to the Town of Watertown.

The insurer shall provide the Town of Watertown with Certificates of Insurance signed by an authorized representative of the insurance company(ies) prior to the performance of this contract describing the coverage and providing that the insurer shall give the Town of Watertown written notice at least thirty (30) days in advance of any termination, expiration, or any and all change in coverage.

Such insurance or renewals or replacements thereof shall remain in force during the Bidder's responsibility under this agreement.

The Bidder at his own cost and expense shall procure and maintain all insurance required and shall name the Town of Watertown and the State of Connecticut as additional insured on all contracts except Worker's Compensation and Professional Errors & Omissions coverage.

In order to facilitate this requirement for insurance, it is recommended that the bidder forward a copy of this exhibit to the bidder's insurance representative(s).

B. Specific Requirements:

(1) Workers' Compensation Insurance

The Bidder shall provide Workers' Compensation Insurance required by law and the Employer's Liability Insurance for at least the amounts of liability for Bodily Injury by accident of $100,000 each accident; Bodily Injury by Disease each employee of $100,000; Bodily Injury by Disease, policy limit of $500,000.

(2) Commercial General Liability Insurance

The Bidder shall carry Commercial General Liability policy (Insurance Services Office Incorporated Form CG-0001 or equivalent). A per occurrence limit of $2,000,000 is required. The Aggregate Limit will be not less than $4,000,000.

(3) Business Automobile Liability Insurance

The Bidder shall carry Business Automobile Liability Insurance. (Insurance Services Office Incorporated Form CA-00001 or equivalent). A per occurrence limit of $2,000,000 is required. The Aggregate Limit will be not less than $4,000,000. "Any Auto" (symbol 1 or equivalent) is required.

C. Hold Harmless & Subcontractor's Requirements:

The Bidder shall require the same insurance that it is required to carry by the Town of Watertown to be carried by any subcontractors and independent contractors hired by the Bidder and to obtain Certificates of Insurance before subcontractors and independent contractors are permitted to begin work.

The Bidder shall require that the Town of Watertown and the State of Connecticut both be named as Additional Insured on all subcontractor's and independent contractor's policies before they are permitted to begin work.

The Bidder and all subcontractors and independent contractors and their insurers shall waive all rights of subrogation against the Town of Watertown, and its officers, agents, servants and employees for losses arising from the work performed by each on this contract.

The Bidder assumes and agrees to hold harmless, indemnify, protect and defend the Town of Watertown against any and all liability for injuries and damages to Bidder and to Bidder's employees, agents, subcontractors and guests, third parties or otherwise incident to or resulting from any and all operations performed by a contractor under any terms of this contract.

D. Other Data:

NOTE 1: If Bidder is only a vender shipping goods via Common Carrier only, General Liability is required.

NOTE 2: If Bidder is a Professional, Errors & Omission coverage will be required.

NOTE 3: The Town reserves the right to amend amounts of coverage required and the types of coverage provided based on work or service to be performed.

GUARANTEE
The bidder shall unconditionally guarantee for a period of one (1) year from the date of acceptance, all materials, supplies, equipment, and services; including but not limited to its workmanship, delivery and installation. If within the guarantee period there are any defects or signs of deterioration the bidder shall repair, adjust or replace the item(s) to the complete satisfaction of the Town. These repairs, adjustments, or replacements are at the sole expense of the bidder and shall be made at such times that are agreeable to the Purchasing Agent so that it is least detrimental to instructional programs.

PERMITS
When required all licenses and permits for complying with any applicable Federal, State, and Municipal laws, codes, regulations in connection with the prosecution of the work shall be obtained by the Bidder, at no additional cost to the Town. The cost of local building permits will be assessed at sixteen cents per one thousand dollars of construction value as declared on the building permit application pursuant to State of Connecticut Statute Sec. 29-263 by the Town of Watertown. The successful contractor will be responsible for payment to the Town of Watertown Building Inspection Department.

PREVAILING WAGE RATES
The Town of Watertown shall require the payment of prevailing rates of wages in accordance with the wage section of the Connecticut General Statues 31-53, 93-392 and shall institute such investigations and periodic monitoring procedures as deemed necessary to determine compliance with labor standard provisions and the Federal requirements of the Statutes as amended.

NONDISCRIMINATION IN EMPLOYMENT
The successful bidder shall agree and warrant that, in the performance of this contract, he 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. A certification of Nonsegregated Facilities and a Certification Regarding Equal Employment Opportunity shall be considered a part of this contract.

DISPUTE RESOLUTION
1. Mandatory Negotiation.

The parties agree that they will attempt to negotiate in good faith any dispute of any nature arising under this agreement. The parties shall negotiate in good faith at not less than two (2) negotiation sessions prior to seeking any resolution of any dispute by any means under Dispute Resolution provisions contained herein below. Each party shall have the right to legal representation at any such negotiation session.

2. Mandatory Mediation.

Any dispute or question arising under the provisions of this agreement, which has not been resolved under the mandatory negotiation provision, shall be submitted to non-binding mediation before one (1) mediator agreed upon by the parties or appointed by the American Arbitration Association. Mediation proceedings shall take place at any suitable location in Watertown, Connecticut and shall be conducted in accordance with the rules and procedures of the mediation then applicable of the American Arbitration Association. If an independent mediator is agreed upon by the parties, said

independent mediator shall establish the rules of such mediation. Each party shall pay one half of all costs and expenses of such mediation. The parties shall use their best efforts to reach a good faith resolution of said dispute within ninety (90) days after the commencement of the mediation proceedings. Any decision of the mediator shall not be binding upon the parties except by agreement of the parties.

3. Election to Begin Court Proceedings.

Provided the parties have completed the mandatory negotiation proceedings and the foregoing provisions with respect to mediation notwithstanding, if either party determines that mediation is not an appropriate means to settle any such dispute, such party shall have the right to commence judicial proceedings for the purpose of settling any such dispute.

MECHANICS LIEN WAIVERS

The successful Bidder shall be required to submit a Mechanics Lien Waiver, acceptable to the Town of Watertown, with each progress payment, and/or at time of final payment, prior to any payment made.

For further technical or administrative information contact Donna Ford, Purchasing Agent at (860) 945-5260 or via email at ford@watertownct.org.

LIQUIDATED DAMAGES

If the Contractor does not complete the work by **December 1, 2023** and has not received written approval for the Town for an extension to the duration of the contract, the Contractor shall pay, as liquidated damages two thousand ($2,000.00) per calendar day to the Town until the work is complete.

TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT

GENERAL REQUIREMENTS

Reconstruction of Guernseytown Road
Watertown Public Works Department
Project Number L153-0003

Scope of Work

The Contractor shall provide all labor, superintendence, materials, plant, tools and equipment necessary for properly constructing the specified improvements and all other work necessary for the proper completion of the project as shown on the Contract Drawings and specified herein within the time stipulated.

Standards

Whenever 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 the advertisement for bids.

Abbreviations are defined as follows:

ASTM	- American Society for 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 Engineers
IEEE	- Institute of Electrical and Electronics Engineers
AWWA	- American Water Works Association
ACPA	- American Concrete Pipe Association

Lines and Grades

The Engineer will establish all principal benchmarks and lines and grades required for the work and will make the surveys and measurements necessary for determining pay quantities. All intermediate lines, grades, and measurements required for the construction details shall be laid out by the Contractor and he shall be responsible for their accuracy. The Contractor shall provide such facilities and men as may be necessary for the Engineer to check lines and grade points placed by the Contractor. All material required for grade stakes shall be furnished by the Contractor and after the required lines and grades have been established thereon, they shall be properly protected to prevent movement or displacement. The Contractor shall keep a transit and leveling instrument on or near the site at all times and a skilled instrument man, employed or obtained whenever necessary, for layout of all locations, dimensions, and levels, and no data, other than the information contained in the Drawings, Specifications, and written orders of the Engineer, shall justify departure from the dimensions and levels required by the Drawings.

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.

Alterations
The Engineer may make alterations to the line, grade, plan, form, dimension, 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 the Contract under the section entitled Extra Work.

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

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 Engineer 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 within ten (10) days of the date of the Notice to Proceed.

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.

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.

Cost Breakdown
Prior to the first estimate for payment to the Contractor, the Contractor shall submit to the Engineer for approval a detailed cost breakdown 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 of 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.

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

Payment for Miscellaneous Work
No direct payment will be made to the Contractor for furnishing and providing miscellaneous temporary works, plant, 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, clean up, and the like, or other items specified under these General Requirements, unless payment therefor 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.

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 his 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 Engineer. Before placing orders for any manufactured item or part of structure, he shall also submit three (3) copies, for approval, of detailed lists and descriptions of the various materials, fixtures, fittings, supplies which he proposes to use in the work, and also the names of individuals or companies who propose to furnish or manufacture the same. Copies of results of all tests of materials and equipment shall be furnished by the Contractor immediately following the performance of required tests.

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

Approval by the Engineer 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 Engineer 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 his 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.

Contract Limits

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

The Contractor shall take particular care to protect trees and shrubs and private personal property. He shall make good any damage to the satisfaction of the Engineer.

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 Engineer. The Contractor shall be held responsible for all damages or injury, done by himself or those in his employ, to any private or public property of any character during the prosecution of the work. The Contractor shall restore or repair at his own expense, in a manner satisfactory to the Engineer, such property as may be damaged by his 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 hours' 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.

The Owner will obtain photographs and/or video tape recordings of the site prior to the start of work under this Contract and Agreement. These photographs and/or recordings will be used to judge the conditions of the site during the course of the work and the adequacy of restoration of the site after completion of the work.

Cleaning up Site
During the progress of the work, the Contractor shall keep the construction area 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 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 all property in an acceptable manner and leave the whole area in a neat and presentable condition.

Storage of Materials
Materials shall be stored so as to insure 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 Engineer. 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.

Removal of Condemned Materials
The Contractor shall immediately remove all rejected and condemned materials of any kind brought to or incorporated in the work from the site of the work. No such rejected or condemned materials shall again be offered for use by the Contractor.

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

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 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 take such measures at his own expense as may be necessary to keep the street open for traffic and shall give advance notice to the Fire and Police Departments, and the Board of Education of his proposed street operations. He further agrees 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, flagmen 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 and the Specification herein. The use of unauthorized or unapproved signs, barricades, or traffic delineators will not be permitted.

The Contractor shall construct and 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 Engineer, shall be continuously provided.

Should the Contractor or his employees neglect to set out and maintain barricades or lights, as required in the Specifications, the Engineer 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 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.

The Engineer and the Chief of Police will determine the need for uniformed police officers for traffic control. If uniformed police officers are deemed necessary, the cost will be included in the item "Trafficperson (Municipal Police Officer).

Temporary Roads

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

Dust Control

The Contractor shall take all necessary precautions to prevent and abate nuisance caused by dust arising from his operations. Approved methods applicable to various parts of the work, such as 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.

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. He shall comply with all safety and sanitary rules, laws and regulations.

Work in Inclement Weather
During freezing, stormy 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.

Working Hours
The Contractor's working schedule shall be confined between the hours of 7:00 a.m. and 6:00 p.m. current local time. Weekend work shall be permitted.

Unless otherwise especially permitted, no work shall be done between the hours of 6:00 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, the Engineer shall be informed 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.

Emergency Work
The Contractor shall file, with the Public Works, Fire and Police Departments of the Town of Watertown, the name and telephone number of a person authorized by him who may be contacted regarding emergency work at the job site that may be required during non-working hours for reasons of public safety. This person shall be readily available and have full authority to deal with any emergency that may occur.

The Contractor shall be solely responsible for site safety and compliance with all applicable regulations with regard to work related activities.

Environmental Compliance
A. General
This section of the Contract is provided to identify those construction activities or other activities under the Town's control or jurisdiction which may have a negative effect on the environment, including the Town's native waters and natural resources, and to prevent or minimize any damage to the environment which might result from such activities, both during and following the completion of any transportation project.

This section reinforces those environmental protection requirements which the Contractor is bound to meet under the terms of the Contract, or under Federal, State or Local laws and regulations. If a Contractor fails to comply with environmental provisions of the Contract or law, the Contractor shall be penalized as provided in this Section and as provided elsewhere in this Contract.

B. Compliance with Laws and Regulations.
The Contractor shall at all times conduct his operations in conformity with all Federal, State and Local permit requirements concerning water, air or noise pollution or the disposal of contaminated or hazardous materials. Permit requirements include but are not limited to those established by regulations

administered by the United States Coast Guard, the U.S. Army Corps of Engineers and the U.S. Environmental Protection.

Appropriate permits shall be required for all activities associated with or incidental to the Contractor's operations including, but not limited to, those on the Project site and in all adjacent areas, waste and disposal areas, borrow and gravel banks, storage areas, haul roads, access roads, detours, field offices, and any other temporary staging areas. The Contractor shall be responsible for, and hold the Town harmless from, any penalties or fines which may be assessed by any authority due to the Contractor's failure to comply with the terms of all applicable permit requirements.

The Town will submit all applications and obtain all permits required for Contract work within the limits shown on the plans or identified elsewhere in the Contract documents. The Contractor shall transfer the Watertown Conservation permit from the name of the Town to his own name. A copy of the permit application and the permit are attached.

Any request by the Contractor for authorization of activities or methods not specifically called for by the Contract, plans, applications submitted or applicable permits issued for the Project must be submitted by the Contractor in writing to the Engineer, and must include a detailed description of the proposed activities or methods, the justification for those activities and supporting documentation showing the proposed activity or method will not create risks of damage to the environment. If such proposal is accepted by the Engineer, the Town will process an application to the appropriate regulatory agency or agencies for any permit amendment, modification, revision or new permit required for the Contractor to carry out the additional activities or implement the changed methods on the Project. The Town does not, however, guarantee that it will be able to obtain the desired permit amendment, modification or revision, and the Town will not be liable for the effects of any inability to do so. No extension of time will be granted as a result of the contractor's request to perform work not authorized as part of the established permit requirements. If the amendment, modification, or revision of the permit is not necessary for the Contractor to perform the work as required by the original Contract or as subsequently ordered by the Engineer, then no claim may be made by the Contractor based on the amount of time taken by the Town to review the Contractor's proposal, or to apply for or secure the permit amendment, modification or revision. No such proposed additional activity shall commence, nor shall such a changed method be implemented until and unless the Engineer approves in writing the Contractor's request.

In case of failure on the part of the Contractor to perform pollution control work as determined by the Engineer, the Engineer may, upon 24 hours written notice, arrange for the performance of the work by approved forces and the cost thereof will be deducted from any monies due or which may become due the Contractor under the Contract or under any other State contract.

C. Water Pollution Control

1. The Contractor shall, throughout the life of the contract, control and abate siltation, sedimentation and pollution of all waters, underground water systems, inland wetlands, and navigable waters for work appearing on the plans. Temporary construction methods proposed by the Contractor shall also conform to all application or permit requirements. The Contractor shall assume responsibility for all obligations and costs incurred under the terms and conditions of such permit applications or permits.

The Contractor shall obtain any permits and pay any feels required for the performance of work which is not included in the original Contract or which is to be done outside the Project limits but which is proposed in the fulfillment of his Contract obligations including, but no limited to, the removal of

material from, deposition of materials in, obstruction of, construction within, alteration or pollution of any inland wetland , navigable water, streams, ponds, lakes, water supplies or other water bodies.

2. The following items may be superseded by specific permits from the Connecticut Department of Energy and Environmental Protection (DEEP) or the Watertown Conservation Agency (WCA). The Contractor shall not make any design changes in the Contract work which requires a variance form the requirements of the following items until and unless the Contractor has first submitted a detailed written proposal for such changes to the Engineer for review by the Department and for transmittal to and review by the DEP and/or the WCA and then received approval form the Town of the proposed variances.

BEST MANAGEMENT PRACTICES

a. No construction shall proceed until erosion and sedimentation control plans, prepared by the Contractor, have been submitted in writing and approved by the Engineer, and until such controls have been installed as the Engineer directs. Such plans shall be consistent with the Connecticut Council On Soil & Water Conservation document "Connecticut Guidelines for Soil Erosion and Sediment Control," as revised, which is available from the Connecticut Department of Environmental Protection, and with the Department document "On Site Mitigation for Construction Activities," as revised.
b. Refueling of equipment or machinery within 8 m of any wetland or watercourse shall be allowed only with the approval of the Engineer.
c. No construction shall proceed until a written proposal of methods to prevent construction debris, paint, spent blast materials, or other materials from entering the wetland or watercourse has been submitted by the Contractor to the Engineer and approved by the Engineer, and such methods have been implemented as the Engineer directs. These materials shall be collected and disposed of in an environmentally safe manner in accordance with all applicable Federal, State and local laws and regulations. The Engineer may order the Contractor to cease such activity temporarily if, in the judgement of the Engineer, wind or storm conditions threaten to cause the deposit of such materials into a waterway.
d. No materials resulting from construction activities shall be placed in or allowed to contribute to the degradation of an adjacent wetland or watercourse. Disposal of any material shall be in accordance with Connecticut General Statutes, including but not limited to Sections 22a-207 though 22a-209.
e. Fording of streams with equipment shall be prohibited, except as approved by the Engineer and as permitted by the WCA. Such equipment travel shall be minimized. Where frequent equipment travel on stream banks and beds is necessary, washed stone shall be placed to minimize erosion, sour, and turbidity, provided no significant grade change will be required for any haul road or temporary structure placed in wetlands or watercourses.
f. All off-site disposal locations for material and debris resulting from the progress of the Project shall be submitted in writing to the Engineer who shall determine whether or not they are acceptable. The Contractor shall ensure that these locations are outside of designated wetlands or watercourses, unless otherwise approved by local, state, or federal agencies with jurisdiction over the matter.
g. A construction sequencing plan and a water handling plan including a contingency plan for flood events must be submitted in writing to the Engineer and approved by the Engineer prior to the commencement of any construction in a waterway. Water shall be kept deep enough in the channel to allow for the passage of fish and the continuous flow of the watercourse as required by the Engineer.
h. When dewatering is necessary, pumps shall not discharge directly into the wetland or watercourse. Prior to dewatering, the Contractor must submit to the Engineer a written proposal

for specific methods and devices to be used, and obtain the Engineer's approval of such methods and devices to be used for dewatering activities, including, but not limited to, pumping the water into a temporary sedimentation bowl, providing surge protection at the inlet and outlet of pumps, or floating the intake of the pump, or other methods to minimize and retain the suspended solids. If the Engineer determines that the pumping operation is causing turbidity problems, said operation shall cease until such time as a means of controlling turbidity is submitted by the Contractor, approved by the Engineer and implemented by the Contractor.

i. Work within or adjacent to watercourses shall be conducted during periods of low flow, whenever possible. The Engineer shall remain aware of flow conditions during the conduct of such work, and shall cause such activity to cease should flow conditions threaten to cause excessive erosion, siltation or turbidity. The Contractor shall make every effort to secure the work site before predicted major storms. A major storm shall be defined as a storm predicted by NOAA Weather Service with warnings of flooding, severe thunderstorms, or similarly severe weather conditions or effects.
j. All temporary fill shall be stabilized during use to prevent erosion and shall be suitably contained to prevent sediment or other particulate matter from reentering a wetland or watercourse. All areas affected by temporary fills must be restored to their original contours or as directed by the Engineer, and revegetated. The areal extent of temporary fill or excavation shall be confined to that area necessary to perform the work, as approved by the Engineer.
k. Seeding is to be accomplished within 7 days of the Contractor's reaching an appropriate grading increment as determined by the Engineer. If the Engineer anticipates and notifies the Contractor, or if the Contractor intends, that a grading operation will be suspended for a period of 30 or more consecutive days, the Contractor shall, within the first 7 days of that suspension period, accomplish seeding, or take such other appropriate measures to stabilize the soil as may be required by the Engineer.
l. Dumping of oil, chemicals or other deleterious materials on the ground is forbidden. The Contractor shall provide a means of catching, retaining, and properly disposing of drained oil, removed oil filters, or other deleterious material. All spills of such materials shall be reported immediately by the Contractor to the DEP.
m. No application of herbicides or pesticides within 8 m of any wetland or watercourse will be allowed. All such applications must be done by a Connecticut licensed applicator. The Contractor shall submit to the Engineer the proposed applicator's name and license number, and must receive the Engineer's approval of the proposed applicator, before such application is carried out.
n. During spawning seasons, as defined in the Contract, discharges and construction activities in spawning areas of State Waters shall be restricted so as not to disturb or inhibit aquatic species which are indigenous to the waters.

If the Contractor wants to make changes in construction operations or scheduling which would affect the use of or necessity for any pollution controls, before beginning to implement those changes it must submit a written proposal detailing them to the Engineer, and must receive the Engineer's approval of those changes. As part of its submission the Contractor must submit a plan showing what erosion and sedimentation controls above and beyond those called for in the plans and specifications would be necessitated by the changes it proposes to make in the sequence or nature of Project construction activities and related operations.

The Contractor shall inspect temporary and permanent erosion and sedimentation controls immediately after each rainfall and at least daily during prolonged rainfall. The Contractor shall maintain all erosion and sedimentation control devices in a functional condition in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control," as revised, and the Department's

document "On Site Mitigation for Construction Activities," as revised. In the event the Contractor fails to maintain such devices in accordance with such documents, and the Contractor does not correct those failures within 24 hours after receipt of written notice of such failures from the Engineer, the Department may proceed with its own or other forces to remedy specified failure and the cost thereof will be deducted from monies due the Contractor under the Contract or under any other State contract.

D. Air Quality Control

The Contractor shall exercise every reasonable precaution throughout the life of the Contract to safeguard the air resources of the State by controlling or abating air pollution in accordance with the DEP's regulations. These measures shall include the control and abatement of dust, mist, smoke, vapor, gas, aerosol, other particulate matter, odorous substances or any combination thereof arising from construction operations, hauling, storage or manufacture of materials.

E. Noise Pollution

The Contractor shall take measures to control the noise intensity caused by his construction operations and equipment, including but not limited to equipment used for drilling, pile driving, blasting, excavation or hauling.

All methods and devices employed to minimize noise shall be subject to the continuing approval of the Engineer. The maximum allowable level of noise at the nearest residence or occupied building shall be 90 decibels on the "A" weighted scale (dBA). Any operation that exceeds this standard will cease until a different construction methodology is developed to allow the work to proceed within the 90 dBA limit.

F. Contaminated and/or Hazardous Material

The Town will acquire any "Hazardous Waste Generator Permit(s)" required under the Resource Conservation and Recovery Act, for the management and disposal of all contaminated and/or hazardous material known to exist or discovered during construction operations, provided that:

1. such material is within the construction limits defined in the Contract, and;
2. such material is not comprised of waste materials generated by the Contractor.

If the Town has defined an area of known or suspected contamination within the Project limits, and if contaminated material in that area has not been removed prior to the start of the Project, the disposition of such material shall be arranged for with an appropriate party.

In the event that the Contractor encounters or exposes any material, not previously known or suspected to be contaminated, but which exhibits abnormal properties which may indicate the presence of hazardous or contaminated material, the Contractor shall cease all operations in the vicinity of the abnormal condition, and the Engineer shall be notified immediately. The presence of barrels, discolored earth, metal, wood, visible fumes or smoke, abnormal odors or excessively hot earth may indicate the presence of hazardous or contaminated material, and shall be treated with extreme caution. The proper disposition of the material shall be arranged for with an appropriate party.

Unless otherwise provided for under a specific Contract item, direct Contractor involvement with hazardous or contaminated materials, other than those associated with Contract operations, is neither required nor solicited under this Contract.

When the Contractor performs support work incidental to the removal, treatment or disposal of hazardous or contaminated material, payment will be made at the unit prices for applicable pay items in the Contract. When the Contract does not include appropriate pay items, payment will be made in accordance with the section titled EXTRA WORK.

The Contractor shall faithfully observe all security precautions established pursuant to OSHA 239 CFR 1919.120, including all revisions and amendments, and shall not work in any area known to contain or suspected of containing hazardous or contaminated material without prior written approval of the Engineer

The Contractor will assume sole responsibility for the proper storage, handling, management and disposal of all regulated materials and wastes associated with the Contractor's operations, including but not limited to; lubricants, antifreeze, engine fluids, paints, and solvents. All costs associated with the Contractor's failure to properly manage such materials in accordance with federal and state regulations, and all remedial and punitive costs incurred by the Town as a result of such failure will be borne by the Contractor.

Excluded from the requirements under this article are coatings removed by the Contractor for the purpose of painting structural steel or other steel elements. The debris resulting from paint removal shall be tested by the Town to determine whether or not it is contaminated or hazardous material. Once so tested, these materials shall be removed from the site and disposed of by the Contractor in accordance with applicable special provisions.

Sedimentation and Erosion Control

The Town has obtained a permit from the Watertown Conservation Commission. The Contractor shall transfer the permit to his own name. No work shall be started until the erosion and sediment controls are installed.

It is the Contractor's responsibility to install any additional sedimentation and erosion control, as ordered by the Engineer or as required by site conditions. It is the Contractor's responsibility for the adequate installation, operation and maintenance of sedimentation and erosion controls. No direct payment will be made for the installation, operation and maintenance of any sedimentation and erosion control.

Work Within or Near Areas Designated as Inland Wetlands

Portions of this project are to be constructed in or near wooded areas and areas classified as inland wetlands. The Contractor shall limit disturbance of these areas, to what is absolutely necessary for construction, and restore these areas, as closely as possible, to their original state.

The Contractor shall familiarize himself with permits and maps held by the Town of Watertown indicating the wetlands. The Contractor shall be required to strictly adhere to all requirements and restrictions imposed by said permits.

The Contractor shall not introduce any substantial quantities of fill materials into any areas outside the contract limits.

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 he will make no claim for and has no right to additional payment or extension of time for completion of the work, or any other concession because of any interpretations or misunderstanding on his part of this Contract or because of any failure on his part to fully acquaint himself with all conditions relating to the work.

General Sanitary Requirements
The Contractor shall provide proper sanitary accommodations at a convenient place on or near the work site. They shall be cleaned daily and shall be adequately serviced.

The Contractor shall maintain a safe drinking water supply readily available to all workers.

Water Supply and Electrical Energy
The Contractor shall make his own arrangements for obtaining the electrical energy and water supply necessary for construction purposes at no additional cost to the Owner.

Explosives and Blasting
Explosives shall be stored, handled, and used in accordance with the laws, ordinance and regulations of the State of Connecticut, all local regulations and with such additional regulations and the Engineer may require. Blasting shall be conducted so as not to endanger persons or property and, unless otherwise permitted, shall be covered or otherwise satisfactorily confined. The Contractor shall be responsible for and shall make good any damage of whatever nature caused by blasting or accidental explosions.

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.

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.

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 pipes, manholes and similar structures, located in or adjacent to the location of the structures included in this Contract, are shown on the Contract Drawings. 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 his own expense, sustain in their places and protect from direct or indirect

injury, all utilities, pipes, poles, conduits, walls, buildings, and other structures and property in the vicinity of his work. Such sustaining and protecting shall be done carefully by the Contractor and as required by the party owning or controlling the facility. Before proceeding with such work, the Contractor shall satisfy the Engineer that the methods and procedures to be used have been approved by the party owning said structure. There shall be no additional compensation for this work and all expenses incidental thereto shall be considered as in the unit price bid for the various items of this Contract.

The Contractor shall take all risks attending the presence or proximity of pipes, poles, conduits, walls, buildings, wires or other structures, utilities and property in the vicinity of his work, and he shall be responsible for all damage and assume all expense for direct or indirect injury caused by his 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 to facilitate installation of the sewer, shall be replaced and restored to a condition as good as or better than existed and to the satisfaction of the Owner or Engineer.

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

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.

Contract Set Aside
The contractor who is selected to perform this State Project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5. An affirmative action plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction.

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

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

Traffic Person:
Uniformed Police Officers will be required for all work performed in the roadway and shall be provided in accordance with the State of Connecticut Department of Transportation "Standard Specifications for Roads, Bridges and Incidental Construction", Form 818, as amended. Upon approval by the Engineer,

the contractor is to arrange for the Police Officers. Contractor shall be responsible for all fees associated with not notifying Extra Duty Office in time to cancel extra duty officers.

Bidders shall:

- Provide a list of equipment available for the project
- Provide a list of references for work performed over the last five years in the State of Connecticut.
- Provide a copy of OSHA 10 certification for each person working on project, including proposed subcontractors, if any.
- List of approved subcontractors

Construction Contracts - Required Contract Provisions
(State Funded Only Contracts)

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Index of Exhibits

1. Specific Equal Employment Opportunity Responsibilities

The Contractor shall comply with the Specific Equal Employment Opportunity requirements, as applicable, attached at Exhibit A and hereby made part of this Contract.

2. Contract Wage Rates

The Contractor shall comply with:

The State wage rate requirements indicated in Exhibit D hereof are hereby made part of this Contract.

Prevailing Wages for Work on State Highways; Annual Adjustments. With respect to contracts for work on state highways and bridges on state highways, the Contractor shall comply with the provisions of Section 31-54 and 31-55a of the Connecticut General Statutes, as revised.

As required by section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 818), as may be revised, every Contractor or subcontractor performing project work on a federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

3. Americans with Disabilities Act of 1990, as Amended

This provision applies to those Contractors who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 et seq.), (Act), during the term of the Contract. The Contractor represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the Contractor to satisfy this standard as the same applies to performance under this Contract, either now or during the term of the Contract as it may be amended, will render the Contract voidable at the option of the State upon notice to the contractor. The Contractor warrants that it will hold the State harmless and indemnify the State from any liability which may be imposed upon the State as a result of any failure of the Contractor to be in compliance with this Act, as the same applies to performance under this Contract.

4. Connecticut Statutory Labor Requirements

(a) Construction, Alteration or Repair of Public Works Projects; Wage Rates. The Contractor shall comply with Section 31-53 of the Connecticut General Statutes, as revised. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of section 31-53 of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 3l-53a of the Connecticut General Statutes, as revised.

(c) Construction Safety and Health Course. The Contractor shall comply with section 31-53b of the Connecticut General Statutes, as revised. The contractor shall furnish proof to the Labor Commissioner with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 of the Connecticut General Statutes, as revised, on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health
Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of
telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

Any employee required to complete a construction safety and health course as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance, they shall be removed from the project until such time as they have completed the required training.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

(d) Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited. The Contract is subject to Section 31-57b of the Connecticut General Statutes, as revised.

(e) Residents Preference in Work on Other Public Facilities. NOT APPLICABLE TO FEDERAL AID CONTRACTS. Pursuant to Section 31-52a of the Connecticut General Statutes, as revised, in the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available, then to residents of other states

5. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)

The Contractor shall comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The Contractor is responsible for determining its tax liability. If the Contractor purchases materials or supplies pursuant to the Connecticut Department of Revenue Services' "Contractor's Exempt Purchase Certificate (CERT-141)," as may be revised, the Contractor acknowledges and agrees that title to such materials and supplies installed or placed in the project will vest in the State simultaneously with passage of title from the retailers or vendors thereof, and the Contractor will have no property rights in the materials and supplies purchased.

Forms and instructions are available anytime by:

Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or Telephone: Call 1-800-382-9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

6. Executive Orders and Other Enactments

As of: March 14, 2023

(a) All references in this Contract to any Federal, State, or local law, statute, public or special act, executive order, ordinance, regulation or code (collectively, "Enactments") shall mean Enactments that apply to the Contract at any time during its term, or that may be made applicable to the Contract during its term. This Contract shall always be read and interpreted in accordance with the latest applicable wording and requirements of the Enactments. Unless otherwise provided by Enactments, the Contractor is not relieved of its obligation to perform under this Contract if it chooses to contest the applicability of the Enactments or the Client Agency's authority to require compliance with the Enactments.

(b) This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of this Contract as if they had been fully set forth in it.

(c) This Contract may be subject to (1) Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services; and (2) Executive Order No. 61 of Governor Dannel P. Malloy promulgated December 13, 2017 concerning the Policy for the Management of State Information Technology Projects, as issued by the Office of Policy and Management, Policy ID IT-SDLC-17-04. If any of the Executive Orders referenced in this subsection is applicable, it is deemed to be incorporated into and made a part of this Contract as if fully set forth in it.

7. NonDiscrimination

(a) For purposes of this Section, the following terms are defined as follows:

i. "Commission" means the Commission on Human Rights and Opportunities;

ii. "Contract" and "contract" include any extension or modification of the Contract or contract;

iii. "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;

iv. "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the genderrelated identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose;

v. "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;

vi. "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;

vii. "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;

viii. "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;

ix. "minority business enterprise" means any small contractor or supplier of materials fiftyone percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management

and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and

x. "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, unless the contract is a municipal public works contract or quasi-public agency project contract, (2) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in C.G.S. § 1-267, (3) the federal government, (4) a foreign government, or (5) an agency of a subdivision, state or government described in the immediately preceding enumerated items (1), (2), (3),or (4).

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

(c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.

(e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining Agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.

(h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(i) Pursuant to subsection (c) of section 4a-60 and subsection (b) of section 4a-60a of the Connecticut General Statutes, the Contractor, for itself and its authorized signatory of this Contract, affirms that it understands the obligations of this section and that it will maintain a policy for the duration of the Contract to assure that the Contract will be performed in compliance with the nondiscrimination requirements of such sections. The Contractor and its authorized signatory of this Contract demonstrate their understanding of this obligation by (A) having provided an affirmative response in the required online bid or response to a

proposal question which asks if the contractor understands its obligations under such sections, (B) signing this Contract, or (C) initialing this nondiscrimination affirmation in the following box: ☐

8. Whistleblower Provision

The following clause is applicable if the Contract has a value of Five Million Dollars ($5,000,000) or more.

Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The
State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.

9. Connecticut Freedom of Information Act

(a) Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.

(b) Confidential Information. The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as

"CONFIDENTIAL," DOT will first review the Contractor's claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.*, Conn. Gen. Stat. §1-210(b)(5)(A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of
Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

10. Service of Process

The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office, as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract and six (6) years thereafter.

11. Substitution of Securities for Retainages on State Contracts and Subcontracts

This Contract is subject to the provisions of Section 3-ll2a of the General Statutes of the State of Connecticut, as revised.

12. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

The Contractor shall comply, if applicable, with the Health Insurance Portability and Accountability Act of 1996 and, pursuant thereto, the provisions attached at Exhibit B, and hereby made part of this Contract.

13. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

14. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes (a) the State has provided to the Contractor the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes, which summary is incorporated by reference into and made a part of this

Contract as if the summary had been fully set forth in this Contract; (b) the Contractor represents that the chief executive officer or authorized signatory of the Contract and all key employees of such officer or signatory have read and understood the summary and agree to comply with the provisions of state ethics law; (c) prior to entering into a contract with any subcontractors or consultants, the Contractor shall provide the summary to all subcontractors and consultants and each such contract entered into with a subcontractor or consultant on or after July 1, 2021, shall include a representation that each subcontractor or consultant and the key employees of such subcontractor or consultant have read and understood the summary and agree to comply with the provisions of state ethics law; (d) failure to include such representations in such contracts with subcontractors or consultants shall be cause for termination of the Contract; and (e) each contract with such contractor, subcontractor or consultant shall incorporate such summary by reference as a part of the contract terms.

15. Audit and Inspection of Plants, Places of Business and Records

(a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.

(b) The Contractor shall maintain and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.

(c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.

(d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.

(e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.

(f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

16. Campaign Contribution Restriction

For all State contracts, defined in section 9-612 of the Connecticut General Statutes as having a value in a calendar year of $50,000 or more, or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this Contract represents that they have received the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice.

17. Tangible Personal Property

(a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;
(2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
(3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
(4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
(5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.

(b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.

(c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

18. Bid Rigging and/or Fraud – Notice to Contractor

The Connecticut Department of Transportation is cooperating with the U.S. Department of Transportation and the Justice Department in their investigation into highway construction contract bid rigging and/or fraud.

A toll-free "HOT LINE" telephone number 800-424-9071 has been established to receive information from contractors, subcontractors, manufacturers, suppliers or anyone with knowledge of bid rigging and/or fraud, either past or current. The "HOT LINE" telephone number will be available during normal working hours (8:00 am – 5:00 pm EST). Information will be treated confidentially and anonymity respected.

19. Consulting Agreement Representation

Pursuant to section 4a-81 of the Connecticut General Statutes, the person signing this Contract on behalf of the Contractor represents, to their best knowledge and belief and subject to the penalty of false statement as provided

in section 53a-157b of the Connecticut General Statutes, that the
Contractor has not entered into any consulting agreements in connection with this Contract, except for the agreements listed below or in an attachment to this Contract. "Consulting agreement" means any written or oral agreement to retain the services, for a fee, of a consultant for the purposes of (A) providing counsel to a contractor, vendor, consultant or other entity seeking to conduct, or conducting, business with the State, (B) contacting, whether in writing or orally, any executive, judicial, or administrative office of the State, including any department, institution, bureau, board, commission, authority, official or employee for the purpose of solicitation, dispute resolution, introduction, requests for information, or (C) any other similar activity related to such contracts. "Consulting agreement" does not include any agreements entered into with a consultant who is registered under the provisions of chapter 10 of the Connecticut General Statutes as of the date such contract is executed in accordance with the provisions of section 4a-81 of the Connecticut General Statutes.

_____ _____ Consultant's Name and
Title Name of Firm (if applicable)

_____ _____ _____
Start Date End Date Cost

The basic terms of the consulting agreement are: _____
_____
_____

Description of Services Provided: _____
_____
_____

Is the consultant a former State employee or former public official? ☐ YES ☐ NO
If YES:_____ _____
Name of Former State Agency Termination Date of Employment

20. Sovereign Immunity

The parties acknowledge and agree that nothing in the Solicitation or the Contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Contract. To the extent that this section conflicts with any other section, this section shall govern.

21. Large State Contract Representation for Contractor

Pursuant to section 4-252 of the Connecticut General Statutes and Acting Governor Susan Bysiewicz Executive Order No. 21-2, promulgated July 1, 2021, the Contractor, for itself and on behalf of all of its principals or key personnel who submitted a bid or proposal, represents:

(1) That no gifts were made by (A) the Contractor, (B) any principals and key personnel of the Contractor, who participate substantially in preparing bids, proposals or negotiating State contracts, or (C) any agent of the Contractor or principals and key personnel, who participates substantially in preparing bids, proposals or negotiating State contracts, to (i) any public official or State employee of the State agency or quasi- public agency soliciting bids or proposals for State contracts, who participates substantially in the preparation of bid solicitations or requests for proposals for State contracts or the negotiation or award of State

contracts, or (ii) any public official or State employee of any other State agency, who has supervisory or appointing authority over such State agency or quasi-public agency;

(2) That no such principals and key personnel of the Contractor, or agent of the Contractor or of such principals and key personnel, knows of any action by the Contractor to circumvent such prohibition on gifts by providing for any other principals and key personnel, official, employee or agent of the Contractor to provide a gift to any such public official or State employee; and

(3) That the Contractor is submitting bids or proposals without fraud or collusion with any person.

22. Large State Contract Representation for Official or Employee of State Agency

Pursuant to section 4-252 of the Connecticut General Statutes and Acting Governor Susan Bysiewicz Executive Order No. 21-2, promulgated July 1, 2021, the State agency official or employee represents that the selection of the person, firm or corporation was not the result of collusion, the giving of a gift or the promise of a gift, compensation, fraud or inappropriate influence from any person.

23. Iran Investment Energy Certification

(a) Pursuant to section 4-252a of the Connecticut General Statutes, the Contractor certifies that it has not made a direct investment of twenty million dollars or more in the energy sector of Iran on or after October 1, 2013, as described in Section 202 of the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010, and has not increased or renewed such investment on or after said date.

(b) If the Contractor makes a good faith effort to determine whether it has made an investment described in subsection (a) of this section then the Contractor shall not be deemed to be in breach of the Contract or in violation of this section. A "good faith effort" for purposes of this subsection includes a determination that the Contractor is not on the list of persons who engage in certain investment activities in Iran created by the Department of General Services of the State of California pursuant to Division 2, Chapter 2.7 of the California Public Contract Code. Nothing in this subsection shall be construed to impair the ability of the State agency or quasi-public agency to pursue a breach of contract action for any violation of the provisions of the Contract.

24. Access to Contract and State Data

The Contractor shall provide to the Client Agency access to any data, as defined in Conn. Gen Stat. Sec. 4e-1, concerning the Contract and the Client Agency that are in the possession or control of the Contractor upon demand and shall provide the data to the Client Agency in a format prescribed by the Client Agency and the State Auditors of Public Accounts at no additional cost.

25. Affirmative Action Policy Statement

The Contractor shall comply with the Affirmative Action Policy Statement, as applicable, attached at Exhibit B and hereby made part of this Contract.

EXHIBIT A

CONNECTICUT REQUIRED SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES July 2022

As of: March 14, 2023

1. General:

a) Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246, Executive Order 11375 are set forth in Required Contract Provisions (Form PR-1273 or 1316, as appropriate) and these Special Provisions which are imposed pursuant to Section 140 of Title 23 U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968, 49 CFR Part 21, 4a-60a and 46a-68c to46a-68f of the Connecticut General Statutes. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.

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

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

c) The Company will work with the Connecticut Department of Transportation (CTDOT) and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.

d) The Company and all his/her subcontractors or subconsultants holding subcontracts not including material suppliers, of $10,000 or more, will comply with the following minimum specific requirement activities of equal employment opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in volume 60, Chapter 4, Section 1, subsection 1 of the Federal-Aid Highway Program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The company will include these requirements in every subcontract of $10,000 or more with such modification of language as necessary to make them binding on the subcontractor or subconsultant.

e) CTDOT shall require each contractor with contracts of $10,000 or more or who have fifty or more employees and are awarded a public works contract, to comply with all existing procedures of CTDOT's Contract Compliance Program.

2. Equal Employment Opportunity Policy:

a) Companies with contracts, agreements or purchase orders valued at $10,000 or more or who have fifty or more employees are required to comply with the Affirmative Action contract requirements. By signing a contract with CTDOT the contractor's commits to complying with federal and state requirements to provide equal employment opportunity to all persons without regard to their race, color, religion, creed, sex, gender identity or expression, marital status, age, national origin, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved and to promote the full realization of equal employment opportunity through a positive and continuous efforts.

3. Project Workforce Utilization Goals:

These goals are applicable to all construction projects performed in the covered area work (whether the project is federal or state funded). If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

a) Appendix A establishes the goals for minority and female utilization in all crafts statewide on all State Funded construction projects.

b) Appendix B establishes the goals for minority and female utilization in all crafts statewide on Federally assisted or funded construction projects.

Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications which contain the applicable goals for minority and female participation.

The goals for minority and female participation are expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

State Utilization Goals	**Federal Utilization Goals**
See Appendix A	**See Appendix B**

4. Executive Order 11246

The Contractor's compliance with Executive Order 11246 and 41-CFR Part 60-4 shall be based on its implementation of the specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(A) and its efforts to meet the goals established for the geographical area where the contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hour performed.

If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Pan does not excuse any covered Contractor's of subcontractor's failure to take good faith efforts to achieve the plan goals and timetables.

The Contractor shall implement the specific affirmative action standards provided in a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs (OFCCP) Office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period

specified.

Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractors obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant hereto.

In order for the nonworking training hours of apprentices and trainees to be counted in meeting the workforce utilization goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites; and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason thereafter; along with whatever additional actions the Contractor may have taken.

d) Provide immediate written notification to CTDOT when the Union or Unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other information that the Union referral process has impeded the Contractor's efforts to meet its obligations.

e) Develop on-the-job training opportunities and/or participate in training programs that which expressly target minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under b above.

f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations.

g) Review at least annually, the company EEO Policy and affirmative action obligations with all employees having any responsibility for hiring, assignments, layoffs, terminations, or other employment decisions, prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h) Disseminate the Contractor's EEO Policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.

i) Direct its recruitment efforts, both oral and written, to minority female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.

j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the project worksite and in other areas of the Contractor's workforce.

k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for opportunities through appropriate training opportunities.

m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n) Ensure that all facilities and company activities are nonsegregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p) Conduct a review at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations:

Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (a through p). The efforts of a contractor association, joint contractor union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work-force participation, makes a good faith

effort to meet with individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non minority. Consequently, the Contractor may be in violation of Executive Order 11246 if a particular group is employed in a substantially disparate manner, (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps so as to achieve maximum results from its efforts to ensure equal employment opportunity.

The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status, (e.g. mechanic, apprentice, trainee, helper, or laborer) dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

Nothing herein provided shall be construed as a limitation upon the application of their laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

The Director of the Office of Federal Contract Compliance Programs, from time to time, shall issue goals and timetables for minority and female utilization which shall be based on appropriate work force, demographic or other relevant data and which shall cover construction projects or construction contracts performed in specific geographical areas. The goals, which shall be applicable to each construction trade in a covered contractor's or timetables, shall be published as notices in the Federal Register, and shall be inserted by the Contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2.

5. <u>Subcontracting:</u>

As of: March 14, 2023

a. The Company will use his/her best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Companies shall obtain lists of minority-owned construction firms from the Office of Equity.

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

6. Records and Reports:

a. The Company will keep such records as are necessary to determine compliance with equal employment opportunity obligations. The records kept by the Company will be designed to indicate:

1. The number of minority and non-minority group members and women employed in each classification on the project.
2. The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women; (applicable only to contractors who rely in whole or in part on unions as a source of their work force),
3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
4. The progress and efforts being made in securing the services of minority group subcontractors or subcontractors with meaningful minority and female representation among their employees.
5. Records of internal and external communication and outreach to document its affirmative efforts.

b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of CTDOT and/or the United States Department of Transportation.

c. **For Federal Highway Administration funded projects only:**

The Company will submit an annual report to CTDOT each July or as otherwise directed, for the duration of the project, indicating the number of minorities, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR 1391. If on-the-job training is being required by "Training Special Provision", the Company will be required to furnish Form FHWA 1409 and 1415 as required by CTDOT.

STATE FUNDED PROJECTS (only)
APPENDIX A
(Labor Market Goals)

LABOR MARKET AREA GOAL			***Minority*** **Female**
Bridgeport			**22.7%** **1.4%**
Ansonia	Beacon Falls	Bridgeport	Derby
Easton	Fairfield	Milford	Monroe

As of: March 14, 2023

Oxford	Seymour	Shelton	Stratford
Trumbull			

Danbury			**10.7%**
3.8%			
Bethel	Bridgewater	Brookfield	Danbury
Kent	New Fairfield	New Milford	Newtown
Redding	Ridgefield	Roxbury	Sherman
Washington			

1.8%			
Brooklyn	Eastford	Hampton	Killingly
Pomfret	Putnam	Scotland	Sterling
Thompson	Voluntown	Union	Woodstock

Hartford			**13.7%**
2.1%			
Andover	Ashford	Avon	Barkhamsted
Belin	Bloomfield	Bolton	Bristol
Burlington	Canton	Chaplin	Colchester
Columbia	Coventry	Cromwell	Durham
East Granby	East Haddam	East Hampton	East Hartford
East Windsor	Ellington	Enfield	Farmington
Glastonbury	Granby	Haddam	Hartford
Harwinton	Hebron	Lebanon	Manchester
Mansfield	Marlborough	Middlefield	Middletown
Newington	Plainville	Plymouth	Portland
Rocky Hill	Simsbury	Somers	South Windsor
Southington	Stafford	Suffield	Tolland
Vernon	West Hartford	Wethersfield	Willington
Winchester	Windham	Windsor	Windsor Locks

Lower River			**4.3%**
1.8%			
Chester	Deep River	Essex	Old Lyme
Westbrook			

LABOR MARKET AREA GOAL ***Minority***
Female

New Haven			**17.9%**
3.1%			
Bethany	Branford	Cheshire	Clinton
East Haven	Guilford	Hamden	Killingworth
Madison	Meriden	New Haven	North Branford

As of: March 14, 2023

North Haven	Orange	Wallingford	West Haven
Woodbridge			

New London			**7.4%**
3.1%			
Bozrah	Canterbury	East Lyme	Franklin
Griswold	Groton	Ledyard	Lisbon
Montville	New London	North Stonington	Norwich
Old Lyme	Old Saybrook	Plainfield	Preston
Salem	Sprague	Stonington	Waterford
Hopkinton	RI – Westerly Rhode Island		

Stamford			**33.2%**
2.1%			
Darien	Greenwich	New Canaan	Norwalk
Stamford	Weston	Westport	Wilton

Torrington			**4.3%**
1.8%			
Canaan	Colebrook	Cornwall	Goshen
Hartland	Kent	Litchfield	Morris
Norfolk	North Canaan	Salisbury	Sharon
Torrington	Warren		

Waterbury			**12.4%**
1.6%			
Bethlehem	Middlebury	Naugatuck	Prospect
Southbury	Thomaston	Waterbury	Watertown
Wolcott	Woodbury		

EXHIBIT B

AFFIRMATIVE ACTION POLICY STATEMENT (July 2022)

It is the policy of this firm to assure that applicants are employed, and that employees are treated during employment, without regard to an individual's race, color, religion, creed, sex, gender identity or expression, marital status, national origin, age, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved and to promote the full realization of equal employment opportunity through positive and continuous affirmative efforts. Such action shall include employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or terminations, rates of pay or other forms of compensation, selection for training/apprenticeship, preapprenticeship opportunities, and on-the-job training opportunities.

This firm will implement, monitor, enforce and achieve full compliance with this Affirmative Action Policy Statement in conjunction with the applicable Federal and State laws, regulations, executive orders, and contract provisions, including but not limited to those listed below:

As of: March 14, 2023

Dissemination of Policy:

All members of the firm who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, this firm's Equal Employment Opportunity (EEO) policy and contractual responsibilities to provide EEO in each grade and classification of employment. These actions shall include:

1. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the firm's EEO policy and its implementation will be reviewed and explained. These meetings will be conducted by the EEO officer.
2. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
3. All personnel who are engaged in direct recruitment for the firm will be instructed by the EEO Officer of the contractor's procedures for locating and hiring minority group employees.
4. Notices and posters setting forth the firm's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
5. The firm's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
6. Sexual Harassment Prevention Resources including training and remedies must be available to all employees. See Connecticut General Assembly Public Acts 19–16 and 19–93.

Recruitment:

When advertising for employees, the firm will include in all advertisements the notation; "An Affirmative Action/Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area where the workforce would normally be derived.

1. The firm will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority and female applicants. To meet this requirement, the firm will identify referral sources and establish procedures for recruitment to obtain the referral of minority and female applicants.
2. In the event the firm has a valid bargaining agreement providing for exclusive hiring referrals, he/she is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The United States Department of Labor has held that where implementation of such agreements has had the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
3. The firm will encourage his/her present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

Personnel Actions:

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to an individual's race, color, religion, creed, sex, gender identity or expression, marital status, national origin, age, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved. The following procedures shall be followed:

1. The firm will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of personnel.
2. The firm will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take correction action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
3. The firm shall periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
4. The firm will promptly investigate all complaints of alleged discrimination made to the firm and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective actions shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

Training and Promotion:

The firm will assist in locating, qualifying, and increasing the skills of minorities and women. The firm will utilize the following tools to identify training and promotional opportunities in the firm:

1. The firm will advise employees and applicants for employment of available training programs and the entrance requirements.
2. The firm will periodically review the training and promotion of minority group and female employees and will encourage eligible employees to apply for such training and promotion. Unions:

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

1. The firm will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
2. The firm will use best efforts to incorporate an EEO clause into each union agreement to the extent that such union will be contractually bound to refer applicants without regard to their to an individual's race, color, religion, creed, sex, gender identity or expression, marital status, national origin, age, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved.
3. The firm is to obtain information as to the referral practices and policies of the labor union except that to the extent that such information is within the exclusive possession of the labor union and such labor union refuses to furnish the information to the contractor, the contractor shall notify the Connecticut Department of Transportation (CTDOT) of the efforts made to obtain the information.
4. In the event the union is unable to provide the firm with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies. (The United States Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations under Executive Order 11246 as amended, and in compliance with 23 CFR Part 230, the firm will notify CTDOT.

Selection of Subcontractors:

The firm will not discriminate on the grounds race, color, religion, sex, sexual orientation, gender identity or expression, marital status, national origin, ancestry, age, intellectual disability, learning disability, physical disability, including, but not limited to, blindness, or status as a veteran in the selection and retention of subcontractors,

including procurement of materials and leases of equipment.

1. The firm shall use his/her best efforts to ensure subcontractor/subconsultant compliance with Federal and State Equal Opportunity (EO) and EEO requirements.

Records and Reports:
The Contractor shall keep records as necessary to document compliance with EO/EEO requirements. Such reports shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of CTDOT and/or the United States Department of Transportation. The following records should be maintained:

6. The number of minority and non-minority group members and women employed in each work classification;
7. The progress and efforts being made in cooperation with unions, when applicable to increase the employment opportunities for minorities and women;
8. The documentation showing progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
9. Complaints of Discrimination.

In implementing this policy and ensuring that affirmative action is being provided, each time a hiring opportunity occurs this firm will contact and request referrals from minority and female organizations, referral sources, and media sources. All advertising will emphasize that the firm is "An Affirmative Action/Equal Opportunity Employer."

In order to substantiate this firm's efforts and affirmative actions to provide equal opportunity, the firm will maintain and submit, as requested, documentation such as referral request correspondence, copies of advertisements utilized and follow-up documentation to substantiate that efforts were made in good faith. This firm will maintain the necessary internal audit procedures and record keeping systems to report the firm's affirmative action efforts.

It is understood by Owner/CEO/President of the firm and the firm's Equal Employment Opportunity Officer and supervisory and managerial personnel that failure to effectively implement, monitor and enforce this firm's affirmative action program and/or failure to adequately document and submit as required, the affirmative actions taken and efforts made to recruit and hire minority and female applicants in accordance with our affirmative action program in each instance of hire, will result in this firm being required to recommit itself to a modified and more stringent affirmative action program as a condition of approval. It is recognized that this policy is a contractual requirement and is a prerequisite for performing services for the contracting agency. This policy in addition to CTDOT's EO/EEO contract provisions and requirements, shall constitute the CTDOT Affirmative Program requirements.

The ultimate responsibility for the full implementation of this firm's Affirmative Action Program rests with the Chief Executive Officer of this firm.

Rev. 4/24/2019

EXHIBIT C

Health Insurance Portability and Accountability Act of 1996 ("HIPAA").

As of: March 14, 2023

(a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.

(b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and

(c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the "Department") is a "covered entity" as that term is defined in 45 C.F.R. § 160.103; and

(d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of "individually identifiable health information," as that term is defined in 45 C.F.R. § 160.103; and

(e) The Contractor is a "business associate" of the Department, as that term is defined in 45 C.F.R. § 160.103; and

(f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.

(g) Definitions

(1) "Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))

(2) "Business Associate" shall mean the Contractor.

(3) "Covered Entity" shall mean the Department of the State of Connecticut named on page 1 of this Contract.

(4) "Designated Record Set" shall have the same meaning as the term "designated record set" in 45 C.F.R. § 164.501.

(5) "Electronic Health Record" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

(6) "Individual" shall have the same meaning as the term "individual"' in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).

(7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.

(8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.

(9) "Required by Law"' shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.

(10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.

(11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.

(12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.

(13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R.§ 164.304.

(14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.

(15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).

(h) Obligations and Activities of Business Associates.

(1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.

(2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.

(3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.

(4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

(5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.

(6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.

(7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.

(8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.

(9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.

(10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.

(11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.

(12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.

(13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.

(14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.

(15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations

(16) Obligations in the Event of a Breach

A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.

B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.

C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:

1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.

2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).

3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.

4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.

5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.

E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.

(i) Permitted Uses and Disclosure by Business Associate.

(1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.

(2) Specific Use and Disclosure Provisions

(A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.

(B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.

(C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).

(j) Obligations of Covered Entity.

(1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.

(2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.

(3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.

(k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.

(l) Term and Termination.

(1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered

Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.

(2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:

(A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or

(B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or

(C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

(3) Effect of Termination

(A) Except as provided in (l)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

(B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

(1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.

(2) Amendment. The Parties agree to take such action as in necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.

(3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.

(4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

(5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.

(6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

EXHIBIT D

As of: March 14, 2023

State Wages and Other Related Information

Please refer to the Department of Labor website for the latest updates, annual adjusted wage rate increases, certified payroll forms and applicable statutes.
http://www.ctdol.state.ct.us/wgwkstnd/prevailwage.htm

Prevailing Wage Law Poster Language

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.

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. § 3153(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

As of: March 14, 2023

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

CONTRACTORS WAGE CERTIFICATION FORM Construction

As of: March 14, 2023

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):_____

aInformation Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine "job

As of: March 14, 2023

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 J1,2,3,4 SP-1,2 S1,2,3,4,5,6,7,8 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) 263-6543.

As of: March 14, 2023

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.

Rev. 7/1/19

SEE BELOW FOR STATE WAGE RATES

As of: March 14, 2023

Project: Reconstruction of Guernseytown Road

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 23-46018

Connecticut Department of Labor
Wage and Workplace Standards Division

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

Project Number: L153-0003 Project Town: Watertown
State#: FAP#:

Project: Reconstruction of Guernseytown Road

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	44.46	28.51
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	39.92	34.47
2) Carpenters, Piledrivermen	36.07	26.15
2a) Diver Tenders	36.07	26.15
3) Divers	44.53	26.15
03a) Millwrights	37.02	27.66

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	55.0	23.75
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray		
4a) Painters: Brush and Roller	37.22	23.40
4d) Painters: Blast and Spray	40.22	23.40
4e) Painters: Tanks, Tower and Swing	39.22	23.40
4f) Elevated Tanks (60 feet and above)	46.22	23.40
	41.4	
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V1,2,7,8,9)		31.07+3% of gross wage
	39.7	38.77 + a
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection		
	47.03	34.05
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)		
----LABORERS---- -		
	32.0	24.40
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist		
	32.25	24.40
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen		

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10) Group 3: Pipelayers	32.5	24.40
	32.5	24.40
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		
12) Group 5: Toxic waste removal (non-mechanical systems)	34.0	24.40
13) Group 6: Blasters	33.75	24.40
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	33.0	24.40
Group 8: Traffic control signalmen	18.0	24.40
	32.75	24.40
Group 9: Hydraulic Drills		
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
	34.23	24.40 + a
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders		
	33.26	24.40 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men		
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	33.26	24.40 + a

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	33.59	24.40 + a
15) Form Erectors		
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	33.26	24.40 + a
17) Laborers Topside, Cage Tenders, Bellman	33.15	24.40 + a
18) Miners	34.23	24.40 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	40.72	24.40 + a
	40.52	24.40 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders		
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	38.54	24.40 + a
	41.31	24.40 + a
21) Mucking Machine Operator, Grout Boss, Track Boss		
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	31.16	28.78 + a
Three Axle Trucks; Two Axle Ready Mix	31.27	28.78 + a
Three Axle Ready Mix	31.33	28.78 + a

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Four Axle Trucks	31.39	28.78 + a
Four Axle Ready-Mix	31.44	28.78 + a
Heavy Duty Trailer (40 tons and over)	33.66	28.78 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	31.44	28.78 + a
Heavy Duty Trailer (up to 40 tons)	32.39	28.78 + a
Snorkle Truck	31.54	28.78 + a
----POWER EQUIPMENT OPERATORS----		
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	46.07	26.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	49.91	26.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	49.06	26.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer).	45.71	26.80 + a

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	44.86	26.80 + 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 (Drott1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)		
	44.42	26.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).		
	43.73	26.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)		
	43.73	26.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.		
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	43.38	26.80 + a
Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)		

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	50.27	**26.80 + 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)		
	42.99	**26.80 + a**
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.		
	42.54	**26.80 + a**
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper;		
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).	42.04	26.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	39.7	26.80 + a
	39.7	26.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.		
Group 12: Wellpoint Operator.	39.63	26.80 + a
Group 13: Compressor Battery Operator.	38.97	26.80 + a
	37.66	26.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).		
	37.2	26.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.		
Group 16: Maintenance Engineer.	36.46	26.80 + a
	41.39	26.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator. (minimum for any job requiring CDL license).		

**NOTE: SEE BELOW

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	38.61	**26.80 +**
a		
----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
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

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.

TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT

TECHNICAL SPECIFICATIONS

Reconstruction of Guernseytown Road
Watertown Public Works Department
Project Number L153-0003

All work is to be performed in accordance with the State of Connecticut Department of Transportation "Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, 2020, Merged with Supplemental Specifications, dated January 2023" as supplemented and as amended below. All Contract Pay Items reference the Standard Specification, Form 818. Those items that have requirements different than those contained in Form 818 have an associated Project Technical Provision. The following list cross references the pay item with the appropriate section of Form 818.

Item No.	Form 817 Section	Item Description	Technical Provision
0201001A	2.01	Clearing and Grubbing	Yes
0202000	2.02	Earth Excavation	No
0202100	2.02	Rock Excavation	No
0202200	2.02	Channel Excavation – Earth	No
0202250	2.02	Channel Excavation – Rock	No
0202529	2.02	Cut Bituminous Concrete Pavement	No
0203205	2.03	Structure Excavation – Earth (Excluding Handling Water)	No
0203305	2.03	Structure Excavation – Rock (Excluding Handling Water)	No
0204151A	2.04	Handling Water	Yes
0207000	2.07	Borrow	No
0209001	2.09	Formation of Subgrade	No
0213100	2.13	Granular Fill	No
0216000	2.16	Pervious Structure Backfill	No
0219001	2.19	Sedimentation Control System	No
0219002	2.19	Sedimentation Control Hay Bale System	No
0219011A	2.19	Sedimentation Control System at Catch Basin	Yes
0286001.1	2.86	Rock in Drainage Trench Excavation 0'-10' Deep	No
0304002	3.04	Processed Aggregate Base	No
0406002	4.06	Temporary Pavement	Yes
0406171	4.06	HMA S0.5	Yes
0406172	4.06	HMA S0.375	Yes
0406236	4.06	Material for Tack Coat	Yes
0406999	4.06	Asphalt Adjustment Cost	Yes

	Form 818		Technical
Item No.	**Section**	**Item Description**	**Provision**
0503866A	5.03	Removal of Existing Culvert (Site No. 1)	Yes
0586001.1	5.86	Type “C” Catch Basin – 0’-10’ Deep	Yes
0586002.1	5.86	Type “C” Catch Basin (4’ Sump) - 0’-10’ Deep	Yes
0586003.1	5.86	Type “C” Catch Basin Double Grate Type I - 0’-10’ Deep	Yes
0586005.1	5.86	Type “C” Catch Basin Double Grate - Type II - 0’-10’ Deep	Yes
0586040.2	5.86	Type “C-L” Catch Basin (4’ Sump) - 0’-10’ Deep	Yes
0586040.2	5.86	Type “C-L” Catch Basin (4’ Sump) - 0’-20’ Deep	Yes
0586086	5.86	Abandon Drainage Structure	Yes
0586750	5.86	Type “C” Catch Basin Top	Yes
0586760	5.86	Type “C-L” Catch Basin Top	Yes
0586790.1	5.86	Remove Drainage Structure – 0’ – 10’ Deep	Yes
0586850.1A	5.86	Hydrodynamic Separator	Yes
0586650	5.86	Reset Manhole	Yes
0601000	6.01	Class ‘A’ Concrete	No
0601219A	6.01	4’x2’ Precast Concrete Box Culvert	Yes
0601220A	6.01	4’x2’ Reinforced Concrete Culvert End	Yes
0602030	6.02	Deformed Steel Bars – Galvanized	No
0686000.15	6.86	15” R.C. Pipe - 0’-10’ Deep	Yes
0686000.18	6.86	18” R.C. Pipe - 0’ to 10’ Deep	Yes
0686000.24	6.86	24” R.C. Pipe - 0’ to 10’ Deep	Yes
0686230.12A	6.86	12" High Density Polyethylene Pipe - 0' to 10' Deep	Yes
0686230.15A	6.86	15" High Density Polyethylene Pipe - 0' to 10' Deep	Yes
0686230.18A	6.86	18" High Density Polyethylene Pipe - 0' to 10' Deep	Yes
0686230.24A	6.86	24" High Density Polyethylene Pipe - 0' to 10' Deep	Yes
0686250.6A	6.86	6” High Density Polyethylene Pipe - Perforated (Smooth Interior) - 0’-10’ Deep	Yes
0686700.15	6.86	15” Reinforced Concrete Drainage Pipe End	Yes
0686700.18	6.86	18” Reinforced Concrete Drainage Pipe End	Yes
0686950.1	6.86	Remove Existing Pipe - 0’ -10’ Deep	Yes
0703011	7.03	Intermediate Riprap	No
0703012	7.03	Modified Riprap	No
0707009A	7.07	Membrane Waterproofing (Cold Liquid Elastomeric)	Yes
0708001	7.08	Dampproofing	No
0728031	7.08	No. 4 Crushed Stone	No
0755009	7.55	Geotextile	No
0815001	8.15	Bituminous Concrete Lip Curbing	No

	Form 818		Technical
Item No.	**Section**	**Item Description**	**Provision**
0910170	9.10	Metal Beam Rail (R-B MASH)	No
0822001	8.22	Temporary Precast Concrete Barrier Curb	No
0822002	8.22	Relocated Temporary Precast Concrete Barrier Curb	No
0910322	9.10	Metal Beam Rail Span Section Type II	No
0911923	9.10	R-B End Anchorage – Type I	No
0911924	9.10	R-B End Anchorage – Type II	No
0913013	9.13	5’ Polyvinyl Chloride Chain Link Fence	No
0921001	9.21	Concrete Sidewalk	No
0922500	9.22	Bituminous Concrete Driveway (Commercial)	No
0922501	9.22	Bituminous Concrete Driveway	No
0922503A	9.22	Gravel Driveway	Yes
0939001	9.39	Sweeping for Dust Control	No
0942001	9.42	Calcium Chloride for Dust Control	No
0943001	9.43	Water for Dust Control	No
0944000	9.44	Furnishing and Placing Topsoil	No
0950005	9.50	Turf Establishment	No
0950033	9.50	Erosion Control Matting Type H	No
0969060A	9.69	Construction Field Office, Small	Yes
0970006	9.70	Trafficperson (Municipal Police Officer) (Estimated Cost)	No
0971001A	9.71	Maintenance and Protection of Traffic	Yes
0975004	9.75	Mobilization and Project Closeout	No
0976002	9.76	Barricade Warning Lights - High Intensity	No
0977001	9.77	Traffic Cone	No
0978002	9.78	Traffic Drum	No
0979003	9.79	Construction Barricade Type III	No
0980001	9.80	Construction Staking	No
1206013	12.06	Removal of Existing Signing	No
1208931	12.08	Sign Face - Sheet Aluminum Type IX Retro-Reflective Sheeting	No
1210101	12.10	4” White Epoxy Resin Pavement Markings	No
1210102	12.10	4” Yellow Epoxy Resin Pavement Markings	No
1210105	12.10	Epoxy Resin Pavement Markings, Symbols, and Legends	No
1220027	12.20	Construction Signs	No
1300102A	13.00	8-Inch Ductile Iron (Water Main)	Yes
1803300	18.03	Impact Attenuation System (Tangential)	No

NOTICE TO CONTRACTOR – ALL-INCLUSIVE DRAINAGE

Added sections:
2.86 – Drainage Trench Excavation
Rock in Drainage Trench Excavation
5.86 – Catch basins, manholes and drop inlets
6.86 – Drainage pipes
Drainage Pipe Ends

This Contract contains the above-noted Special Provisions for all-inclusive drainage, developed to replace the following Sections in their entireties:

- Section 5.07 – Catch Basins, Manholes and Drop Inlets
- Section 6.51 – *Culverts*
- Section 6.52 – *Culvert Ends*

The Section 5.86 and 6.86 items include excavation and bedding material in the drainage structure, pipe and pipe end unit prices.

Section 2.05 *Trench Excavation* may be included for miscellaneous trenching, where necessary, but will not be used with all-inclusive drainage items.

Other Standard Specifications, Supplemental Specifications or Special Provisions may contain references to Articles or Subarticles from previous versions of Sections 5.07, 6.51 and 6.52 which are no longer valid.

The following Standard Specifications Sections or Supplements contain references to Articles or Subarticles from Section 2.05 which shall remain in effect:

- Section 2.06 – Ditch Excavation
- Section 5.06 – Retaining Walls, Endwalls and Steps
- Section 7.51 – Underdrains and Outlets
- Section 10.01 – Trenching and Backfilling

'Rock in Drainage Trench Excavation' is now defined in Section 2.86. 'Rock in Trench Excavation' will remain in Section 2.05 and may be used with trenching not associated with all-inclusive drainage items.

Any references to Articles beginning with "5.07," "6.51," or "6.52" shall refer to the pertinent topic or materials in the new Special Provisions contained herein.

NOTICE TO CONTRACTOR – SECTION 4.06 AND M.04 MIX DESIGNATION EQUIVALENCY AND PG BINDER EQUIVALENCY

Sections 4.06 and M.04 have been replaced in their entirety with the Special Provisions included as part of this contract. These Special Provisions reflect changes in mix designations for various types of hot-mix asphalt (HMA) and include the removal of mixes designed and governed by the Marshall Mix Design method. The following table is to be used to associate mix designations noted on the plans with those in the contract specifications and related documents. Mix designations on each row are equivalent and refer to a single mix, which shall be subject to the requirements of the Section 4.06 and M.04 Special Provisions for the Official Mix Designation in the leftmost column of the corresponding row in the table.

Mix Designation Equivalency Table

Official Mix Designation	Equivalent Mix Designation (a)	Equivalent Mix Designation (b)
(c)	Superpave 1.5 inch	Superpave 37.5 mm
HMA S1	Superpave 1.0 inch	Superpave 25.0 mm
HMA S0.5	Superpave 0.5 inch	Superpave 12.5 mm
HMA S0.375	Superpave 0.375 inch	Superpave 9.5 mm
HMA S0.25	Superpave 0.25 inch	Superpave 6.25 mm
(c)	Superpave #4	Superpave #4
HMA S0.5 (d)	Bituminous Concrete Class 1 **(e)**	Bituminous Concrete Class 1 **(e)**
HMA S0.375 (d)	Bituminous Concrete Class 2 where it is specified in lifts 1.25 or thicker **(e)**	Bituminous Concrete Class 2 where it is specified in lifts 1.25 or thicker **(e)**
HMA S0.25 (d)	Bituminous Concrete Class 2 where it is specified in lifts 1.0 inches to less than 1.25 inches **(e)**; Bituminous Concrete Class 12 **(e)**	Bituminous Concrete Class 2 where it is specified in lifts 1.0 inches to less than 1.25 inches **(e)**; Bituminous Concrete Class 12 **(e)**
HMA S1 (d)	Bituminous Concrete Class 4 **(e)**	Bituminous Concrete Class 4 **(e)**
Curb Mix	Bituminous Concrete Class 3	Bituminous Concrete Class 3

Notes

(a) This mix designation is generally included with projects where the English measurement system is used. The mix designation may contain both the English measurement system designation and the SI (metric) measurement system designation, one of which would be in parenthesis.

(b) This mix designation is generally included with projects where the SI (metric) measurement system is used. The mix designation may contain both the English measurement system designation and the SI measurement system designation, one of which would be in parenthesis.

(c) This mix is no longer in use except by contract-specific Special Provision; if this mix is called for in the Plans but no such Special Provision is included for this contract a suitable substitute must be approved by the Engineer.
(d) Unless approved by the Engineer, the Superpave Design Level for the Official Mix Designation bituminous concrete replacing a Marshall mix called for in the plans or other contract documents shall be Design Level 2 for mixes used on mainline or shoulders of state-maintained roadways and Design Level 1 elsewhere, including but not limited to driveways or sidewalks.
(e) All mixes designed under the Marshall mix-design method are no longer covered by the 4.06 Special Provision. Wherever they appear in Contract plans and documents they shall be substituted by the "Official Mix Designation" in the same row of the Mix Designation Equivalency Table. Unless approved by the Engineer, the Superpave Design Level shall be Level 1.

PG Binder Designation Equivalency Table

Official Binder Designation	Equivalent Binder Designation	Use
PG 64S-22	PG 64-22	Hot-Mix Asphalt (HMA S* pay items and pay items using HMA S* materials)**(a),(b)**
PG 64E-22	PG 76-22	Polymer-Modified Asphalt (PMA S* pay items and pay items using HMA S* materials)**(a),(b)**

Notes
(a) Use the Mix Designation Equivalency Table above to identify the Official Mix Designation for materials using the Marshall mix design method, i.e. "Bituminous Concrete Class *."

Refer to the NTC – Superpave Design Level for the Superpave Design Level to use for each mix on a project. The PG Binder Designation Equivalency Table can be used to obtain the Official Binder Designation for each mix identified in the NTC – Superpave Design Level.

NOTICE TO CONTRACTOR – FORM 817

All construction under this contract shall adhere to and comply with the Department of Transportation, Form 818, "Standard Specifications for Roads, Bridges, Facilities and Incidental Construction", including the most recent supplements thereto dated January 2023, except Division I shall be overruled by these Specifications if there is a conflict.

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

ADJUSTMENTS

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 Town's inspection staff will randomly locate core locations as specified in Section 4.06. Town 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. Transport of cores to an independent test lab will be paid for by the Town.

NOTICE TO CONTRACTOR – HANDLING WATER

Item #0204151A Handling Water is a lump sum item that will include all handling water. Examples of work items whose costs are to be paid for under this item include, but not necessarily limited to, the following:

- Dewatering and cofferdams related to the construction of roadway, culverts, and end walls.
- Dewatering of all excavations related to end wall and culvert structures including their related substructure elements.
- Dewatering of all trench excavations related to the installation of pipelines (water mains, fire hydrants, water services, storm drainage, etc.)
- Dewatering of all excavations related to the installation of structures related to utility work (drainage manholes, catch basins, hydrodynamic separators, etc.)
- Dewatering of all excavations related to removing drainage structures.
- The rerouting of any water body, stream/creek, or overland sheet flow to temporarily divert water around the localized work area (e.g.. buried water conveyance pipe, temporary bypass pumping operations, etc.). All work to be conducted in accordance with applicable regulations.
- The proper handling and filtering of encountered water before releasing back into the nearest receiving water body or drainage structure

NOTICE TO CONTRACTOR – POTENTIAL MODIFIED AWARD SCHEDULE

The contractor is hereby given notice that this contract may not be awarded until all Federal and State financial approvals have been received. If all financial approvals are not received, this contract may be withdrawn and re-advertised at the discretion of the State, per section XIII of the Construction Contract Bidding and Award Manual. This shall not be the basis for any claims by any bidder.

NOTICE TO CONTRACTOR – INSPECTION AND TESTING OF MATERIALS

Minimum testing requirements must meet or exceed those shown in Chapter 7 of the latest version of CT DOT Materials Testing Manual: 'Suggested Minimum Schedule for Acceptance Testing (LOTCIP)' revised 4/2/2019, also found in the most recent addition of the LOTCIP Guidelines.

NOTICE TO CONTRACTOR – CONTRACTOR PERFORMANCE

The contractor is to self-perform a minimum of 50% of the total contract value with his/her own organization as stated in the Form 818.

SECTION 2.86 - DRAINAGE TRENCH EXCAVATION, ROCK IN DRAINAGE TRENCH EXCAVATION

2.86.01—Description: Drainage trench excavation consists of the excavation necessary for the proper installation of drainage structures, pipes, pipe ends and any other incidental drainage items. It shall include earth and rock excavation, removal of existing pipes, dewatering, backfill, and disposal of materials; to the trench limits described herein, to the dimensions shown on the plans, or as directed by the Engineer.

Classifications:

(1) Drainage Trench Excavation will include only the excavation necessary for the construction of the drainage items and the removals specified above.

(2) Rock in Drainage Trench Excavation, insofar as it applies to drainage trench excavation, shall be defined as **1/2 cubic yard or more** in volume of the following obstructions removed from the limits of the drainage trench:

(a) rock in definite ledge formation
(b) boulders, or portions of boulders
(c) cement masonry structures
(d) concrete or reinforced concrete structures
(e) reinforced concrete pipe
(f) subsurface concrete pavement or concrete base

The removal shall be as indicated or directed from within the limits defined in 2.86.03 for drainage trench excavation.

2.86.03 —Construction Methods:

(1) Drainage Trench Excavation Limits:

Horizontal Limits: Trench widths for pipes, pipe ends, pipe-arches, and drainage structures shall be as follows:

(a) 2 feet greater than the nominal inside diameter of circular pipe or nominal inside span of elliptical pipe or pipe-arch for such diameters or spans of less than 30 inches
(b) 3 feet greater than the nominal inside diameter of circular pipe or the nominal inside span of elliptical pipe or pipe-arch for such diameters or spans that are 30 inches or greater
(c) 4 feet greater than the nominal inside diameter or nominal horizontal inside span for pipe-arches fabricated from structural plates
(d) 2 feet beyond the neat lines of all exterior or foundation walls of drainage structures

Vertical Limits: Trench depths shall extend vertically as follows:

(a) From the bottom of the trench to the bottom of the roadway excavation, or in areas away from roadway excavation, to the top of existing ground surface.
(b) Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Drainage Trench Excavation: Drainage trench excavation shall be made in conformity with the requirements of the plans, or as directed by the Engineer. The Contractor shall furnish and employ such shores, braces, pumps, or ancillary equipment as needed for the proper protection of

property, proper completion of the work, as well as safety of the public and employees of both the Contractor and the Department. All bracing and shoring shall be removed when no longer required for the construction or safety of the work. When required, the Contractor shall provide or have on the Site at all times any OSHA certification for equipment to be used, per 1.07.07. For support of trenches greater than 10 feet in depth, working drawings shall be submitted, in accordance with 1.05.02. The Contractor shall control erosion and sedimentation at trench locations and ensure that pumped water from the drainage excavation is discharged in accordance with the requirements of 1.10.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved backfill, thoroughly compacted in lifts not to exceed 6 inches, for the full trench width. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

After the excavation is complete, the Contractor shall notify the Engineer and no drainage structure or material shall be placed in the excavated area until the Engineer has approved the depth of excavation and the character of the foundation material.

(3) Rock in Drainage Trench Excavation:

(a) Rock in Drainage Trench Excavation - Ledge: When rock in definite ledge form is encountered, the Contractor shall excavate a minimum of 12 inches below the bottom of the proposed pipe or drainage structure; and this depth shall be filled with bedding material (as specified in M.08.03-1) below the proposed pipe; or granular fill (as specified in M.02.01) below the proposed drainage structure, which shall be thoroughly compacted in lifts not to exceed 6 inches.

(b) Rock in Drainage Trench Excavation - Boulders: When boulders are encountered, the Contractor shall remove them from the trench and if backfill is required, the void shall be filled with bedding material, surplus excavated material (as specified in 2.02.03-8) or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(c) Rock in Drainage Trench Excavation –Structures: When cement masonry, concrete or reinforced concrete structures are encountered within the drainage trench limits, the Contractor shall remove the structure in its entirety or as directed by the Engineer, and if backfill is required, the void shall be filled with bedding material, surplus excavated material or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(4) Backfill: Suitable material excavated from the drainage trench shall be used as backfill material prior to consideration of using any other source of backfill. Backfill material used shall be of a quality satisfactory to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. Rock fill or stones larger than 5 inches shall not be placed within 1 foot of the drainage structure or pipe. The grading shall be completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material, placed in layers not to exceed 6 inches in depth after compaction, which shall be thoroughly compacted with equipment approved by the Engineer.

All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it may be obtained from the Project surplus excavation in accordance with 2.02.03-8 or from borrow pits, gravel pits, or elsewhere as directed by the Engineer.

2.86.04 —Method of Measurement:

Drainage Trench Excavation: Drainage trench excavation will not be measured for payment. If granular fill or borrow is required to replace unsuitable material it will be measured for

payment as directed by the Engineer.

Rock in Drainage Trench Excavation: If any material meeting the definition of Rock in Drainage Trench Excavation is encountered, the Contractor shall strip it of sufficient overlying material to allow for proper measurement and shall then notify the Engineer that the rock surface is ready for measurement. If the Contractor fails to give such notice, the Engineer will presume that the measurements taken at the time the Engineer first saw the material in question will give the true quantity of excavation.

Rock in Drainage Trench Excavation will be measured according to the classification provided in 2.86.01 and within the drainage trench excavation limits provided in 2.86.03.

For the removal of underground obstructions, as classified in 2.86.01-2, the measurement shall be the actual volume of rock removed (1/2 cubic yard or more) as approved by the Engineer.

Rock in Drainage Trench Excavation will not be measured for payment in fills.

Bedding Material or other suitable fill, as specified in 2.86.03(3), used to fill voids after rock is excavated will not be measured for payment.

2.86.05 —Basis of Payment:

Drainage Trench Excavation: There will be no direct payment for drainage trench excavation required for the installation of drainage pipes, pipe ends, catch basins, drop inlets, manholes, and other drainage structures, or any other incidental drainage work including materials, tools, equipment and labor necessary to complete the drainage trench excavation in conformity with the plans or as directed by the Engineer.

There will be no direct payment for backfill or disposal of surplus material necessary for the satisfactory completion of this work.

There will be no direct payment made for shoring, bracing, dewatering, or for material or equipment necessary for the satisfactory completion of the work.

Where called for on the plans to install temporary earth retaining systems for the support of existing facilities, pavement, utilities, or for other constraints, payment will be made in accordance with such items in the Contract.

If granular fill or borrow is used to replace unsuitable material, payment will be made at the respective Contract unit prices, or in the absence of such items in the Contract, as Extra Work in accordance with 1.04.05.

Rock in Drainage Trench Excavation: When rock, conforming to the description in 2.86.01 is encountered within the limits of drainage trench excavation, its removal will be classified and paid for at the Contract unit price per cubic yard for "Rock in Drainage Trench Excavation 0' – 10' Deep," or "Rock in Drainage Trench Excavation 0' – 20' Deep," as the case may be.

Those portions of drainage trench excavation classified and paid for as "Rock in Drainage Trench Excavation" of the various depths will be the actual volumes of rock excavated within the limits for drainage trench excavation, at the applicable bottom depth price.

Where no item or items for "Rock in Drainage Trench Excavation" at the applicable depth appear in the proposal and rock is encountered in drainage trench excavation, its removal will be paid for as Extra Work in accordance with 1.04.05.

When excavation is necessary in fill, no such excavation will be paid for as "Rock in Drainage Trench Excavation."

When excavation is necessary for any purpose other than drainage-related items, no such excavation will be paid under this item.

Bedding material or any other suitable material used to fill voids vacated by excavated rock will not be paid for but shall be included in the unit price per cubic yard for "Rock in Drainage Trench Excavation."

Pay Item	Pay Unit
Rock in Drainage Trench Excavation 0' - 10' Deep	c.y.

SECTION 4.06 - BITUMINOUS CONCRETE

Section 4.06 is being deleted in its entirety and replaced with the following:
4.06.01—Description
4.06.02—Materials 4.06.03—
Construction Methods 4.06.04—
Method of Measurement
4.06.05—Basis of Payment

4.06.01 —Description: Work under this section shall include the production, delivery, placement, and compaction of an uniform textured, non-segregated, smooth bituminous concrete pavement to the grade and cross section shown on the plans.

The terms listed below as used in this specification are defined as:

Bituminous Concrete: A composite material consisting of prescribed amounts of asphalt binder, and aggregates. Asphalt binder may also contain additives engineered to modify specific properties and/or behavior of the composite material. References to bituminous concrete apply to all of its forms, such as those identified as hot-mix asphalt (HMA),or polymer-modified asphalt (PMA).

Bituminous Concrete Plant (Plant): A structure where aggregates and asphalt binder are combined in a controlled fashion into a bituminous concrete mixture suitable for forming pavements and other paved surfaces.

Course: A continuous layer (a lift or multiple lifts) of the same bituminous concrete mixture placed as part of the pavement structure.

Density Lot: The total tonnage of all bituminous concrete placed in a single lift and as defined in Article 4.06.03.

Disintegration: Erosion or fragmentation of the pavement surface which can be described as polishing, weathering-oxidizing, scaling, spalling, raveling, or formation of potholes.

Dispute Resolution: A procedure used to resolve conflicts between the Engineer and the Contractor's test results that may affect payment.

Hot Mix Asphalt (HMA): A bituminous concrete mixture typically produced at 325°F.

Job Mix Formula (JMF): A recommended aggregate gradation and asphalt binder content to achieve the required mixture properties.

Lift: An application of a bituminous concrete mixture placed and compacted to a specified thickness in a single paver pass.

Percent Within Limits (PWL): The percentage of the lot falling between the Upper Specification Limit (USL) and the Lower Specification Limit (LSL).

Polymer-Modified Asphalt (PMA): A bituminous concrete mixture containing a polymer modified asphalt binder and using a qualified warm mix technology.

Production Lot: The total tonnage of a bituminous concrete mixture from a single source that may receive an adjustment.

Production Sub Lot: Portion of the production lot typically represented by a single sample.

Quality Assurance (QA): All those planned and systematic actions necessary to provide ConnDOT the confidence that a Contractor will perform the work as specified in the Contract.

Quality Control (QC): The sum total of activities performed by the vendor (Producer, Manufacturer, and Contractor) to ensure that a product meets contract specification requirements.

Superpave: A bituminous concrete mix design used in mixtures designated as "S*" Where "S" indicates Superpave and * indicates the sieve related to the nominal maximum aggregate size of the mix.

Segregation: A non-uniform distribution of a bituminous concrete mixture in terms of gradation,

temperature, or volumetric properties.
Warm Mix Asphalt (WMA) Technology: A qualified additive or technology that may be used to produce a bituminous concrete at reduced temperatures and/or increase workability of the mixture.

4.06.02 —Materials: All materials shall conform to the requirements of Section M.04.
1. Materials Supply: The bituminous concrete mixture must be from one source of supply and originate from one Plant unless authorized by the Engineer.
2. Recycled Materials: Reclaimed Asphalt Pavement (RAP), Crushed Recycled Container Glass (CRCG), Recycled Asphalt Shingles (RAS), or crumb rubber (CR) from recycled tires may be incorporated in bituminous concrete mixtures in accordance with Project Specifications.

4.06.03 —Construction Methods:

1. Material Documentation: All vendors producing bituminous concrete must have Plants with automated vehicle-weighing scales, storage scales, and material feeds capable of producing a delivery ticket containing the information below.

a. "State of Connecticut" printed on ticket.
b. Name of producer, identification of Plant, and specific storage silo if used.
c. Date and time.
d. Mixture Designation; Mix type and level Curb mixtures for machine-placed curbing must state "curb mix only".
e. If WMA Technology is used, the additive name and dosage rate or water injection rate must be listed.
f. Net weight of mixture loaded into the vehicle (When RAP and/or RAS is used the moisture content shall be excluded from mixture net weight).
g. Gross weight (equal to the net weight plus the tare weight or the loaded scale weight).
h. Tare weight of vehicle (Daily scale weight of the empty vehicle).
i. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
j. Vehicle number - unique means of identification vehicle.
k. For Batch Plants, individual aggregate, recycled materials, and virgin asphalt max/target/min weights when silos are not used.
l. For every mixture designation the running daily total delivered and sequential load number.

The net weight of mixture loaded into the vehicle must be equal to the cumulative measured weights of its components.

The Contractor must notify the Engineer immediately if, during production, there is a malfunction of the weight recording system in the automated Plant. Manually written tickets containing all required information will be allowed for no more than one hour.

The State reserves the right to have an inspector present to monitor batching and /or weighing operations.

2. Transportation of Mixture: The mixture shall be transported in vehicles that are clean of all foreign material, excessive coating or cleaning agents, and, that have no gaps through which mixture might spill. Any material spilled during the loading or transportation process shall be quantified by re-weighing the vehicle. The Contractor shall load vehicles uniformly so that segregation is minimized. Loaded vehicles shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The cover must minimize air infiltration.

Vehicles found not to be in conformance shall not be loaded.

Vehicles with loads of bituminous concrete being delivered to State projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall

furnish a list and allowable weights of all vehicles transporting mixture.
The State reserves the right to check the gross and tare weight of any vehicle. If the gross or tare weight varies from that shown on the delivery ticket by more than 0.4 percent, the Engineer will recalculate the net weight. The Contractor shall correct the discrepancy to the satisfaction of the Engineer.

If a vehicle delivers mixture to the project and the delivery ticket indicates that the vehicle is overweight, the load may not be rejected but a "Measured Weight Adjustment" will be taken in accordance with Article 4.06.04.

Vehicle body coating and cleaning agents must not have a deleterious effect on the mixture. The use of solvents or fuel oil, in any concentration, is prohibited for the coating of vehicle bodies.

For each delivery, the Engineer shall be provided a clear, legible copy of the delivery ticket.

3. Paving Equipment: The Contractor shall have the necessary paving and compaction equipment at the project site to perform the work. All equipment shall be in good working order and any equipment that is worn, defective or inadequate for performance of the work shall be repaired or replaced by the Contractor to the satisfaction of the Engineer. During the paving operation, the use of solvents or fuel oil, in any concentration, is prohibited as a release agent or cleaner on any paving equipment (i.e., rollers, pavers, transfer devices, etc.).

Refueling or cleaning of equipment is prohibited in any location on the project where fuel or solvents might come in contact with paved areas or areas to be paved. Solvents used in cleaning mechanical equipment or hand tools shall be stored off of areas paved or to be paved.

Pavers: Each paver shall have a receiving hopper with sufficient capacity to provide for a uniform spreading operation and a distribution system that places the mix uniformly, without segregation. The paver shall be equipped with and use a vibratory screed system with heaters or burners. The screed system shall be capable of producing a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screed units as part of the system shall have auger extensions and tunnel extenders as necessary. Automatic screed controls for grade and slope shall be used at all times unless otherwise authorized by the Engineer. The controls shall automatically adjust the screed to compensate for irregularities in the preceding course or existing base. The controls shall maintain the proper transverse slope and be readily adjustable, and shall operate from a fixed or moving reference such as a grade wire or floating beam.

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Rollers types shall include steel-wheeled, pneumatic or a combination thereof. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination of. Vibratory rollers shall be equipped with indicators for amplitude, frequency and speed settings/readouts to measure the impacts per foot during the compaction process. Oscillatory rollers shall be equipped with frequency indicators. Rollers can operate in the dynamic mode using the oscillatory system on concrete structures such as bridges and catch basins if at the lowest frequency setting.

Pneumatic tire rollers shall be equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 pounds per square inch uniformly over the surface, The Contractor shall furnish documentation to the Engineer regarding tire size; pressure and loading to confirm that the proper contact pressure is being developed and that the loading and contact pressure is uniform for all wheels.

Lighting: For paving operations, which will be performed during hours of darkness, the paving equipment shall be equipped with lighting fixtures as described below, or with an approved equal. Lighting shall minimize glare to passing traffic. The lighting options and minimum number of

fixtures are listed in Tables 4.06-1 and 4.06-2:

TABLE 4.06-1: Minimum Paver Lighting

Option	Fixture Configuration	Fixture Quantity	Requirement
1	Type A	3	Mount over screed area
	Type B (narrow) or Type C (spot)	2	Aim to auger and guideline
	Type B (wide) or Type C (flood)	2	Aim 25 feet behind paving machine
2	Type D Balloon	2	Mount over screed area

TABLE 4.06-2: Minimum Roller Lighting

Option	Fixture Configuration*	Fixture Quantity	Requirement
1	Type B (wide)	2	Aim 50 feet in front of and behind roller
	Type B (narrow)	2	Aim 100 feet in front of and behind roller
2	Type C (flood)	2	Aim 50 feet in front of and behind roller
	Type C (spot)	2	Aim 100 feet in front of and behind roller
3	Type D Balloon	1	Mount above the roller

*All fixtures shall be mounted above the roller.

Type A: Fluorescent fixture shall be heavy-duty industrial type. Each fixture shall have a minimum output of 8,000 lumens. The fixtures shall be mounted horizontally, and be designed for continuous row installation.

Type B: Each floodlight fixture shall have a minimum output of 18,000 lumens.

Type C: Each fixture shall have a minimum output of 19,000 lumens.

Type D: Balloon light: Each balloon light fixture shall have a minimum output of 50,000 lumens, and emit light equally in all directions.

4. Test Section: The Engineer may require the Contractor to place a test section whenever the requirements of this specification or Section M.04 are not met.

The Contractor shall submit the quantity of mixture to be placed and the location of the test section for review and approval by the Engineer. The same equipment used in the construction of a passing test section shall be used throughout production.

If a test section fails to meet specifications, the Contractor shall stop production, make necessary adjustments to the job mix formula, Plant operations, or procedures for placement and compaction.

The Contractor shall construct test sections, as allowed by the Engineer, until all the required specifications are met. All test sections shall also be subject to removal as set forth in Article 1.06.04.

5. Transitions for Roadway Surface: Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall conform to the criteria below unless otherwise specified.

Permanent Transitions: Defined as any gradual change in pavement elevation that remains as a permanent part of the work.

A transition shall be constructed no closer than 75 feet from either side of a bridge expansion joint or parapet. All permanent transitions, leading and trailing, shall meet the following length requirements:

a) Posted speed limit is greater than 35 MPH: 30 feet per inch of elevation change.

b) Posted speed limit is 35 MPH or less: 15 feet per inch of elevation change.

In areas where it is impractical to use the above described permanent transition lengths the use of a shorter permanent transition length may be permitted when approved by the Engineer.

Temporary Transitions: A temporary transition is defined as a transition that does not remain a permanent part of the work. All temporary transitions shall meet the following length requirements:

a) Posted speed limit is greater than 50 MPH

(1) Leading Transitions = 15 feet per inch of vertical change (thickness)

(2) Trailing Transitions = 6 feet per inch of vertical change (thickness)

b) Posted speed limit is 40, 45, or 50 MPH

(1) Leading and Trailing = 4 feet per inch of vertical change (thickness)

c) Posted speed limit is 35 MPH or less

(1) Leading and Trailing = 3 feet per inch of vertical change (thickness)

Note: Any temporary transition to be in-place over the winter shutdown period or during extended periods of inactivity (more than 14 calendar days) shall conform to the greater than 50 MPH requirements shown above.

6. Spreading and Finishing of Mixture: Prior to the placement of the mixture, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance.

Immediately before placing a bituminous concrete lift, a uniform coating of tack coat shall be applied to all existing underlying pavement surfaces and on the exposed surface of a wedge joint. Such surfaces shall be clean and dry. Sweeping or other means acceptable to the Engineer shall be used.

The mixture shall not be placed whenever the surface is wet or frozen.

The Engineer may verify the mixture temperature by means of a probe or infrared type of thermometer. The Engineer may reject the load based on readings from a probe type thermometer and the specify temperature in the quality control plan (QCP) for placement.

Tack Coat Application: The tack coat shall be applied by a pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gallons per square yard for a non-milled surface and an application rate of 0.05 to 0.07 gallons per square yard for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gallons per square yard. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall not be heated in excess of 160°F and shall not be further diluted.

Tack coat shall be allowed sufficient time to break prior to any paving equipment or haul vehicles driving on it.

The Contractor may request to omit the tack coat application between bituminous concrete layers that have not been exposed to traffic and are placed during the same work shift. Requests to omit tack coat application on the exposed surface of a wedge joint will not be considered.

Placement: The mixture shall be placed and compacted to provide a smooth, dense surface with a uniform texture and no segregation at the specified thickness and dimensions indicated in the plans and specifications.

When unforeseen weather conditions prevent further placement of the mixture, the Engineer is not obligated to accept or place the bituminous concrete mixture that is in transit from the Plant.

In advance of paving, traffic control requirements shall be set up, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The Contractor shall inspect the newly placed pavement for defects in the mixture or placement

before rolling is started. Any deviation from standard crown or section shall be immediately remedied by placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

Where it is impractical due to physical limitations to operate the paving equipment, the Engineer may permit the use of other methods or equipment. Where hand spreading is permitted, the mixture shall be placed by means of suitable shovels and other tools, and in a uniformly loose layer at a thickness that will result in a completed pavement meeting the designed grade and elevation.

Placement Tolerances: Each lift of bituminous concrete placed at a specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an adjustment or removal. Lift tolerances will not relieve the Contractor from meeting the final designed grade. Lifts of specified non-uniform thickness, i.e. wedge or shim course, shall not be subject to thickness and area adjustments.

a) Thickness- Where the average thickness of the lift exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the Engineer will calculate the thickness adjustment in accordance with Article 4.06.04.

TABLE 4.06-3: Thickness Tolerances

Mixture Designation	**Lift Tolerance**
S1	+/- ⅜ inch
S0.25, S0.375, S0.5	+/- ¼ inch

Where the thickness of the lift of mixture is less than that shown on the plans beyond the tolerances shown in Table 4.06-3, the Contractor, with the approval of the Engineer, shall take corrective action in accordance with this specification.

b) Area- Where the width of the lift exceeds that shown on the plans by more than the specified thickness, the Engineer will calculate the area adjustment in accordance with Article 4.06.04.

c) Delivered Weight of Mixture - When the delivery ticket shows that the vehicle exceeds the allowable gross weight for the vehicle type, the Engineer will calculate the weight adjustment in accordance with Article 4.06.04.

Transverse Joints: All transverse joints shall be formed by saw-cutting to expose the full thickness of the lift. Tack coat shall be applied to the sawn face immediately prior to additional mixture being placed.

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.03 and eliminate all roller marks without displacement, shoving, cracking, or aggregate breakage.

When placing a lift with a specified thickness less than one and one-half (1 ½) inches, or a wedge course, the Contractor shall provide a minimum rolling pattern as determined by the development of a compaction curve. The procedure to be used shall be documented in the Contractor's QCP for placement and demonstrated on the first day of placement.

The use of the vibratory system on concrete structures is prohibited. When approved by the Engineer, the Contractor may operate a roller using an oscillatory system at the lowest frequency setting.

If the Engineer determines that the use of compaction equipment in the dynamic mode may damage highway components, utilities, or adjacent property, the Contractor shall provide alternate compaction equipment. The Engineer may allow the Contractor to operate rollers in the dynamic

mode using the oscillatory system at the lowest frequency setting.

Rollers operating in the dynamic mode shall be shut off when changing directions.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

Surface Requirements: Each lift of the surface course shall not vary more than ¼ inch from a Contractor-supplied 10 foot straightedge. For all other lifts, the tolerance shall be ⅜ inch. Such tolerance will apply to all paved areas.

Any surface that exhibits these characteristics or exceeds these tolerances shall be corrected by the Contractor at its own expense.

7. Longitudinal Joint Construction Methods: The Contractor shall use Method I- Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are between 1½ and 3 inches. S1.0 mixtures shall be excluded from using Method I. Method II Butt Joint (see Figure 4.06-2) shall be used for lifts less than 1½ inches or greater than or equal to 3 inches. During placement of multiple lifts, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inches from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed ¼ inch in any location.

Method I - Notched Wedge Joint:

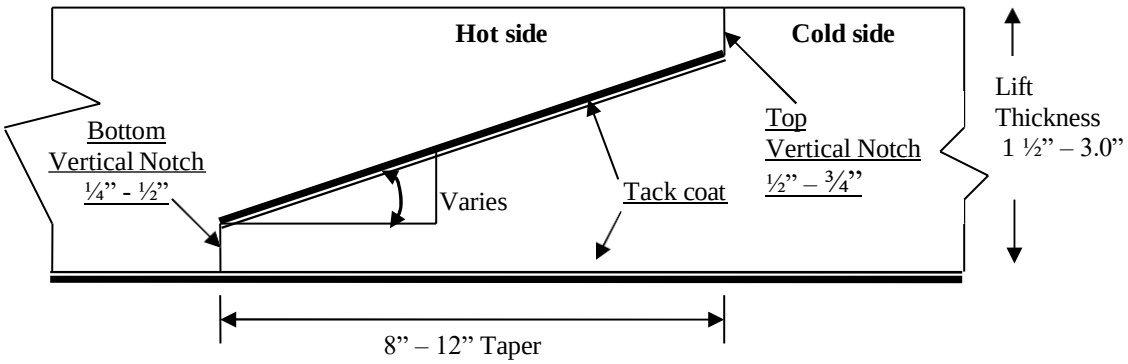

FIGURE 4.06-1: Notched Wedge Joint

A notched wedge joint shall be constructed as shown in Figure 4.06-1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches. The device shall have an integrated vibratory system.

The taper portion of the wedge joint must be placed over the longitudinal joint in the lift immediately below. The top vertical notch must be located at the centerline or lane line in the final lift. The requirement for paving full width "curb to curb" as described in Method II may be waived if addressed in the QC plan and approved by the Engineer.

The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device.

The taper portion of the wedge joint shall not be exposed to traffic for more than 5 calendar days.

Any exposed wedge joint must be located to allow for the free draining of water from the road surface.

The Engineer reserves the right to define the paving limits when using a wedge joint that will be

exposed to traffic.

If Method I, Notched Wedge Joint cannot be used on lifts between 1.5 and 3 inches, Method III Butt Joint may be substituted according to the requirements below for "Method III – Butt Joint with Hot Pour Rubberized Asphalt Treatment."

Method II - Butt Joint:

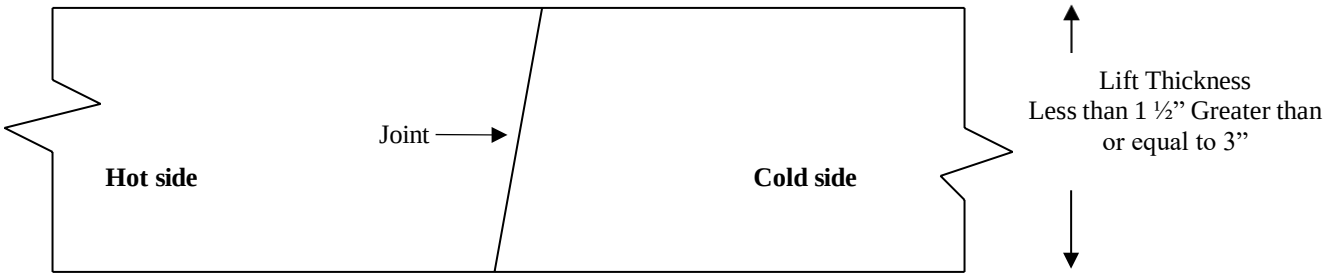

FIGURE 4.06-2: Butt Joint

When adjoining passes are placed, the Contractor shall utilize equipment that creates a near vertical edge (refer to Figure 4.06-2). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). The end gate on the paver should be set so there is an overlap onto the cold side of the joint.

The Contractor shall not allow any butt joint to be incomplete at the end of a work shift unless otherwise allowed by the Engineer. When using this method, the Contractor is not allowed to leave a vertical edge exposed at the end of a work shift and must complete paving of the roadway full width "curb to curb."

Method III- Butt Joint with Hot Poured Rubberized Asphalt Treatment: If Method I Wedge Joint cannot be used due to physical constraints in certain limited locations; the contractor may submit a request in writing for approval by the Engineer, to utilize Method III Butt Joint as a substitution in those locations. There shall be no additional measurement or payment made when the Method III Butt Joint is substituted for the Method I Notched Wedge Joint. When required by the contract or approved by the Engineer, Method III (see Figure 4.06-3) shall be used.

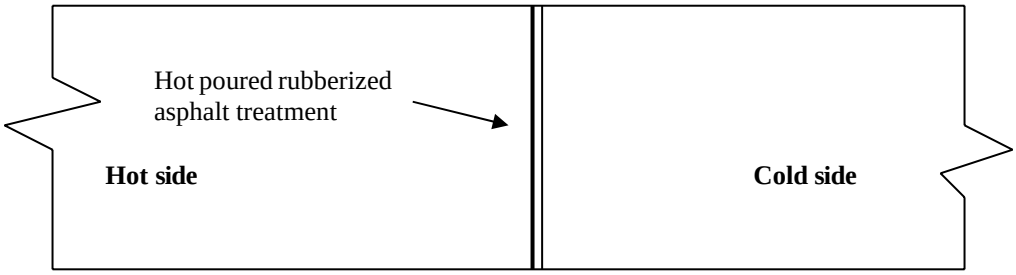

FIGURE 4.06-3: Butt Joint with Hot Poured Rubberized Asphalt Treatment

All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a rubberized joint seal material meeting the requirements of ASTM D 6690, Type 2. The joint sealant shall be placed on the face of the "cold side" of the butt joint as shown above prior to placing the "hot side" of the butt joint. The joint seal material shall be applied in accordance with the manufacturer's recommendation so as to provide a uniform coverage and avoid excess bleeding onto the newly placed pavement.

8. Contractor Quality Control (QC) Requirements: The Contractor shall be responsible for

maintaining adequate quality control procedures throughout the production and placement operations. Therefore, the Contractor must ensure that the materials, mixture and work provided by Subcontractors, Suppliers and Producers also meet contract specification requirements.

This effort must be documented in Quality Control Plans and address the actions, inspection, or sampling and testing necessary to keep the production and placement operations in control, to determine when an operation has gone out of control and to respond to correct the situation in a timely fashion.

The Standard QCP for production shall consist of the quality control program specific to the production facility.

There are three components to the QCP for placement: a Standard QCP, a Project Summary Sheet that details project specific information, and if applicable a separate Extended Season Paving Plan as required in Section 9 "Temperature and Seasonal Requirements".

The Standard QCP for both production and placement shall be submitted to the Department for approval each calendar year and.at a minimum of 30 days prior to production or placement.

Production or placement shall not occur until all QCP components have been approved by the Engineer.

Each QCP shall include the name and qualifications of a Quality Control Manager (QCM). The QCM shall be responsible for the administration of the QCP, and any modifications that may become necessary. The QCM shall have the ability to direct all Contractor personnel on the project during paving operations. All Contractor sampling, inspection and test reports shall be reviewed and signed by the QCM prior to submittal to the Engineer. The QCPs shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor.

Approval of the QCP does not relieve the Contractor of its responsibility to comply with the project specifications. The Contractor may modify the QCPs as work progresses and must document the changes in writing prior to resuming operations. These changes include but are not limited to changes in quality control procedures or personnel. The Department reserves the right to deny significant changes to the QCPs.

QCP for Production: Refer to Section M.04.03-1.

QCP for Placement: The Standard QCP, Project Summary Sheet, and Extended Season Paving Plan shall conform to the format provided by the Engineer. The format is available at http://www.ct.gov/dot/lib/dot/documents/dconstruction/pat/qcp_outline_hma_placement.pdf.

The Contractor shall perform all quality control sampling and testing, provide inspection, and exercise management control to ensure that placement conforms to the requirements as outlined in its QCP during all phases of the work. The Contractor shall document these activities for each day of placement.

The Contractor shall submit complete field density testing and inspection records to the Engineer within 48 hours in a manner acceptable to the Engineer.

The Contractor may obtain one (1) mat core and one (1) joint core per day for process control, provided this process is detailed in the QCP. The results of these process control cores shall not be used to dispute the Department determinations from the acceptance cores. The Contractor shall submit the location of each process control core to the Engineer for approval prior to taking the core. The core holes shall be filled to the same requirements described in sub-article 4.06.03-10.

9. Temperature and Seasonal Requirements: Paving, including placement of temporary pavements, shall be divided into two seasons, "In-Season" and "Extended-Season". In-Season paving occurs from May 1 – October 14, and Extended Season paving occurs from October 15-April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

Mixtures shall not be placed when the air or sub base temperature is less than 40°F regardless of the season.

Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the project that addresses minimum delivered mix temperature considering WMA, PMA or other additives, maximum paver speed, enhanced rolling patterns and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

10. Obtaining Bituminous Concrete Cores: This Section describes the methodology and sampling frequency the Contractor shall use to obtain pavement cores.

Coring shall be performed on each lift specified to a thickness of one and one-half (1 ½) inches or more within 5 days of placement. The Contractor shall extract cores (4 or 6 inch diameter for S0.25, S0.375 and S0.5 mixtures 6 inch diameter for S1.0 mixtures) from locations determined by the Engineer. The Engineer must witness the extraction, labeling of cores and filling of the core holes.

A density lot will be complete when the full designed paving width and length of the lot has been placed and shall include all longitudinal joints between the curb lines. HMA S1 mixes are excluded from the longitudinal joint density requirements.

A standard density lot is the quantity of material placed within the defined area exclusive of any structures. A combo density lot is the quantity of material placed within the defined area inclusive of structures less than or equal to 500 feet long. A bridge density lot is the quantity of material placed on a structure larger than 500 feet in length.

Prior to paving, the type and number of lot (s) shall be determined by the Engineer. The number of cores per lot shall be determined in accordance to Tables 4.06-4, 4.06-5A and 4.06-5B.Noncontiguous areas such as highway ramps may be combined to create one lot. Combined areas should be set up to target a 2000 ton lot size. The longitudinal locations of mat cores within a lot containing multiple paving passes will be determined using the total distance covered by the paver. The locations of the joint cores will be determined using the total length of longitudinal joints within the lot.

Sampling is in accordance with the following tables:

TABLE 4.06-4: Bridge Density Lot(s)

Length of Each Structure (Feet)	No. of Mat Cores	No. of Joint Cores
< 500’	See Table 4.06-5(A or B)	See Table 4.06-5(A or B)
501’ – 1500’	3	3
1501’ – 2500’	4	4
2501’ and greater	5	5

All material placed on structures less than or equal to 500 feet in length shall be included as part of a standard lot as follows:

TABLE 4.06-5A: Standard and Combo Density Lot(s) > 500 Tons

Lot Type	No. of Mat Cores		No. of Joint Cores		Target Lot Size (Tons)
Standard Lot / Without Bridge (s)	4		4		2000
Combo Lot / Lot With	4 plus	1 per structure	4 plus	1 per structure	2000

Bridge(s)[1]		(< 300')		(< 300')	
		2 per structure (301' – 500')		2 per structure (301' – 500')	

TABLE 4.06-5B: Standard and Combo Density Lot < 500 Tons

Lot Type	No. of Mat Cores		No. of Joint Cores	
Standard Lot / Without Bridge (s)	3		3	
Combo Lot / Lot With Bridge(s)[1]	2 plus	1 per structure	2 plus	1 per structure

Note:
[1] If a combo lot mat or joint core location randomly falls on a structure, the core is to be obtained on the structure in addition to the core(s) required on the structure.

After the lift has been compacted and cooled, the Contractor shall cut cores to a depth equal to or greater than the lift thickness and remove them without damaging the lift(s) to be tested. Any core that is damaged or obviously defective while being obtained will be replaced with a new core from a location within 2 feet measured in a longitudinal direction.

A mat core shall not be located any closer than one foot from the edge of a paver pass. If a random number locates a core less than one foot from any edge, the location will be adjusted by the Engineer so that the outer edge of the core is one foot from the edge of the paver pass.

Method I, Notched Wedge Joint cores shall be taken so that the center of the core is 5 inches from the visible joint on the hot mat side (Figure 4.06-5).

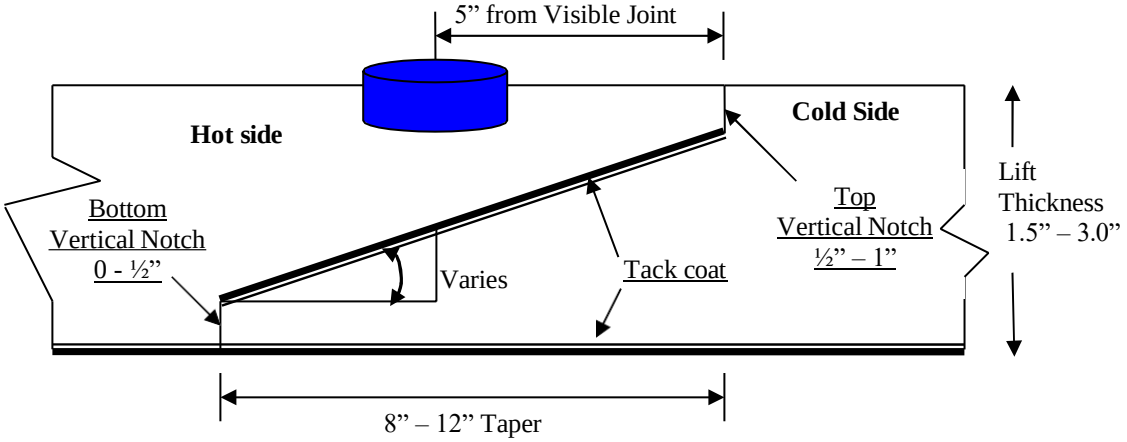

FIGURE 4.06-5: Notched Wedge Joint Cores

When Method II or Method III Butt Joint is utilized, cores shall be taken from the hot side so the edge of the core is within 1 inch of the longitudinal joint.

The cores shall be labeled by the Contractor with the project number, date placed, lot number and sub-lot number. The core's label shall, include "M" for a mat core and "J" for a joint core. A mat core from the second lot and first sub-lot shall be labeled "M2 – 1" (Figure 4.06-4). The Engineer shall fill out a MAT-109 to accompany the cores. The Contractor shall deliver the cores and MAT-109 to the Department's Central Lab. The Contractor shall use a container approved by the Engineer. The container shall have a lid capable of being locked shut and tamper proof. The Contractor shall use foam, bubble wrap, or another suitable material to prevent the cores from

being damaged during handling and transportation. Once the cores and MAT-109 are in the container the Engineer will secure the lid using a security seal. The security seal's identification number must be documented on the MAT-109. Central Lab personnel will break the security seal and take possession of the cores.

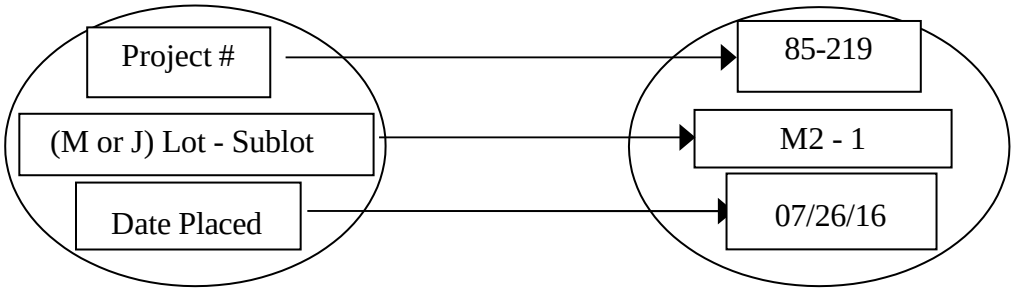

FIGURE 4.06-4: Labeling of Cores

Each core hole shall be filled within four hours upon core extraction. Prior to being filled, the hole shall be prepared by removing any free water and applying tack coat using a brush or other means to uniformly cover the cut surface. The core hole shall be filled using a bituminous concrete mixture at a minimum temperature of 240ºF containing the same or smaller nominal maximum aggregate size and compacted with a hand compactor or other mechanical means to the maximum compaction possible. The bituminous concrete shall be compacted to ⅛ inch above the finished pavement.

11. Acceptance Sampling and Testing: Sampling and testing shall be performed at a frequency not less than the minimum frequency specified in Section M.04 and sub-article 4.06.03-10.

Sampling shall be performed in accordance with ASTM D 3665, or a statistically based procedure of stratified random sampling approved by the Engineer.

Plant Material Acceptance: The Contractor shall provide the required sampling and testing during all phases of the work in accordance with Section M.04. The Department will verify the Contractor's acceptance test results. Should any test results exceed the specified tolerances in the Department's current QA Program for Materials, the Contractor test results for a subject lot or sub lot may be replaced with the Department's results for the purpose of calculating adjustments. The verification procedure is included in the Department's current QA Program for Materials.

Density Acceptance: The Engineer will perform all acceptance testing in accordance with AASHTO T 331. The density of each core will be determined using the daily production's average maximum theoretical specific gravity (Gmm) established during the testing of the parent material at the Plant. When there was no testing of the parent material or any Gmm exceeds the specified tolerances in the Department's current QA Program for Materials, the Engineer will determine the maximum theoretical density value to be used for density calculations.

12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer's test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within 7 calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results within the timeframe described in sub-article 4.06.03-9 supporting its position. No request for Dispute Resolution will be allowed for a Density Lot in which any core was not taken within the required 5 calendar days of placement.

Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new set of core samples per disputed lot. The core samples must be extracted no later than 14 calendar days from the date of Engineer's authorization.

The number and location (mat, joint, or structure) of the cores taken for dispute resolution must reflect the number and location of the original cores. The location of each core shall be randomly located within the respective original sub lot. All such cores shall be extracted and the core hole filled using the procedure outlined in Article 4.06.03. The dispute resolution results shall be added to the original results and averaged for determining the final in-place density value.

13. Corrective Work Procedure: If pavement placed by the Contractor does not meet the specifications, and the Engineer requires its replacement or correction, the Contractor shall:

Propose a corrective procedure to the Engineer for review and approval prior to any corrective work commencing. The proposal shall include:

- Limits of pavement to be replaced or corrected, indicating stationing or other landmarks that are readily distinguishable.
- Proposed work schedule.
- Construction method and sequence of operations.
- Methods of maintenance and protection of traffic.
- Material sources.
- Names and telephone numbers of supervising personnel.

Any corrective courses placed as the final wearing surface shall match the specified lift thickness after compaction.

14. Protection of the Work: The Contractor shall protect all sections of the newly finished pavement from damage that may occur as a result of the Contractor's operations for the duration of the Project.

15. Cut Bituminous Concrete Pavement: Work under this item shall consist of making a straight-line cut in the pavement to the lines delineated on the plans or as directed by the Engineer. The cut shall provide a straight, clean, vertical face with no cracking, tearing or breakage along the cut edge.

4.06.04 —Method of Measurement:

1. HMA S* or PMA S*: The quantity of bituminous concrete measured for payment will be determined by the documented net weight in tons accepted by the Engineer in accordance with this specification and Section M.04.

2. Adjustments: Adjustments to bituminous concrete quantities will not be permitted. Required values of pavement mat densities and pavement joint densities are provided in Tables 4.06-9 and 4.06-10.

TABLE 4.06-9: Required Values for Pavement Mat density

Average Test Result Percent Mat Density	Percent Adjustment (Bridge and Non-Bridge)
97.1 - 100	Remove and Replace (curb to curb)
94.5 – 97.0	Acceptable. No quantity adjustment.
93.5 – 94.4	Acceptable. No quantity adjustment.
92.0 – 93.4	Acceptable. No quantity adjustment.
90.0 – 91.9	Remove and Replace (curb to curb)

88.0 – 89.9	Remove and Replace (curb to curb)
87.0 – 87.9	Remove and Replace (curb to curb)
86.9 or less	Remove and Replace (curb to curb)

TABLE 4.06-10: Required Values for Pavement Joint Density

Average Test Result Percent Joint Density	Percent Adjustment (Bridge and Non-Bridge)
97.1 – 100	Remove and Replace (curb to curb)
93.5 – 97.0	Acceptable. No quantity adjustment.
92.0 – 93.4	Acceptable. No quantity adjustment.
91.0 – 91.9	Remove and Replace (curb to curb)
89.0 – 90.9	Remove and Replace (curb to curb)
88.0 – 88.9	Remove and Replace (curb to curb)
87.0 – 87.9	Remove and Replace (curb to curb)
86.9 or less	Remove and Replace (curb to curb)

3. Transitions for Roadway Surface: The installation of permanent transitions shall be measured under the appropriate item used in the formation of the transition.

The quantity of material used for the installation of temporary transitions shall be measured for payment under the appropriate item used in the formation of the transition. The installation and removal of a bond breaker, and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is not measured for payment.

4. Cut Bituminous Concrete Pavement: The quantity of bituminous concrete pavement cut will be measured in accordance with Article 2.02.04.

5. Material for Tack Coat: The quantity of tack coat will be measured for payment by the number of gallons furnished and applied on the Project and approved by the Engineer. No tack coat material shall be included that is placed in excess of the tolerance described in Article 4.06.03.

a. Container Method- Material furnished in a container will be measured to the nearest ½ gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container capable of measuring the volume to the nearest ½ gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

b. Vehicle Method-

i. Measured by Weight: The number of gallons furnished will be determined by weighing the material on calibrated scales furnished by the Contractor. To convert weight to gallons, one of the following formulas will be used:

$$\text{Tack Coat (gallons at 60°F)} = \frac{\text{Measured Weight (pounds)}}{\text{Weight per gallon at 60°F}}$$

$$\text{Tack Coat (gallons at 60°F)} = \frac{0.996 \times \text{Measured Weight (pounds)}}{\text{Weight per gallon at 77°F}}$$

ii. Measured by automated metering system on the delivery vehicle:

Tack Coat (gallons at 60°F) = Factor (from Table 4.06-11) multiplied by the measured gallons.

TABLE 4.06-11: Factor to Convert Volume of Tack Coat to 60°F

Tack Coat Application Temperature (°F)	Factor	Tack Coat Application Temperature (°F)	Factor
75	0.996	120	0.985
80	0.995	125	0.984
85	0.994	130	0.983
90	0.993	135	0.982
95	0.991	140	0.980
100	0.990	145	0.979
105	0.989	150	0.978
110	0.988	155	0.977
115	0.986	160	0.976

4.06.05 —Basis of Payment:

1. HMA S* or PMA S*: The furnishing and placing of bituminous concrete will be paid for at the Contract unit price per ton for "HMA S*" or "PMA S*".

All costs associated with providing illumination of the work area are included in the general cost of the work.

All costs associated with cleaning the surface to be paved, including mechanical sweeping, are included in the general cost of the work. All costs associated with constructing longitudinal joints are included in the general cost of the work.

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

2. Bituminous Concrete Adjustment Costs: The adjustment will be calculated using the formulas shown below if all of the measured adjustments in Article 4.06.04 are not equal to zero. A positive or negative adjustment will be applied to monies due the Contractor.

Production Lot: $[T_T + T_A + T_W + T_{SD}]$ x Unit Price = Est. (P)

Density Lot: T_D x Unit Price = Est. (D)

Where: Unit Price = Contract unit price per ton per type of mixture

T_* = Total tons of each adjustment calculated in Article 4.06.04

Est. ( ) = Pay Unit represented in dollars representing incentive or disincentive.

The Bituminous Concrete Adjustment Cost item if included in the bid proposal or estimate is not to be altered by the Contractor.

3. Transitions for Roadway Surface: The installation of permanent transitions shall be paid under the appropriate item used in the formation of the transition. The quantity of material used for the installation of temporary transitions shall be paid under the appropriate pay item used in the formation of the transition. The installation and removal of a bond breaker, and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is included in the general cost of the work.

4. The cutting of bituminous concrete pavement will be paid in accordance with Article 2.02.05.

5. Material for tack coat will be paid for at the Contract unit price per gallon at 60°F for

"Material for Tack Coat".

Pay Item*	Pay Unit*
HMA S*	ton
PMA S*	ton
Bituminous Concrete Adjustment Cost	est.
Material for Tack Coat	gal.

*For contracts administered by the State of Connecticut, Department of Administrative Services, the pay items and pay units are as shown in contract award price schedule.

SECTION 5.86 - CATCH BASINS, MANHOLES AND DROP INLETS

5.86.01 —Description: The work under this Section shall consist of furnishing, preparing, and installing catch basins, manholes and drop inlets (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.

This Section shall also include resetting or replacing catch basin tops as well as manhole frames and covers.

5.86.02 —Materials: The materials for this work shall meet the following requirements:
Drainage structures shall meet the requirements of M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.

Galvanizing shall meet the requirements of M.06.03.

Mortar shall meet the requirements of M.11.04.

Butyl rubber joint seal shall meet the requirements of ASTM C990.

Granular fill, if necessary, shall meet the requirements of M.02.01.

Protective compound material shall be a type appearing on the Department's Qualified Products List and be acceptable to the Engineer, as specified in M.03.09.

5.86.03 —Construction Methods: Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where a drainage structure is to be installed below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the proposed drainage structure or to ensure a uniform foundation for the structure.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

When a drainage structure outside of proposed drainage trench limits is to be removed, it shall be completely removed and all pipes shall be removed or plugged with cement masonry.

When a drainage structure is to be abandoned, the structure shall be removed to a depth 2 feet below the subgrade or as directed by the Engineer. The floor of the structure shall be broken and all pipes shall be plugged with cement masonry.

Drainage structures shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved. The provisions of 6.02.03 pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval unless called for in the plans, Contract or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

When it becomes necessary to increase the horizontal dimensions of manholes, catch basins and drop inlets to sizes greater than those shown on the plans in order to provide for multiple pipe installations, large pipes or for other reasons, the Contractor shall construct such manholes, catch basins and drop inlets to modified dimensions as directed by the Engineer.

The surfaces of the tops of all catch basins, and drop inlets shall be given a coat of protective compound material, at the manufacturer's recommended application rate, immediately upon completion of the concrete curing period.

All masonry units shall be laid in full mortar beds.

Metal fittings for catch basins, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

All inlet and outlet pipes shall be set flush with the inside face of the wall of the drainage structure as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections, and the concrete or masonry shall be constructed around them neatly to prevent leakage along their outer surfaces.

When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size extending from the drainage structure to the nearest joint of the existing pipe in accordance with 6.86.03 or as directed by the Engineer.

Backfilling shall be performed in accordance with 2.86.03.

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.

5.86.04 —Method of Measurement:

Drainage Trench Excavation: 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.

Rock in Drainage Trench Excavation: Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.

Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Resetting of Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Replacement of frames, covers, and tops will be measured as a unit for catch basin top or manhole frame and cover.

Conversion of drainage structures as specified on the plans, or as directed by the Engineer, including structure reconstruction will be measured for payment as a unit.

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.

5.86.05 —Basis of Payment:

Drainage Trench Excavation for the installation of proposed structures described herein will be paid for under the respective drainage Contract item(s) for which the excavation is being

performed, in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Manholes and Catch Basins will be paid for at the Contract unit price for each "Manhole," or "Catch Basin," of the type specified, at "0' to 10' Deep" or "0' to 20' Deep," complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Drop Inlets will be paid for at the Contract unit price for each "Drop Inlet," of the type specified, complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Manholes, Catch Basins and Drop Inlets constructed to modified dimensions as directed by the Engineer, will be paid for as follows:

Where the interior floor area has to be increased to accommodate existing field conditions, as measured horizontally at the top of the base of the completed structure, and does not exceed 125% of the interior floor area as shown on the plans for that structure, then the structure shall be paid for at the Contract unit price for each "Manhole," "Catch Basin," or "Drop Inlet" of the type specified. Where the floor area is greater than 125%, the increase in the unit price for the individual structure shall be in direct proportion to the increase of the completed structure interior floor area as compared to the interior floor area as shown on the plans for that structure. Such increased unit price shall include all excavation, materials, equipment, tools, and labor incidental to the completion of the structure.

Reset Units will be paid for at the Contract unit price each for "Reset Manhole," "Reset Catch Basin," or "Reset Drop Inlet," of the type specified, respectively, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto, except when the work requires reconstruction greater than 3 feet, measured vertically, then the entire cost of resetting the unit will be paid for as Extra Work in accordance with the provisions of 1.04.05.

Frames, Covers, and Tops when required in connection with reset units, will be paid for at the Contract unit price each for such "Manhole Frame and Cover" or "(Type) Catch Basin Top," complete in place, including all incidental expense; or when no price exists, the furnishing and placing of such material will be paid for as Extra Work in accordance with the provisions of 1.04.05.

When the catch basin top has a stone or granite curb in its design, the curb or inlet shall be included in the cost of the "(Type) Catch Basin Top."

Conversion of drainage structures will be paid for at the Contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to (Type) Manhole," or "Convert Manhole to (Type) Catch Basin," complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, all alterations to existing structure, all materials including catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

The maximum change in elevation of frame under these items shall not exceed 3 feet. Greater depth changes, if required, shall be paid for as Extra Work, in accordance with 1.04.05.

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
(Type) Catch Basin – 0' to 10' Deep	ea.
(Type) Catch Basin – 0' to 20' Deep	ea.
Manhole (Size) – 0' to 10' Deep	ea.
Manhole (Size) – 0' to 20' Deep	ea.
(Type) Drop Inlet	ea.
Reset Catch Basin	ea.
Reset Manhole	ea.
Reset Drop Inlet	ea.
Convert Catch Basin to (Type) Catch Basin	ea.
Convert Catch Basin to (Type) Manhole	ea.
Convert Manhole to (Type) Catch Basin	ea.
Manhole Frame and Cover	ea.
(Type) Catch Basin Top	ea.
Remove Drainage Structure – 0' to 10' Deep	ea.
Remove Drainage Structure – 0' to 20' Deep	ea.
Abandon Drainage Structure	ea.

SECTION 6.86 - DRAINAGE PIPES, DRAINAGE PIPE ENDS

6.86.01 —Description 6.86.02—
Materials 6.86.03—Construction
Methods 6.86.04—Method of
Measurement 6.86.05—Basis of
Payment

6.86.01 —Description: This work shall consist of furnishing, preparing and installing drainage pipes of the size and type specified, bedding material, joint sealant, rubber gaskets, clamps, collars, grout, grout collars, drainage trench excavation, backfilling or satisfactory disposal of all materials, the removal of which is necessary for the proper completion of the work, connecting proposed drainage systems to existing systems, plugging or abandoning existing pipes and removal of existing pipe within trench limits, as shown on the plans or as directed by the Engineer.

This Section shall also include removal of drainage pipes outside of drainage trench excavation limits, as defined in 2.86.03-1.

6.86.02 —Materials: The materials for this work shall meet the following requirements:
Drainage Pipe, Drainage Pipe Ends, Sealers, Gaskets and connection hardware shall meet the requirements of M.08.01.

Bedding Material shall meet the requirements of M.08.03-1.

Granular Fill, if necessary, shall meet the requirements of M.02.01.

Brick Masonry shall meet the requirements of M.11.03 and Mortar shall meet the requirements of M.11.04.

Concrete used for Concrete Pipe Connections shall be Class “F” Concrete meeting the requirements of M.03.

6.86.03 —Construction Methods:

(1) Drainage Trench Excavation: Drainage trench excavation and backfilling shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where drainage pipe is to be laid below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the bedding material.

Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Rock in Drainage Trench Excavation: When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

(3) Drainage Pipe Installation: New or re-laid drainage pipes shall be installed on 4 inches of bedding material (12 inches if over rock in ledge formation), the details as shown on the plans, or as directed by the Engineer. Prior to placement of the drainage pipe, in accordance with the plans, bedding material shall be pre-shaped to 10% of the total height of the pipe in order to keep the pipe in the center of the trench. Following placement of the drainage pipe, bedding material backfill shall be placed in accordance with the following table:

Internal Pipe Diameter	Required Bedding Material Backfill
< 48 inches*	25% of total height of the pipe
≥ 48 inches*	12 inches above the top of the pipe
*Includes pipe arch of equivalent internal horizontal span See Standard Drawing	

The placement of the drainage pipe shall start at the downstream end and progress upstream or as shown on the plans, or as directed by the Engineer. All drainage pipes shall be carefully laid in the center of the drainage trench, true to the lines and grades given. Bell ends shall face upgrade and all joints shall be tight.

Joints in concrete pipe shall be sealed with cold-applied bituminous sealer, preformed plastic gaskets or flexible, watertight, rubber-type gaskets. Portland cement mortar shall not be used for sealing pipe joints except with permission of the Engineer.

When cold-applied bituminous sealer is used, the bell and spigot ends shall be wiped clean and dry before applying the bituminous sealer to the pipe ends. Before the drainage pipes are placed in contact with each other, the spigot or tongue end shall be completely covered with bituminous sealer; then the pipe shall be laid to line and grade so the inside surface of all abutting pipes are flush. Additional bituminous sealer shall be applied to the joint after the connection has been made to ensure a water tight connection.

Where the end of an existing drainage pipe is not compatible with the end of a proposed concrete pipe, the Contractor shall align the inner diameters of the pipes being connected, butt the pipe ends together, and construct a cast-in-place concrete pipe connection, as shown in the plans. Incompatible bell/spigot or tongue/groove ends shall be cut off as required to ensure the interior drainage pipe walls are aligned to provide a smooth transition between the pipes.

Metal pipe and pipe arches shall be carefully joined and firmly clamped together by approved connecting bands, which shall be properly bolted in place before any backfill is placed.

Newly installed drainage pipe which is not in true alignment, or which shows any settlement or distortion, shall be reinstalled in accordance with 1.05.03.

When drainage pipe outside of proposed drainage trench limits is to be removed, it shall be removed to the limits shown on the plans and all remaining pipes shall be plugged with cement masonry.

Where shown on the plans or directed by the Engineer, the Contractor shall plug abandoned existing pipes with cement masonry.

(4) Drainage Pipe End Installation: Reinforced concrete drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. The joints shall be sealed as specified in 6.86.03-3 and backfill shall be placed around both sides of the unit simultaneously to the elevation shown on the plans.

Metal drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. After the attachment of the drainage pipe end, backfill shall be placed around both sides of the unit up to the elevation shown on the plans, exercising caution to avoid displacement or deformation of the unit.

6.86.04—Method of Measurement: This work will be measured as follows:

Drainage Trench Excavation, in accordance with 2.86.04, will not be measured for payment.

Rock in Drainage Trench Excavation will be measured in accordance with 2.86.04.

Bedding Material will not be measured for payment.

New and Re-laid Pipes and Pipe Arches will be measured for payment by the actual number of linear feet of pipe or pipe arch of the various sizes and types, completed and accepted and measured in place along the invert. Coupling bands and fittings for pipes and pipe arches will not be measured for payment.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be measured for payment as separate units.

Corrugated Metal Pipe Elbows (of the Size and Type specified) will be measured for payment by the actual number of linear feet of pipe elbows completed and accepted, based on 6 linear feet per elbow, as shown on the plans. Coupling bands for elbows will not be measured for payment.

Concrete Pipe Connection will be measured for payment by the number of each concrete pipe connection constructed at locations where proposed concrete pipes tie into an existing pipe with an incompatible end, completed and accepted by the Engineer.

Removal of drainage pipe outside of drainage trench excavation limits, as defined in 2.86.03, will be measured for payment by the actual number of linear feet of drainage pipe removed.

There will be no measurement for plugging existing pipes with cement masonry.

6.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of drainage pipes will not be paid separately but shall be included in the Contract unit price for the respective drainage pipe or pipe end item(s), in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Bedding Material necessary for the installation of drainage items described herein will be included in the Contract unit price for the respective drainage pipe or pipe end item(s). Bedding material required to fill voids when rock in drainage trench is encountered will not be measured for payment but shall be included in the Contract unit price for "Rock in Drainage Trench Excavation," in accordance with 2.86.05.

New Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "(Size and Type) Pipe (Thickness) – 0' to 10' Deep," "(Size and Type) Pipe (Thickness) – 0' to 20' Deep," "(Size) Pipe Arch (Thickness) – 0' to 10' Deep" or "(Size) Pipe Arch (Thickness) – 0' to 20' Deep" complete in place, including materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Relaid Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "Relaid Pipe (Size and Type) – 0' to 10' Deep," "Re-laid Pipe (Size and Type) – 0' to 20' Deep," "Relaid Pipe Arch (Size and Type) – 0' to 10' Deep," or "Relaid Pipe Arch (Size and Type) – 0' to 20' Deep," complete in place, including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be paid for at the Contract unit price for each drainage pipe end of the Size and Type specified, complete in place, including all excavation, materials, attachment systems, equipment, tools and labor incidental thereto.

Corrugated Metal Pipe Elbows will be paid for at the Contract unit price per linear foot for "(Size and Type) Corrugated Metal Pipe Elbow" including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Concrete Pipe Connection will be paid for at the Contract unit price each for "Concrete Pipe Connection" complete in place, including all materials, equipment, tools and labor incidental thereto.

Removal of drainage pipes of all types and sizes, outside of drainage trench excavation limits, as defined in 2.86.03-1, will be paid for at the Contract unit price per linear foot for "Remove Existing Pipe – 0' to 10' Deep," or "Remove Existing Pipe – 0' to 20' Deep," which price shall include excavation, temporary trench protection, backfill, and all equipment, tools and labor incidental thereto.

There will be no direct payment for the plugging of existing drainage pipes, but the cost thereof shall be included in the respective drainage Contract item(s).

Pay Item	Pay Unit
(Size and Type) Pipe (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe (Thickness) – 0' to 20' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 20' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 10' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 20' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 10' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 20' Deep	l.f.
(Size) Reinforced Concrete Drainage Pipe End	ea.
(Size) Metal Drainage Pipe End	ea.
(Size and Type) Corrugated Metal Pipe Elbow	l.f.
Concrete Pipe Connection	ea.
Remove Existing Pipe – 0' to 10' Deep	l.f.
Remove Existing Pipe – 0' to 20' Deep	l.f.

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SECTION M.04 BITUMINOUS CONCRETE MATERIALS

Section M.04 is being deleted in its entirety and replaced with the following:

M.04.01—Bituminous Concrete Materials and Facilities
M.04.02—Mix Design and Job Mix Formula (JMF)
M.04.03—Production Requirements

M.04.01—Bituminous Concrete Materials and Facilities: Each source of component material, Plant and laboratory used to produce and test bituminous concrete must be qualified on an annual basis by the Engineer. AASHTO or ASTM Standards noted with an (M) have been modified and are detailed in Table M.04.03-6.

Aggregates from multiple sources of supply must not be blended or stored in the same stockpile.

1. Coarse Aggregate:

All coarse aggregate shall meet the requirements listed in Section M.01.

2. Fine Aggregate:

All fine aggregate shall meet the requirements listed in Section M.01

3. Mineral Filler:

Mineral filler shall conform to the requirements of AASHTO M 17.

4. Performance Graded (PG) Asphalt Binder:

(a) General:

i. PG asphalt binder shall be uniformly mixed and blended and be free of contaminants such as fuel oils and other solvents. Binder shall be properly heated and stored to prevent damage or separation.

ii. The binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29. The Contractor shall submit a Certified Test Report and bill of lading representing each delivery in accordance with AASHTO R 26(M). The Certified Test Report must also indicate the binder specific gravity at 77ºF; rotational viscosity at 275ºF and 329ºF and the mixing and compaction viscosity-temperature chart for each shipment.

iii. The Contractor shall submit the name(s) of personnel responsible for receipt, inspection, and record keeping of PG binder. Contractor plant personnel shall document specific storage tank(s) where binder will be transferred and stored until used, and provide binder samples to the Engineer upon request. The person(s) shall assure that each shipment is accompanied by a statement certifying that the transport vehicle was inspected before loading and was found acceptable for the material shipped, and, that the binder is free of contamination from any residual material, along with two (2) copies of the bill of lading.

iii. The blending or combining of PG binders in one storage tank at the Plant from different suppliers, grades, or additive percentages is prohibited.

iv. Basis of Approval: The request for approval of the source of supply shall list the location where the material will be manufactured, and the handling and storage methods, along with necessary certification in accordance with AASHTO R 26(M). Only suppliers/refineries that have an approved "Quality Control Plan for Performance Graded Binders" formatted in accordance with AASHTO R 26(M) may supply PG binders to Department projects.

(b) Standard Performance Grade (PG) Binder:

Standard PG binder shall be defined as "Neat". Neat PG binders shall be free from modification with: fillers, extenders, reinforcing agents, adhesion promoters, thermoplastic polymers, acid modification and other additives such as re-refined motor oil, and shall indicate such information on each bill of lading and certified test report.

The standard asphalt binder grade shall be PG 64S-22.

(c) Modified Performance Grade (PG) Binder:

The modified asphalt binder shall be Performance Grade PG 64E-22 asphalt modified solely with a Styrene-Butadiene-Styrene (SBS) polymer. The polymer modifier shall be added at either the refinery or terminal and delivered to the bituminous concrete production facility as homogenous blend. The stability of the modified binder shall be verified in accordance with ASTM D7173 using the Dynamic Shear Rheometer (DSR). The DSR G*/sin(δ) results from the top and bottom sections of the ASTM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report. The binder shall meet the requirements of AASHTO M 332 (including Appendix X1) and AASHTO R 29.

(d) Warm Mix Additive or Technology:

The warm mix additive or technology must be listed on the North East Asphalt User Producer Group (NEAUPG) Qualified Warm Mix Asphalt (WMA) Technologies List at the time of bid, which may be accessed online at http://www.neaupg.uconn.edu.

The warm mix additive shall be blended with the asphalt binder in accordance with the manufacturer's recommendations.

The blended binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29 for the specified binder grade. The Contractor shall submit a Certified Test Report showing the results of the testing demonstrating the binder grade. In addition, it must include the grade of the virgin binder, the brand name of the warm mix additive, the manufacturer's suggested rate for the WMA additive, the water injection rate (when applicable) and the WMA Technology manufacturer's recommended mixing and compaction temperature ranges.

5. Emulsified Asphalts:

(a) General:

The emulsified asphalt shall meet the requirements of AASHTO M 140 or AASHTO M 208 as applicable.

The emulsified asphalts shall be free of contaminants such as fuel oils and other solvents.

The blending at mixing plants of emulsified asphalts from different suppliers is prohibited.

.(b) Basis of Approval

The request for approval of the source of supply shall list the location where the material is manufactured, the handling and storage methods, and certifications in accordance with AASHTO PP 71. Only suppliers that have an approved "Quality Control Plan for Emulsified Asphalt" formatted in accordance with AASHTO PP 71 and submit monthly split samples per grade to the Engineer may supply emulsified asphalt to Department projects.

Each shipment of emulsified asphalt delivered to the project site shall be accompanied with the corresponding Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon at 77°F and Material Certificate.

Anionic emulsified asphalts shall conform to the requirements of AASHTO M-140. Materials used for tack coat shall not be diluted and meet grade RS-1 or RS-1H. When ambient temperatures are 80˚F and rising, grade SS-1 or SS-lH may be substituted if permitted by the

Engineer.

Cationic emulsified asphalt shall conform to the requirements of AASHTO M-208. Materials used for tack coat shall not be diluted and meet grade CRS-1. The settlement and demulsibility test will not be performed unless deemed necessary by the Engineer. When ambient temperatures are 80˚F and rising, grade CSS-1 or CSS-lh may be substituted if permitted by the Engineer.

6. Reclaimed Asphalt Pavement (RAP):

(a) General: RAP is a material obtained from the cold milling or removal and processing of bituminous concrete pavement. RAP material shall be crushed to 100% passing the ½ inch sieve and free from contaminants such as joint compound, wood, plastic, and metals.

(b) Basis of Approval: The RAP material will be accepted on the basis of one of the following criteria:

When the source of all RAP material is from pavements previously constructed on Department projects, the Contractor shall provide a Materials Certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.

When the RAP material source or quality is not known, the Contractor shall request for approval to the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a Material Certificate and applicable test results stating that the RAP consists of aggregates that meet the specification requirements of sub articles M.04.01-1 through 3, and, that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material on Department projects and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:

A 50-pound sample of the RAP to be incorporated into the recycled mixture.

A 25-pound sample of the extracted aggregate from the RAP.

7. Crushed Recycled Container Glass (CRCG):

(a) Requirements: The Contractor may propose to use clean and environmentally-acceptable CRCG in an amount not greater than 5% by weight of total aggregate.

(b) Basis of Approval: The Contractor shall submit to the Engineer a request to use CRCG. The request shall state that the CRCG contains no more than 1% by weight of contaminants such as paper, plastic and metal and conform to the following gradation:

CRCG Grading Requirements	
Sieve Size	Percent Passing
3/8-inch	100
No. 4	35-100
No. 200	0.0-10.0

The Contractor shall submit a Materials Certificate to the Engineer stating that the CRCG complies with all the applicable requirements in this specification.

8. Joint Seal Material:

(a) Requirements: Joint seal material must meet the requirements of ASTM D 6690 – Type 2. The Contractor shall submit a Material Certificate in accordance with Article 1.06.07 certifying that the joint seal material meets the requirements of this specification.

9. Recycled Asphalt Shingles (RAS)

(a) Requirements: RAS shall consist of processed asphalt roofing shingles from post-consumer asphalt shingles or from manufactured shingle waste. The RAS material under consideration for use in bituminous concrete mixtures must be certified as being asbestos free and shall be entirely free of whole, intact nails. The RAS material shall meet the requirements of AASHTO MP 23. The producer shall test the RAS material to determine the asphalt content and the gradation of the RAS material. The producer shall take necessary action to prevent contamination of RAS stockpiles.

The Contractor shall submit a Materials Certificate to the Engineer stating that the RAS complies with all the applicable requirements in this specification.

10. Plant Requirements:

(a) General: The Plant producing bituminous concrete shall comply with AASHTO M 156.

(b) Storage Silos: The Contractor may use silos for short-term storage with the approval of the Engineer. A silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. When multiple silos are filled, the Contractor shall discharge one silo at a time. Simultaneous discharge of multiple silos for the same Project is not permitted.

Type of silo cylinder	Maximum storage time for all classes (hr)	
	HMA	WMA/PMA
Open Surge	4	Mfg Recommendations*
Unheated – Non-insulated	8	Mfg Recommendations*
Unheated – Insulated	18	Mfg Recommendations*
Heated – No inert gas	TBD by the Engineer	TBD by the Engineer

*Not to exceed HMA limits

(c) Documentation System: The mixing plant documentation system shall include equipment for accurately proportioning the components of the mixture by weight and in the proper order, controlling the cycle sequence and timing the mixing operations. Recording equipment shall monitor the batching sequence of each component of the mixture and produce a printed record of these operations on each Plant ticket, as specified herein.

If recycled materials are used, the Plant tickets shall include their dry weight, percentage and daily moisture content.

If a WMA Technology is added at the Plant, the Plant tickets shall include the actual dosage rate.

For drum Plants, the Plant ticket shall be produced at 5 minute intervals and maintained by the vendor for a period of three years after the completion of the project.

For batch Plants, the Plant ticket shall be produced for each batch and maintained by the vendor for a period of three years after the completion of the project. In addition, an asterisk (*) shall be automatically printed next to any individual batch weight(s) exceeding the following tolerances:

Each Aggregate Component	±1.5% of individual or cumulative target weight for each bin
Mineral Filler	±0.5% of the total batch
Bituminous Material	±0.1% of the total batch
Zero Return (Aggregate)	±0.5% of the total batch
Zero Return (Bituminous Material)	±0.1% of the total batch

The entire batching and mixing interlock cut-off circuits shall interrupt and stop the automatic batching operations when an error exceeding the acceptable tolerance occurs in proportioning.

The scales shall not be manually adjusted during the printing process. In addition, the system shall be interlocked to allow printing only when the scale has come to a complete rest. A unique printed character (m) shall automatically be printed on the ticket when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning.

Aggregates: Aggregate stockpiles shall be managed to prevent segregation and cross contamination. For drum plants only, the percent moisture content at a minimum prior to production and half way through production shall be determined.

Mixture: The dry and wet mix times shall be sufficient to provide a uniform mixture and a minimum particle coating of 95% as determined by AASHTO T 195(M) .

Bituminous concrete mixtures shall contain no more than 0.5% moisture when tested in accordance with AASHTO T 329.

RAP: RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).

Asphalt Binder: A binder log shall be submitted to the Department's Central Lab on a monthly basis.

Warm mix additive: For mechanically foamed WMA, the water injection rate shall be monitored during production and not exceed 2.0% by total weight of binder. For additive added at the Plant, the dosage rate shall be monitored during production.

Plant Laboratory: The Contractor shall maintain a laboratory at the production facility to test bituminous concrete mixtures during production. The laboratory shall have a minimum of 300 square feet, have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, and be equipped with all necessary testing equipment as well as with a PC, printer, and telephone with a dedicated hard-wired phone line. In addition, the PC shall have internet connection and a functioning web browser with unrestricted access to https://ctmail.ct.gov. This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a heating system capable of maintaining a minimum temperature of 65°F. It shall be clean and free of all materials and equipment not associated with the laboratory. Sufficient light and ventilation must be provided. During summer months, adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature.

The laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all tests in their entirety that are referenced in AASHTO R 35and AASHTO M 323. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the project with all necessary testing supplies and equipment.

The Contractor shall maintain a list of laboratory equipment used in the acceptance testing processes including but not limited to, balances, scales, manometer/vacuum gauge, thermometers, gyratory compactor, clearly showing calibration and/or inspection dates, in accordance with AASHTO R 18. The Contractor shall notify the Engineer if any modifications are made to the equipment within the laboratory. The Contractor shall take immediate action to replace, repair, and/or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

M.04.02—Mix Design and Job Mix Formula (JMF)

1. Curb Mix:

(a) Requirements: The Contractor shall use bituminous concrete that meets the requirements of Table M.04.02-1. RAP may be used in 5% increments by weight up to 30%.

(b) Basis of Approval: Annually, an approved JMF based on a mix design for curb mix must be on file with the Engineer prior to use. .

Any change in component source of supply or consensus properties must be approved by the Engineer. A revised JMF shall be submitted prior to use.

TABLE M.04.02 – 1:
Control Points for Curb Mix Mixtures

Mix	Curb Mix	Production Tolerances from JMF target
Grade of PG **Binder content %**	**PG 64S-22** **6.5 - 9.0**	**0.4**
Sieve Size		
# 200	3.0 – 8.0 (b)	2.0
# 50	10 - 30	4
# 30	20 - 40	5
# 8	40 - 70	6
# 4	65 - 87	7
¼"		
3/8 "	95 - 100	8
½ "	100	8
¾"		8
1"		
2"		
Additionally, the fraction of material retained between any two consecutive sieves shall not be less than 4%		
Mixture Temperature		
Binder	325°F maximum	
Aggregate	280-350° F	
Mixtures	265-325° F	
Mixture Properties		
Air Voids (VA) %	0 – 4.0 (a)	

Notes: (a) Compaction Parameter 50gyration N_{des}.
(b) The percent passing the #200 sieve shall not exceed the percentage of bituminous asphalt binder.

2.

Superpave Design Method – S0.25, S0.375, S0.5, and S1

(a) Requirements: All designated mixes shall be designed using the Superpave mix design method in accordance with AASHTO R 35. A JMF based on the mix design shall meet the requirements of Tables M.04.02-2 through Table M.04.02-5. Each JMF must be submitted no less than seven (7) days prior to production and must be approved by the Engineer prior to use. All approved JMFs expire at the end of the calendar year.

All aggregate component consensus properties and tensile strength ratio (TSR) specimens shall be tested at an AASHTO Materials Reference Laboratory (AMRL) by NETTCP certified technicians.

All bituminous concrete mixes shall be tested for stripping susceptibility by performing the tensile strength ratio (TSR) test procedure in accordance with AASHTO T 283(M) at a minimum every 36 months. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. TSR specimens, and corresponding JMF shall be submitted with each

test report.

i. Superpave Mixtures with RAP: RAP may be used with the following conditions:
- RAP amounts up to 15% may be used with no binder grade modification.
- RAP amounts up to 20% may be used provided a new JMF is approved by the Engineer.
- The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
- Two representative samples of RAP shall be obtained. Each sample shall be split and one split sample shall be tested for binder content in accordance with AASHTO T 164 and the other in accordance AASHTO T 308.
- RAP material shall not be used with any other recycling option.

ii. Superpave Mixtures with RAS: RAS may be used solely in HMA S1 mixtures with the following conditions:
- RAS amounts up to 3% may be used.
- RAS total binder replacement up to 15% may be used with no binder grade modification.
- RAS total binder replacement up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance to AASHTO M 323 appendix X1 or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
- Superpave Mixtures with RAS shall meet AASHTO PP 78 design considerations. The RAS asphalt binder availability factor (F) used in AASHTO PP 78 shall be 0.85.

iii. Superpave Mixtures with CRCG: CRCG may be used solely in HMA S1 mixtures. One percent of hydrated lime, or other accepted non-stripping agent, shall be added to all mixtures containing CRCG. CRCG material shall not be used with any other recycling option.

(b) Basis of Approval: The following information must be included with the JMF submittal:

i. Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
ii. Average asphalt content of the RAP or RAS by AASHTO T 164.
iii. Source of RAP or RAS, and percentage to be used.
iv. Warm mix Technology, manufacturer's recommended additive rate and tolerances and manufacturer recommended mixing and compaction temperatures.
v. TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
vi. Mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.
vii. JMF ignition oven correction factor by AASHTO T 308.

With each JMF submittal, the following samples shall be submitted to the Division of Materials Testing:
- 4 - one quart cans of PG binder, with corresponding Safety Data Sheet (SDS)
- 1 - 50 lbs bag of RAP
- 2 – 50 lbs bag of plant blended virgin aggregate

A JMF may not be approved if any of the properties of the aggregate components or mix do not meet the verification tolerances as described in the Department's current QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures.

Any material based on a JMF, once approved, shall only be acceptable for use when it is produced by the designated plant, it utilizes the same components, and the production of material continues to meet all criteria as specified herein, and component aggregates are maintained within the tolerances shown in Table M.04.02-2. A new JMF must be submitted to the Engineer for approval whenever a new component source is proposed.

Only one mix with one JMF will be approved for production at any one time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.

(c) Mix Status: Each facility will have each type of mixture rated based on the results of the previous year's production. Mix Status will be provided to each bituminous concrete producer annually prior to the beginning of the paving season.

The rating criteria are based on compliance with Air Voids and Voids in Mineral Aggregate (VMA) as indicated in Table M.04.03-4 and are calculated as follows:

Criteria A: Percentage of acceptance test results with compliant air voids.

Criteria B: The average of the percentage of acceptance test results with compliant VMA, and percentage of acceptance test results with compliant air voids.

The final rating assigned will be the lower of the rating obtained with Criteria A or B.

Mix status is defined as:

"A" – Approved: Assigned to each mixture type from a production facility with a current rating of 70% or greater, or to each mixture type completing a successful PPT.

"PPT" – Pre-Production Trial: Temporarily assigned to each mixture type from a production facility when:

1. there are no compliant acceptance production test results submitted to the Department from the previous year;
2. there is a source change in one or more aggregate components
3. there is a component percentage change of more than 5% by weight;
4. there is a change in RAP percentage;
5. the mixture has a rating of less than 70% from the previous season; a new JMF not previously submitted.

Bituminous concrete mixtures with a "PPT" status cannot be used on Department projects. Testing shall be performed by the Producer with NETTCP certified personnel on material under this status. Test results must confirm that specifications requirements in Table M.04.02-2 and Table M.04.02-5 are met before material can be used. One of the following methods must be used to verify the test results:

Option A: Schedule a day when a Department Inspector can be at the facility to witness testing or,

Option B: When the Contractor or their representative performs testing without being witnessed by an Inspector, the Contractor shall submit the test results and a split sample including 2 gyratory molds, 5,000 grams of boxed bituminous concrete, and 5,000 grams of cooled loose bituminous concrete for verification testing and approval.

Option C: When the Contractor or their representative performs testing without being witnessed by a Department Inspector, the Engineer may verify the mix in the

Contractor's laboratory.

Witnessing or verifying by the Department of compliant test results will change the mix's status to an "A".

The differences between the Department's test results and the Contractor's must be within the "C" tolerances included in the Department's QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures in order to be verified.

"U" – Not Approved: Status assigned to a type of mixture that does not have an approved JMF. Bituminous concrete mixtures with a "U" status cannot be used on Department projects.

TABLE M.04.02– 2: Superpave Mixture Design Criteria

	S0.25		S0.375		S0.5		S1	
Sieve	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS	
inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)
2.0	-	-	-	-	-	-	-	-
1.5	-	-	-	-	-	-	100	-
1.0	-	-	-	-	-	-	90	100
3/4	-	-	-	-	100	-	-	90
1/2	100	-	100	-	90	100	-	-
3/8	97	100	90	100	-	90	-	-
#4	75	90	-	75	-	-	-	-
#8	32	67	32	67	28	58	19	45
#16	-	-	-	-	-	-	-	-
#30	-	-	-	-	-	-	-	-
#50	-	-	-	-	-	-	-	-
#100	-	-	-	-	-	-	-	-
#200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0
VMA (%)	16.5 ± 1		16.0 ± 1		15.0 ± 1		13.0 ± 1	
VA (%)	4.0 ± 1		4.0 ± 1		4.0 ± 1		4.0 ± 1	
Gse	JMF value		JMF value		JMF value		JMF value	
Gmm	JMF ± 0.030		JMF ± 0.030		JMF ± 0.030		JMF ± 0.030	
Dust / binder	0.6 – 1.2		0.6 – 1.2		0.6 – 1.2		0.6 – 1.2	
Mix Temp[(1)]	265 – 325°F		265 – 325°F		265 – 325°F		265 – 325°F	
TSR	> 80%		> 80%		> 80%		> 80%	
T-283 Stripping	Minimal, as determined by the Engineer							

Notes: [(1)] For all mixtures using a WMA technology, the mix temperature shall meet PG binder and WMA manufacturer's recommendations.

TABLE M.04.02–3: Superpave Consensus Properties Requirements for Combined Aggregate

Traffic Level	Design ESALs (80 kN), Millions	Coarse Aggregate Angularity (1) ASTM D 5821, Minimum %	Fine Aggregate Angularity AASHTO T 304, Method A Minimum %	Flat and Elongated Particles (2) ASTM D 4791, Maximum %	Sand Equivalent AASHTO T 176, Minimum %
1	< 0.3	55/- -	40	10	40
2	0.3 to < 3.0	75/- -	40	10	40
3	≥ 3.0	95/90	45	10	45

Notes: (1) 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces..

(2)Criteria presented as maximum Percent by mass of flat and elongated particles of materials retained on the #4 sieve, determined at 5:1 ratio.

TABLE M.04.02– 4: Superpave Traffic Levels and Design Volumetric Properties

Traffic Level	Design ESALs	Number of Gyrations by Superpave Gyratory Compactor			Percent Density of Gmm from HMA/WMA specimen			Voids Filled with Asphalt (VFA) Based on Nominal mix size – inch			
	(million)	Nini	Ndes	Nmax	Nini	Ndes	Nmax	0.25	0.375	0.5	1
1	< 0.3	6	50	75	≤ 91.5	96.0	≤ 98.0	70 - 80	70 - 80	70 - 80	67 - 80
2	0.3 to < 3.0	7	75	115	≤ 90.5	96.0	≤ 98.0	65 - 78	65 - 78	65 - 78	65 - 78
3	≥ 3.0	8	100	160	≤ 90.0	96.0	≤ 98.0	65 – 77	73 - 76	65 - 75	65 - 75

TABLE M.04.02– 5:
Superpave Minimum Binder Content by Mix Type and Level

Mix Type	Level	Binder Content Minimum
S0.25	1	5.70
S0.25	2	5.60
S0.25	3	5.50
S0.375	1	5.70
S0.375	2	5.60
S0.375	3	5.50
S0.5	1	5.10
S0.5	2	5.00
S0.5	3	4.90
S1	1	4.60
S1	2	4.50
S1	3	4.40

M.04.03— Production Requirements:

1. Standard Quality Control Plan (QCP) for Production:

The QCP for production shall describe the organization and procedures which the Contractor shall use to administer quality control. The QCP shall include the procedures used to control the production process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must detail the inspection, sampling and testing protocols to be used, and the frequency for each.

Control Chart(s) shall be developed and maintained for critical aspect(s) of the production process as determined by the Contractor. The control chart(s) shall identify the material property, applicable upper and lower control limits, and be updated with current test data. As a minimum, the following quality characteristics shall be included in the control charts: percent passing #4 sieve, percent passing #200 sieve, binder content, air voids, Gmm and VMA. The control chart(s) shall be used as part of the quality control system to document variability of the bituminous concrete production process. The control chart(s) shall be submitted to the Engineer the first day of each month.

The QCP shall also include the name and qualifications of a Quality Control Manager. The Quality Control Manager shall be responsible for the administration of the QCP, including compliance with the plan and any plan modifications.

The Contractor shall submit complete production testing records to the Engineer within 24 hours in a manner acceptable to the Engineer.

The QCP shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QCP must also include a list of sampling & testing methods and frequencies used during production, and the names of all Quality Control personnel and their duties.

Approval of the QCP does not imply any warranty by the Engineer that adherence to the plan

will result in production of bituminous concrete that complies with these specifications. The Contractor shall submit any changes to the QCP as work progresses.

2. Acceptance Requirements:

a. General:

Acceptance samples shall be obtained from the hauling vehicles and tested by the Contractor at the Plant.

The Contractor shall submit all acceptance tests results to the Engineer within 24 hours or prior to the next day's production. All acceptance test specimens and supporting documentation must be retained by the Contractor and may be disposed of with the approval of the Engineer. All quality control specimens shall be clearly labeled and separated from the acceptance specimens.

Contractor personnel performing acceptance sampling and testing must be present at the facility prior to, during, and until completion of production, and be certified as a NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Production of material for use on State projects must be suspended by the Contractor if such personnel are not present. Technicians found by the Engineer to be non-compliant with NETTCP policies and procedures or Department policies may be removed by the Engineer from participating in the acceptance testing process for Department projects until their actions can be reviewed.

Anytime during production that testing equipment becomes defective or inoperable, production can continue for a maximum of 1 hour. The Contractor shall obtain box sample(s) in accordance with Table M.04.03-2 to satisfy the daily acceptance testing requirement for the quantity shipped to the project. The box sample(s) shall be tested once the equipment issue has been resolved to the satisfaction of the Engineer. Production beyond 1 hour may be considered by the Engineer. Production will not be permitted beyond that day until the subject equipment issue has been resolved.

Verification testing will be performed by the Engineer in accordance with the Department's QA Program for Materials.

Should the Department be unable to verify the Contractor's acceptance test result(s) due to a failure of the Contractor to retain acceptance test specimens or supporting documentation, the Contractor shall review its quality control plan, determine the cause of the nonconformance and respond in writing within 24 hours to the Engineer describing the corrective action taken. In addition, the Contractor must provide supporting documentation or test results to validate the subject acceptance test result(s). The Engineer may invalidate any adjustments for material corresponding to the subject acceptance test(s). Failure of the Contractor to adequately address quality control issues at a facility may result in suspension of production for Department projects at that facility.

b. Curb Mix Acceptance Sampling and Testing Procedures:

Curb Mix shall be tested in accordance to Table M.04.03-1 by the Contractor at a frequency of one test per every 250 tons of cumulative production, regardless of the day of production.

TABLE M.04.03 – 1: Curb Mix Acceptance Test Procedures

Protocol	Reference	Description

1	**AASHTO T 30(M)**	Mechanical Analysis of Extracted Aggregate
2	**AASHTO T 168**	Sampling of Bituminous Concrete
3	**AASHTO T 308**	Binder content by Ignition Oven method (adjusted for aggregate correction factor)
4	**AASHTO T 209(M)[(2)]**	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
5	**AASHTO T 312[(2)]**	[(1)]Superpave Gyratory molds compacted to N_{des}
6	**AASHTO T 329**	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

Notes: **(1)** One set equals two six-inch molds. Molds to be compacted to 50 gyrations
(2) Once per year or when requested by the Engineer

i. Determination of Off-Test Status:

1. Curb Mix is considered "off test" when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1. If the mix is "off test", the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.
2. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the "off test" status.
3. The Engineer may cease supply from the plant when test results from three consecutive samples are not within the JMF tolerances or the test results from two consecutive samples not within the control points indicated in Table M.04.02-1 regardless of production date.

ii. JMF revisions

1. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
2. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.

c. Superpave Mix Acceptance:

Sampling and Testing Procedures:

Production Lot: The Lot will be defined as one of the following types:

- Non-PWL Production Lot for total estimated project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
- PWL Production Lot for total estimated project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

Production Sub Lot:

- For Non-PWL: As defined in Table M.04.03 – 2

- For PWL: 500 tons (the last Sub Lot may be less than 500 tons)

Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:

- completion of the Course
- a Job Mix Formula revision due to changes in:
  - cold feed percentages over 5%
  - target combined gradation over 5%
  - target binder over 0.15%
  - any component specific gravity
- a Lot spanning 30 calendar days

The acceptance sample(s) location(s) shall be selected using stratified – random sampling in accordance with ASTM D 3665 based on:

- the total daily estimated tons of production for non-PWL lots, or
- the total lot size for PWL lots.

One acceptance sample shall be obtained and tested per Sub Lot. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one acceptance test shall always be performed in the last sub-lot based on actual tons of material produced.

For Non-PWL lots, quantities of the same mixture per plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.

Table M.04.03 – 2:
Superpave Acceptance Testing Frequency per Type/Level/Plant for Non-PWL lots

Daily quantity produced in tons (lot)	Number of Sub Lots/Tests
0 to 150	0, Unless requested by the Engineer
151 to 500	1
501 to 1,000	2
1,001 to 2,000	3
2,001 or greater	1 per 500 tons or portions thereof

The following test procedures shall be used for acceptance:

TABLE M.04.03– 3: Superpave Acceptance Testing Procedures

Protocol	Procedure	Description
1	**AASHTO T 168**	Sampling of bituminous concrete
2	**AASHTO R 47**	Reducing samples to testing size
3	**AASHTO T 308**	Binder content by ignition oven method (adjusted for aggregate correction factor)
4	**AASHTO T 30(M)**	Gradation of extracted aggregate for bituminous concrete mixture
5	AASHTO T 312	(1)Superpave gyratory molds compacted to N_{des}
6	AASHTO T 166	(2)Bulk specific gravity of bituminous concrete
7	AASHTO R 35	(2)Air voids, VMA
8	AASHTO T 209(M)	Maximum specific gravity of bituminous concrete (average of two tests)
9	AASHTO T 329	Moisture content of bituminous concrete

Notes: **(1)** One set equals two six-inch molds. Molds to be compacted to Nmax for PPTs and to Ndes for production testing. The first sublot of the year will be compacted to N_{max}

(2) Average value of one set of six-inch molds.

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in five (5) consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause and correct the issue. When two consecutive moving average differences are 0.3% or more and no assignable cause has been stablished, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last five (5) acceptance results.

The test specimen must be placed in an ignition oven for testing in accordance with AASHTO T 308 within thirty minutes of being obtained from the hauling vehicle and the test shall start immediately after.

The Contractor shall perform TSR testing within 30 days after the start of production for all design levels of HMA- and PMA- S0.5 plant-produced mixtures, in accordance with AASHTO T 283(M). The TSR test shall be performed at an AMRL certified laboratory by NETTCP certified technicians. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. The test results and specimens shall be submitted to the Engineer for review. Superpave mixtures that require anti-strip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and bituminous concrete. The Contractor shall submit the name, manufacturer, percent used, technical datasheet and SDS for the anti-strip additive (if applicable) to the Engineer.

a. Determination of Off-Test Status:

i. Superpave mixes shall be considered *"off test"* when any Control Point Sieve, binder content, VA, VMA, or Gmm value is outside of the limits specified in Table M.04.03-4 or the target binder content at the Plant is below the minimum binder

content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.
Any time the bituminous concrete mixture is considered Off-test:

1. The Contractor shall notify the Engineer when the Plant is *"off test"* for any mix design that is delivered to the project in any production day. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the *"off test"* determination.
2. The Contractor must take immediate actions to correct the deficiency, minimize *"off test"* production to the project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance to the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

b. Cessation of Supply for Superpave Mixtures in non-PWL lots:

A mixture shall not be used on Department's projects when it is "off test" for:

i. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or,
ii. two (2) consecutive tests in the Control Point sieves in one production shift.

As a result of cessation of supply, the mix status will be changed to PPT.

c. JMF revisions:

JMF revisions are only permitted prior to or after a production shift. A JMF revision is effective from the time it was submitted and is not retroactive to the previous test(s).

JMF revisions shall be justified by a documented trend of test results.

Revisions to aggregate and RAP specific gravities are only permitted when testing is performed at an AMRL certified laboratory by NETTCP certified technicians.

A JMF revision is required when the Plant target RAP and/or bin percentage deviates by more than 5% and/or the Plant target binder content deviates by more than 0.15% from the active JMF.

TABLE M.04.03-4: Superpave Mixture Production Requirements

	S0.25		S0.375		S0.5		S1		Tolerances
Sieve	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		From JMF Targets (2)
inches	Min(%)	Max(%)	Min(%)	Max(%)	Min(%)	Max(%)	Min(%)	Max(%)	±Tol
1.5	-	-	-	-	-	-	100	-	
1.0	-	-	-	-	-	-	90	100	
3/4	-	-	-	-	100	-	-	90	
1/2	100	-	100	-	90	100	-	-	
3/8	97	100	90	100	-	90	-	-	
#4	75	90	-	75	-	-	-	-	
#8	32	67	32	67	28	58	19	45	
#16	-	-	-	-	-	-	-	-	
#200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0	
Pb	JMF value		JMF value		JMF value		JMF value		0.3(5)
VMA (%)	16.5		16.0		15.0		13.0		1.0(6)
VA (%)	4.0		4.0		4.0		4.0		1.0(7)
Gmm	JMF value		JMF value		JMF value		JMF value		0.030
Agg. Temp (3)	280 – 350F		280 – 350F		280 – 350F		280 – 350F		
Mix Temp (4)	265 – 325 F (1)		265 – 325 F (1)		265 – 325 F (1)		265 – 325 F (1)		
Prod. TSR	N/A		N/A		≥80%		N/A		
T-283 Stripping	N/A		N/A		Minimal as determined by the Engineer		N/A		

Notes: (1) 300ºF minimum after October 15.
(2) JMF tolerances shall be defined as the limits for production compliance.
(3) For all mixtures with WMA technology, changes to the minimum aggregate temperature will require Engineer's approval.
(4) For PMA and mixtures with WMA technology, the mix temperature shall meet manufacturer's recommendations. In addition, for all mixtures with WMA technology, the maximum mix temperature shall not exceed 325°F.
(5) 0.4 for PWL lots
(6) 1.3 for PWL lots (7) 1.2 for PWL lots

TABLE M.04.03-5:
Superpave Traffic Levels and Design Volumetric Properties

Traffic Level	Design ESALs	Number of Gyrations by Superpave Gyratory Compactor	
	(million)	Nini	Ndes
1	< 0.3	6	50
2	0.3 to < 3.0	7	75
3	≥3.0	8	100

Table M.04.03-6:
Modifications to Standard AASHTO and ASTM Test Specifications and Procedures

AASHTO Standard Method of Test	
Reference	**Modification**
T 30	Section 7.2 thru 7.4 Samples are not routinely washed for production testing
T 168	Samples are taken at one point in the pile. Samples from a hauling vehicle are taken from only one point instead of three as specified. Selection of Samples: Sampling is equally important as the testing, and the sampler shall use every precaution to obtain samples that are truly representative of the bituminous mixture. Box Samples: In order to enhance the rate of processing samples taken in the field by construction or maintenance personnel the samples will be tested in the order received and data processed to be determine conformance to material specifications and to prioritize inspections by laboratory personnel.
T 195	Section 4.3 only one truck load of mixture is sampled. Samples are taken from opposite sides of the load.
T 209	Section 7.2 The average of two bowls is used proportionally in order to satisfy minimum mass requirements. 8.3 Omit Pycnometer method.
T 283	When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufactures recommended compaction temperature prior to fabrication of the specimens.

Table M.04.03-6:
Modifications to Standard AASHTO and ASTM Test Specifications and Procedures
(continued)

AASHTO Standard Recommended Practices	
Reference	**Modification**
R 26	All laboratory technician(s) responsible for testing PG-binders be certified or Interim Qualified by the New England Transportation Technician Certification Program (NETTCP) as a PG Asphalt Binder Lab Technician. All laboratories testing binders for the Department are required to be accredited by the AASHTO Materials Reference Laboratory (AMRL). Sources interested in being approved to supply PG-binders to the Department by use of an "in-line blending system," must record properties of blended material, and additives used. Each source of supply of PG-binder must indicate that the binders contain no additives used to modify or enhance their performance properties. Binders that are manufactured using additives, modifiers, extenders etc., shall disclose the type of additive, percentage and any handling specifications/limitations required. All AASHTO M 320 references shall be replaced with AASHTO M 332. Once a month, one split sample and test results for each asphalt binder grade and each lot shall be submitted by the PG binder supplier to the Department's Central Lab. Material remaining in a certified lot shall be re-certified no later than 30 days after initial certification. Each April and September, the PG binder supplier shall submit test results for two (2) BBR tests at two (2) different temperatures in accordance with AASHTO R 29.

ITEM #0201001A– CLEARING AND GRUBBING

This work shall conform to Section 2.01 “Clearing and Grubbing” as supplemented and amended as follows:

Description: Replace the last sentence with the following:

Existing fences, mailboxes, signs, etc. shall be removed and replaced as necessary and where existing fencing is to be removed and reset, a temporary fence shall be erected after removal for protection of the public. In areas where clearing and trimming is necessary to provide adequate sight lines to signs, material shall be removed as directed by the engineer.

Pay Items	Pay Unit
Clearing and Grubbing	l.s.

ITEM #0204151A –HANDLING WATER

Description: Work under this item shall consist of designing, furnishing, installing, maintaining, removing, and disposing of a temporary water handling system. This may include water-handling-cofferdams (temporary barriers), bypass pipes, bypass pumps/ hoses, temporary energy dissipation, sumps, drainage channels, and equipment and work necessary for dewatering.

A temporary water handling system redirects surface water beyond, through, or around the limits of construction to allow work to be done in the dry.

Materials: The materials required for this work shall be as shown on the plans, on the accepted working drawings, or as ordered by the Engineer.

Construction Methods: The Contractor shall prepare and submit written procedures for handling water. Working drawings, in accordance with Article 1.05.02, shall be prepared and submitted.

The Contractor shall consider stream conditions and water elevations associated with the Site to determine the type of temporary water handling system required to redirect water away from work being performed. The system shall be designed to be compatible with the stage construction and Maintenance and Protection of Traffic, as indicated in the Contract, and shall conform to Section 1.10.

The Contractor shall be responsible for maintenance of the water handling system. If the system becomes damaged or displaced during construction, the system shall be corrected as required. Unless otherwise provided or directed, all temporary water handling system components shall be removed and disposed of in an acceptable manner when no longer required.

Method of Measurement: The work under this item, being paid on a lump sum basis, will not be measured for payment.

Basis of Payment: This work will be paid for at the Contract lump sum price for "Handling Water" complete and accepted, which price shall include designing (including submittals and working drawings), furnishing, installing, maintaining, removing, and disposing of all temporary water handling system components as are necessary for completion of the work. This price shall include all materials, equipment, tools, labor, and work incidental thereto.

A schedule of values for payment shall be submitted to the Engineer for review and comment.

Pay Item	Pay Unit
Handling Water	l.s.

ITEM #0219011A – SEDIMENTATION CONTROL SYSTEM 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
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: Sediment Control System 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: Sediment Control System 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 #503866A – REMOVAL OF EXISTING CULVERT (SITE NO. 1)

Description: Work under this item shall consist of the complete removal and proper disposal of all components of the existing concrete box culvert, including but not limited to, concrete slab, concrete headwall, fencing, metal bridge rail, concrete floor slab, concrete walls and concrete cutoff walls. All excavation of existing surrounding material and placement of backfill material, outside of the limits of Roadway Excavation, Channel Excavation and Structure Excavation, that is necessary for the removal of existing bridge components, shall be included under this item, as well. Restoration of the site in the area of the removed existing box culvert including regrading of the channel as required.

Construction Methods: Components shall be removed in stages in order to facilitate the Maintenance and Protection of Traffic and Water Handling plans shown in the contract drawings and approved by the Engineer. Portions to remain in service in order to carry traffic loads and stream flows shall be maintained in suitable condition to perform their required function until they are later removed. Special attention shall be given to the locations between stages of construction where components are cut and partially removed and at the interfaces with temporary earth retaining systems.

All portions of the culvert not suitable for embankment fill and all components of the metal pipes. Metal bridge rails, fencing, fence posts, and metal hand rails, shall be properly disposed of off-site. Suitable backfill material shall be placed and compacted in lifts in accordance with the requirements of Article 2.02.03 of Form 818.

Extreme care shall be taken to avoid damage to the underground utilities that are in the vicinity of the work.

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

Basis of Payment: This work will be paid for at the contract lump sum price for "Removal of Existing Culvert (Site No. 1)" when complete and accepted. Partial payments of the lump sum price may be made based on percentages of partial removal, agreed between the Engineer and Contractor.

Pay Item	Pay Unit
Removal of Existing Culvert (Site No. 1)	l.f.

ITEM #0586850.1A -HYDRODYNAMIC SEPARATOR

Description: Hydrodynamic separators are proprietary devices manufactured for stormwater treatment. The hydrodynamic separator shall be a precast concrete structure and include an internal chamber with features that induce a swirling, circular, or spiraling flow pattern in the stormwater flow that separate and trap sediment and pollutants in a chamber that can be accessed for later removal.

This item will consist of furnishing and construction of a hydrodynamic separator, a flow diversion structure, manholes and pipes in the location, grades, treatment capacity and to the dimensions and details shown on the contract drawings, and in accordance with these specifications or as directed by the Engineer. The work also includes the preparation of hydraulic design calculations for the hydrodynamic separator(s) and flow diversion structure(s) as specified herein.

The hydrodynamic separator shall be assembled and installed in strict compliance with the Manufacturer's instructions unless otherwise directed by these specifications or by the Engineer. Internal flow controls / diversion components, external appurtenances, concrete manhole riser sections, manhole frames and covers, reinforcing, threaded inserts, lifting and seating fixtures, non-shrink grout, and all other necessary materials and equipment to complete the work shall be included.

This item shall also include the cleaning of the hydrodynamic separator of all sediment and debris every 90 days, or as needed, from when they are put into service, until final acceptance of the project.

Approved Products and Manufacturer Information: Proprietary hydrodynamic separators currently approved by the Department are listed in **Table 1 "CONNDOT LIST OF APPROVED HYDRODYNAMIC SEPARATORS".** Company contact information is provided for convenience. *As the company information frequently changes, the Department is not responsible for its accuracy.* **The Engineer will reject any proposed hydrodynamic separator that is not listed in Table 1.**

The listed products have been approved for use on Department projects based on only a general review of the product's construction, function and treatment capabilities. **Therefore, the approved list shall not be construed to mean that all products appearing on the list are suitable to any specific project site or drainage design.**

Performance: The stormwater treatment performance of the selected hydrodynamic separator shall be based on the water quality flow (WQF) as defined and calculated in accordance with the Department's current version of the Drainage Manual.

The hydrodynamic separator shall be designed to treat the entire WQF as indicated on the contract drawings or specifications, without bypass, through the separator's internal components.

TABLE 1 – CONNDOT LIST OF APPROVED HYDRODYNAMIC SEPARATORS

HYDRODYNAMIC SEPARATOR PRODUCT NAME	COMPANY INFORMATION
Downstream Defender	Hydro International 94 Hutchins Drive Portland, Maine 04102 (207) 756-6200 http://www.hydrointernational.biz/us/index_us.php
FloGard Dual-Vortex Hydrodynamic Separator	KriStar Enterprises, Inc. 4020 Riverclub Drive Cumming, Georgia 30041 (770)-889-4338 http://www.kristar.com/
High Efficiency CDS	Contech Stormwater Solutions 200 Enterprise Drive Scarborough, Maine 04074 (800)-925-5240 http://www.contech-cpi.com/stormwater/13
Vortechs	
Vortsentry	
Hydroguard	Hydroworks, LLC 525Boulevard Kenilworth, NJ 07033 (888)-290-7900 / (908)-272-4411 http://www.hydroworks.org/
Stormceptor OSR	Rinker Materials – Stormceptor 69 Neck Road Westfield, MA 01085 (800)-909-7763 / (413) 246-7144 www.rinkerstormceptor.com
Stormceptor STC	
V2B1	Environment 21 8713 Read Road, P.O. Box 55 East Pembroke, New York 14056-0055 (800)-809-2801 / (585)-815-4700 www.env21.com

Hydrodynamic separator systems and models that have been pre-approved for use on Department projects and their corresponding maximum allowable WQF's for stormwater treatment are shown in **Table 2**, "**PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS**". The Engineer will reject any proposed hydrodynamic separator system/model that is not listed in Table 2.

For more severe storm events that produce flows up to and including the drainage design flow (DDF) and which result in flows greater than the WQF, the hydrodynamic separator shall be capable of conveying the portion of the DDF directed to it without surcharging the upstream storm drainage system and re-suspending previously trapped sediment.

Sediment Storage Capacity: Settleable solids shall accumulate in a location within the hydrodynamic separator structure that is accessible for cleaning and maintenance but not susceptible to resuspension. Direct access through openings in the precast concrete unit shall be provided to the sediment storage chamber and all other chambers to facilitate maintenance.

The standard sediment storage capacities for Department pre-approved hydrodynamic separator systems/models are shown in **Table 3**, "**STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS***"*. The sediment storage capacities listed in Table 3 are values based on standard structure dimensions and anticipated maintenance requirements.

Some standard hydrodynamic separator models may be modified as determined by the Manufacturer to increase the sediment storage capacity. When a modification is proposed by increasing the depth of the standard structure, the sediment storage capacity of the proposed structure shall be determined in accordance with **Table 4, "SEDIMENT STORAGE CAPACITY CALCULATION"**.

The Contractor shall be responsible for verifying the standard sediment storage capacity of the hydrodynamic separator unit(s) and coordinating any proposed modifications to increase sediment storage capacity with the Manufacturer(s). All proposed modifications and revised sediment storage capacity determinations shall be clearly documented in the working drawing submission to the Department.

Hydraulic Design: The Contractor shall prepare or have prepared a hydraulic grade line (HGL) analysis for an evaluation of the selected hydrodynamic separator as described in this section. The HGL analysis shall be performed for both the WQF and the DDF. The analysis shall be consistent with the methodology described in Section 11.12 of the Department's Drainage Manual.

Head loss coefficients, to be used in the HGL analysis, shall be determined in accordance with Section 11.12.6 for all structures except the hydrodynamic separator, which shall be obtained from the Manufacturer. Documentation shall be submitted demonstrating how the coefficient was derived either through calculation and/or testing data. A benching factor of 1.0 shall be applied to the flow diversion structure.

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS

Maximum WQF (cfs)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
0.4	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	450	1000	VS30	2
0.5	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	900	1000	VS30	2
0.6	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	900	1000	VS40	2
0.7	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	900	1000	VS40	2
0.8	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	900	1000	VS40	2
0.9	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1200	1000	VS40	3
1.0	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1800	1000	VS40	3
1.1	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1800	1000	VS40	4
1.2	6-ft	DVS-48	2015	HG 5	140	2400	1000	VS50	4
1.3	6-ft	DVS-60	2015	HG 5	140	2400	1000	VS50	4
1.4	6-ft	DVS-60	2015	HG 5	140	2400	2000	VS50	4
1.5	6-ft	DVS-60	2020	HG 5	140	2400	2000	VS50	6
1.6	6-ft	DVS-60	2020	HG 5	140	2400	2000	VS50	6
1.7	6-ft	DVS-60	2020	HG 5	250	2400	2000	VS50	6
1.8	6-ft	DVS-60	2020	HG 6	250	2400	2000	VS50	7
1.9	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	7
2.0	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	7
2.1	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	9
2.2	6-ft	DVS-72	2025	HG 6	250	3600	2000	VS60	8
2.3	6-ft	DVS-72	3020, 3020-D	HG 6	250	3600	2000	VS60	8
2.4	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	2000	VS60	8
2.5	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	3000	VS60	10
2.6	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	3000	VS60	11
2.7	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS60	11
2.8	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS70	11
2.9	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS70	12
3.0	6-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
3.1	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12
3.2	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12
3.3	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	14
3.4	8-ft	DVS-72	3035; 3035-D	HG 7	390	6000	3000	VS70	14
3.5	8-ft	DVS-72	3030; 3030-DV, 3030-D; 4030-D	HG 7	390	6000	3000	VS70	14
3.6	8-ft	DVS-72	4030	HG 7	390	6000	3000	VS70	14
3.7	8-ft	DVS-84	4030	HG 8	390	6000	3000	VS70	14
3.8	8-ft	DVS-84	4030	HG 8	390	6000	4000	VS70	13
3.9	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS70	15
4.0	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	15
4.1	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	15
4.2	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.3	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.4	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.5	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.6	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.7	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.8	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.9	8-ft	DVS-84	5640-D	HG 8	390	11000s	4000	VS80	17
5.0	8-ft	DVS-84	5640-D	HG 9	390	11000s	4000	VS80	19
5.2	8-ft	DVS-84	4040-D	HG 9	390	11000s	4000	VS80	20
5.4	8-ft	DVS-96	4040-D	HG 9	390	11000s	4000	VS100	20
5.5	8-ft	DVS-96	4045-D	HG 9	390	11000s	5000	VS100	18
5.6	8-ft	DVS-96	4045-D	HG 9	560	11000s	5000	VS100	18
6.0	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	18
6.1	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	21

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2B1
6.3	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	25
6.4	10-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	25
6.5	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	25
6.9	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	25
7.0	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	22
7.1	10-ft	DVS-96	5042-D	HG 10	560	11000s	5000	VS100	22
7.2	10-ft	DVS-96	5042-D	HG 10	560	13000s	5000	VS100	22
7.3	10-ft	DVS-96	4045	HG 10	560	13000s	5000	VS100	22
7.5	10-ft	DVS-96	5653-D	HG 10	560	13000s	7000	VS100	22
7.7	10-ft	DVS-120	5653-D	HG 10	560	13000s	7000	VS100	22
7.8	10-ft	DVS-120	5653-D	HG 10	560	13000s	7000	VS100	50
7.9	10-ft	DVS-120	5653-D	HG 10	780	13000s	7000	VS100	50
8.0	10-ft	DVS-120	5658-D	HG 10	780	13000s	7000	VS100	50
8.2	10-ft	DVS-120	5658-D	HG 10	780	16000s	7000	VS100	50
8.5	10-ft	DVS-120	5658-D	HG 12	780	16000s	7000	VS100	50
8.6	10-ft	DVS-120	5658-D	HG 12	780	16000s	7000	VS100	50
8.9	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS100	50
9.0	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS120	50
9.2	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS120	50
9.5	10-ft	DVS-120	5050-DV	HG 12	780	16000s	7000	VS120	50
9.6	10-ft	DVS-120	5050-DV	HG 12	780	16000s	7000	VS120	50
10.0	10-ft	DVS-120	5050-DV	HG 12	780	16000s	9000	VS120	50
10.1	10-ft	DVS-120	5050-DV	HG 12	780	16000s	9000	VS120	50
10.5	10-ft	DVS-120	5050-DV	HG 12	780		9000	VS120	50
10.9	10-ft	DVS-120	5050-DV	HG 12	780		9000	VS120	50
11.0	10-ft	DVS-120	7070-DV	HG 12	780		9000	VS120	50
11.2	10-ft	DVS-120	7070-DV	HG 12	1125		9000	VS120	50

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
11.5		DVS-120	7070-DV	HG 12	1125		9000	VS120	50
11.8		DVS-120	7070-DV	HG 12	1125		9000	VS120	50
11.9		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.0		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.1		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.5		DVS-120	7070-DV	HG 12	1125		11000	VS120	60
13.0		DVS-120	7070-DV		1125		11000	VS120	60
13.5		DVS-120	7070-DV		1125		11000	VS120	60
13.6		DVS-120	7070-DV		1125		11000	VS120	60
14.0		DVS-144	7070-DV		1125		11000	VS120	60
14.5		DVS-144	7070-DV		1125		11000		60
14.9		DVS-144	7070-DV		1125		11000		60
15.0		DVS-144	7070-DV		1125		16000		60
15.5		DVS-144	7070-DV		1125		16000		60
15.7		DVS-144	7070-DV		1125		16000		60
16.0		DVS-144	7070-DV				16000		60
16.5		DVS-144	7070-DV				16000		60
17.0		DVS-144	7070-DV				16000		
17.5		DVS-144	7070-DV				16000		
18.0		DVS-144	7070-DV				16000		
18.5		DVS-144	7070-DV				16000		
19.0		DVS-144	7070-DV				16000		
19.7		DVS-144	7070-DV				16000		
20.0		DVS-144	10060-DV				16000		
21.5		DVS-144	10060-DV				16000		
22.3		DVS-144	10060-DV				1319		
25.0			10060-DV				1319		
25.2			10060-DV				1319		

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
27.6			10060-DV				1421		
29.3			10080-DV				1421		
30.0			10080-DV				1522		
31.2			10080-DV				1522		
33.6			100100-DV				1522		
35.0			100100-DV				1624		
38.2			100100-DV				1624		
40.0			100100-DV				1726		
43.2			100100-DV				1726		
49.3			100100-DV						

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS

Sediment Storage (cubic yards)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
0.3		DVS-36					1000		
0.5	4-ft								
0.6							2000		
0.7		DVS-48		HG 4					
0.8					065	450		VS30	2; 3
0.9			2015-4G; 2015-4						
1.0 (minimum)							3000		
1.1					140	900			
1.2				HG 5					
1.3		DVS-60							
1.4							4000	VS40	
1.5			2015; 2020; 2025						
1.6									4
1.7				HG 6					
1.8	6-ft					1200			
1.9							5000		
2.0									
2.1									
2.2		DVS-72						VS50	
2.3				HG 7					
2.4									6; 7
2.5							7000		
2.6			3020, 3020-D; 3030, 3030-DV, 3030-D; 3035, 3035-D						
2.9					250	2400			

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
3.0				HG 8					
3.1							9000	VS60	
3.2									8; 9
3.3						1800			
3.4									
3.5		DVS-84							
3.6									
3.7	8-ft		5640-D						
3.8				HG 9					
3.9							11000		
4.0									
4.2									10; 11; 12
4.3			4030-D; 4040-D; 4045-D					VS70	
4.5									
4.6									
4.7									13
5.0				HG 10					
5.1									
5.3		DVS-96	5042-DV; 5050-DV						
5.5									
5.6			4030; 4040; 4045; 5653-D; 5658-D; 5678-D				16000	VS80	
5.7									
6.0						3600			
6.5									

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2B1
6.6							1319		
6.9									
7.0									
7.1									
7.2									
7.3									14; 15; 16; 17; 18
7.5				HG 12					
7.6							1421		
7.7									
8.0									
8.3									
8.4			7070-DV						
8.6						4800			
8.7	10-ft				390		1522	VS100	
9.0									
9.5									
9.6									
9.9							1624		
10.0									
10.3		DVS-120							
10.5									19; 20
11.0									
11.2							1726		
11.3						6000			
11.5									21; 22
11.8									

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	Downstream Defender	Flogard	High Eff. CDS	Hydroguard	Stormceptor OSR	Stormceptor STC	Vortechs	Vortsentry	V2 B1
12.0									
12.6								VS120	25
12.9					560				
13.0									
13.4						7200			
15.0									
17.5					780				
17.8		DVS-144	10060-DV;10080-DV; 100100-DV						
20.0									
22.3									50
25.0									
25.8					1125				
26.1						11000s			
26.2									
30.0									
34.1						13000s			
34.9									60
35.0									
38.7									
40.0									
40.7						16000s			

TABLE 4 - SEDIMENT STORAGE CAPACITY CALCULATION

Product	**Sediment Storage Capacity (Volume) Calculation (cubic feet)**
Downstream Defender	Inside Diameter (ft^2) of Structure x Distance (ft) from Bottom of Benching Skirt to Inside Floor of Structure
FloGard® Dual-Vortex	Inside Diameter (ft^2) of Structure x 1/2 Distance (ft) from Bottom of Vortex Tube to Inside Floor of Structure
High Efficiency CDS	Inside Diameter (ft^2) of Structure x Depth (ft) of Solids Storage Sump
Hydroguard	Inside Diameter (ft^2) of Structure x 1/2 Depth (ft) Below Outer Baffle Wall
Stormceptor STC	Inside Diameter (ft^2) of Structure x 1/2 Depth (ft) Below Drop Tee Inlet Pipe
Stormceptor OSR	Inside Diameter (ft^2) of Structure x 1/2 Depth (ft) Below Drop Tee Inlet Pipe
Vortechs	Inside Diameter (ft^2) of Grit Chamber x 1/2 Depth (ft) Below Opening in Swirl Wall
Vortsentry	Inside Diameter (ft^2) of Structure x Depth (ft) of Sediment Storage Sump
V2B1	Inside Diameter (ft^2) of Structure (D1) x 1/2 Depth (ft) Below Pipe Invert
Note: 1 cubic foot = 0.037 cubic yard or 1 cubic yard = 27 cubic feet	

Since the selected hydrodynamic separator and associated connecting pipes and structures may be different in type, configuration and performance than the one assumed in the design phase of the project, the hydraulic calculations performed for the drainage design must be replicated and revised to reflect any adjustments necessary to the drainage design for installation of the selected system, such as different flow-line elevations, head loss coefficient, pipe sizes, etc. The selected hydrodynamic separator shall be designed so as not to change the drainage system upstream of the flow diversion structure or to increase the HGL elevation upstream of the flow diversion structure. Any modifications necessary to the overall drainage design as a result of the Contractor selected hydrodynamic separator shall be the responsibility of the Contractor.

The new HGL analysis must demonstrate the following conditions:

1. The hydrodynamic separator can treat the WQF. The HGL elevation in the hydrodynamic separator at the WQF shall be below the elevation of internal bypass so that all of the WQF is treated by the system.
2. When the drainage system is operating at the DDF, the hydraulic computations must show that the HGL elevation shown on Form A for the DDF and the HGL elevation in the hydrodynamic separator must be a minimum of one foot below the top (ground) elevation of the structure. To demonstrate compliance, the hydraulic analysis shall be extended to a point upstream in the drainage system that is not influenced by the proposed changes and where the results converge with the previous design analysis. In such a case, the Contractor shall request a copy of the design analysis from the Department. A freeboard less than one foot may be accepted by the Engineer on a case by case basis provided that a justification of the reason has been included with the HGL analysis.
3. Documentation must be provided that the flow in excess of the WQF can pass through the device without washout of the previously captured sediment.

Hydrodynamic Separator Selection: To ensure compliance with the special provision, the selection process of a proprietary hydrodynamic separator for installation on a Town project is outlined by the following steps:

1. First, select the available product(s) from Table 2 (**PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS**) that meet or exceed the WQF treatment specified on the Hydrodynamic Separator Design Data Sheets (Form A - Design) attached to this specification. **The Engineer shall reject any proposed hydrodynamic separator system/model that is not listed in Table 2.**
2. Using Table 3 (**STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS**), check whether the initially selected product(s) in Step 1, meet or exceed the minimum sediment storage requirement specified on the plans. In some cases, the required sediment storage capacity will govern the model size required for the project. In lieu of selecting a larger model to accommodate the sediment storage requirement, the Contractor may submit working drawings as recommended by the Manufacturer, showing how a standard model has been modified to satisfy the sediment storage requirement. When a modification is proposed by increasing the depth of the standard structure, **Table 4 (SEDIMENT STORAGE CAPACITY CALCULATION)** shall be utilized to determine the sediment storage capacity of the proposed structure.
3. Hydrodynamic separator system/models pre-approval by the Department shall not be construed to mean that all products appearing on Tables 2 and 3 are suitable to any specific project site or drainage design. The Contractor shall verify the constructability

of the selected hydrodynamic separator in relation to dimensional, structural, geotechnical and right-of-way constraints at each installation site. If revisions to the drainage design, including the system layout, are required to accommodate the selected separator, the Contractor shall provide working drawings showing the revised layout, including the position of the hydrodynamic separator and the number, positions and types of connecting structures, and any other components of the system within the pay limits. The working drawings shall be prepared in sufficient detail to perform a hydraulic analysis and confirm that the layout will fit the constraints of each site.

4. Upon determination that the WQF, sediment storage and constructability requirements have been met, the Contractor shall prepare or have prepared, a HGL analysis in accordance with the hydraulic requirements of this special provision, that includes the selected hydrodynamic separator and any revisions to the drainage design needed for the installation.
5. Acceptance of the computations by the Engineer must be obtained by the Contractor prior to the purchase or installation of any units.

Materials: Materials utilized to fabricate, construct and install the precast concrete hydrodynamic separator including but not limited to precast concrete units, brick, concrete masonry units, manhole frames and covers shall meet the requirements specified in the Standard Specifications, Form 817, Article M.08.02, except that the 28 day compressive strength specified in Subarticle M.08.02-4, shall be a minimum of 4000 psi (27.6 MPa).

The Contractor shall provide a Materials Certificate **in accordance with 1.06.07 for each unit delivered to the project.** Upon request, the Contractor shall also provide Certified Test Reports for the fine and coarse aggregates and all cementitious materials, and the concrete mix design indicating the weight of each component, used in the construction of the precast units for review. The structures shall not be shipped until released by the Contractor's Quality Control Manager or designee.

The wall and slabs of the precast concrete units shall be designed to sustain HS20-44 (MS18) loading requirements.

Manholes and Catch Basins shall conform to Section 5.07 of Form 817.

Granular fill shall conform to the requirements of Article M.02.01 of Form 817.

Non-shrink grout shall conform to the requirements of Subarticle M.03.01-12 of Form 817.

Drainage pipe, sealant and gaskets shall conform to the requirements of Article M.08.01 of Form 817.

Mortar shall conform to the requirements of Article M.11.04 of Form 817.

Sealant used for the hydrodynamic separator unit(s) shall be resistant to oil and other hydrocarbons and conform to the requirements of ASTM C-443.

Working Drawings: Working drawings in accordance with Article 1.05.02 – 2 shall be required for the system selected by the Contractor.

If revisions to the layout of the system within the payment limits of this item are required to accommodate the selected separator, the working drawings shall also include plans that show the required revisions. These plans shall show the revised position of the hydrodynamic separator unit(s), and all revisions to connecting structures, pipes, elevations, and details, including the design within the flow diversion structure. The revised plans shall also include the pay limit showing all the components of the system that are included in this lump sum pay item.
Working drawings shall also show details for construction, reinforcing joints, internal and external components, any cast-in-place appurtenances, locations and elevations of pipe openings, access manhole locations and elevations, and type / method of sealing pipe entrances.

Working drawings for each hydrodynamic separator on the project shall have all appropriate vertical dimensions referenced with elevations that are consistent with the project plans. In addition to any other structural, material or installation requirements, the working drawings shall clearly indicate the location, dimensions and volume (capacity) of the sediment storage area within the device.

The working drawings shall be sealed by a professional engineer licensed in the state where the devices are manufactured and that said engineer shall certify the device meets the minimum requirements of the CONNDOT Standards.

The working drawing submission by the Contractor shall consist of the following documents:

1. Working drawings for each hydrodynamic separator proposed for installation on the project.
2. Copies of the pertinent construction plan, profile, cross section and detail sheets that have been annotated with any proposed drainage revisions that are required for the installation of the proposed hydrodynamic separator(s). If no changes are required, the submittal shall note same.
3. An Operations and Maintenance Manual for each hydrodynamic separator describing operations, inspection, maintenance procedures and any applicable warranty information.

Acceptance of the working drawing submission by the Engineer must be obtained by the Contractor prior to the fabrication of each hydrodynamic separator and diversion structure.

Construction Methods: The Contractor shall inspect the hydrodynamic separator and any accessory equipment upon delivery for general appearance, dimensions, soundness or damage in a manner acceptable to the Engineer. If any defects or damage are identified by the inspection, the unit shall be rejected by the Contractor and a new undamaged hydrodynamic separator shall be supplied. Any required adjustments of the separator shall be completed in accordance with Manufacturer's recommendations. A Manufacturer's representative and the Engineer will inspect the hydrodynamic separator before installation.

The Contractor shall install the hydrodynamic separator structure in accordance with the Manufacturer's recommendations unless otherwise directed by this specification or by the Engineer. The hydrodynamic separator shall be installed plumb, level and aligned both vertically and horizontally with the inlet and outlet piping. The hydrodynamic separator shall be placed on a compacted granular fill base in accordance with the Manufacturer's specifications or a minimum thickness of 6" (150mm) whichever is larger. Anchoring systems shall be installed, where needed, to resist buoyancy forces. Care shall be taken not to damage the hydrodynamic separator during backfill and compaction.

Pipe openings in the hydrodynamic separator shall be sized to accept pipes of the specified size(s) and material(s) as shown on the contract drawings and shall be sealed by the Contractor in accordance with the requirements of this specification. The inlet and outlet pipe connections shall be watertight. The hydrodynamic separator shall be tested for leakage according to the Manufacturer's specifications and to the satisfaction of the Engineer. Any leaks must be found and corrected to the satisfaction of the Engineer prior to acceptance of the structure.

Access openings with manhole frames and covers shall be provided to all chambers of the hydrodynamic separator. The access openings and pipe openings shall be detailed on the working drawings to be submitted by the Contractor for review and acceptance by the Engineer.

All connecting structures and pipes included within the payment limits for this work shall be constructed in accordance with the applicable requirements of Article 5.07.03 and Article 6.51.03.

Method of Measurement: Design, construction, furnishing, installation and cleaning of the hydrodynamic separator, the flow diversion structure, manholes and pipes as shown on the contract drawings, including all internal and external appurtenances and materials used, will be paid for on a lump sum basis per site.

Basis of Payment: This work will be paid for at the contract unit price for Hydrodynamic Separator (Site No. 1), complete in place, which price shall include all work within the pay limits shown on the contract drawings for hydrodynamic separator. If revisions to the layout of the system within the payment limits for this item are required to accommodate the selected separator, the lump sum price shall also include all additional or revised connecting structures and pipes. The contract lump sum shall include, but not be limited to, the following:

1. Design, preparation, revisions of working drawings and hydraulic computations.
2. Concrete and reinforcing steel, sealant, cement, mortar, flexible rubber sleeves, internal and external components, brick and masonry, frames and covers used to construct access manholes.
3. Manholes and pipes as shown on the contract drawings, or as revised and shown on submitted working drawings accepted by the Engineer.
4. Structure excavation, back fill, and disposal of surplus material.
5. Compacted granular fill.
6. Trench excavation and bedding material.
7. Cleaning of the Hydrodynamic Separator, flow diversion structure, manholes and pipes as shown on the contract drawings (of all debris every 90 days, or as needed), during the duration of the project, shall also be included in the price of this item.
8. The Operations and Maintenance Manual for each hydrodynamic separator.

The price shall include but not be limited to all materials, testing, equipment, tools and labor incidental thereto.

Pay Items	Pay Unit
Hydrodynamic Separator (Site No. 1)	ea.

ITEM #0601219A – 2'X4' PRECAST CONCRETE BOX CULVERT

Description: Work under this item consists of furnishing and installing a precast concrete box culvert(s) as shown on the plans and as ordered by the Engineer. This item also includes all hardware, inserts, dowels for connections, reinforcing steel and joint materials as shown on the plans.

Materials:

- The concrete mix design shall meet the requirements of M.03.02, Class PCC05562, and shall be submitted to the Engineer.
- All reinforcing steel, including dowel bar mechanical connectors, shall be galvanized and shall meet the requirements of M.06.01.
- All threaded concrete inserts, lifting fixtures, and miscellaneous hardware cast into precast concrete components shall be galvanized in accordance with ASTM A153 or ASTM B695 Grade 50. All portions of the lifting and seating devices shall be recessed from the finished concrete surface.
- Non-shrink grout shall meet the requirements of M.03.05 and be suitable for submerged applications.
- Gaskets shall meet the requirements of ASTM D1056, C1677 or C990.
- Geotextiles shall be the "Separation (High Survivability)" type and shall be selected from the Department's Qualified Product List.

Construction Methods:

1. Submittals: All submittals shall include a title sheet with the following:

- Project number, town and crossing.
- Bridge number, when shown on the plans.
- Design code, as applicable.
- Contact information for fabricator – contact information shall include name and address of the fabricator and the name of contact person with phone number and email address.

(a) Shop Drawings - Precast Concrete Components: Prior to fabrication, the Contractor shall submit an individually packaged set of shop drawings for the precast concrete components for each precast box culvert location to the Engineer for review, in accordance with the plans and 1.05.02. Each shop drawing package shall include details necessary for fabrication of each unique component, handling and installation of the precast concrete components, supporting documents for all materials incorporated into the precast concrete components and for other materials provided by the fabricator.

(b) Working Drawings - Lifting and Seating Devices : Prior to fabrication, the Contractor shall submit working drawings and supporting computations for the embedded lifting and seating devices required for the handling and installation of the precast concrete components at each box culvert location to the Engineer for review in accordance with 1.05.02. Prior to applying load to the embedded devices, the concrete shall attain the minimum concrete compressive strength associated with the safe working load of the device.

(c) Working Drawings - Installation of Precast Concrete Components: Prior to installation of the precast concrete components, the Contractor shall submit working drawings and supporting computations for the lifting and placement of the precast concrete components, to the Engineer for review in accordance with 1.05.02. Cranes shall be operated in accordance with the Connecticut Department of Public Safety regulations. The Contractor shall be responsible for

verifying the weight of each lift. The working drawing submittal shall include, but not be limited to the following:

- Plan of the work area showing all structures, roads, railroad tracks, Federal and State regulated areas as depicted on the plans, overhead and subsurface utilities, property lines, or any other information relative to erection. No picks shall be allowed over vehicular, pedestrian, railway or vessel traffic.
- A detailed narrative describing the lifting and installation sequence.
- Manufacture's data sheet for the crane(s) including the load/capacity chart. The capacity of the crane shall be adequate for the total lift/pick load including rigging, spreaders and other materials. In the area of railroads and navigable waterways, the capacity shall be as required by the regulatory authorities.
- Manufacturer's data sheets and product data sheets for all rigging (slings, spreader bars, blocks, etc.), lifting devices, and other connecting equipment and hardware listing the number, type, size, arrangement and capacity of each.
- Location of each crane for each pick.
- Crane support measures, including any support beneath the outriggers such as bearing pads, crane mats, planking or special decking, or other means to transfer the crane's total weight (including the lifted load) into the earth or structure beneath it.
- Delivery location of each component.
- Boom length and the lift and setting radius for each pick (or maximum lift radius).
- Pick point location(s) on each component.
- Lifting weight of each component including rigging (clamps, spreader beams, etc.)

(d) Product Data – Field Installed Materials: Prior to installation of the precast concrete components, the Contractor shall submit product data for field installed materials, such as non-shrink grout, geotextile, etc., not addressed in other submissions to the Engineer for review in accordance with 1.05.02.

2. Fabrication and Manufacture: The fabrication and manufacture of the precast concrete components shall meet the requirements of M.08.02-4 as supplemented by the following:

(a) Reinforcing Steel: Reinforcing steel shall be fabricated and installed in accordance with Articles 6.02.03-2 through 6.02.03-5. The welding of reinforcement is not permitted.

(b) Test Cylinders: During the casting of the components, the Contractor shall cast a minimum of four 4 inch × 6 inch test cylinders in accordance with AASHTO T23 during each production run. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to confirm that the concrete meets the requirements of M.03.02.

(c) Placing Concrete: Concrete shall not be deposited in the forms until the Contractor has inspected the reinforcing steel, including all other embedded components, and has documented such inspection.

Concrete shall not be deposited into the forms when the ambient temperature is below 40°F or above 100°F, unless adequate heating or cooling procedures have been previously approved by the Engineer. The concrete temperature shall be 60°F to 90°F at the time of placement.

Truck-mixed or transit-mixed concrete will not be allowed.

Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and dimension that provides a controlled atmosphere for the protection of the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is

completely under cover.

The concrete shall be vibrated internally, or externally, or both, as needed to provide adequate flow and consolidation of the concrete. The vibration shall be provided in such a manner as to avoid displacement of reinforcing steel, forms, or other components. There shall be no interruption in the placement of concrete. Concrete shall be placed and vibrated sufficiently to produce a surface free from imperfections such as honeycombing, segregation, cracking, or checking.

Any deficiencies noted in the components may be cause for rejection.

(d) Finishing: All fins, runs, or mortar shall be removed from the concrete surfaces which will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding. All exposed, outside concrete surfaces shall be given a grout clean-down finish in accordance with 6.01.03-10.

(e) Handling and Storage: Any precast concrete components damaged during storage, transportation or handling shall be repaired or replaced by the Contractor, at its own expense, as directed by the Engineer.

(f) Repairs: The Contractor shall submit to the Engineer, for review, any proposed methods or materials to be used in the repair of precast concrete components or defective surfaces. Precast concrete components with defective area greater than 10% as determined by the Engineer will be rejected.

3. Fabrication Tolerances: Tolerances of forming precast concrete box sections shall be as follows:

(a) Internal Dimensions: The internal dimensions shall be within 1% of the design dimensions or within 1 1/2 inches, whichever is less.

(b) Roof, Floor and Wall Thickness: The roof, floor and wall thickness shall be within 1/4 inch of the thicknesses shown in the design.

(c) Laying Length of Opposite Surfaces: Variations in laying lengths of two opposite surfaces of the box section shall be less than 1/8 inch/foot of internal span up to 3/4 inch maximum.

(d) Length of Section: The length of a section shall not vary from the designed length by more than 1/2 inch in any box section.

4. Pre-assembly of Box Sections: Box sections shall conform to all dimensions within tolerances specified herein. Adjacent sections shall be assembled without a gasket at the manufacturing plant to ensure that all tolerances are met prior to shipping. All sections that will be joined with mechanical connectors shall be pre-assembled, complete with fasteners, to confirm alignment. The Department shall be given at least 2 working days' notice to inspect and evaluate the sections prior to shipping.

5. Installation: The installation of the precast concrete box sections and components shall be in accordance with the plans and the following:

(a) The installation of the precast concrete box sections shall proceed as required by the sequence of construction, stage construction plans, and the special provisions entitled "Prosecution and Progress" and "Maintenance and Protection of Traffic."

(b) Prior to installing the inlet and outlet end box culvert sections, a bed of non-shrink grout shall be placed on the cut-off walls. The end box culvert sections shall be connected to the cut-off wall using galvanized dowels installed in cast or drilled holes and bonded with non-shrink grout.

(c) All box culvert lap joints shall be sealed with rubber gaskets and must provide a silt-tight fit. A positive means, through the use of seating devices, shall be used for pulling each section against the adjacent section to assure a silt-tight joint. The gasket shall be uniformly compressed to a minimum of 1/2 of its uncompressed width. The joint opening between adjacent seated sections on all interior surfaces of the culvert shall be uniform and match the width shown on the plans.

The interior surfaces on either side of the lap joints of the adjacent seated sections shall form a smooth and continuous plane, free from irregularities.

(d) After its installation, any box section, as determined by the Engineer, not acceptable in vertical or horizontal alignment for any reason, including but not limited to settlement, displacement, excess camber or misfit, shall be removed by the Contractor and correctly installed, as directed by the Engineer and at the Contractor's expense.

(e) The lap joints on the exterior of the roof and the interior of the floor and the lap joints on the interior and exterior of the walls (full height on each side) shall be filled with non-shrink grout after seating the sections. The exposed portions of the lap joints within the haunches or fillets on the interior of the culvert sections shall also be filled with non-shrink grout. The non-shrink grout shall be finished smooth and flush with the adjacent concrete surface.

All portions of the lifting and seating devices that extend to or beyond the finished concrete surface shall be removed. All fixtures or holes cast into the sections for lifting or seating shall be completely filled with non-shrink grout and finished smooth and flush with the adjacent concrete surface.

The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall follow the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions.

Prior to the passage of flowing water over the with non-shrink grout, the non-shrink grout shall attain a minimum compressive strength of 3,000 psi.

(f) Geotextile shall be placed on the exterior surface of the roof and walls of the culvert over the lap joints between the culvert sections. The geotextile shall extend 12 inches to each side of the joint and shall be attached to the culvert with silicone caulk.

6. Erection Tolerances: The Contractor shall be responsible for ensuring the overall length of the box culvert meets the layout requirements on the plans within all acceptable tolerances as specified in the contract.

Method of Measurement: The work for the precast concrete box culvert will not be measured for payment but will be paid for by the linear foot of precast concrete box culvert as dimensioned on the plans along each box culvert cell, completed and accepted.

Basis of Payment: The work for the precast concrete box culvert will be paid for at the Contract unit price per linear foot for "(Size) Precast Concrete Box Culvert," completed in place and accepted, which price shall include all equipment, materials, tools and labor incidental to the manufacture, shipping, repair and installation of the precast concrete box culvert of the specified size(s) at the locations shown on the plans.

Pay Item	Pay Unit
4'X2' Precast Concrete Box Culvert	l.f.

ITEM #0601220A – 4'x2' REINFORCED CONCRETE CULVERT END

Description: Work under this item shall consist of designing, furnishing and installing a box culvert end constructed of four-sided, steel reinforced, monolithically cast concrete sections with open ends of the size and length shown on the plans. Precast concrete cut off and return wall, reinforcing steel dowels, reinforcing steel bars, threaded inserts, lifting and seating fixtures, non-shrink grout, and all other necessary materials and equipment to complete the work shall also be included.

Materials:

Concrete: The concrete shall conform to the requirements of Subarticle M.14.01-1, as applicable except that the entrained air content requirement shall be eliminated when zero-slump concrete is used.

Reinforcement: Welded wire fabric shall be uncoated and conform to the requirements of ASTM A185 or ASTM A497. Deformed steel bars shall be uncoated and conform to the requirements of ASTM A615, Grade 60.

Threaded Inserts, Lifting Fixtures and Miscellaneous Hardware: All inserts, fixtures and hardware cast into precast concrete components shall have a corrosion-resistant coating or be fabricated from a non-corrosive material suitable for the intended use. The coating shall be either an epoxy material or galvanization, applied mechanically or by the hot-dip process. All hardware shall be as specified on the working drawings.

Gaskets: Gaskets shall be flexible, expanded rubber conforming to ASTM D1056.

Non-shrink Grout: Non-shrink grout shall conform to Subarticle M.03.01-12.

Geotextile: Shall be "Separation (High Survivability)", as listed in the Connecticut Department of Transportation's Approved List for Geotextiles. Torn or punctured geotextiles shall not be used.

Construction Methods: The design and manufacture of the precast concrete box culvert shall conform to the requirements of the AASHTO LRFD Bridge Design Specifications, 5th Edition, with latest Interim Revisions, supplemented by ASTM C1433 with the following additions and revisions:

1. Working Drawings: Before fabrication, the Contractor shall submit working drawings to the Engineer for review in accordance with Article 1.05.02.

Working drawings for all box culverts shall include but not be limited to the following:

Layout plan of box culvert.

Plans and cross-sections showing length, width, height and thickness of walls and slabs.

Type, size, location and spacing of steel reinforcing and inserts for anchoring threaded deformed steel bars. Bending diagrams, material lists and catalog cuts for inserts shall be provided.

Type, size and location of lifting holes and seating fixtures. All fixtures (inserts, etc.) cast permanently into the sections shall be recessed a minimum of ¾". No more than four lifting holes or fixtures shall be located in each box section.

Location and size of all holes cast for grouting deformed steel bars or other reasons as noted on the plans.

Complete details of the lap joints at the end of the box sections, which shall include the type, size and location of gaskets and additional steel reinforcement. Except where shown otherwise, the ends of the box sections shall have lap joints with not less than 1½" of concrete overlap. Each joint shall be provided with a preplaced gasket.

Material designations.

Working drawings for all box sections shall be stamped by a Professional Engineer licensed in the State of Connecticut. Each sheet of the working drawings shall be stamped.

After the working drawings have been reviewed and the Engineer's comments have been appropriately taken into account and implemented, the Contractor shall submit a final submission of working drawings. The final submission shall include one set of full size (approximately 2' x 3') mylar sheets and three sets of half-scale paper copies. Two of the half-scale sets are intended for distribution to the Office of Bridge Safety and Evaluation and the remaining set is intended for the project designer.

Erection drawings shall also be prepared and submitted for review by the Department.

2. Design Computations: With the submission of working drawings, the Contractor shall also submit to the Engineer for review four sets of complete design computations for the box culvert end. These computations shall be stamped by a Professional Engineer licensed in Connecticut.

The box culvert end shall be designed in accordance with the Load and Resistance Factor Design Method (LRFD) described in the aforementioned AASHTO and ASTM specifications. The box culvert shall be designed to support an HL-93 live load for the applicable AASHTO Limit States.

Design, Legal and Permit Vehicle Load Ratings shall be prepared for the box culvert. The live load ratings shall conform to the LRFD method in accordance with the AASHTO Manual for Bridge Evaluation, 2nd Edition. Live Loads, Load Factor Criteria and Analysis Parameters are given in the Table in Appendix A.

Two sets of Inventory and Operating load ratings for the box culvert end shall be submitted in summary form along with computations substantiating the load ratings. One set of Inventory and Operating load ratings will be provided to CONNDOT's Office of Bridge Safety & Evaluation.

3. Length of Sections: The length of each precast end section shall be determined by the Contractor. When laid together, the culvert sections shall satisfy the total length of the box culvert end shown on the plans.

4. Forms and Forming Material: Forms shall be mortar-tight and sufficiently strong to prevent misalignment of adjacent box sections. Forms shall be constructed to allow their removal without damage to the concrete. A positive means of supporting reinforcing cages in place during forming shall be required.

The forms shall not be removed until the concrete is sufficiently strong to avoid possible damage to the concrete. Forms shall not be removed without approval being granted by the Engineer.

All forming materials used for casting cylindrical openings for lifting holes or holes for grouting deformed steel bars shall be removed. All non-plastic material used as forms for casting weepholes shall also be removed.

5. Mixture: The Contractor shall design and submit to the Engineer for review a concrete mix that shall attain a minimum 28-day strength (f'c) as shown on the plans.

6. Placing Concrete: Concrete shall not be deposited in the forms until the Engineer has verified the presence and proper location of the reinforcing steel and other cast-in-place components, and has given his approval thereof.

Concrete shall not be deposited into the forms when the ambient temperature is below 40° F or above 100° F, unless adequate heating or cooling procedures are provided and have been previously approved by the Engineer. The concrete temperature shall be within the range of 60° F to 90° F at the time of placement.

Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and dimension that provides a controlled atmosphere for the protection of both the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is completely under cover.

Void forms shall be held in place against uplift or lateral displacement during the pouring and vibrating of the concrete by substantial wire ties or other satisfactory means as approved by the

Engineer.

The concrete shall be vibrated internally, or externally, or both, as ordered by the Engineer. The vibrating shall be done with care in such a manner as to avoid displacement of reinforcing steel, voids, forms, or other components. There shall be no interruption in the pouring of any of the sections. Concrete shall be carefully placed in the forms and sufficiently vibrated to produce a surface that is free from imperfections such as honeycombing, segregation, cracking, or checking. Any deficiencies noted in the sections may be cause for rejection.

7. Test Cylinders: During the casting of the sections, the Contractor shall make test cylinders under the supervision of a representative of the Department. A minimum of 4 cylinders shall be taken during each production run or as ordered by the Engineer. The dimensions and type of cylinder mold shall be as specified by the Engineer. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to determine the 28-day compressive strength requirements (f′c). Failure of any of the 28-day tests cylinders to meet 90% of the minimum compressive strength requirement may be cause for rejection. The Engineer also reserves the right to request and test core specimens from the sections to determine their adequacy.

8. Repairs: The Engineer shall evaluate the acceptability and the cause of the defects and the service condition of the box section. No repairs shall be done by the Contractor unless permission has been granted by the Engineer. The Contractor shall submit to the Engineer, for review, the proposed methods and materials to be used in the repair operation. All repairs shall be sound and properly finished and cured before the box section is delivered to the job site. The Contractor shall bear the costs of all repair work.

9. Finishing: All exposed, outside surfaces of end sections shall be given a grout clean-down finish in accordance with Subarticle 6.01.03-21 except where concrete will be field cast against the section. Other formed surfaces need not be finished in any specific manner. All fins, runs, or mortar shall be removed from surfaces that will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding.

10. Handling and Storage: Care shall be taken during storage, transporting, hoisting and handling of all box sections to prevent damage. Sections damaged by improper storing, transporting or handling shall be repaired or replaced by the Contractor, as directed by the Engineer and at no cost to the State of Connecticut. All storage and handling operations shall be as directed by the Engineer.

The box sections shall not be removed from their casting beds until the concrete has attained a minimum compressive strength of 75% of the 28-day strength. The box sections shall not be shipped to the job site until the 28-day strength (f'c) has been attained.

11. Installation: The installation of the precast concrete box culvert shall conform to the following requirements:

The installation of the precast concrete box culvert sections shall proceed as required by the sequence of construction, stage construction plans, and the special provisions entitled "Prosecution and Progress" and "Maintenance and Protection of Traffic."

The box ends shall be placed in a manner to best accommodate and facilitate the construction of the cast-in-place concrete headwalls, cut-off walls, wingwalls, etc. No box sections shall be set on cast-in-place concrete without the approval of the Engineer.

The box sections shall be set to the line and grade indicated on the plans or as directed by the Engineer. Placement of the sections shall not start until the Engineer has approved the depth of excavation and the suitability of the foundation material.

The lap joints shall be securely seated together to achieve a silt-tight joint all around. A silt-tight joint is defined as a joint in which the gasket is compressed to a minimum of one half of its

uncompressed width. The gasket shall be uniformly compressed along all vertical and horizontal surfaces. A positive means, through the use of seating devices, shall be used for pulling one section against another to assure an adequate silt-tight joint.

Details for the seating method shall be submitted to the Engineer for review. The lap joints shall be seated such that they make a continuous line of sections with a smooth interior free from irregularities in the invert line.

The top portions of the horizontal lap joints for the roof and floor slabs and the outside face of the vertical lap joints (full height on each side) shall be neatly filled with non-shrink grout after seating the sections. The exposed portions of the lap joints within the haunches or fillets shall also be neatly filled with non-shrink grout. The finished surface shall be smooth and level with the adjacent concrete.

The box sections for multiple barrel culverts shall be placed as detailed on the plans. Slight mismatches along the 1" longitudinal joint may be tolerated by the Engineer provided that the vertical difference between the top surfaces of adjacent sections is 1" or less. The top 2" of the longitudinal joint shall be filled flush with non-shrink grout. The top surface of the non-shrink grout shall be sloped to form a smooth transition to correct any allowable mismatches.

Geotextile shall be placed over all vertical joints. Geotextile shall also be placed over the roof joints of culverts not receiving woven glass fabric. The geotextile shall extend 6" to each side of the joint and be attached to the culvert using silicone caulk.

After its installation, any box section or joint that is, as determined by the Engineer, not acceptable in vertical or horizontal alignment for any reason, including but not limited to settlement, displacement, excess camber or misfit, shall be removed by the Contractor and correctly installed, as directed by the Engineer and at no additional cost to the State.

All fixtures or holes cast into the sections for lifting or seating shall be neatly filled with non-shrink grout. The finished surface shall be smooth and level with the adjacent concrete.

The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall conform to the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions. The grout shall be cured at least 3 days unless determined otherwise by the Engineer.

Method of Measurement: This work will be measured for payment by the number of linear feet of precast concrete box culvert, of the size indicated, completed and accepted and measured in place along the floor at the centerline of culvert. The payment for the Reinforced Concrete Culvert End will be measured by the quantity of units.

Basis of Payment: Payment for this work will be made at the contract unit price per unit "Reinforced Concrete Culvert End", of the size indicated, complete and accepted, which price shall include threaded inserts, non-shrink grout, geotextile, gaskets, precast concrete cut off and return walls and all other materials, equipment, tools and labor incidental thereto.

The contract unit price per unit of "Reinforced Concrete Culvert End" shall also include the costs of preparing and furnishing design computations, working drawings, final drawings, and erection drawings.

Pay Item	Pay Unit
4' x 2' Reinforced Concrete Culvert End	ea.

ITEM #0686250.6A - 6” HIGH DENSITY POLYETHYLENE PIPE - PERFORATED (SMOOTH INTERIOR) - 0’ TO 10’ DEEP
ITEM #0686230.12A - 12” HIGH DENSITY POLYETHYLENE PIPE - 0’ TO 10’ DEEP
ITEM #0686230.15A - 15” HIGH DENSITY POLYETHYLENE PIPE - 0’ TO 10’ DEEP
ITEM #0686230.18A - 18” HIGH DENSITY POLYETHYLENE PIPE - 0’ TO 10’ DEEP
ITEM #0686230.24A - 24” HIGH DENSITY POLYETHYLENE PIPE - 0’ TO 10’ DEEP

All the applicable provisions of Section 6.51 of the Standard Specifications shall apply, except as amended or supplemented herein:

6.51.03 – Construction Methods: Add the following:
The pipe installation will be constructed in accordance with the detail in the plans.

Pay Item	Pay Unit
6” High Density Polyethylene Pipe – Perforated (Smooth Interior) – 0’ to 10’ Deep	l.f.
12” High Density Polyethylene Pipe 0’ to 10’ Deep	l.f.
15” High Density Polyethylene Pipe 0’ to 10’ Deep	l.f.
18” High Density Polyethylene Pipe 0’ to 10’ Deep	l.f.
24” High Density Polyethylene Pipe 0’ to 10’ Deep	l.f..

ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

Description: Work under this section includes furnishing and installation of a seamless elastomeric waterproofing membrane system to the concrete deck as shown on the plans, in accordance with this specification and as directed by the Engineer.

The completed membrane system shall be comprised of three separate layers at a minimum total thickness of 0.120 inch (120 mil) resulting from two equal spray applications over a primer.

Material: The membrane waterproofing system shall be one of the following or approved equal:

1. Eliminator
   Manufacturer: Stirling Lloyd Products, Inc.
   152 Rockwell Road, Building A
   Newington, CT 06111
   Tel: 860-666-5008
2. Bridge Deck Membrane System
   Manufacturer: Bridge Preservation, LLC
   87 Shawnee Ave.
   Kansas City, Kansas 66105
   Tel: 913-321-9006

The membrane system shall meet the following requirements set forth in this specification:

A. Primer

The primer shall be a 100% reactive, acrylic based, two component, spray applied resin capable of full cure in 40 minutes at 20^0C (68^0F).

B. Membrane

The membrane shall be 100% solvent free reactive, acrylic based, two component, spray applied material.

The membrane shall meet or exceed the following properties as related to laboratory prepared samples tested at 20^0C (68^0F) and 24-hour cure where applicable:

PROPERTY	TEST METHOD	UNITS
Gel Time		6-11 minutes
Cure Time		30 minutes
Water Vapor Transmission	ASTM E96	0.3 Perms or less
Adhesion failure in concrete	ASTM D4541	0.7 Mpa (100 psi) or failure
Minimum Tensile Strength	ASTM D638, Method A, Die C	6.4 Mpa (940 psi)
Minimum Elongation at Break	ASTM D638, Method A, Die C	80%
Crack Bridging	ASTM C836	Pass @ 24 cycles, 1.59mm (0.0625 inch) -26^0C (-15^0F)
Ballast Impact	SNCF Test Method	No Damage

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane in accordance with the requirements of Article 1.06.07.

Construction Methods: A Manufacturer's representative shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, the handling, mixing and addition of components and application of the primer and membrane. The representative shall remain on-site until the membrane has fully cured.

The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

1) Job Conditions

A. Environmental Requirements

Application can proceed while air and substrate temperatures are between 0^0C (32^0F) and 40^0C (104^0F) providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the System. The applicator shall follow safety instructions regarding respirators and safety equipment.

B. Safety Requirements

All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

"No Smoking" signs shall be visibly posted at the job site during application of the membrane waterproofing.

Non-related personnel in the work area shall be kept to a minimum.

2) Delivery, Storage and Handling

A. Packaging and Shipping

All components of the System shall be delivered to the site in the Manufacturer's packaging, clearly identified with the products type and batch number.

B. Storage and Protection

The Applicator shall be provided with a storage area for all components. The area shall be cool, dry and out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.

Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

A. Shelf Life - Membrane Components

Packaging of all membrane components shall include a shelf life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

3) Inspection

Prior to priming of the surface, the Engineer, Applicator and Manufacturer's representative shall inspect and approve the prepared substrate.

Random tests for adequate tensile bond strength shall be conducted on the substrate by the Applicator at the job site using an Elcometer Adhesion Tester in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one per 500 m^2 (5000 ft^2), but no less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 0.7 Mpa (100 psi) or failure in the concrete.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied will be removed and a new application effected at the Contractor's expense as directed by Engineer.

Cracks and joints shall be treated in accordance with the Manufacturer's recommendations as approved or directed by the Engineer.

4) Preparation

A. Protection

The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.

B. Surface Preparation

The concrete deck shall have cured for a minimum of seven days in accordance with applicable provisions of Section 6.01.03 of the Standard Specifications.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be performed via detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance.

The substrate shall be inspected after excavation and all spalls repaired prior to placement of the prime coat. Spalls shall be repaired with rapid cure concrete patch materials per the Engineer's and Manufacturer's recommendations.

Voids and blow holes on vertical surfaces shall be repaired in the same manner.

The surface profile of prepared substrate is not to exceed 6 mm (1/4 inch) (peak to valley) and areas of minor surface deterioration of 13 mm (1/2 inch) and greater in depth shall also be repaired.

The extent and location of then surface patches shall require the approval of the Engineer before the System is applied.

There shall be no visible moisture present on the surface at the time of the application of the System. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5) Application

The Contractor shall retain an Applicator who is fully trained and licensed by the membrane manufacturer who has successfully completed at least three spray membrane projects in the past 5 years. The Contractor shall furnish the Engineer with a list of references including contact persons along with addresses and phone numbers of persons who supervised these projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall

have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

B. The System shall be applied in three distinct steps as listed below:

- Substrate preparation
- Priming
- Membrane application

C. Immediately prior to the application of any components of the System, the surface shall be dry and any remaining dust or loose particles shall be removed using clean, dry oil free compressed air or industrial vacuum.

Where the area to be treated is bound by a vertical surface (e.g. curb or wall), the System may be continued up the vertical as necessary.

The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations or as approved or directed by the Engineer.

A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

D. Primer

The primer shall consist of one coat with an overall coverage rate of 3.0-4.3m^2/1 (125-175 ft^2/gal) unless otherwise recommended in the manufacturer's written instructions.

All components shall be measured and mixed in accordance with the Manufacturer's recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions, brush or roller application shall be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

E. Membrane

The waterproofing membrane shall consist of two coats with a film thickness of 1.5 mm (60 mils) per coat and a total of 3.0 mm (120 mils) to achieve an overall coverage rate of 0.32m^2/1 (13.0 ft^2/gal). The waterproofing membrane shall consist of two coats of contrasting colors to aid in quality assurance and inspection.

The membrane shall be comprised of two liquid Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer's recommendations.

The substrate shall be coated in a methodical manner. Checks for wet film thickness shall be carried out typically once every 9m^2 (100 ft^2), where product gel time allows.

F. Repairs

If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g. acetone) up to a width of at least 100 mm (4 inches) on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with a 100 mm (4 inches) overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing one by at least 100 mm (4 inches). Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer's written instructions.

G. Application of Tack Coat

1) A polymer-modified bitumen hot melt adhesive bond tack coat shall be provided by the

waterproof membrane Manufacturer and be fully compatible with the liquid membrane. The tack coat shall be applied as per the Manufacturer's recommendations with all the guidelines regarding surfacing strictly adhered to.

2) The membrane to be coated shall be clean and free from loose debris, moisture, or other contaminants. Oil, diesel fuel, or grease shall be removed with solvent approved by the Manufacturer.

H. Field Quality Control

The following tests shall be conducted by the Applicator or Manufacturer's representative and recorded on a form to be submitted to the Engineer. The testing equipment shall be furnished by the Contractor.

Temperature: Air, substrate temperatures and dew point.

Adhesion Tests: Adhesion tests of the cured membrane to the substrate shall be checked as per (Section 3).

Membrane Thickness: Wet film thickness shall be checked every 9 m^2 (100 ft^2) using a gauge pin or standard comb type thickness gauge during application where membrane gel time permits. Ultrasonic testing, calibrated point-penetrating (destructive) testing, or other methods approved by the Engineer, shall be employed for determination of dry film thickness in the event that rapid set time of the membrane does not for allow for the use of wet film thickness testing methods. Repair of the membrane system following destructive testing shall be in accordance with the manufacturer's recommendations.

Coverage Rates: Rates for all layers shall be monitored by checking quantity of material used against the area covered.

I. Final Review

The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.

Method of Measurement: The quantity to be paid for under this item shall be the number of square yards of waterproofed surface completed and accepted.

Basis of Payment: This item will be paid for at the contract unit price per square yard of "Membrane Waterproofing (Cold Liquid Elastomeric)", complete in place, which price shall include all surface preparation, furnishing and applying the system, quality control tests, and any necessary repairs and remediation work as well as all materials, equipment, tools, labor incidental to this work.

Pay Items	Pay Unit
Membrane Waterproofing (Cold Liquid Elastomeric)	s.y.

ITEM # 0922503A – GRAVEL DRIVEWAY

Description:
Work under this item shall consist of a gravel driveway constructed in the location and to the dimensions and details shown on the plans or as directed by the Engineer and in accordance with these specifications.

Materials:
Gravel shall conform to the requirements of Article M.02.01 for granular fill.

Construction Methods:

1. **Excavation**: Excavation, including removal of any sidewalk, or driveway, shall be made to the required depth below the finished grade, as shown on the plans or as directed by the Engineer. All soft and yielding material shall be removed and replaced with suitable material.
2. **Gravel Surface:** Gravel aggregate shall be uniformly spread to the required depth and thoroughly compacted by multiple passes of a roller weighing (with a mass) of not less than 500 pounds.
3. **Backfill and Removal of Surplus Material:** The sides of the driveway shall be backfilled with suitable material thoroughly compacted and finished flush with the top of the sidewalk or driveway. All surplus material shall be removed and the site left in a neat and presentable condition to the satisfaction of the Engineer. In sections inaccessible to the roller, the gravel and backfill shall be hand-tamped with tampers weighing not less than 12 pounds, the face of which shall not exceed 50 square inches in area.

Method of Measurement: This work will be measured for payment as follows:

1. **Gravel Driveway**: This work will be measured by the actual number of square yards of completed and accepted driveway.
2. **Excavation:** Excavation below the finished grade of the driveway, backfilling, and disposal of surplus material will not be measured for payment; but the cost shall be included in the price bid for the driveway. Excavation above the finished grade of the driveway will be classified and paid for in accordance with Section 2.02.

Basis of Payment: This work will be paid for at the contract unit price per square yard for "Gravel Driveway" complete and accepted in place, which price shall include excavation as specified above, backfill, disposal of surplus material, granular fill, all equipment, tools, labor and materials incidental thereto.

Pay Item	Pay Unit
Gravel Driveway	s.y.

ITEM # 0969060A – CONSTRUCTION FIELD OFFICE, SMALL

Description: Under the item included in the bid document, adequate weatherproof office quarters with related furnishings, materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of the Inspector and others who may be engaged with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	**Small**	**Med.**	**Large**	**Extra Large**
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	400	1000	2000
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by Owner personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the Owner and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel, wiring, outlets, etc., to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

A. 120/240 volt, 1 phase, 3 wire
B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.

After work is complete and prior to energizing, the Town of Watertown Building Inspector must be contacted, 860-945-5264. Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68^{o}-80^{o} Fahrenheit within the field office.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 6 568B patch panel in a central wiring location and Cat 6 cable from the patch panel to each PC station, Smart Board location, Multifunction Laser Printer/Copier/Scanner/Fax, terminating in a (Category 6 568B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a category 5 cable run to the location of the installed data circuit.

The central wiring location will be determined by the Owner's staff or representative in coordination with the designated field office personnel as soon as the facility is in place.

For Small, Medium and Large field offices the Contractor shall run a CAT 6 LAN cable a minimum length of 25 feet for each networked device (including but not limited to: smartboards and Multi-Function Laser Printer/Copier/Scanner/Fax) to LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. For an Extra-Large field office the

Contractor shall run CAT 6 LAN cables from workstations, install patch panel in data circuit demark area and terminate runs with RJ45 jacks at each device location. Terminate runs to patch panel in LAN switch area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The Contractor shall supply cables to connect the Wi-Fi printer to the Contractor supplied internet router and to workstations/devices as needed. These cables shall be separate from the LAN cables and data Jacks detailed above for the network.

The number of networked devices anticipated shall be at least equal to the number of personal computer tables, Multi-Function Laser Printer/Copier/Scanner/Fax, and smartboards listed below.

The installation of a data communication circuit between the field office and the Owner will be coordinated between the Owner's staff or representative and the local utility company once the Contractor supplies the field office phone numbers and anticipated installation date. The Contractor shall provide the field office telephone number(s) to the Owner within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Furnishing Description	**Office Size**			
	Small	**Med.**	**Large**	**Extra Large**
	Quantity			
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-	-	-	1
Personal computer tables (4 ft. x 2.5 ft.).	2	3	5	8
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Conference table, 3 ft. x 12 ft.	-	-	-	1
Table – 3 ft. x 6 ft.	-	-	-	1
Office Chairs.	2	4	8	20
Mail slot bin – legal size.	-	-	1	1
Non-fire resistant cabinet.	-	-	2	4
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Storage racks to hold 3 ft. x 5 ft. display charts.	-	-	1	2
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1	1	2	2
Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.	-	-	1	2
Case of cardboard banker boxes (Min 10 boxes/case)	1	1	2	3
Open bookcase – 3 shelves – 3 ft. long.	-	-	2	2
White Dry-Erase Board, 36" x 48"min. with markers	1	1	1	1

and eraser.				
Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.	-	-	6	6
Coat rack with 20 coat capacity.	-	-	-	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electric wall clock.	-	-	-	2
Telephone.	1	1	1	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8
8 Outlet Power Strip with Surge Protection	3	4	6	9
Rain Gauge	1	1	1	1
Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.	-	-	-	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1
Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f. , 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.	1	1	2	4
Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under Computer Related Hardware and Software.	1	1		
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under Computer Related Hardware and Software.			1	1
Field Office Wi-Fi Connection as specified below under Computer Related Hardware and Software	1	1	1	1
Wi-Fi Printer as specified below under Computer Related Hardware and Software.	1	1	1	1
Digital Camera as specified below under Computer Related Hardware and Software.	1	1	3	3
Video Projector as specified below under Computer Related Hardware and Software.	-	-	-	1
Smart Board as specified below under Computer Related Hardware and Software.	-	-	-	1
Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.	1	1	1	2

Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1
Flip Phones as specified under Computer Related Hardware and Software.	-	-	-	-
Smart Phones as specified under Computer Related Hardware and Software.	-	-	-	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Computer Related Hardware and Software: The Owner and Owner's represantive will supply by its own means the actual Personal Computers for the Owner and Owner's representatives. The Contractor shall supply the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors, and Smart Board(s) as well as associated hardware and software, must meet the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date, at CTDOTs web site http://www.ct.gov/dot/cwp/view.asp?a=1410&q=563904

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Wi-Fi Printer (separate from the Multifunction Laser Printer/Copier/Scanner/Fax), Field Office Wi-Fi, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projector(s) and Smart Board(s) as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Oweer for review and approval. The Wi-Fi Printer, Wi-Fi Router, Flip Phones, Smart Phones, digital cameras, Projector(s) and Smart Board(s) will be reviewed by Owner District personnel or representatives. The Multifunction Laser Printer/Copier/Scanner/Fax will be reviewed by the Owner. The Contractor shall not purchase the hardware, software, or services until the Owner informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation and setup of the field office Wi-Fi, Wi-Fi printer, and the configuration of the wireless router as directed by the Owner. Installation will be coordinated with the Owner and Project personnel.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the Owner, a minimum of 2 working days in advance of the proposed delivery or installation of the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s), as well as associated hardware, software, supplies, and support documentation.

The Contractor shall provide all supplies, paper, maintenance, service and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi, fax machines and other equipment and facilities required by this specification for the duration of the Contract. All repairs must be performed with-in 48 hours. If the repairs require more than a 48 hours then an equal or better

replacement must be provided.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply install and maintain a rain gauge for the duration of the project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rain water from the top of the post into the rain gauge. The Location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches. If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.

B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.

C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

All testing equipment will remain the property of the Contractor at the completion of the project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars ($5,000) in order to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the CTDOT, the Owner, and Owner representatives shall be an additional named insured on the policy. These losses shall include, but not be limited to: theft, fire, and physical damage. The CTDOT, the Owner, and Owner representatives will be responsible for all maintenance costs of CTDOT, Owner, and Owner representative owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current Owner equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the Owner may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the Owner will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the Owner’s representatives, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas

shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer related hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, (Type)," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

Pay Item	Pay Unit
Construction Field Office, Small	Mo.

ITEM # 0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description is supplemented by the following:

GUERNSEYTOWN ROAD

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction on a paved travel path of not less than 10 feet in width. Excepted from this is the period during the allowable period when the contractor is actively working , at which time the contractor shall maintain and protect at least an alternating one-way traffic operation, on a paved travel path not less than 11 feet in width.

The stage construction staging plans contained in the plan set are shown as a means to achieve these goals. The contractor may recommend an alternate means to as long as it meets the criteria contain in this section and ion the limitations on operations. Any alternative staging plan must be submitted to the engineer for review and comment before implementing.

WEST ROAD

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction on a paved travel path of not less than 10 feet in width. Excepted from this is the period during which - the intersection with Guernseytown Road is being constructed at which time traffic will be detoured in accordance with the plans. The length of time the detour can be in effect will not exceed seven (7) days.

ALL OTHER ROADWAYS

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 10 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall maintain and protect at least an alternating one-way traffic operation, on a paved travel path not less than 11 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet and there shall be no more than one alternating one-way traffic operation within the project limits without prior approval of the Engineer.

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 allowed to close said driveways to perform the required work during those periods when the businesses are closed, unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor will coordinate with the owner to determine the time period of the closure.

Article 9.71.03 - Construction Method is supplemented as follows:

EXISTING SIGNING

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

GENERAL

Unpaved travel paths will only be permitted for areas requiring full depth and full width reconstruction, in which case, the Contractor will be allowed to maintain traffic on processed aggregate for a duration not to exceed 10 calendar days. The unpaved section shall be the full width of the road and perpendicular to the travel lanes. 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 (bridge) section by the end of a workday (work night), or as directed by the engineer.

When the installation of the intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall 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 areas and the travel lanes, with drums spaced every 50 feet. At the end of the workday, if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary traversable slope of 4:1 or flatter that is acceptable to the Engineer.

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

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

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

Construction vehicles entering travel lanes at speeds less than the posted speed are interfering with traffic, and 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 posted speeds, in order to merge with existing traffic.

REQUIREMENTS FOR WINTER

Prior to winter, the Contractor shall install the final wearing surface and pavement markings on all sections of roadway repaired during that construction season.

The Contractor shall schedule a meeting with representatives of the Engineer and the Town of Watertown to determine what interim traffic control measures the Contractor must accomplish for the winter to provide safety to the motorist 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 the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

TRAFFIC CONTROL PATTERNS

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

- Speed and volume of traffic
- Duration of operation
- Exposure to hazards

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

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

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

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

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

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

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

PLACEMENT OF SIGNS

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

ALLOWABLE ADJUSTMENT OF SIGNS AND DEVICES SHOWN ON THE TRAFFIC

CONTROL PLANS

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

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

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

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

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

TABLE I – MINIMUM TAPER LENGTHS

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

SECTION 1. WORK ZONE SAFETY MEETINGS

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

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

- Review Project scope of work and time
- Review Section 1.08, Prosecution and Progress
- Review Section 9.70, Trafficpersons
- Review Section 9.71, Maintenance and Protection of Traffic
- Review Contractor's schedule and method of operations.
- Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.

- Open discussion of work zone questions and issues
- Discussion of review and approval process for changes in contract requirements as they relate to work zone areas

SECTION 2. GENERAL

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

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

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

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

SECTION 3. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

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

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

3.c) Stopping traffic may be allowed:

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

3.d) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advanced warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic. If required, traffic slowing techniques may be used and shall include the use of Truck Mounted Impact Attenuators (TMAs) as appropriate, for a minimum of one mile in advance of the pattern starting point. Once the advanced warning signs and the first ten traffic cones/drums are installed/removed, the TMAs and sign crew shall continue to install/remove the pattern as described in Section 4c and traffic shall be allowed to resume their normal travel.

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

3.f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line

traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

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

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

SECTION 4. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

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

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

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

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

SECTION 5. LOTCIP PROJECT SIGN REQUIREMENTS

SIGN PANEL: Signs should be made from suitable materials to perform effectively for a minimum of 3 years. Example of allowable materials include ¾" MDO-EXT-APA Plywood or 0.125-gauge sheet aluminum. The following types of materials shall not be used: mesh, non-rigid, roll-up, corrugated or waffle board types substrates, foam core and composite aluminum sign substrates.

Suitable attachments shall be provided so that the signs can be firmly attached to the sign supports without causing damage to the signs.

Signs may be painted or use non-reflective plastic sheeting. Paint shall be extremely durable, high quality, semi-gloss enamel resistant to air, sun and water. Non-reflective plastic sheeting shall be permanently adhered to the backing. The material shall withstand 3 years' vertical, south-facing exterior exposure.

COLORS: All letters and symbols shall be blue code #0000FF, rgb (0, 0, 255), pantone 294, or approved equal. Background shall be white code #FFFFFF, rgb (255, 255, 255), or approved equal. If plywood is used for the sign panel, the back of the panel shall be painted matte black.

TYPEFACE: Helvetica Medium

SIGN SUPPORT: Sign panels shall be attached to vertical sign support posts. All sign supports shall have breakaway features that meet AASHTO requirements contained in the current "Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals". The breakaway features shall be structurally adequate to carry the sign panel at 60-mph wind loading. Installation shall be in accordance with the manufacturer's recommendations. A minimum 2-ft embedment depth below the ground line is required.

LOCATION: The signs shall be installed in advance of Series 16 signs.

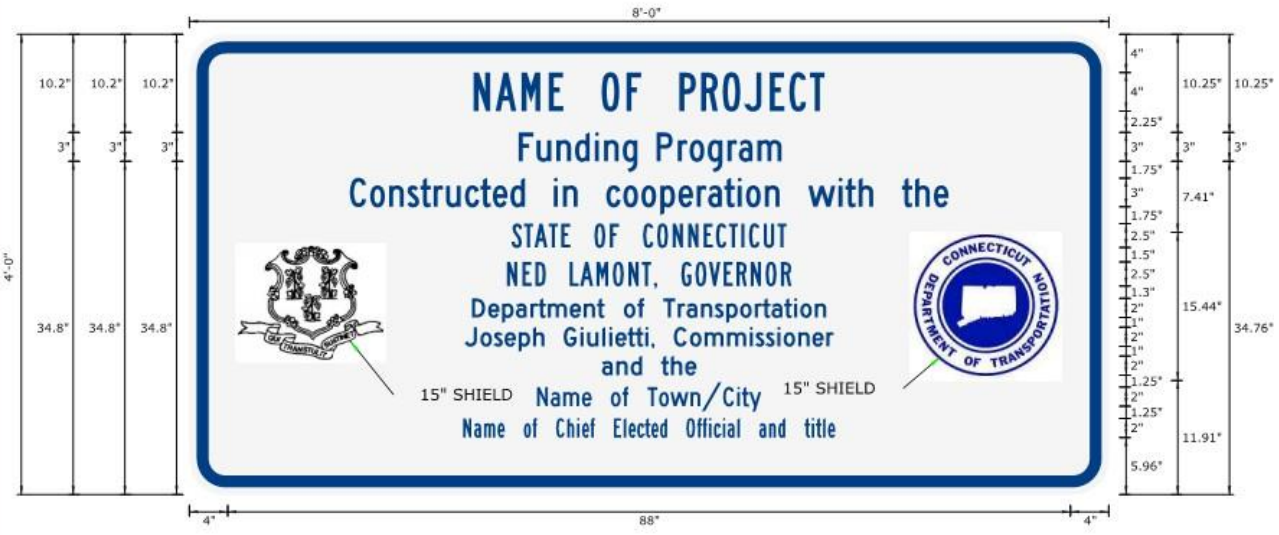
The signs SHALL be installed parallel to the travel way, so they are NOT easily viewable by drivers, as the signs are not MUTCD compliant and are not intended to be roadway signs.

The lateral offset from the edge of road to the face of sign should be 6-12 feet. 12 feet is preferred where space is available for installation. When installed on a trail, the lateral offset should be 2 feet.

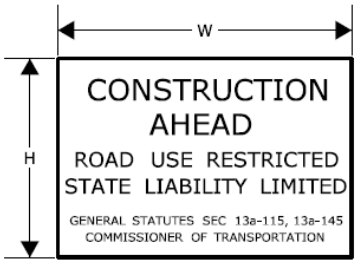
The bottom of the sign should be mounted 7 feet above the edge of road.

DURATION: The signs shall be erected for the life of the construction project. This means that they should be erected only after Notice to Proceed has been given to the contractor and should be removed with all other construction related signs at the end of the project considered to be the point that acceptance of the construction work is given.

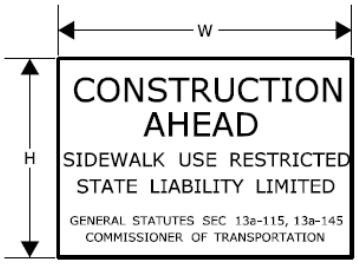
LEGEND: Name of Project: Guernseytown Road Recosntruction
Funding Program: Local Transportation Capital Improvement Program
Name of Town/City: Town of Watertown
Name of Chief Elected Official and title: Robert M. Scannell, Town M



SERIES 16 SIGNS



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



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

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

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

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

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

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

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

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

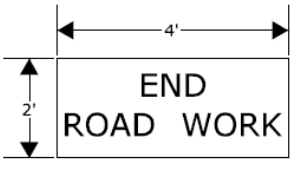
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

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

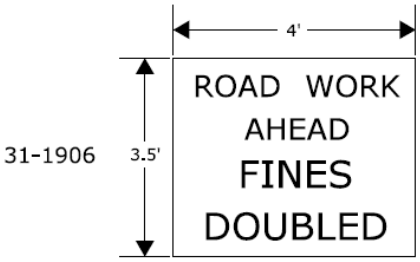
THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

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



80-9612



31-1906

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
REQUIRED SIGNS

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

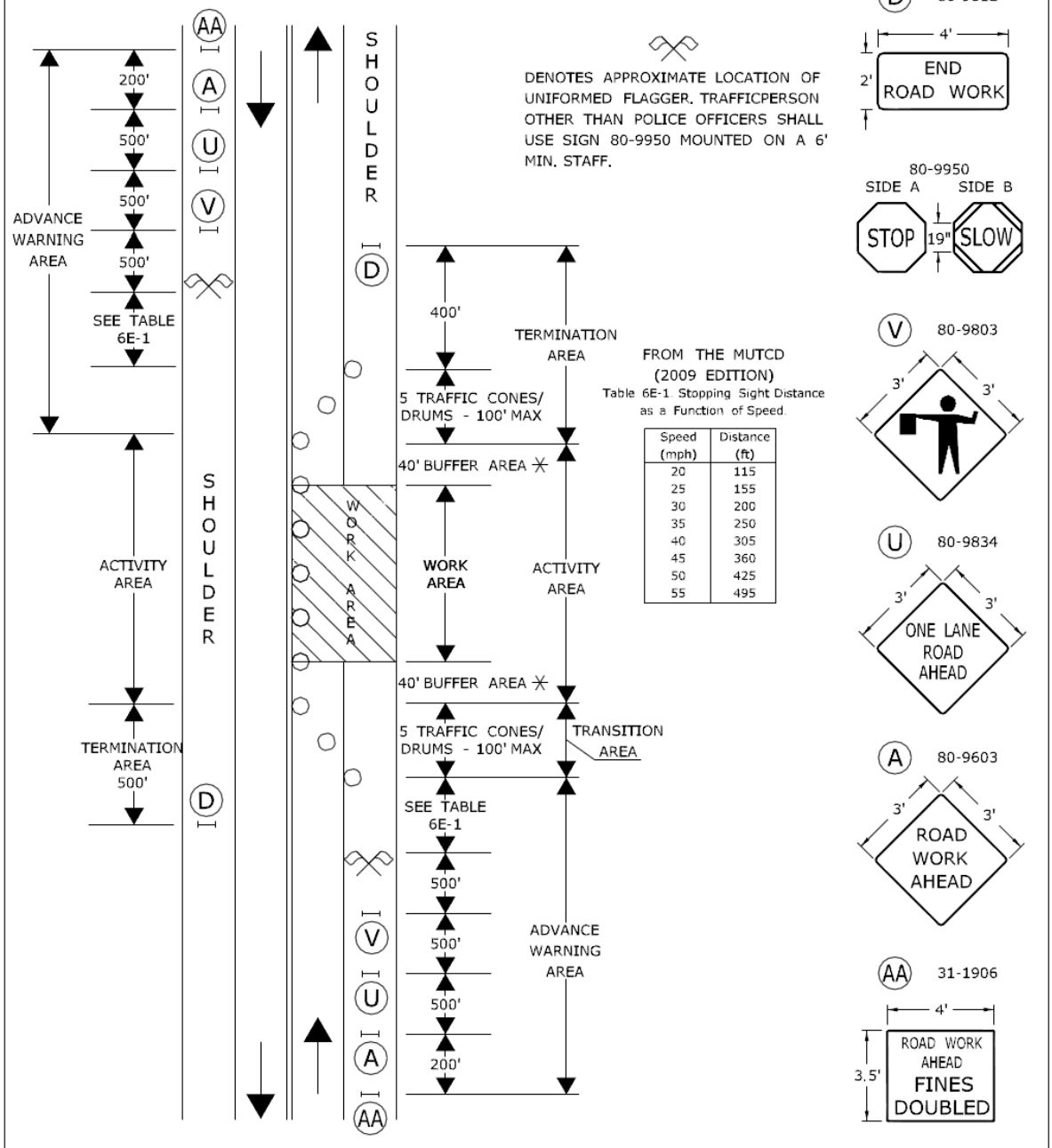
APPROVED

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

PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)



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

○ 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

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

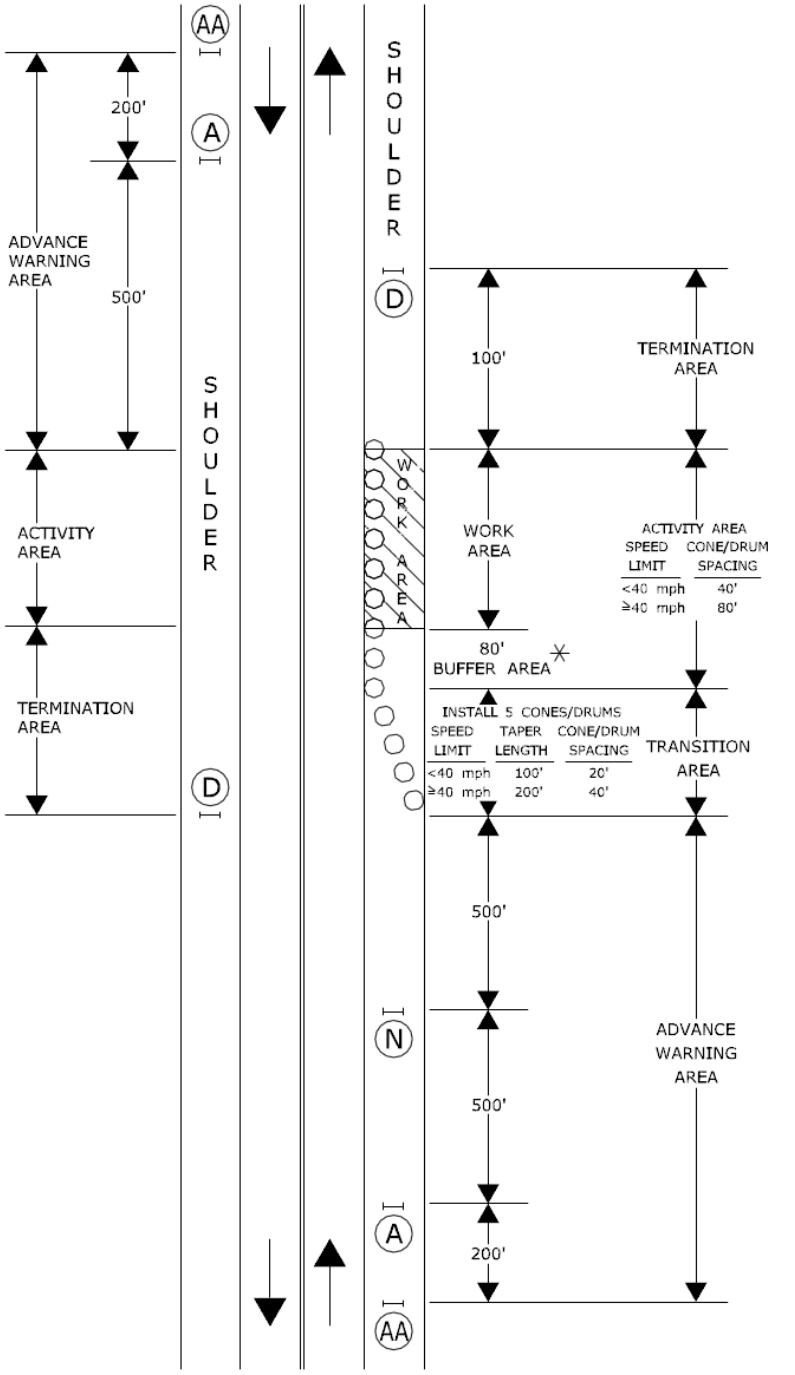
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

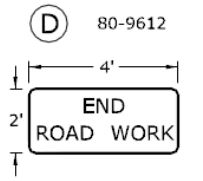
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

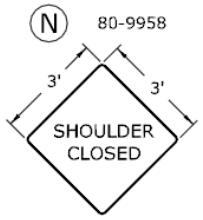
APPROVED Charles S. Harlow 2012.06.05 15:55:45-04'00'
PRINCIPAL ENGINEER

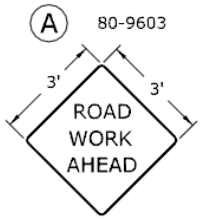
WORK IN SHOULDER - TWO LANE HIGHWAY

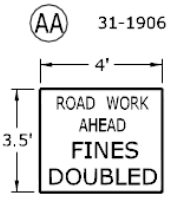
SIGN FACE
71 SQ. FT (MIN.)











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

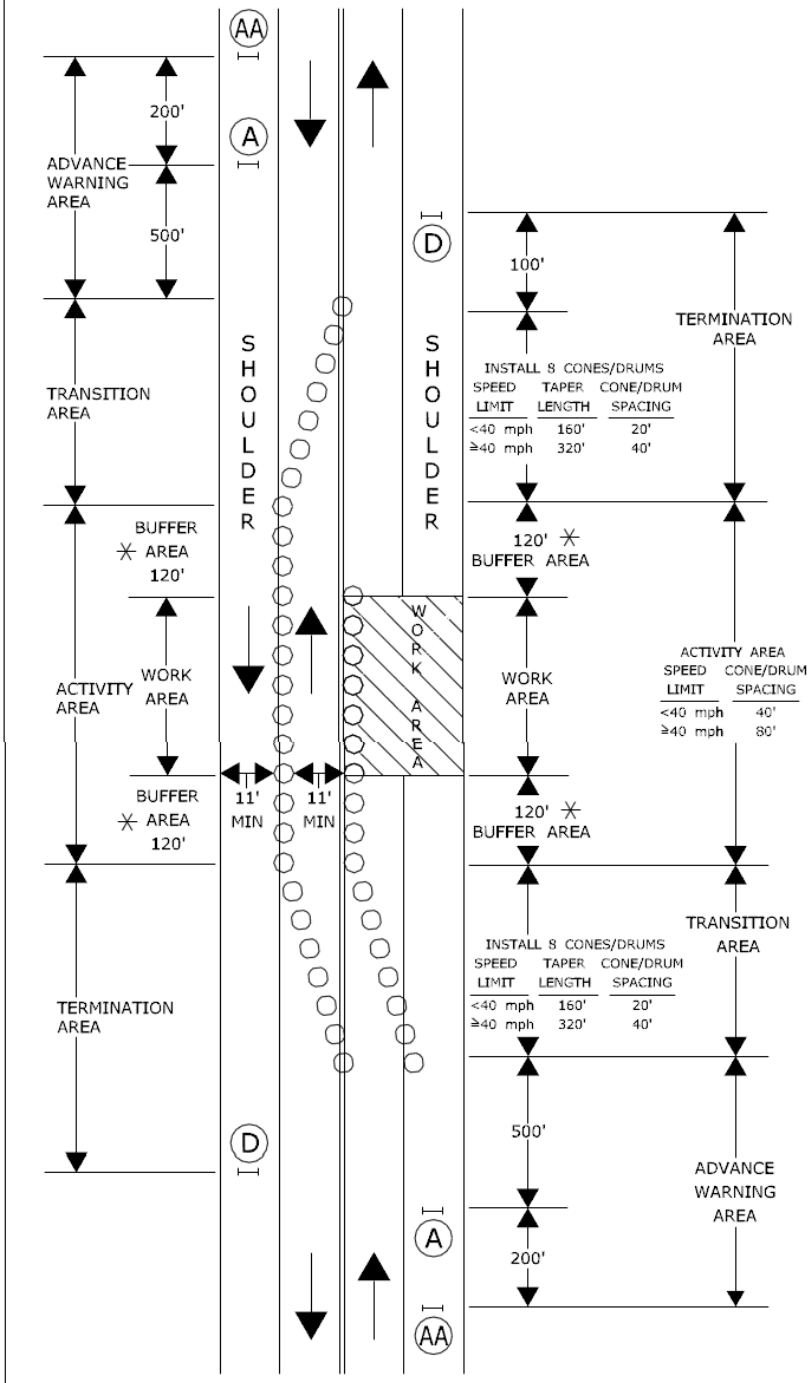
APPROVED

Charles S. Harlow
2012.06.05 15:56:09-04'00'

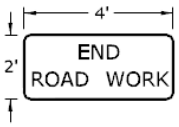
PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)

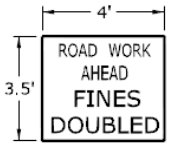


D 80-9612



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

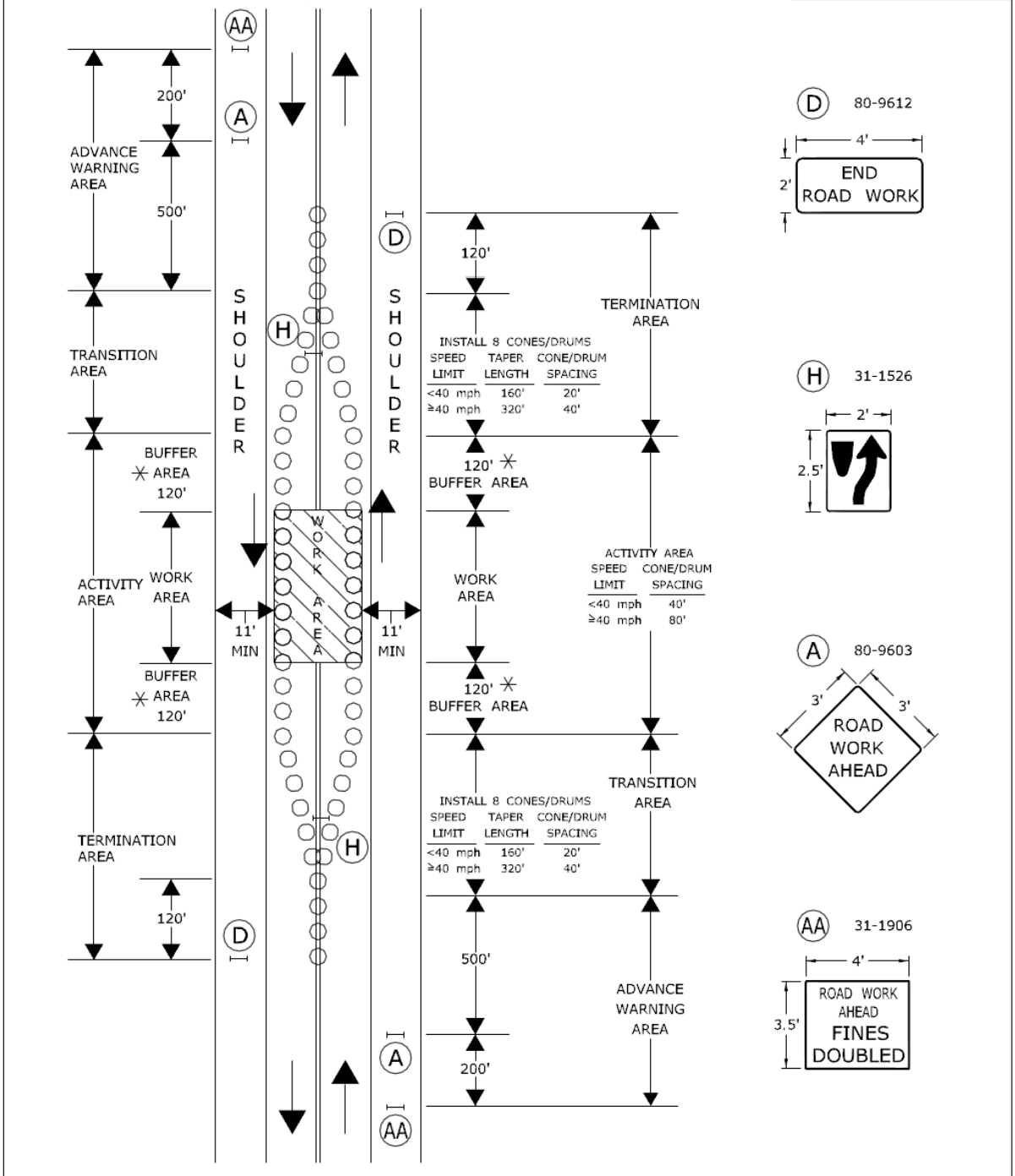
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:29-04'00'
PRINCIPAL ENGINEER

WORK IN MIDDLE OF ROADWAY
TWO LANE HIGHWAY

SIGN FACE
72 SQ. FT (MIN.)



TRAFFIC CONE **OR** TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 16

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

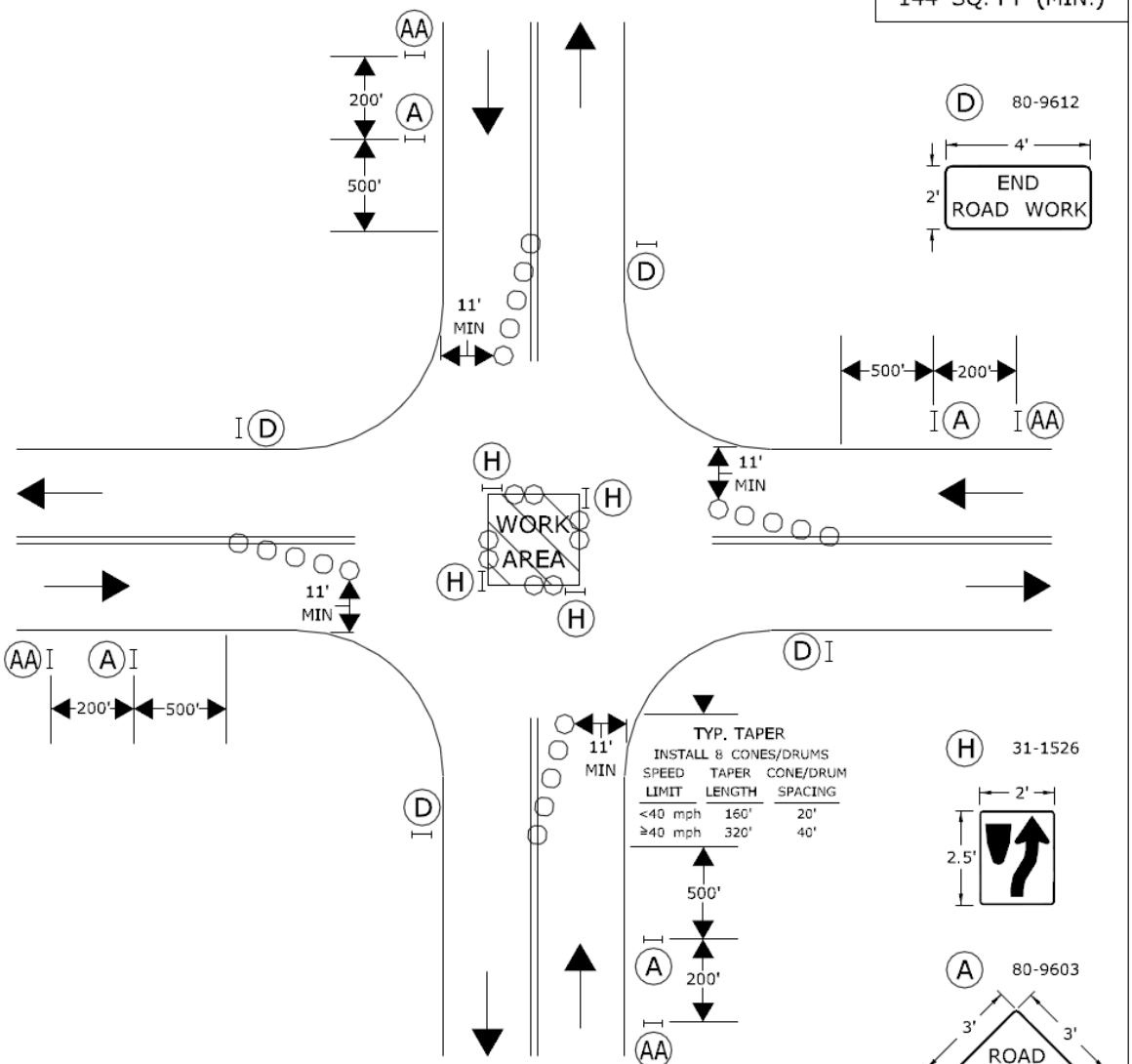
APPROVED

Charles S. Harlow
2012.06.05 15:56:51-04'00'

PRINCIPAL ENGINEER

WORK IN MIDDLE OF ROADWAY AT INTERSECTION

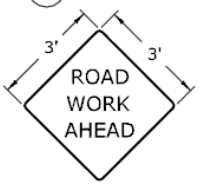
SIGN FACE
144 SQ. FT (MIN.)



D 80-9612

H 31-1526

A 80-9603



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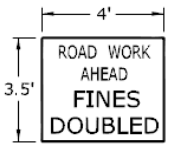

TRAFFIC CONE **OR** TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 17

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

Charles S. Harlow
2012.06.05 15:57:16-04'00'

PRINCIPAL ENGINEER

ITEM #1300102A – 8" DUCTILE IRON PIPE (WATER MAIN)

Description: The Contractor shall furnish and install ductile iron pipe, of the sizes indicated, and all the fittings and appurtenances to the lines and grades shown on the Contract Drawings, complete as shown, specified or directed, including but not limited to; pressure reducing valves, vaults, bends, restraint, blow off assemblies, gate/butterfly valves, air valves, sterilization fittings, tapping sleeves, tapping gates, RCP sleeve, gate boxes, tees, insulation, thrust blocks, reinforcing steel bars at thrust blocks, and anchors, polystyrene, transporting materials, digging test pits, the clearing, trenching, disposing of unused excavated materials, removing and disposing of sections of the present water mains and concrete anchors, furnishing installing and field testing the pipelines complete with pipe restraints, concrete anchor/thrust blocks and utility identification tape, all trenching, rock removal, refilling trenches, filter fabric, furnishing additional material for refilling, trench compaction/testing, bituminous concrete for patching for temporary and permanent surface restoration, miscellaneous grading, sheeting, bracing, pumping and all incidental work where required, to the specifications and details of the District, except as otherwise herein provided for.

Maintain all water services during construction. Provide temporary water source when necessary.

Reference to "WFD" in this Item refers to "Watertown Fire District".

Materials: All materials used shall be from manufacturers and models as specified here in unless otherwise approved by the WFD or the Engineer

Ductile Iron Pipe - Submittals: Six (6) sets of the manufacturer's literature and/or shop drawings for the materials of this section shall be submitted for approval. The Contractor shall furnish detailed drawings as follows and no work shall be fabricated until they have been approved by the Engineer:

1. Dimensions and general details for typical length of pipe.
2. Detail of joint between pipes for both push-on and restrained joints together with installation instructions.
3. Dimensions and general details for all fittings including joint details for both mechanical and restrained joints.
4. Location plans or lists showing number of pipes and fittings and other such information as needed for installation.

Prior to pipe-laying, the Contractor shall dig test pits where the new pipe connects to the present water main to ascertain the location, elevation and cross sectional dimensions of the present mains.

Pipe Specifications: All ductile iron pipe with push-on joints shall be the 60-42-10 grade cast in revolving molds in full accord with the following American National Standard, except for details for the joints and other modifications stated herein: "Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids".

ANSI/AWWA C151/A 21.51, furnished in 18-foot or 20-foot lengths. Push-on joints for such pipe shall be in accordance with ANSI/AWWA C111/A 21.11.

All requirements of the American National Standards Institute Specifications will be rigidly enforced and the foundry shall submit regularly to the Engineer, single copies of the report of tensile tests and low temperature impact tests as required in Section 51-12 and 51-13 of the ANSI/AWWA C151/A 21.51.

The Contractor shall submit to the Engineer a certified statement that the inspection and all of the specified tests have been made and met as required in Section 511.4.2 of ANSI/AWWA C151/ A21.51.

The ductile iron pipe to be furnished under this Contract shall conform to the following dimensions:

Size (Inches)	Thickness (Inches)	Thickness (Class)
6	0.37	54
8	0.39	54

Where shown, specified or ordered, the pipe shall have push-on joints of the type which employs a single elongated, grooved rubber gasket to affect a watertight joint seal. The joints shall conform to the latest American National Standard for "Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings", ANSI/AWWA C111/A21.11, except as otherwise specified herein. The rubber gaskets shall be manufactured from high quality rubber satisfactory to the Engineer and shall be similar to the gaskets used in the Tyton joint as manufactured by the United States Pipe and Foundry Company or the Fastite joint as manufactured by the American Cast Iron Pipe Company or the Grip-Tite joint as manufactured by Griffin Pipe Products Co. or approved equal.

Where shown, specified or ordered, the pipe shall have restrained joints of a type which employs a single elongated, rubber gasket to affect a watertight joint seal. The joints shall conform in general to ANSI/AWWA C111/A21.11. The rubber gaskets shall be manufactured from high quality rubber satisfactory to the Engineer. The restrained joint pipe shall be as manufactured by the American Cast Iron Pipe Company, McWane, Super Lock, TR Flex, or approved equal.

The grooved rubber gaskets and joint lubricant shall be furnished with the pipe and shall be considered included in the price bid per linear feet of pipe. The gasket shall be plainly identified as to pipe size and packaged in a suitable and satisfactory manner for shipment.

Each pipe shall have cast or stamped on it the maker's name or mark, the year in which the pipe is cast, and the letters "DI" or "DUCTILE" as required by the American National Standards Institute Specifications. The weight and thickness class shall be painted on each pipe, as required by the American National Standards Institute Specifications, and a record of weight for each pipe before the application of a lining or coating shall be submitted to the Engineer.

Fitting Specifications: All ductile iron fittings to be furnished under this Contract shall conform to the American National Standard for "Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, for Water and other Liquids", ANSI/AWWA C110/A21.10. In addition to the marking required by the American National Standards Institute Specifications, the year of casting shall be cast on all fittings. Single copies of the results of tests required by the ANSI/AWWA C110-A21.10 shall be submitted to the Engineer.

Bolt holes in the mechanical joint bells of all fittings shall straddle the vertical centerline of the fitting (fitting laying in horizontal position).

Unless otherwise shown, specified or ordered, all fittings shall be mechanical joint (MJ).

Joint Accessories: All joint accessories shall be furnished with each pipe and fitting and shall be plainly identified as to pipe size. A certified statement that all required tests on the joint accessories have been made and met as specified shall be submitted to the Engineer.

Lining and Coating: All pipe and fittings, except sleeves, caps and plugs shall be lined with cement mortar in accord with the American National Standard for "Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water", ANSI/AWWA C104/A21.4. However, linings with thickness twice those specified in Section 4-10.1 shall be furnished. Thickness determinations, in accord with Section 4-9, shall be made on at least one fitting of each type.

All pipe and fittings, including steel sleeves, caps, plugs, tees, bends and reducers, shall be coated inside and outside with an approved bituminous material, neither sufficiently soft to flow when

exposed to the summer sun, nor brittle enough to crack and scale off when exposed to temperatures below freezing.

Coating may be applied by painting, dipping or spraying, but in no case are the pipe fittings or the coating material to be heated to a high enough temperature to be detrimental to the cement lining. In addition, the coating of the interior shall conform to the requirements of ANSI/AWWA C104/A21.1.

The Contractor shall submit to the Engineer a certified statement that the inspection and all of the specified tests have been made and met.

THE FOLLOWING ARE ACCEPTABLE PIPE MANUFACTURERS:

Atlantic States Pipe (McWane)
United States Pipe & Foundry Co.
Griffin Pipe Products, Inc.
Clow Corp. (McWane)
ACIPCO

Inspection: All pipe and fittings shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the foundry by a representative of the District.

Harnessing Specifications: Eyebolts and lacing rods shall be of A-minimum ASTM A 36 steel. All components shall be hot -dipped galvanized.

Retainer glands for mechanical joints shall conform to ANSI/AWWA C111/A21.11 and the following additional requirements:

1. All retainer glands shall be ductile iron and all retaining devices shall be heat treated ductile iron.
2. All retainer glands shall have a minimum rated working pressure of 250 psi.

The retainer glands shall be Megalug Series 1100 as manufactured by EBAA Iron Sales, Inc. Eastland, Texas ,Split, Split Staargrip Series 3100S as manufactured by Star National Products, Houston, Texas or approved equal.

Components of the harnessing system for push-on joint ductile iron pipe shall be in general accord with the above requirements for lacing rods and retainer glands. The harnessing system shall be the Series 1100HD Megalug Harness as manufactured by EBAA Iron Sales, Inc., Eastland, Texas, Split Stargrip Series 3100S as manufactured by Star National Products, Houston, Texas or approved equal.

Rigid Foam Insulation: Use rigid foam insulation of size and type indicated on the Contract drawing or as directed by the Engineer to protect water mains from potential freezing conditions. Rigid foam insulation shall conform to the following: Rigid closed-cell, expanded polystryrene board, 2-inch thick extruded board complying with FS-HH-I-524; Type II, Class B, compressive strength of 30psi, water absorption of 1.0 perm per inch maximum and thermal conductivity of (K-value at 75 degree F) -0.2. All insulation, jacketing, and related materials to be utilized in conjunction with this project shall conform to the Contract Drawings and Specifications and must be submitted to the Engineer for approval prior to use.

Trench Refill: Trench refill materials shall meet the following requirements:

Backfill Material: Backfill Material shall consist of granular soil excavated on site meeting the approval of the Engineer. Materials shall be of such a nature that they will form a stable dense fill. Materials shall not contain stones larger than 6-inch, vegetation, masses of roots, individual roots

more than 12-feet long or more than ½-inch in diameter, trash, clays, or plastic fines. Organic matter shall not exceed two percent (2%). Non-plastic fines (silts) shall not exceed 20 percent (20%).

Pipe Bedding: Pipe bedding shall conform to the requirements of Article M.01.01, Gradation passing through square mesh sieve No. 8, CTDOT Form 818.

Crushed Stone: Crushed stone shall conform to the requirements of Article M.02.01-1 Grading A, CTDOT Form 818 and Sub article M.02.02-2(a), CTDOT Form 816, for loss on abrasion.

Granular Base: Granular base shall conform to the requirements of Article M.02.03, Grading "C", CTDOT Form 818.

Sand: Sand shall conform to the requirements of Sub article M.11.04c, CTDOT Form 817.

Utility Identification Tape: Utility identification tape shall be 6-inch wide non-detectable, designed to withstand extended underground exposure, colored blue and be durably imprinted with an appropriate warning indicating the presence of the buried pipe.

Ductile Iron Pipe and Fittings: Refer to the "Ductile Iron Pipe (Water Main)" specification.

Gate Valve, Extension Stem and Gate Box: Refer to WFD Detail.

Gate Valves – 3 inch through 8 inch: Resilient Seated Gate Valves shall be manufactured and tested to the requirements of AWWA C509-01 and C500-03 as applicable, shall be ductile iron with a working pressure of 250 psi, a test pressure of 500 psi, and shall have mechanical joint ends conforming to the requirements of ANSI 21.11/AWWA C111. This pressure rating shall be cast on the outside of the valve. The valve body and bonnet shall be coated on all exterior and interior surfaces with a fusion bonded epoxy conforming to the requirements of AWWA C550-90.

Valves shall be resilient-seated, non-rising stem with 2" square nut and open left (counterclockwise). All surfaces of the solid ductile iron gate, including the stem hole, shall be encapsulated in SBR rubber tightly bonded to the gate. No bare metal shall be left exposed. Both the rubber and the adhesive must meet or exceed all the requirements of AWWA C509 (3" gates shall be bronze). Stem seal shall be O-Ring packing designed for renewal under line pressure in the full open position.

The stuffing box and bonnet bolts and nuts shall be 304 stainless steel. The valve body and bonnet shall be A536 ductile iron.

In order to assure compliance with AWWA and other applicable standards, and access to the manufacturing facilities for inspection purposes, and assure timely shipment and delivery, all valves must be manufactured, assembled and tested in plants located within the continental United States. Existing valves to be abandoned shall be indicated on the contract documents and/or as directed by the Engineer.

Existing valves that require removal from an abandoned water main and salvaging as required by the contract documents and/or as required by the Engineer shall be cleaned and left on the project site for pickup by the WFD.

Line Stops: Line Stop sleeves where shown on the plans shall be of the mechanical joint type of epoxy coated carbon steel construction for installations on ductile iron pipe. I. Follower ring gaskets shall be of molded rubber. Bolts and nuts shall be of corrosion resistant material. Line stop sleeves shall be manufactured by the manufacturer of the line stop equipment and shall be Smith Blair 687 line stop, Hydra-Stop HSF 250 line stop, or approved equal.

The tapping and line stopping shall be accomplished utilizing specialized machinery and methods and shall consist of tapping sleeves permanently attached to the pipeline, plugs and blind flanges for permanently plugging the outlet of the tapping sleeve, temporary tapping valve, tapping machine, and line stopping machine. Tapping and line stopping equipment shall include all accessories

required to successfully perform the work described here in.

The tapping sleeve for the cast iron pipes which are not of standard diameter shall be of shop fabricated carbon steel construction consisting of three parts, the top and bottom saddle sections and the nozzle. The fittings shall be full encirclement type. The top and bottom saddle sections shall be shaped to accurately fit around the pipelines in such a manner that they will provide structural support for the existing pipe sections after removal of the tapping coupon.

The top saddle section shall bear against the pipe wall and clamp around the pipe to provide structural reinforcement for the portion of the pipe to be removed. The thickness of the tapping sleeve components shall be based upon the design calculations for the operating pressure of the pipe system and the grade of the steel used for the sleeve. Material shall be ASTM A283 Grade C, ASTM A36, or equal. All weldments shall be braced and stress relieved. The top saddle section shall fit essentially half the circumference of the pipeline to provide support and structural integrity to the remaining portion of the existing pipeline.

The top saddle shall incorporate a gasket to be placed against the existing pipeline to seal between the saddle and the pipeline. Gaskets shall be molded from elastomer compounds that resist compression setting and are compatible with potable water in the 32 to 140 degrees F temperature range.

The bottom saddle section shall fit essentially half the circumference of the pipeline. The section shall be of continuous steel plate or individual bands shaped to accurately fit the pipe circumference.

The top and bottom saddle sections shall be joined to clamp against the pipe wall with a sufficient number and size of bolts for the specified operating pressure.

The nozzle section shall be of the same nominal pipe size as required for the line stop machine. The nozzle shall be ASTM A283 Grade C, ASTM A36, or equal. All weldments shall be braced and stress relieved. The nozzle outlet shall be flanged with flange dimensions conforming to ANSI B16.5, 150 lb pattern. The nozzle shall bear against the exposed pipe. The nozzle shall incorporate a gasket to be placed against the existing pipe to seal between the nozzle and the pipeline. Gaskets shall be molded from elastomer compounds that resist compression setting and are compatible with potable in the 32 to 140 degrees F temperature range.

Line stop sleeves and valves shall be designed for working pressure of 200 psi and shop tested at 400 psi. The line stop sleeve shall be tested in place to a minimum of 200 psi, for a minimum of 60 minutes with no loss of pressure. If the sleeve fails the 200 psi pressure test, the original failed sleeve shall be replaced with an entirely new sleeve.

The completion plug shall be machined from a stress relieved carbon steel plate. It shall contain two circumferential grooves; one to receive the locking devices from the nozzle flange, and the second to contain a compressible O-ring to seal pressure tight against the bore of the flange.

Upon completion of the work, the line stop nozzles shall be closed with a blind flange placed over the completion plug. Facing and drilling of the blind flange shall be compatible with the nozzle flange. Minimum blind flange thickness shall be AWWA C207, Class D. The blind flange shall include a minimum 1 inch NPT tapped outlet with plug to allow pressure testing of the complete plug.

The tapping sleeves, completion plug, and blind flange shall be designed for permanent installation in the pipeline and provide permanent plugging of the temporary tap. As such, the tapping sleeve components shall be manufactured of corrosion resistant materials, or shall be treated to enhance corrosion resistance.

Valve Boxes: Valve boxes shall be ductile or cast iron (2) two piece, Buffalo type, round body, heavy pattern, adjustable of the sliding type with at least 10-inch overlap of top section over the

other with flanged top section. The covers shall have the word "WATER" cast in the top. Extensions shall be provided. Boxes shall be made in North America.

Concrete anchor/ Thrust blocks: Anchors and thrust blocks shall be Class "A" concrete conforming to Article M.03.01.

Reinforcing Steel Bars: Reinforcing steel bars shall be ASTM A615 Grade 60 conforming to Article M.06.01.

Harnessing: Refer to WFD Detail.

Filter fabric: Fabric shall conform to Article M.08.01-26.

Utility Identification Tape: The tape shall be 4-inches wide, designed to withstand extended underground exposure, colored blue and be durably imprinted with an appropriate warning indicating the presence of the buried pipe.

Expansion fittings shall be conforming to the material properties of ANSI/AWWAC153/A21.53. All expansion joints shall be capable of expanding or contracting to the amounts shown on the drawings, or indicated in the specifications, but in no case shall there be less than 4" total axial movement. Separation beyond the maximum extension of the expansion joint shall be prevented without the use of external tie rods. Each expansion joint shall be pressure tested against its own restraint to a minimum of 350 psi. The approved joint restraint shall be provided with each mechanical joint connection. All pressure containing parts shall be lined with a minimum of 15 mils of fusion bonded epoxy, conforming to the applicable requirements of ANSI/AWWA C213, and shall be tested with a 1500 volt spark test conforming to stated specification.

Construction Methods:

Transporting and Distributing Pipe: The Contractor shall transport the pipe and fittings from the place of manufacture, shall secure all permits which may be necessary, and comply with the requirements of the Connecticut Bureau of Highways, Cities and Towns, concerning heavy transporting over State, City and Town highways.

During loading, transportation and unloading, more than ordinary care shall be taken to prevent injury to the pipes. Such work shall be done with each section of the pipe under full control at all times and under no condition shall a pipe be dropped on the ground. Pipes shall be placed on sand beds or other methods may be employed to avoid chances of pipe being frozen to the ground surface.

In distributing the pipe in the field, as permitted, each piece shall be placed as near as possible to the point where it is to be installed and faced in the proper direction. In case any pipe received damage from handling or other cause and made unacceptable to the Engineer, it shall be replaced with a new pipe at the expense of the Contractor. The Contractor is cautioned that, City, or Town authorities may not permit storing pipe, etc., within street or highway limits.

Clearing Trees and Bushes: No trees within streets and highways, or adjacent to the normal trench therein, shall be damaged or removed. In streets and highways where there is no permanent paving, the Contractor shall, unless otherwise directed, remove and dispose of only those trees, bushes or shrubs required for construction and approved by the Engineer. The unlimited removal of trees and brush will generally not be required or permitted. All trees, bushes or shrubs which are not to be removed shall be preserved and protected by the Contractor. Should any trees, bushes or shrubs, which are to be preserved and protected, become damaged by the conduct of the work, the Contractor shall replace them at his own expense. Brush, small branches, trash, large trunks, stumps and all other surplus material and debris shall be removed from the site of the work.

Trenching: Prior to any excavation, the Contractor shall notify all affected utilities in accord with Public Act 77-350 (CALL BEFORE YOU DIG 1-800-922-4455).

The trench for the pipe shall be 18-inches beyond the outside of the barrel of the pipe on each side, the top of the barrel of the pipe shall be as shown on the Contract Drawings or as directed by the Engineer; and the bottom of the trench shall be at the bottom of the pipe. The Contractor alone shall be responsible for the stability and safety of the trenches and adjacent structures, and shall use such trench support and bracing as necessary without additional payment therefor. Pavement cuts shall be made with the edges reasonably smooth and without cracking or damage to the pavement outside the limits of the portion excavated. The methods used and the location of such cuts shall conform to the requirements and specifications of the City. Repairs to pavement shall be made in accordance with the requirements and specifications of the City.

In any area to receive fill, no pipe trench shall be excavated until the fill has been placed and compacted to a level at least 3-feet above the top of the pipe to be installed.

The Contractor may be required to excavate locally to determine the location and depth of existing underground structures on the lines of the pipe well in advance of the pipe laying. There will be no additional payment for this work, including backfilling and temporary surfacing.

Sheeting, Bracing and Pumping: The Contractor shall furnish and put in place such sheeting and bracing as may be necessary, to support the sides of the excavation, to prevent undermining of the pavement or to protect from possible injury any pipes, sewers, ducts, poles, conduits or other structures existing in the streets, or highways, and shall remove such sheeting and bracing as the trench is refilled unless the Engineer shall order it left in place.

The Contractor shall maintain all excavations in proper condition for carrying on the work, and to this end shall do all bailing, draining, or pumping which may be necessary to keep the trenches or other excavations free of water. No direct payment will be made for this work but the cost thereof will be considered as having been included in the price bid per linear feet of pipe.

If the Contractor installs and operates well points on any section of the work, the expense of the same shall be borne by the Contractor.

Protection of Pipes, Drains, Culverts, etc.: All existing gas pipes, water pipes, sewers, drains, manholes, catch basins, culverts, electrical conduits, telephone ducts, utility poles or other structures which are uncovered by the excavation, and which do not, in the opinion of the Engineer, require to be changed in location, shall be carefully supported and protected from injury by the Contractor; and in case of damage, they shall be restored by him without compensation; therefore, to as good condition as that in which they were found and shall be kept in repair during the existence of this Contract.

Unless shown otherwise on the Contract Drawings or directed otherwise by the Engineer, the pipeline shall be installed a minimum of four (4) feet – six (6) inches below finished grade. The pipeline shall also be installed to provide at least eighteen (18) inches of vertical clearance between the water pipe and storm drains or sanitary sewers

Laying Ductile Iron Pipe: Proper and suitable tools and appliances for safe and convenient handling and laying of pipe shall be used, and care shall be taken to prevent the coating of the pipe from being damaged, particularly on the inside of the pipes. The Contractor shall not start any pipe work until he has satisfied the Engineer that he has on hand and available the following minimum equipment:

1. Wheel pipe cutters, hydraulic pipe cutter or a pipe saw for the sizes of pipe to be laid;
2. Ratchet type socket wrenches for mechanical joint bolts and nuts;
3. At least two expandable pipe stops of the proper size for closing the end of the pipe being laid when not actually laying pipe.

All pipes shall be carefully examined for defects and no pipe or other casting shall be laid which is known to be defective, and should any defective pipe or other casting be discovered after being laid, it shall be removed and replaced with a sound casting at the expense of the Contractor.

Pipe located on the bridges shall be carefully cut to length and carefully installed to insure proper positioning of joints between pipe support assemblies.

The pipe shall be laid upon sound soil, cut true and even so that the barrel of the pipe will have a bearing for its full length. In the event the trench is excavated below the grade of the bottom of the pipe, the trench will be brought up to grade with acceptable crushed stone or processed gravel, pneumatically tamped, at the expense of the Contractor, before the pipe is laid.

The utility identification tape shall be place approximately two (2) feet above the top of the pipe.

When not actually laying pipe (e.g. overnight, weekends, holidays, etc.) the open ends of the pipe shall be kept plugged with approved watertight night caps furnished by the Contractor.

The Contractor shall take all necessary precautions to prevent water from entering the pipe during installation of the pipeline.

Unless shown otherwise on the Contract Drawings or directed otherwise by the Engineer, the pipeline shall be installed a minimum of four (4) feet - six (6) inches below finished grade. The pipeline shall also be installed to provide at least eighteen (18) inches of vertical clearance between the water pipe and storm drains or sanitary sewers.

Cutting Pipe: Whenever the pipes require cutting, an approved saw, wheel, or hydraulic type cutter shall be used. This work shall be done by the Contractor without extra compensation, in a manner satisfactory to the Engineer, and only experienced men shall be engaged thereon.

Joints: On pipe with rubber gasket push-on joints, the gasket shall be installed in the socket of the pipe previously laid and the gasket then lubricated. The plain end of the pipe being laid shall then be inserted and pulled or pushed to the full depth of the socket. An approved jack-type tool shall be used to assemble pipe 10-inchs and larger. Plain ends of cut pipe shall be filed or ground to a taper to prevent damage to the gasket during insertion.

On fittings, butterfly and gate valves with mechanical joints, the follower ring and rubber gaskets shall be placed on the plain end of the pipe being (or previously) laid and entered into the socket of the fitting. The gasket shall then be evenly seated in the socket, the follower ring moved up to the face of the gasket and the "T" bolts inserted and made finger tight. The "T" bolts shall then be tightened with a ratchet or torque wrench to between 60 and 80 foot-pounds. See U-03 for additional joint requirements.

Joint Restraints: Where and as shown on the Contract Drawings, or as directed by the Engineer, retaining glands or eye bolts and lacing rods shall be installed with the standard lacing details shown for mechanical joint pipe or fittings.

The retaining glands shall be installed in lieu of the standard mechanical joint gland. The "T" bolts shall be tightened with a ratchet or torque wrench to between 60 and 80 foot-pounds. Only then shall the set screws be tightened to a maximum of 70 foot-pounds, tightening 180 degrees apart and making a final check with the wrench to ascertain that all set screws have 70 foot-pounds. The joint is then complete. Torque settings shall be done with the pipe laid in the trench in place.

Retaining glands shall also be installed adjacent to the pipe bells. No "T" bolts will be installed; however, the set screws will be installed as above.

The standard mechanical joint gland placed behind the pipe shall be installed snugly against the back of the bell to preclude movement. No "T" bolts will be installed on this gland.

Other special lacing or harnessing, if shown on the Contract Drawings, or directed by the Engineer shall be installed by the Contractor to the satisfaction of the Engineer.

Refilling Trenches: As soon as practicable after the pipes have been laid, the trenches shall be refilled at least to a level 2-feet above the top of the pipe with approved gravel, deposited in layers no more than 6-inchs in depth and satisfactorily compacted with pneumatic hand tampers, each layer to be leveled and

thoroughly compacted to the satisfaction of the Engineer before the next layer is deposited. There will be no additional payment for necessary borrow to refill to this level. Special care shall be taken to consolidate the gravel under the pipes and the whole work of refilling shall be done in a manner which will prevent subsequent settlement and injury to the pipe. Above this level except for the surfacing material, the Contractor may use approved material from the trench excavation.

Line Stop: Submit measurements of pipe outer diameter verified by test pit and complete detail drawings and design calculations of the proposed thrust block design for restraining the tapping sleeve and line stop.

After completion of the tap, submit the coupon removed to the Owner.

Except for the segment of pipe between the line stop and existing valves closed for water main shut downs, flow in the pipeline shall not be stopped, and the pipeline shall not be drained during any portion of the tapping and line stopping operation.

Upon completion of the connection, testing and acceptance of the work, remove the line stop and plug the tapping sleeve branch outlet.

The Contractor shall employ a specialty subcontractor to perform the tapping and line stopping work. The subcontractor shall have demonstrated experience with tapping and line stopping work of pipelines for a minimum of 5 years. The subcontractor's demonstrated experience shall be on water mains of similar material and size as the pipelines on this project.

A concrete encasement shall be installed around each completed tapping sleeve following successful pressure testing of the completed sleeve installation but prior to installation of the tapping machine and start of the tapping operation. Concrete and reinforcement shall be as specified in Item 601 (Concrete for Structures) of the Standard Specifications. The encasement shall provide support for the pipe, support the weight of the tapping and line stopping machines and provide thrust restraint for the pipe. The encasement shall be constructed in accordance with the subcontractor's recommendations and designed for the operating pressure of the pipeline. Provide additional thrust restraint as required to prevent movement of the pipe and joint failure. For the design of the encasement and restraints, it shall be assumed that the existing joints of the pipeline provide no thrust restraint.

The work of the line stopping shall be done with the pipelines filled and under pressure. Service in the pipelines shall not be interrupted.

The Contractor and his subcontractor shall be responsible for providing all necessary thrust blocks to properly restrain the tapping sleeve and line stop assembly. The means and methods of thrust restrain shall be submitted to the Owner and Engineer for review and comments prior to execution of the work. The installation and function of the thrust restraint system.

The tapping operation shall proceed approximately as follows:

1. Perform an initial field inspection of the pipe to receive the tap under the supervision of the Engineer to verify the location of the line stop tap and determine its exact pipe dimensions (diameter and ovality) for shop fabrication of the tapping sleeve components.

Place a minimum of a 2 inch blowoff in the area of the line stop.

2. Install the sleeves and bolt in place. Power wire brush and grind the exterior surface of the main to remove any debris, corrosion deposits or other surface. Disinfect as specified herein the surface of all components of the tapping sleeve, valve, piping and tapping equipment that will come into contact with potable water prior to the installation of the tapping sleeve and valve.
3. Prepare the coupon to be removed from the pipe by the tapping operation such that the coupon will be retained by the tapping machine and removed from the line. None of the cut

material shall remain in the pipeline.

4. Install the tapping nozzle in place. Install the tapping valve and pressure test the nozzle and tapping saddle to the operating pressure of the line using caution to not exceed the collapse pressure of the pipeline. The Engineer shall witness the pressure test. Upon successful completion of the pressure test, install the concrete encasement around the tapping sleeve.
5. Install the tapping machine. The tapping machine cutting component (shell cutter and pilot drill) shall be designed to provide a clean cut of the pipe wall and to retain the cut coupon for removal. Upson approval from the Engineer, perform the tap and withdraw the cutter.
6. The line stop shall consist of a folding plugging head that contains an elastomer sealing element. The element shall be monolithically molded from a polyurethane compound suitable for water service. The element shall be in a flat plane perpendicular to the flow in the pipeline when the plugging head is in the full open position. The plugging head shall have a sealing element to seal against the inside of the pipeline when in the full open position. The plugging head shall be advanced into and retracted from the main by means of a linear actuator. When retracted, the plugging head and carrier shall be housed in an adapter, bolted pressure tight between the tapping valve and actuator.
7. Upon closure of the main pipeline with the line stop, work on the main pipeline shall proceed as expeditiously as possible. Prior to open cutting the main pipeline, install a 1" inch test tap into the segment between the line stop to demonstrate the effectiveness of the shut down and provide a drain. The main pipeline shall be drained and opened at each end of the segment to be removed of construction and acceptance of the new piping and valves, the line stops shall be removed. A permanent blind flange shall be placed on the outlet of each tapping sleeve. All components of the tapping sleeve shall receive a coat of coal tar epoxy to a minimum cured thickness of not less than 0.020-in.

Trench Backfill: Backfill above the 24-inch level will comply with and be paid for under the appropriate items included in this Contract.

Frost in Trench or Refill: Every effort shall be extended to eliminate the presence of frost in the bottom and sides of the trench and refill material. The Contractor shall cover and heat the trench or take such other means as necessary to eliminate the frost and chance of subsequent pipe settlement.

Cleaning: Prior to the installation of the pipeline, the Contractor shall clean the interior of the pipelines to the satisfaction of the Engineer, by such means as the Engineer approves.

Filling, Sterilizing and Flushing: At the location(s) as shown on the Contract Drawings or as ordered by the Engineer, the Contractor shall install an appropriately sized chlorination inlet, chlorination blow-off and sterilization sampling connection point on the crown of the pipe for sterilization testing. All costs for providing and installing said fittings shall be included in the unit price bid per foot of pipe or pipeline installed. As soon as practicable after the Contractor has completed installation of the pipeline to include a successful leakage and hydrostatic test, the WFD will fill, and flush the pipeline. The Contractor shall supply labor to assist the WFD in filling and flushing the pipeline. If the pipeline is not connected to an existing operating water main, the Contractor shall furnish all labor, materials, equipment, at no extra cost to the WFD or Town to temporarily connect a WFD water main to the pipeline to be tested. The Contractor will not be charged for the WFD water used in this operation. The Contractor shall be responsible for labor, equipment and material necessary for erosion control.

Subsequent to sterilizing and flushing the water main(s), the WFD will test the water in accord with required state regulations. Should the water fail to pass the required tests and it is determined that the failure was caused by the Contractor's operations, all costs for re-sterilization, re-flushing, re-testing, etc., shall be borne by the Contractor.

The Contractor will attempt to minimize any damage to the road work that may occur during the flushing operation; however, he shall repair any such minor damage and the cost thereof will be considered as included in the price bid per linear feet of pipe.

Disinfecting and Flushing Water Mains Continuous Hypochlorite Feed Method

The work specified in this section describes continuous feed method of disinfecting newly constructed potable-water mains. The Contractor installing water mains and appurtenances such as pipe, valves, fittings and accessories within the WFD service area is responsible for disinfecting the water main and pipe sections. The WFD requires the Contractor to adhere to the strict standards stipulated in latest edition of AWWA C601, "Standard for Disinfecting Water Mains" when performing disinfection procedures. The standards represent the physical, chemical and bacteriological parameters that must be satisfied prior to determining if newly installed water mains can be placed into service.

The Contractor installing water mains and appurtenances within the District service area is responsible for all operations related to disinfecting water mains and pipe sections except working on the existing water distribution system. The gates within the existing water distribution system shall be operated only by the WFD.

The Contractor shall be required to issue a submittal for the subcontractor that will be performing the chlorine injection. The submittal shall include a minimum of three disinfection jobs of equal size and scope within the last two years and three references with contact information to establish the minimum level of required experience to perform the chlorine injection on the project. The Contractor shall be allowed to proceed with the implementation of this Section only if the submittal has been approved by the WFD.

After flushing and subsequent to performing the disinfection operation, the WFD will collect and analyze two complete sets of water samples**.** The two sets of water samples will be collected approximately twenty-four hours apart from each other. The first sample will be taken 2 hours after flushing and the second sample 24 hours after the first sample. Anticipate approximately two business days for sampling and test results. The WFD will compare the results from the water samples collected to the maximum allowable limits for each parameter. If all parameters are satisfactory then the water main is considered to have passed and can now be opened for service. It is important to note that if any one parameter fails then two additional water samples will be collected twenty-four hours apart from each other. The parameters used to compare to the water sample results are listed in Table 1.

Use of WFD supplied water for flushing purposes may be limited during periods of high demand or when temperatures exceed 95 degrees Fahrenheit.

Submittals

The Contractor shall be responsible for developing a detailed plan that discusses at a minimum the scouring full pipe diameter flushing, methods for handling the volume of water from the flushing operation, disinfecting procedure with liquid sodium hypochlorite solution, de-chlorination procedure and sampling for each section of new water main to be tested. The Contractor shall provide a detailed submittal to the Engineer and WFD that outlines the specifics of the proposed procedures for each location.

SODIUM HYPOCHLORITE SOLUTION. Sodium hypochlorite conforming to ANSI/AWWA B300 is available in liquid form in glass, rubber-lined or plastic containers typically ranging in size from 1 quart to 5 gallons. Sodium hypochlorite contains approximately 5% to 15% available chlorine, and the storage conditions and time must be controlled to minimize its deterioration.

The sanitary handling of materials, the practices during construction, and the continual inspection of the work are the primary means for ensuring the sanitary condition of the water main. The effectiveness of disinfection depends on maintaining clean pipes and avoiding major contamination during construction activities.

PREVENTATIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION. Heavy particles generally harbor bacteria and prevent elevated chlorine concentrations from contacting and killing these organisms. The procedures of this specification must be observed to assure that a water main and its appurtenances have been thoroughly cleaned for the final disinfection by chlorination. Also, any connection of a new water main to the active distribution system prior to the receipt of satisfactory physical and bacteriological sample results may constitute a cross-connection. Therefore, new water mains must be isolated until physical and bacteriological tests, immediately after and 24 hours following flushing of the water main, are satisfactorily completed and meeting District specifications.

A successful disinfection process begins at the early stages of construction. The Contractor must protect piping systems from contamination including interiors of pipes, fittings and valves. Pipe and appurtenances delivered for construction shall be capped or bagged to minimize the entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent-proof plugs may be used when watertight plugs are not practicable and when thorough cleaning will be performed by flushing or other means. The sanitary handling of materials, the practices during construction, and the continual inspection of the work are the primary means for ensuring the sanitary condition of the water main.

Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the lower the risk of contamination.

JOINTS. Joints of all pipes in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.

SEALING MATERIALS. No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Sealing material or gaskets shall be handled in a manner that avoids contamination. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water and approved by the pipe manufacturer, and not contribute odors. It shall be delivered to the job in closed containers and shall be kept clean and applied with dedicated, clean applicator brushes.

CLEANING AND SWABBING. Each pipe section that is being readied for assembly in the field and just prior to installation, shall have the interior pipe surface swabbed with a 1% to 5% hypochlorite disinfecting solution using mechanical means like pulling a chlorine soaked mop or pigging device through the pipe or by power washing . If in the opinion of the Engineer, any dirt enters the pipe while being installed, the pipe will be swabbed again with 1% to 5%. The cleaning method used shall not force mud or debris into the interior pipe-joint spaces and shall be acceptable

to the Engineer.

WET TRENCH CONSTRUCTION. If it is not possible to keep the pipe and fittings dry during installation, the water that may enter the pipe-joint spaces shall contain an available chlorine concentration of approximately 25 mg/L. This may be accomplished by adding calcium hypochlorite granules or tablets to each length of the pipe before it is lowered into a wet trench or by treating the trench water with hypochlorite tablets.

FLOODING BY STORM OR ACCIDENT DURING CONSTRUCTION. If the main is flooded during construction, it shall be cleared of the floodwater by draining and flushing with potable water until the main is clean. The section exposed to the floodwater shall then be filled with chlorinated potable water that, at the end of a 24-hour holding period, will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the main.

PREFLUSHING OF SOURCE WATER. The source water used for disinfection and pressure testing shall be flushed prior to its use to ensure that normally occurring contaminants or debris are not introduced into the new water main pipe. The WFD will be responsible for operating gate valves in the street as necessary. Adequate drainage must be provided during flushing, away from the construction area. The contractor shall be responsible for constructing temporary discharge piping and/or materials as necessary, at no additional cost to the WFD.

CONTINUOUS FEED METHOD OF CHLORINATION. Hypo-chlorination utilizes a concentrated dose of chlorine solution, usually 25 ppm for a 24 hour period, to eradicate bacterial contamination. This is a critical operation that requires skilled personnel and therefore the WFD reserves his right to request the replacement of any Contractor / Subcontractor's personnel for lack of skills performing these tests The Contractor shall not be compensated for the replacement of his Subcontractor or its personnel if requested by the District as a result of lack of skills in performing these tests. The WFD has developed safe and effective hypo-chlorination procedures. These procedures allow for disinfecting a new section of the WFD water distribution system, minimizing the risk to the field crews, to customers and to the environment. These procedures are to be followed when disinfecting all new pipelines which utilize the injection of sodium hypochlorite.

FINAL FLUSHING. After the applicable retention period of 24 hours, heavily chlorinated water should not remain in prolonged contact with the pipe. In order to prevent damage to the pipe lining or to prevent corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main, fittings, valves and branches until chlorine measurements show that the concentration in the main is no higher than that generally prevailing in the distribution system.

The Contractor shall make arrangements with the WFD to flush the new water main following disinfection. WFD forces shall be responsible for operating the gate valves in the street as necessary. It is important to note here that the new water main shall be kept isolated from the active distribution system using a physical separation until disinfectant has been flushed and satisfactory bacteriological, physical and VOC testing has been completed. Operation of all valves used in filling and flushing the line shall be performed by WFD personnel.

The Contractor shall be responsible for supplying necessary materials, equipment and appurtenances for neutralizing the chlorine and to perform all flushing operations except the operating of gate valves within the existing water distribution system. The minimum materials and

equipment required to flush and neutralize the water main are:

- Five 3-inch x 20-foot rubber hoses, each with 3-inch male x female Camlock Couplings.
- Dechlorination device, model 3M-CLA, manufactured by Measurement Technologies, Sammamish WA or approved equal.
- Standard hydrant wrench.
- 90-degree ductile iron elbow with retaining gland, either 4 or 6-inch depending on blow off size.
- Customized 4 or 6-inch, 3/8-inch thick metal plate that bolts on to the 90-degree ductile iron elbow with 2-1/2-inch male fire connection (NST) thread. 4 or 6-inch depends on the blow off size.
- Ascorbic acid powder

The Contractor shall also be responsible for determining where the water will drain during the flushing operation so as not to cause localized flooding or cause damage to property or the environment. The environment to which the chlorinated water is to be discharged shall be inspected. Following neutralization of the chlorinated water, the level of chlorine shall be between 0.1 and 0.8 mg/l and in no case higher than the chlorine level in the distribution system. It is important to note that during the summer months water mains tend to take longer to disinfect due to higher ambient temperatures increasing the bacterial count. Usually, additional flushing will result in successfully disinfecting the water main.

DISINFECTION TESTS. Following disinfection and flushing, WFD forces will collect and analyze water samples from the new main utilizing a copper sterilization sampling fitting located no more than every 1,200 feet along the newly constructed water main. One set of water samples will be collected: approximately 2 hours following the flushing operation. The results are available approximately two business days following collection. The analytical results for the samples will be compared to the maximum allowable limits for each parameter as established by the WFD shown in Table 1. If the parameters are satisfactory for water samples, then the water main is considered passing and can be opened for service.

To ensure the water sample integrity, the WFD requires the person taking the sample to complete a "Chain of Custody" form, see attachment. This form must accompany the water sample when transporting to the WFD's laboratory at for analyzing.

Table 1
Physical, Chemical and Bacteriological Parameters for Water Mains

Parameter	Maximum Allowable Limit
pH	6.4 to 10
Color	15 units

Turbidity	1.0 NTU
Odor	2
Hardness	60 ppm.
Specific Conductance	150 microhms at 25 ºC
Coliform Bacteria	0 per 100 milliliters
Standard Heterotrophic Plate Count	< 500 per milliliter at 35 ºC
Chlorine Residual	<0.1- 0.8 ppm.
Volatile Organic Compounds (VOC)	See attached **Procedure**

RESAMPLING. If the initial disinfection fails to produce satisfactory physical and bacteriological results for the water samples, the new main shall be re-flushed and re-sampled.

If the new water main fails two rounds of sampling, the WFD shall determine if re-disinfection is needed or if the new main should only be flushed.

ATTACHMENT-CHAIN OF CUSTODY FORM
WFD - Sample Collection \ Chain of Custody
Distribution Specials
New Mains

Project DVW (when applicable to Developer Permit Agreement): _____

Project Name (for all projects): _____

Town: _____

Sample I.D.	Location (street)	Size of Main	Length of Main
S1			
S2			
S3			
S4			

Is a VOC being submitted? YES / NO

Time Collected

S1	S2	S3	S4

Chlorine residual

S1	S2	S3	S4

Collected by: _

Any observations that might affect the physical and bacteriological quality of the water should be noted below:

_____

Relinquished By:	Date / Time:
Received By:	Date / Time:
Relinquished By:	Date / Time:
Received By:	Date / Time:

Service Tubing:

1. Piping for buried copper water services shall be continuous Type K annealed seamless copper water tubing conforming to ASTM B88 Standard Specification for Seamless Copper Water Tube. Tubing size shall be determined by the Watertown Fire District.
2. Couplings, if required, for existing to new service pipe connections shall have **compression** connections on the inlet and **compression** connections on the outlet. Couplings shall be made of brass as specified in AWWA C800. All brass components that come into contact with potable water shall be made from either CDA/UNS Brass Alloys C89520 or C89833 and shall not contain more than twenty five hundredths of one percent (0.25% or less) total lead content by weight. The lead leach limit of the coupling shall be 5 parts per billion (ppb). Couplings shall be NSF/ANSI 61 Annex F and Annex G and NSF/ANSI 372 certified by an ANSI accredited organization and shall be stamped or embossed with a mark or name indicating that the product is manufactured from a low-lead alloy, as specified above.

CURB STOPS:

1. Curb stops shall be of brass as specified in AWWA C800. All brass components that come into contact with potable water shall be made from either CDA/UNS Brass Alloys C89520 or C89833 and shall not contain more than twenty five hundredths of one percent (0.25% or less) total lead content by weight. The lead leach limit of the curb stops shall be 5 ppb. Curb stops shall be NSF/ANSI 61 Annex F and Annex G and NSF/ANSI 372 certified by an ANSI accredited organization and shall be stamped or embossed with a mark or name indicating that the product is manufactured from a low-lead alloy, as specified above.
2. Curb stops shall be **inverted key* or ball*** style and the inlet and the outlet shall have **compression* and/or flared*** connections.
3. For specific curb stop details, see the WFD Details.

CURB BOXES:

1. The cast iron box shall be the sliding Buffalo type with **Arch pattern or Minneapolis pattern** base. Minimum inside diameter of the upper section shall be 1-1/2-inch for 3/4-inch and 1-inch curb stops and 2-inch for 1-1/2-inch and 2-inch curb stops. Curb box lid shall **have brass pentagonal nut* or shall be Erie pattern.**

3. Boxes shall be equipped with 30-inch stationary extension rods with pinned connections to the curb stop.

4. For specific curb box details, see WFD Details.

Air Valve Assembly: All brass fittings shall be of standard design generally used by water utilities and be in accord with ASTM B62 and ANSI/AWWA C800.

The corporation stops and angle valves shall be of good, tough, composition bronze well-mixed and free from flaws and imperfections. The corporation stops shall be of a type suitable for use in ductile iron mains. The inlet end shall have an inlet taper thread type known as the "Mueller Taper Thread".

Fittings, valves, etc. shall be flared connectors.

The gate valve box shall conform to the following requirements:

1. Cast iron shall conform to ASTM A48, Class 25.

2. Top section shall be of the top flange design and shall have no bead on the bottom.
3. The word "WATER" shall be cast with raised letters in the center of the cover.
4. Base section shall be of the Dwyer design which centers the operating nut for positive access to the valve.
5. For specific gate box details, see the WFD Details.

Inspection Before Installation: All tubing and fittings shall be carefully examined for defects and no material shall be installed which is known to be defective and should any defective tubing or fitting be discovered after being installed, it shall be removed and replaced with sound material at no additional cost to the WFD.

Installation: The air valves, chlorination valve and blow-off shall be installed according to the details and to the satisfaction of the Engineer. To properly receive the air valve or other assembly the ductile iron pipe shall be drilled and tapped. All tapped holes for corporation stops shall be tapped Mueller Thread.

All tapped holes in ductile iron pipe shall be cleaned by running the correct size tap into the hole immediately prior to installing the corporation.

Gate valve boxes shall be set plumb and centered on the fitting, etc. Earth fill shall be carefully tamped around the gate box to a distance of 4 feet on all sides of the box or to the undistributed trench face, if less than 4 feet.

Excavation and refill shall conform to the requirements under other applicable Contract Sections.

8-Inch and Smaller Gate Valves:

Quality Assurance: All gate valves, accessories and gate boxes shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured.

A certified statement that inspection and all of the specified tests have been made and met shall also be submitted.

All gate valves, accessories and gate boxes shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the foundry by a representative of the WFD.

In addition the WFD reserves the right to have any or all materials inspected and/or tested by an independent service at either the manufacturer's plant or elsewhere. Such inspection and/or tests shall be at the WFD 's expense.

A certified statement that inspection and all of the specified tests have been made and met shall also be submitted.

Gate Valve: The gate valve shall conform to ANSI/AWWA C500, ANSI/AWWA C509 and the following additional requirements:

1. Valve shall be double disc or resilient seated.
2. Bolts and nuts for connecting O-ring seal plates and bonnet to body shall either be copper-silicon alloy or stainless steel.
3. Valve shall be furnished with O-ring seals utilizing two O-rings, consistent with appropriate specifications.
4. Valve shall have mechanical joint ends, unless otherwise specifically indicated, which shall conform to ANSI/AWWA C111/A21.11. All joint accessories shall be furnished with each valve.
5. Direction to open shall be left-hand.
6. Operating nut shall be 2" square.

Gate Valve Box: The gate valve box shall conform to the following requirements:

1. U.S. Made Only – 5 ¼" Cast Iron Slip Type
2. Cast iron shall conform to ASTM A48, Class 25.
3. Top section shall be of the top flange design and shall have no bead on the bottom.
4. The word "WATER" shall be cast with raised letters in the center of the cover.
5. Base section shall be of the Dwyer design which centers the operating nut for positive access to the valve.
6. For specific gate box details, see the WFD Details.

Extension Stem: The extension stem shall be fabricated from steel conforming to ASTM A 36. Galvanizing shall conform to the latest edition of ASTM A 123.

Inspection Before Installation: The gate valve, gate box, etc. shall be subject to a careful inspection before being installed. The valve shall be run through a full open-close cycle to insure proper operation.

Installation of Gate Valve: The gate valve shall be installed according to the details shown and to the satisfaction of the Engineer.

All debris and foreign material shall be cleared from valve openings and seats. All mechanisms shall be checked and all nuts and bolts checked for tightness.

The valve box shall be set plumb and centered directly over the operating nut of the valves. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box or to the undisturbed trench face, if less than 4 feet.

Where and as shown on the Contract Drawings, or ordered, a valve extension stem shall be installed. An extension stem will be ordered when the valve-operating nut is more than 4.5 feet below finished grade.

Excavation and refill shall conform to the requirements under other applicable Contract Sections.

Blow-Off Assembly:

Quality Assurance: All blow-off assemblies including gate valves and fittings shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured.

All blow-off assemblies including valves and fittings shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the foundry by a representative of the WFD.

In addition, the WFD reserves the right to have any or all blow-off assemblies including valves, fittings and special castings inspected and/or tested by an independent service at either the manufacturer's plant or elsewhere. Such inspection and/or the tests shall be at the WFD 's expense.

A certified statement that inspection and all of the specified tests have been made and met shall also be submitted.

Inspection Before Installation: Blow-off assemblies including gate valves, pipe, fittings, gate boxes, etc. shall be subject to a careful inspection before being installed. Valves shall be run through a full open-close cycle to insure proper operation.

Installation of Blow-off Assemblies: Blow-off assemblies including piping, gate valves, fittings, etc. shall be installed according to the details shown and to the satisfaction of the Engineer.

All debris and foreign material shall be cleared from valve openings. The blow-off assembly shall be set plumb. Blow-off assemblies and connecting pipe shall have at least the same depth of cover as the distributing main.

Trench refill shall be placed over the pipe and fittings from the bottom of the trench to 2 feet above the top of the pipe and fittings.

Ductile iron pipe and harnessing shall be installed in accord with the specifications.

The utility identification tape shall be placed approximately two (2) feet above the top of the pipe.

Gate valves and gate boxes shall be installed in accord with the specifications.

Three-quarter inch (3/4") crushed stone, special trench refill and concrete shall be placed in accord with the specifications.

Excavation and refill shall conform to the requirements under other applicable Contract Sections. Temporary and permanent paved and unpaved surface restoration shall conform to the requirements under other applicable Contract Sections.

Hydrant:

Quality Assurance: All hydrants assemblies including gate valves and fittings shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured.

All hydrants assemblies including valves and fittings shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the foundry by a representative of the WFD.

The hydrant shall conform to the following requirements:

1. Hydrants shall conform to the requirements of AWWA C502. They shall be equipped with a 4-1/2-inch valve opening, 5 ½ ft. bury and 6-inch mechanical joint shoe.

2. Hydrants shall have one 4-1/2-inch pumper and two 2-1/2- inch hose connections. Threads shall be NST.

3. Hydrant operating and nozzle cap nuts shall be of pentagonal shape and measure one and one half inches from flat to point. The height of the nut shall not be less than one inch.

4. All internal operating parts including main valve, main valve seat, drain valve mechanism, operating rod, etc., shall be removable without excavating.

5. Main valve seat rings shall be made of brass or bronze, and shall screw into a seat retainer ring or sub-seat, which shall also be made of brass or bronze.

6. Hydrants shall be traffic models with frangible bolts or breakaway couplings. Details of hydrant design shall meet the requirements of the WFD Specification.

Method of Measurement: This work will be measured for payment as follows:

"8" Ductile Iron Pipe (Water Main)" shall be measured by the actual number of linear feet of ductile iron pipe, in the sizes indicated, complete as shown, specified and directed. The length of pipe to be measured shall be the length of the line after the pipes have been installed, measured or computed along the center line of the pipe from the center line of the main line valves or face of the terminal pipe or fitting or change between buried installation and installation on the bridge, as shown on the Contract Drawings. Measurement shall pass through and include all valves, bends and mainline fitting. Additional measurements shall be taken along branches for Blow-off Assemblies, regardless of their diameter.

Gravel fill from the bottom of the trench to the level 24-inches above the top of the pipe will not be measured for payment, but will be included in the cost of the pipe.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "8" Ductile Iron Pipe (Water Main)" complete and in place. The price shall also include the cost of digging test pits; transporting the materials; clearing, trenching; disposing of excavated materials, removing and disposing of the present water pipes and any appurtenances as needed; furnishing and installing the pipelines complete as shown on plans or as directed, with lacing and harnessing where required, including fittings, pressure reducing valves, line stops, vaults, bends, restraint, filter fabric, bank gravel, sand, blow off assemblies, gate/butterfly valves, air valves, sterilization fittings, tapping sleeves, tapping gates, RCP sleeve, gate boxes, tees, thrust blocks, anchors, expansion fittings, polystyrene, utility identification tape and fire hydrant assemblies; water services; refilling trenches; furnishing the additional materials; bituminous concrete for patching for temporary and permanent resurfacing; grading; sheeting; bracing; pumping and all incidental work, except as otherwise herein provided for. No claim will be allowed because the number of pipes and joints may be greater than estimated by the Contractor. The price shall also include all material, transportation, labor, including labor required to assist the WFD during the testing, and equipment necessary to construct the pipelines in accord with the Contract Drawings, the Specifications and the requirements of the Engineer there under.

The cost of all excavation, disposing of excavated material, except that which is suitable for refilling, and furnishing other materials for refilling, unless otherwise specified, will be considered as having been included in the price bid per linear foot of pipeline.

No direct payment will be made for any work done or materials used in making the pipeline tight.

Pay Item	Pay Unit
8-Inch Ductile Iron (Water Main)	l.f.

TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT

BID PROPOSAL

Reconstruction of Guernseytown Road
Watertown Public Works Department
Project Number L153-0003

BID OPENING: 11:00 a.m., Wednesday, April 26th, 2023.

TO: Donna Ford, Purchasing Agent
Town of Watertown
Town Hall
61 Echo Lake
Road
Watertown, CT 06795

The undersigned, as bidder, agrees to furnish material, labor and equipment for the Reconstruction of Guernseytown Road as specified and 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 he has 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 Town is directly or indirectly interested therein or in any portion of the profit thereof; and that he proposes and agrees, if this Proposal is accepted, to execute the Form of Contract with the Town; to provide all necessary equipment, tools, labor and deliver 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 Town as therein set forth, and that he will take in full payment therefor, the following unit prices and lump sums, to wit:

FIRM _____
Name

_____
Street

_____
City State Zip Code

NAME _____
Please Print
TELEPHONE NUMBER _____

FAX NUMBER _____

EMAIL ADDRESS _____

SIGNED _____ DATE _____

PLEASE

IT IS A REQUIREMENT OF THIS BID THAT EACH PROPOSAL SUBMITTED MUST HAVE A DUPLICATE COPY ATTACHED.

YOUR COOPERATION IS APPRECIATED

PROPOSAL FORM

Description/Unit Price Estimated Quantities Computed Totals

0201001A. Clearing and Grubbing

The unit price of _____Dollars and _____Cents

($_____) per lump sum (l.s.) 1 l.s. $_____

0202000. Earth Excavation

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 10,457 c.y. $_____

0202100. Rock Excavation

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 3,459 c.y. $_____

0202200. Channel Excavation - Earth

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 650 c.y. $_____

0202250. Channel Excavation - Rock

The unit price of
_____Dollars and _____Cents

($_____) per cubic yard (c.y.) 75 c.y. $_____

0202529. Cut Bituminous Concrete Pavement

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 115 l.f. $_____

0203205. Structure Excavation - Earth (Excluding Handling Water)

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 700 c.y. $_____

0203305. Structure Excavation - Rock (Excluding Handling Water)

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 36 c.y. $_____

0204151A. Handling Water

The unit price of _____Dollars and _____Cents

($_____) per lump sum (l.s.) 1 l.s. $_____

020700. Borrow

The unit price of_____Dollars and _____Cents

($_____) per cubic yard (c.y.) 50 c.y. $_____

0209001. Formation of Subgrade

The unit price of_____Dollars and _____Cents

($_____) per square yard (s.y.) 14,740 s.y. $_____

0213100. Granular Fill

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 40 c.y. $_____

0216000. Pervious Structure Backfill

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 310 c.y. $_____

0219001. Sedimentation Control System

The unit price of _____Dollars and _____Cents

($_____) per Linear Foot (l.f.) 4,975 l.f. $_____

0219002. Sedimentation Control Hay Bale System

The unit price of _____Dollars and _____Cents

($_____) per Linear Foot (l.f.) 150 l.f. $_____

0219011A. Sedimentation Control System at Catch Basin

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 39 ea. $_____

0286001.1. Rock in Drainage Trench Excavation - 0'-10' Deep

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 449 c.y. $_____

0304002. Processed Aggregate Base

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 4,914 c.y. $_____

0406002. Temporary Pavement

The unit price of _____Dollars and _____Cents

($_____) per square (s.y.) 800 s.y. $_____

0406171. HMA S0.5

The unit price of _____ Dollars and _____ Cents

($_____) per ton (ton) 3,201 ton $_____

0406172. HMA S0.375

The unit price of _____ Dollars and _____ Cents

($_____) per ton (ton) 1,520 ton $_____

0406236. Material for Tack Coat

The unit price of _____ Dollars and _____ Cents

($_____) per gallon (gal.) 1,319 gal. $_____

0406999. Asphalt Adjustment Cost

The unit price of Five Thousand Dollars and Zero Cents

($ 5,000) estimated (EST.) $ 5,000

0503866A. Removal of Existing Culvert (Site No. 1)

The unit price of _____ Dollars and _____ Cents

($_____) per lump sum (l.s.) 1 l.s. $_____

0586001.1. Type "C" Catch Basin - 0'-10' Deep

The unit price of_____ Dollars and _____ Cents

($_____) per each (ea.) 22 ea. $_____

0586002.1. Type "C" Catch Basin (4' Sump) - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per each (ea.) 3 ea. $_____

0586003.1. Type "C" Catch Basin Double Grate Type I - 0'-10' Deep

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 2 ea. $_____

0586005.1. Type "C" Catch Basin Double Grate - Type II - 0'-10' Deep

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 6 ea. $_____

0586040.1. Type "C-L" Catch Basin (4' Sump) - 0'-10' Deep

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 2 ea. $_____

0586040.2. Type "C-L" Catch Basin (4' Sump) - 0'-20' Deep

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 1 ea. $_____

0586086. Abandon Drainage Structure

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 8 ea. $_____

0586650. Reset Manhole

The unit price of _____Dollars and _____Cents

($ _____) per each (ea.) 1 ea. $_____

0586750. Type "C" Catch Basin Top

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 1 ea. $_____

0586760A. Type "C-L" Catch Basin Top

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 1 ea. $_____

0586790.1. Remove Drainage Structure - 0'-10' Deep

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 7 ea. $_____

0586850.1A. Hydrodynamic Separator

The unit price of _____Dollars and _____Cents

($ _____) per each (ea.) 1 ea. $_____

0601000. Class 'A' Concrete

The unit price of _____Dollars and _____Cents

($_____) per cubic yard (c.y.) 82 c.y. $_____

0601219A. 4'x2' Precast Concrete Box Culvert

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 80 l.f. $_____

0601220A. 4'x2' Reinforced Concrete Culvert End

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 2 ea. $_____

0602006. Deformed Steel Bars - Galvanized

The unit price of _____Dollars and _____Cents

($_____) per pound (lb.) 12,000 lb. $_____

0686000.15. 15" R.C. Pipe - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 40 l.f. $_____

0686000.18. 18" R.C. Pipe - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 99 l.f. $_____

0686000.24. 24" R.C. Pipe - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 4 l.f. $_____

0686230.12A. 12" High Density Polyethylene Pipe - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 31 l.f. $_____

0686230.15A. 15" High Density Polyethylene Pipe - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 1,847 l.f. $_____

0686230.18A. 18" High Density Polyethylene Pipe - 0-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 689 l.f. $_____

0686230.24A. 24" High Density Polyethylene Pipe - 0-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 131 l.f. $_____

0686250.6. 6" High Density Polyethylene Pipe – Perforated (Smooth Interior) – 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear foot (l.f.) 100 l.f. $_____

0636700.15A. 15" Reinforced Concrete Drainage Pipe End

The unit price of _____ Dollars and _____ Cents

($_____) per each (ea.) 2 ea. $_____

0636700.18A. 18" Reinforced Concrete Drainage Pipe End

The unit price of _____ Dollars and _____ Cents

($_____) per each (ea.) 3 ea. $_____

0685950.1 Remove Existing Pipe - 0'-10' Deep

The unit price of _____ Dollars and _____ Cents

($_____) per linear feet (l.f.) 2,038 l.f. $_____

0703011. Intermediate Riprap

The unit price of _____ Dollars and _____ Cents

($_____) per cubic yard (c.y.) 56 c.y.$_____

0703012. Modified Riprap

The unit price of _____ Dollars and _____ Cents

($_____) per cubic yard (c.y.) 41 c.y.$_____

0707009A. Membrane Waterproofing (Cold Liquid Elastomeric)

The unit price of _____ Dollars and _____ Cents

($_____) per square yard (s.y.) 69 s.y. $_____

0708001. Dampproofing

The unit price of _____Dollars and _____Cents

($_____) per square yard (s.y.) 62 s.y. $_____

0728031. No. 4 Crushed Stone

The unit price of _____Dollars and _____Cents

($_____) per cubic foot (c.f.) 2,058 c,f. $_____

0755009. Geotextile

The unit price of _____Dollars and _____Cents

($ _____) per square yard (s.y.) 740 s.y. $_____

0815001. Bituminous Concrete Lip Curbing

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 7,128 l.f. $_____

0822001. Temporary Precast Concrete Barrier Curb

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 910 l.f. $_____

0822002. Relocated Temporary Precast Concrete Barrier Curb

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 3,190 l.f.. $_____

0910170. Metal Beam Rail (Type R-B Mash)

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 1,913 l.f. $_____

0910322. Metal Beam Rail Span Section Type II

The unit price of _____Dollars and _____Cents

($_____) per linear foot (ea.) 3 ea. $_____

0911923. R-B End Anchorage - Type I

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 6 ea. $_____

0911924. R-B End Anchorage - Type II

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 2 ea. $_____

0913013. 5' Polyvinyl Chloride Chain Link Fence

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 86 l.f. $_____

0921001. Concrete Sidewalk

The unit price of _____Dollars and _____Cents

($_____) per square feet (s.f.) 15 s.f. $_____

0922500. Bituminous Concrete Driveway (Commercial)

The unit price of _____Dollars and _____Cents

($_____) per square yard (s.y.) 160 s.y. $_____

0922501. Bituminous Concrete Driveway

The unit price of _____Dollars and _____Cents

($ _____) per square yard (s.y.) 400 s.y. $_____

0922503A. Gravel Driveway

The unit price of _____Dollars and _____Cents

($_____) per square yard (s.y.) 210 s.y. $_____

0939001. Sweeping for Dust Control

The unit price of _____Dollars and _____Cents

($_____) per hour (hr.) 320 hr. $_____

0942001. Calcium Chloride for Dust Control

The unit price of _____Dollars and _____Cents

($_____) per ton (ton) 7 ton $_____

0943001. Water for Dust Control

The unit price of _____Dollars and _____Cents

$_____) per thousand gallon (m.gal.) 924 m.gal. $_____

0944000. Furnishing and Placing Topsoil

The unit price of _____Dollars and _____Cents

($_____) per square yard (s.y.) 10,585 s.y. $_____

095005. Turf Establishment

The unit price of _____Dollars and _____Cents

($_____) per square yard (s.y.) 10,585 s.y. $_____

0950033. Erosion Control Matting Type H

The unit price of _____Dollars and _____Cents

($_____) per square yard (s.y.) 1273 s.y. $_____

0969060A. Construction Field Office, Small

The unit price of _____Dollars and _____Cents

($_____) per month (mo.) 12 mo. $_____

0970006. Traffic Person (Municipal Police Officer) (Estimated Cost)

The unit price of One Hundred Thousand Dollars and Zero Cents

($ 100,000) est. $100,000

0971001A. Maintenance and Protection of Traffic

The unit price of _____Dollars and _____Cents

($_____) per lump sum (l.s.) 1 l.s. $_____

0975004. Mobilization and Project Closeout

The unit price of _____Dollars and _____Cents

($_____) per lump sum (l.s.) 1 l.s. $_____

0976002. Barricade Warning Lights - High Intensity

The unit price of _____Dollars and _____Cents

($_____) per day (day) 30 day $_____

0977001. Traffic Cone

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 40 ea. $_____

0978002. Traffic Drum

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 40 ea. $_____

0979003. Construction Barricade Type III

The unit price of _____Dollars and _____Cents

($_____) per each (ea.) 4 ea. $_____

0980001. Construction Staking

The unit price of _____Dollars and _____Cents

($_____) per lump sum (l.s.) l.s. $_____

1206013. Removal of Existing Signing

The unit price of _____Dollars and _____Cents

($_____) per lump sum (l.s.) 1 l.s. $_____

1208931. Sign Face - Sheet Aluminum (Type IX Retro-Reflective Sheeting)

The unit price of _____Dollars and _____Cents

($_____) per square foot (s.f.) 38.63 s.f. $_____

1210101. 4" White Epoxy Resin Pavement Markings

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 6,590 l.f. $_____

1210102. 4" Yellow Epoxy Resin Pavement Markings

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 7,734 l.f. $_____

1210105. Epoxy Resin Pavement Markings, Symbols, and Legends

The unit price of _____Dollars and _____Cents

($_____) per square foot (s.f.) 33 s.f. $_____

1220027. Construction Signs

The unit price of _____Dollars and _____Cents

($_____) per square foot (s.f.) 423.75 s.f. $_____

1300102A. 8-Inch Ductile Iron (Water Main)

The unit price of _____Dollars and _____Cents

($_____) per linear foot (l.f.) 1010 l.f. $_____

1803300. Impact Attenuation System (Tangential)

The unit price of _____Dollars and _____Cents

($_____) per linear each (ea.) 2 ea. $_____

Computed Total $_____

Computed Total- Project $_____

NOTE: The Computed Totals are for convenience in initial comparison of bids and are not an official part of this Proposal. The Town reserves the right to eliminate any Item or portion of the work which it deems to be in its best interest.

Payment Terms _____

Time to Completion _____Working Days

Warranty _____

Have you taken any exceptions or have you deviated from our printed specification and if so, are such suggested changes clearly noted on the page provided for exceptions to specifications?

____yes _____no

EXCEPTIONS TAKEN TO SPECIFICATIONS:

_____

_____

_____

_____

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_____

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_____

RECEIPT OF ADDENDA

ADDENDUM #	**SIGNATURE**	**DATE**
1.	_____	___/___/___
2.	_____	___/___/___
3.	_____	___/___/___
4.	_____	___/___/___

NAME OF BIDDER: _____

OFFICIAL ADDRESS: _____

PHONE NUMBER: _____

BY: _____ TITLE: _____
(Please Print)

DATE: _____

SIGNATURE: _____

PROPOSED SUBCONTRACTORS

FIRM _____
Name

_____
Street

_____
City State Zip Code

CONTACT _____ TELEPHONE _____
Please Print
TYPE OF WORK TO BE PERFORMED _____

_____
. . . . . .

FIRM _____
Name

_____
Street

_____
City State Zip Code

CONTACT _____ TELEPHONE _____
Please Print
TYPE OF WORK TO BE PERFORMED _____

_____
. . . . . .

FIRM _____
Name

_____
Street

_____
City State Zip Code

CONTACT _____ TELEPHONE _____
Please Print
TYPE OF WORK TO BE PERFORMED _____

_____

REFERENCES

The Bidder is required to fill out the following form to enable the Owner to make inquiries and judgement 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 in nature to the project described herein that the Bidder has completed along with the approximate construction cost. Include the name, address and telephone number of a reference for each project.

_____

_____

_____

_____

_____

_____

_____

_____

_____

3. List projects presently under construction by the Bidder, dollar volume of the Contract and percent completed.

_____

_____

_____

_____

4. Has the Bidder ever failed to complete work awarded to him; 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 the 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 a 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: _____

_____

PERFORMANCE BOND

KNOW ALL MEN 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:

_____
_____

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, and 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 he 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 it 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 any wise 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 _____day of _____, 20__.

ATTEST: _____
Principal

_____ By_____(s)
(Principal) Secretary
(SEAL)

_____ _____
(Witness as to Principal) (Address)

_____ _____
(Address)

_____ _____
Surety
ATTEST:

_____
(Surety) Secretary
(SEAL)

_____ By_____
(Witness as to Surety) Attorney-in-Fact

_____ _____
(Address) (Address)
_____ _____

NOTE: 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 MEN 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:

_____
_____

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, and 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 he 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 it 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 any wise 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 _____day of _____, 20__.

ATTEST:
Principal

_____

(Principal) Secretary
(SEAL)
(Address)

_____
(Witness as to Principal)

_____
(Address)

_____

By_____(s)

_____

_____

ATTEST:
Surety

_____

(Surety) Secretary
(SEAL)

_____
(Witness as to Surety)

_____
(Address)

_____

By_____
Attorney-in-Fact

_____
(Address)

_____

NOTE: 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.

STATE OF CONNECTICUT

Certificate of Compliance with Connecticut General Statute Section 31 - 57b

I hereby certify that all of the statements herein contained below have been examined by me, and to the best of my knowledge and belief are true and correct.

The _____ **HAS / HAS NOT**
Company Name (Cross out Non-applicable)

been cited for three (3) or more willful or serious or serious violations of any Occupational Safety and Health Act (OSHA) or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act of 1970, and not abated within the time fixed by the citation and such citation has not been set aside following appeal to the appropriate agency of court having jurisdiction or **HAS / HAS NOT** (Cross out Non-applicable) received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the bid.

The list of violations (if applicable) is attached.

_____
(Name of Firm, Organization or Corporation)

Signed: _____
Written Signature:

_____
Name Typed: *(Corporation Seal)*

Title: _____
(Title of Above Person, typed)

Dated: _____

State of)
County of) ***ss:*** ***A.D., 20_____***
)

Sworn to and personally appeared before me for the above, _____,
(Name of Firm, Organization, Corporation)

Signer and Sealer of the foregoing instrument of and acknowledged the same to be the free act and deed of

_____ _____, and his/her free act and deed as
(Name of Person appearing in front of Notary or Clerk)

_____.
(Title of Person appearing in front of Notary or Clerk)

My Commission Expires. _____
(Notary Public) *(Seal)*

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of Connecticut

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

(1) He/She is (owner, partner, officer, representative or agent) of
_____

(2) He/She is fully informed and 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 not any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, 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 secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner 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 his affiant.

(Signed)_____

_____
(Title)

Subscribed and sworn to before me
this_____day of _____20___

_____

_____
(Title)

My Commission expires_____, 20____