TOWN OF GLASTONBURY
ENGINEERING DIVISION
PW-1809

CONTRACT DOCUMENTS

FOR

GLASTONBURY BOULEVARD PAVEMENT REHABILITATION

STATE PROJECT L053-0003

BID # GL-2020-13

ADVERTISED ON: MARCH 12, 2020

BID DUE DATE: APRIL 9, 2020

TOWN OF GLASTONBURY

INVITATION TO BID

BID #	ITEM	DATE & TIME REQUIRED
GL-2020-13 State Project No L053-0003	Glastonbury Blvd. Pavement Rehabilitation Main Street to Naubuc Avenue	April 9, 2020 at 11:00 A.M.

The Town of Glastonbury will receive Sealed Bids, in duplicate, for pavement rehabilitation and traffic signal improvements for Glastonbury Boulevard between Main Street and Naubuc Avenue in Glastonbury, State Project No. L053-0003 (Bid #GL-2020-13). Bids will be received only at the Office of the Purchasing Agent, Town Hall (second level), 2155 Main Street, Glastonbury, CT 06033, Attention: Mary F. Visone, Purchasing Agent, no later than the time and date indicated. All bids will be publicly opened and read. No late bids will be accepted.

The Town reserves the right to waive informalities or reject any or all bids when said action is deemed to be in the best interests of the Town.

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

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

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

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

Mary F. Visone
Purchasing Agent

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1. Sealed bids **(one original and one copy)** on the attached Bid Forms will be received at the Office of the Purchasing Agent, Town Hall, 2155 Main Street, Glastonbury, Connecticut 06033 (second level). At the designated time of opening, they will be publicly opened, read, recorded and placed on file.

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

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

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

5. The envelope enclosing your bid should be clearly marked your company name and address, bid number, bid title, time of bid opening, and date.

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

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

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

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

10. Each bid must be accompanied by a bid bond payable to the Town for ten percent (10%) of the total amount of the bid. The bid bond of the successful Bidder will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned. A certified check may be used in lieu of a bid bond. The Town of Glastonbury will not be liable for the accrual of any interest on any certified check submitted. Cashier's checks will not be accepted.

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

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

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

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

15. Bidder is required to review the Town of Glastonbury Code of Ethics adopted July 8, 2003 and effective August 1, 2003 and revised October 29, 2013 and effective November 8, 2013. Bidder shall acknowledge that they have reviewed the document in the area provided on the bid/proposal response page (BP). The selected Bidder will also be required to complete and sign an Acknowledgement Form prior to award. The Code of Ethics and the Consultant Acknowledgement Form can be accessed at the Town of Glastonbury website at **www.glastonbury-ct.gov**. Upon entering the website scroll down to click on **Bids & Proposals Icon** which will bring you to the links for the **Code of Ethics** and the **Consultant Acknowledgement Form**. If the Bidder does not have access to the internet, a copy of these documents can be obtained through the Purchasing Department at the address listed within this bid/proposal.

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

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

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

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

20. **State Prevailing Wage Rates:**

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

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

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

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

OSHA SAFETY AND HEALTH CERTIFICATION

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

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

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

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

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

As stated above, the work for this project falls under the provisions of CONN. GEN. STAT. Sections 46a-68c and 46a-68d which require that prior to the award of this contract, you must have your company affirmative action plan approved by CHRO. A copy of your plan must be submitted to the CHRO within 30 days of your receipt of award. Should you have any questions regarding the preparation of your plan, please contact the Contract Compliance Unit at the Commission on Human Rights and Opportunities at (860) 541-4709.

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

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

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

*"The undersigned Bidder, _____, hereby submits a bid for materials, equipment and/or services for the Town of Glastonbury. The bid is for bid documents titled **"Glastonbury Boulevard Pavement Rehabilitation Bid# GL-2020-13".***
The undersigned Bidder hereby certifies under penalty of perjury that in connection with the bid and, if it is awarded the purchase order or contract by the Town, in connection with any purchase order or contract: (1) no materials containing natural gas waste or oil waste from natural gas extraction activities or oil extraction activities shall be provided to the Town or shall be used in providing any services to the Town by the undersigned Bidder or any contractor, sub-contractor or agent of the undersigned Bidder; (b) nor will the undersigned Bidder or any contractor, subcontractor or agent of the undersigned Bidder apply any natural gas waste or oil waste from natural gas extraction activities or oil extraction activities to any publicly owned and/or maintained road or real property within the Town of Glastonbury in performing its obligations under the purchase order or contract.
The undersigned Bidder hereby agrees and acknowledges that this requirement shall be a term of the purchase order or contract, if it awarded the purchase order or contract by the Town, and any breach of this provision shall be a breach of the purchase order or contract."

25. All Bidders are hereby made aware that, as per the Form 817, the selected contractor shall self-perform a minimum of 50% of the total contract value with its own organization.

IMPORTANT:

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

NOTE: Any technical questions regarding this bid shall be made in writing (email acceptable) and directed to Stephen Braun, Assistant Town Engineer, 2155 Main Street, PO Box 6523, Glastonbury, CT 06033; stephen.braun@glastonbury-ct.gov. Telephone (860) 652-7743 between the hours of 8:00 a.m. – 4:30 p.m. For administrative questions concerning this bid/proposal, please contact Mary F. Visone, Purchasing Agent, at (860) 652-7588 or email the Purchasing Department at purchasing@glastonbury-ct.gov. All questions, answers, and/or addenda, as applicable, will be posted on the Town's website at www.glastonbury-ct.gov (Upon entering the website scroll down to click on Bids & Proposals Icon, then scroll down page to see the active bid table. You must click the Bid Title to view all bid details and document links). The request must be received at least five (5) business days prior to the advertised response deadline**. It is the respondent's responsibility to check the website for addenda prior to submission of any bid/proposal.**

01.00 WORKMANSHIP, MATERIALS AND EMPLOYEES

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

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

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

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

02.00 SUPERINTENDENT

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

03.00 PRECONSTRUCTION MEETING

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

04.00 PERMITS

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

04.02 The Town of Glastonbury will be the permittee of a Highway Encroachment Permit issued by Connecticut Department of Transportation District 1. Contractor is responsible for adherence to all requirements and conditions within this permit.

05.00 PROPERTY ACCESS

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

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

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

06.00 PROTECTION OF THE PUBLIC AND OF WORK AND PROPERTY

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

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

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

07.00 EXISTING IMPROVEMENTS

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

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

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

08.00 SEPARATE CONTRACTS

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

09.00 INSPECTION OF WORK

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

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

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

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

10.00 RIGHT TO INCREASE OR DECREASE WORK

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

11.00 RIGHT OF ENGINEER TO STOP WORK FOR WEATHER CONDITIONS

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

12.00 CONTRACTOR TO BE RESPONSIBLE FOR IMPERFECT WORK OR MATERIALS

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

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

13.01 If, in the opinion of the Engineer, the Contractor is not proceeding with the work at a sufficient rate of progress so as to finish in the time specified, or has abandoned said work, or is not complying with the terms and stipulations or the Contract and

specifications, the Engineer may serve notice on the Contractor to adopt such methods as will ensure the completion of the work in the time specified.

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

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

14.00 DEDUCTIONS FOR UNCORRECTED WORK

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

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

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

15.00 CLEANING UP

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

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

16.00 ROYALTIES AND PATENTS

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

01.00 NOTICE TO CONTRACTOR

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

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

01.02 The Contractor is hereby alerted to the fact that the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817 (Form 817) latest edition including supplements thereto dated July 2019, are the governing specifications and are to be considered part of the Contract Documents. The Form 817 shall not be provided by the Town and any cost associated therewith shall be the responsibility of the Contractor. In case of any discrepancy between the Contract Drawings or Specifications and the Form 817, the matter shall immediately be submitted to the Engineer. The Engineer shall have sole authority in resolving any discrepancies.

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

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

02.00 COMMUNICATIONS

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

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

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

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

03.00 PARTIAL USE OF IMPROVEMENTS

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

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

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

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

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

04.00 INSURANCE

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

a. Worker's Compensation Insurance:

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

b. Commercial General Liability:

- Including Premises and Operations, Products and Completed Operations, Personal and Advertising Injury, Contractual Liability and Independent Contractors

- Limits of Liability for Bodily Injury and Property Damage
  Each Occurrence: $1,000,000
  Aggregate: $2,000,000
  (The Aggregate Limit shall apply separately to each job.)
- A Waiver of Subrogation shall be provided

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

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

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

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

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

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

05.00 WORK BY OTHERS

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

delays or other reasons caused by the work by others or his failure to coordinate such work.

06.00 CONTRACTOR'S WORK AND STORAGE AREA

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

07.00 DISPOSAL AREA

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

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

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

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

08.00 DUST CONTROL

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

09.00 MAINTENANCE / GUARANTEE PERIOD

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

10.00 PROTECTION OF EXISTING UTILITIES

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

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

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

11.00 TIME FOR COMPLETION/NOTICE TO PROCEED

11.01 The work under this Contract shall commence on the date ordered by the Engineer in the Notice to Proceed. After the work has begun, it shall continue in an orderly fashion such that all contract work is completed within one-hundred twenty (120) calendar days of the commencement date indicated in the Notice to Proceed.

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

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

12.00 LIQUIDATED DAMAGES

12.01 As actual damages for any delay in completion of the work that the Contractor is required to perform under this Contract are impossible to determine, the Contractor and the Sureties shall be liable for and shall pay to the Town the sum of $1,500.00 as fixed, agreed and liquidated damages for each calendar day of delay from the above-stipulated completion, or completion as modified in writing by both parties, until such work is satisfactorily completed and accepted.

13.00 SCHEDULE OF DRAWINGS

13.01 The Contractor is hereby alerted that the plan set entitled “Glastonbury Boulevard Pavement Rehabilitation”, including thirty seven (37) sheets prepared by the Town of Glastonbury Engineering Division is to be considered part of these specifications.

14.00 CHANGES IN THE WORK

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

15.00 LAYOUT OF WORK

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

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

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

17.00 PROSECUTION AND PROGRESS

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

17.02 Limitations on work hours are described in the Prosecution and Progress Special Provision. The Contractor shall understand and strictly comply with these limitations.

Work on weekends or during time periods other than those described above will not be permitted. No work will be allowed on designated Town Holidays unless permission is granted by the Town.

18.00 EXTRA WORK AND RETAINAGE

18.01 Extra and cost plus work shall be governed by Article 1.04.05 and Article 1.09.04 of the Form 817.

18.02 Article 1.09.06, Part A, Item 1 of the Form 817 is hereby modified as follows: Retainage shall be withheld in the amount of five (5) percent. Release of retainage shall be made upon final acceptance of the project by the Town.

19.00 SUBMITTALS AND MATERIALS TESTING

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

TOWN OF GLASTONBURY			
BID / PROPOSAL	**GL # 2020-13**		
STATE PROJECT NO.	**L053-0003**		
DATE ADVERTISED	**3/12/2020**	**DATE / TIME DUE**	**4/9/2020 at 11:00 A.M.**
NAME OF PROJECT	**Glastonbury Boulevard Pavement Rehabilitation**		

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

The Bidder acknowledges receipt of the following Addenda:

Addendum #1 _____ (Initial & Date)

Addendum #2 _____ (Initial & Date)

Addendum #3 _____ (Initial & Date)

OTHER ITEMS REQUIRED WITH SUBMISSION OF BID PROPOSAL:

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

_____ 1. Included Bid Bond as per Section 10 of the Information for Bidders.

_____ 2. Included Disclosure of Past and Pending Mediation, Arbitration, and Litigation cases against the Bidder or its Principals as per Section 17 of the Information for Bidders.

_____ 3. Included Qualifications Statement as per Section 21 of the Information for Bidders.

_____ 4. Included Required CHRO documentation as per Section 22 of the Information for Bidders.

_____ 5. Included Certificate of Compliance with CGS 31-57B as per Section 23 of the Information for Bidders.

_____ 6. Provided certification for Compliance with Town Ordinance Prohibiting Natural Gas Waste & Oil Waste From Natural Gas Extraction Activities or Oil Extraction Activities as per Section 24 of the Information for Bidders

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

_____ 8. Acknowledged Code of Ethics on page BP-7.

_____ 9. Clearly marked envelope with Bid Number, Date, Time of opening, Bidder's Company Name and address.

BIDDER NAME:_____

GLASTONBURY BOULEVARD PAVEMENT REHABILITATION **BID #GL-2020-13**
BID PROPOSAL
STATE PROJECT L053-0003

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXT
1	0202513 A	Removal of Concrete Sidewalk	SY	773		
2	0202529	Cut Bituminous Concrete Pavement	LF	798		
3	0216012 A	Controlled Low Strength Material	CY	26		
4	0219011 A	Sediment Control System at Catch Basin	EA	34		
5	0404100 A	Bituminous Concrete Patching - Full Depth	SY	255		
6	0406189 A	Pre-Overlay Crack Filling (0.5 to 1.25")	LF	1,000		
7	0406236 A	Material for Tackcoat	Gal	1,135		
8	0406275 A	Fine Milling of Bituminous Concrete (0 to 4 Inches)	SY	22,704		
9	0406171 A	HMA S0.5”	TON	4,996		
10	0406999 A	Asphalt Adjustment Cost	EST	1	$ 5,500.00	$ 5,500.00
11	0507003 A	Remove and Build Type "C" Catch Basin	EA	1		
12	0507028 A	Replace Type "C' Catch Basin Top	EA	6		
13	0507029 A	Replace Type "C-L" Catch Basin Top	EA	3		
14	0507030 A	Replace Type "C" Catch Basin Double Grate-Type II Top	EA	2		
15	0507201 A	Type "C-L" Catch Basin	EA	1		
16	0507781 A	Reset Manhole	EA	24		
17	0507791 A	Rebuild Type "C" Catch Basin	VF	47		
18	0507792 A	Rebuild Type "C" Double Grate Type II Catch Basin	VF	6		

BIDDER NAME:_____

LINE NO.	ITEM NO.		ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXT
19	0507831	A	Convert Catch Basin to Manhole	EA	1		
20	0651011	A	12" R.C. Pipe	LF	32		
21	0813041	A	6" x 18" Granite Stone Curbing	LF	235		
22	0813051	A	6" x 18" Granite Curved Stone Curbing	LF	572		
23	0814005		Reset Granite Curved Stone Curbing	LF	82		
24	0921001	A	Concrete Sidewalk	SF	4,470		
25	0921005	A	Concrete Sidewalk Ramp	SF	1,502		
26	0921006	A	Concrete Ice Strip	LF	121		
27	0922500	A	Bituminous Concrete Driveway (Commercial)	SY	2,111		
28	0944000	A	Furnishing and Placing Topsoil	SY	650		
29	0945060	A	Pine Bark Mulch	SY	53		
30	0945070	A	Removal and Re-Establishment of Existing Plantings	LS	1		
31	0950005	A	Turf Establishment	SY	650		
32	0952001	A	Selective Clearing and Thinning	LS	1		
33	0970006	A	Trafficperson (Municipal Police Officer)	EST	1	$103,000.00	$ 103,000.00
34	0970007	A	Trafficperson (Uniformed Flagger)	HR	240		
35	0971001	A	Maintenance and Protection of Traffic	LS	1		
36	0975002		Mobilization and Project Closeout	LS	1		

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXT
37	0976001	Barricade Warning Lights - Low Intensity	Day	12,060		
38	0978002	Traffic Drum	EA	161		
39	0979003	Construction Barricade Type III	EA	27		
40	0908001	Construction Staking	LS	1		
41	0981100	42" Traffic Cone	EA	80		
42	1001001	Trenching and Backfilling	LF	558		
43	1002203	Traffic Control Foundation-Pedestal-Type I	EA	24		
44	1008115	2" Rigid Metal Conduit in Trench	LF	253		
45	1008215	2" Rigid Metal Conduit Under Roadway	LF	305		
46	1008908 A	Clean Existing Conduit	LF	100		
47	1010021	Concrete Handhole-Type II	EA	3		
48	1010060 A	Clean Existing Concrete Handhole	EA	32		
49	1102002 A	8' Aluminum Pedestal	EA	16		
50	1102008 A	4'-4" Aluminum Pedestal	EA	1		
51	1105104 A	1 Way 4 Section Mast Arm Traffic Signal	EA	1		
52	1106001 A	1 Way Pedestrian Signal Pole Mounted	EA	4		
53	1106003 A	1 Way Pedestrian Signal Pedestal Mounted	EA	16		
54	1107011 A	Accessible Pedestrian Signal and Detector (Type A)	EA	20		

BIDDER NAME:_____

LINE NO.	ITEM NO.		ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXT
55	1108163	A	Modify Existing Controller	EA	3		
56	1111600	A	Extension Bracket	EA	1		
57	1112286	A	360 Degree Camera Assembly	EA	5		
58	1112287	A	360 Degree Video Detection Processor	EA	3		
59	1113008		3 Conductor No. 6 AWG Type SE Style THW	LF	1,650		
60	1113050		2 Conductor No. 14 Cable	LF	50		
61	1113103		7 Conductor No. 14 Cable	LF	2,900		
62	1113104		9 Conductor No. 14 Cable	LF	340		
63	1113725	A	23 AWG 4 Twisted Pair Category 6 Cable	LF	900		
64	1114201	A	Auxiliary Equipment Cabinet	EA	1		
65	1117001	A	RRFB Auxiliary Cabinet	EA	1		
66	1117110	A	Rectangular Rapid Flashing Beacon (RRFB) - Type A	EA	6		
67	1117111	A	Rectangular Rapid Flashing Beacon (RRFB) - Type B	EA	3		
68	1118012	A	Removal and/or Relocation of Traffic Signal Equipment	LS	1		
69	1131030	A	Changeable Message Sign Full Matrix (6' Wide)	DAY	200		
70	1131032	A	Changeable Message Sign Full Matrix (10' Wide)	DAY	100		
71	1206023	A	Removal and Relocation of Existing Signs	LS	1		
72	1208931	A	Sign Face-Sheet Aluminum Type IX Reflective Sheeting	SF	300		

BIDDER NAME:_____

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXT
73	1209005	Painted Pavement Markings 4" White	LF	8,500		
74	1209007	Painted Pavement Markings 4" Yellow	LF	4,000		
75	1209050	Painted Pavement Markings (General)	SF	6,410		
76	1210101	4" White Epoxy Resin Pavement Markings	LF	8,500		
77	1210102	4" Yellow Epoxy Resin Pavement Markings	LF	4,000		
78	1210105	Epoxy Resin Pavement Marking Sym. & Legends	SF	6,410		
79	1211001	Removal of Pavement Markings	SF	220		
80	1220013	Construction Signs	SF	780		
81	1302061 A	Adjust Gate Box (Water)	EA	22		
82	1302062 A	Adjust Gate Box (Gas)	EA	2		

TOTAL BID AMOUNT: $_____
(Numeric)

WRITTEN TOTAL BID AMOUNT:_____

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

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

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

Respectfully submitted:

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

(Seal – If bid is by a Corporation)

Attest

SPECIAL PROVISIONS

INDEX TO SPECIAL PROVISIONS

This index has been prepared for the convenience of those using this contract with the sole express purpose of locating quickly the information contained herein; and no claims shall arise due to omissions, additions, deletions, etc., as this index shall not be considered part of the contract.

NOTICE TO CONTRACTOR - PROTECTION AND COORDINATION OF EXISTING UTILITIES

Existing utilities shall be maintained during construction except as specifically stated herein and/or noted on the plans and as coordinated with the utilities. The Contractor shall verify the location of underground, structure mounted and overhead utilities. Construction work within the vicinity of utilities shall be performed in accordance with current safety regulations.

The Contractor shall notify "Call Before You Dig", telephone: 8-1-1 or 1-800-922-4455 for the location of public utility, in accordance with Section 16-345 of the Regulations of the Department of Utility Control.

Representatives of the various utility companies shall be provided access to the work, by the Contractor.

Contractors are cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features, as actual conditions may differ from the information shown on the plans or contained elsewhere in the specifications.

The Contractor shall notify the Engineer prior to the start of work and shall be responsible for all coordination with the Town. The Contractor shall allow the Engineer complete access to the work.

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

Any damage to any existing private and public utility, as a result of the Contractors operations, shall be repaired to the utility's and Engineer's satisfaction at no cost to the Town or the Utilities, including ail materials, labor, etc., required to complete the repairs.

The Contractor's attention is directed to the requirements of Section 1.07.13 - "Contractor's Responsibilities for Adjacent Property and Services".

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

The Contractor shall coordinate all utility relocations with the respective utility company. The Contractor shall notify Connecticut Natural Gas two weeks in advance of the required gas valve box adjustments as shown on the plans.

NOTICE TO CONTRACTOR – UTILITY COMPANIES

It is understood that any references in the contract documents to Northeast Utilities, CL&P and/or Yankee Gas are meant to refer to Eversource.

It is understood that any references in the contract documents to AT&T is meant to refer to Frontier Communications.

NOTICE TO CONTRACTOR - TRAFFIC SIGNALS

The Contractor is hereby notified that certain conditions pertaining to the installation of new signals and maintenance of traffic signal operations are required when relevant, as part of this contract.

Qualified/Unqualified Workers

U.S. Department of Labor
Occupational Safety & Health Administration (OSHA) www.osha.gov

Part Number	**1910**
Part Title	**Occupational Safety & Health Administration**
Subpart	**S**
Subpart Title	**Electrical**
Standard Number	**1910.333**
Title	**Selection and use of work practices**

Completion of this project will require Contractor employees to be near overhead utility lines. All workers and their activities when near utility lines shall comply with the above OSHA regulations. In general, unqualified workers are not allowed within 10 feet of overhead, energized lines. It is the contractor's responsibility to ensure that workers in this area are qualified in accordance with OSHA regulations.

The electric distribution company is responsible to provide and install all necessary anchors and guy strands on utility poles. It is the Contractors responsibility to coordinate with the utility company to ensure proper placement of the anchor.

Utility poles cannot be double loaded without proper guying.

The contractor will be held liable for all damage to existing equipment resulting from his or his subcontractor's actions. A credit will be deducted from monies due the Contractor for all maintenance calls responded to by Department of Transportation personnel.

The 30 Day Test on traffic control equipment, as specified in Section 10.00, Article 10.00.10 - TESTS, will not begin until the items listed below are delivered to the Town of Glastonbury Engineering Division.

Five (5) sets of cabinet wiring diagrams. Leave one set in the controller cabinet.
All spare load switches and flash relays.

NOTICE TO CONTRACTOR - RRFB

The Contractor is hereby notified that certain conditions pertaining to the installation of new RRFB equipment are required when relevant, as part of this contract.

Qualified/Unqualified Workers

U.S. Department of Labor
Occupational Safety & Health Administration (OSHA) www.osha.gov
Part Number 1910
Part Title Occupational Safety & Health Administration
Subpart S
Subpart Title Electrical
Standard Number 1910.333
Title Selection and use of work practices

Completion of this project will require Contractor employees to be near overhead utility lines. All workers and their activities when near utility lines shall comply with the above OSHA regulations. In general, unqualified workers are not allowed within 10 feet of overhead, energized lines. It is the contractor's responsibility to ensure that workers in this area are qualified in accordance with OSHA regulations.

SECTION 1.05 CONTROL OF WORK

Article 1.05.02 - Plans, Working Drawings and Shop Drawings **is supplemented as follows:**

Subarticle 1.05.02 - (2) is supplemented by the following:

Traffic Signal Items:

When required by the contract documents or when ordered by the Engineer, The Contractor shall prepare and submit product data sheets**,** working drawings and/or shop drawings for all traffic signal items, except Steel Span Poles and Mast Arm Assemblies when applicable, to the Town of Glastonbury Engineering Division for approval before fabrication. The packaged set of product data sheets, working drawings and/or shop drawings shall be submitted either in paper (hard copy) form or in an electronic portable document format (.pdf). The package submitted in paper form shall include one (1) set. Product data sheets shall be printed on ANSI A (8 ½" x 11"; 216 mm x 279mm; letter) sheets. Working drawings and shop drawings shall be printed on ANSI B (11" x 17"; 279 mm x 432 mm; ledger/tabloid) sheets.

The packaged set submitted in an electronic portable document format (.pdf) shall be in an individual file with appropriate bookmarks for each item. The electronic files for product data sheets shall be created on ANSI A (8 ½" x 11"; 216 mm x 279mm; letter) sheets. Working drawings and shop drawings shall be created on ANSI B (11" x 17"; 279 mm x 432 mm; ledger/tabloid) sheets.

Article 1.05.05 – Cooperation by Contractor

Add the following:
Agents of various public service agencies, municipal and State Departments, and private site contractors may be entering on the work site to remove existing utilities, to construct or place new facilities or to make alterations to existing facilities.

The Contractor shall perform the work in cooperation with the various agencies in a manner which causes the least interference with the operations of the aforementioned agencies and shall have no claim for delay which may be due to, or result from, said work of these agents.

Article 1.05.06 – Cooperation with Utilities

Add the following:
Written notice shall be given by the Contractor to all public service corporations or municipal and State Officials owning or having charge of publicly or privately owned utilities 30 days in advance of the commencement of operations that will affect the utilities. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

The utility company representatives listed in Section 1.07 shall be contacted by the Contractor to coordinate the protection of their utilities on this project 30 days prior to the start of any work on this project involving their utilities.

The Contractor shall make his/her own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of construction operations.

The Contractor shall notify "Call Before You Dig" at 1-800-922-4455, 72 hours prior to disturbing ground in any way.

SECTION 1.07 LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.07 – Safety and Public Convenience

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

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

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

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

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

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

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

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

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

UTILITY COMPANIES WITHIN THE PROJECT AREA

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

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

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

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

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

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

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

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

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

TOWN OF GLASTONBURY

Engineering Division
2155 Main Street
Glastonbury, CT. 06033

Daniel A. Pennington, P.E.
Director of Physical Services/Town Engineer
Phone: (860) 652-7736
Email: Daniel.pennington@glastonbury-ct.gov

Engineering Division
2155 Main Street
Glastonbury, CT. 06033

Stephen M. Braun, P.E.
Assistant Town Engineer/Project Manager
Phone: (860) 652-7743
Email: Stephen.braun@glastonbury-ct.gov

Glastonbury Police Department
2108 Main Street
Glastonbury, CT. 06033

Watch Commander
Phone: (860) 633-8301

Glastonbury Tree Warden
2143 Main Street
Glastonbury, CT. 06033

Gregory Foran
Director of Parks and Recreation/Tree Warden
Phone: (860) 652-7686
Email: Gregory.foran@glastonbury-ct.gov

SECTION 1.06 CONTROL OF MATERIALS

Article 1.06.01 - Source of Supply and Quality:

Add the following:

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

1. Concrete Mix Designs for Sidewalks, Ramps
2. Wire Mesh Reinforcing
3. Processed Stone Base
4. Expansion Joint Material
5. Joint Sealant
6. Smooth Metal Dowel
7. Speed Dowel Sleeves
8. Concrete Sealer with water/salt guard
9. Detectable Warning Tile-Replaceable
10. Granite Stone Curbing-Straight and Curved
11. Sign Posts
12. Bituminous Concrete Pavement-Superpave S-0.5” Level 2
13. Bituminous Concrete for Driveways
14. Sediment Control Sack
15. Reinforced Concrete Pipe
16. Catch Basin Componants
17. Catch Basin Frames and Grates
18. Manhole Frame and Cover
19. Subbase Material
20. Material for Tackcoat
21. Topsoil
22. Seed Mixture
23. Sign Face Sheet Aluminum
24. Epoxy Resin Pavement Markings
25. Hot-Applied Painted Pavement Markings
26. Pre-Overlay Crack Sealant

Traffic Signal Items:

For the following traffic signal items the Contractor shall submit a complete description of the item, shop drawings, product data sheets and other descriptive literature which completely illustrates such items presented for formal review. Such review shall not change the requirements for a certified test report and materials certificate as may be called for. All documents shall be grouped into one separate file for each group of items as indicated by the Roman numerals below (for example, one pdf file for all of the pedestal items). The documents for all of the traffic signal items shall be submitted at one time, unless otherwise allowed by the Engineer.

I. 10080XX – Rigid Metal Conduit

II. 1102XXXA – Aluminum Pedestals

III. 1105XXXA – Traffic Signals

IV. 1106XXXA – Pedestrian Signals

V. 1107011A – Accessible Pedestrian Signal and Detector (Type A)

VI. 1112XXXA – 360 Degree Camera Assemblies, Processor, Extension Brackets, etc.

VII. 1113XXXA - Control Cables / Wiring

VIII. 1114201A – Auxiliary Equipment Cabinet

IX. 1117XXXA – Rectangular Rapid Flashing Beacon Assemblies and Auxiliary Cabinet

Article 1.06.07 - Certified Test Reports and Materials Certificates:

Add the following:

1) For the materials in the following items, a Certified Test Report will be required confirming their conformance to the requirements set forth in these plans or specifications or both. Should the consignee noted on a Certified Test Report be other than the Prime Contractor, then Materials Certificates shall be required to identify the shipment.

Catch Basin Frames and Grates	RCP
Signing	Rigid Metal Conduit
Pavement Markings	Pre-Overlay Crack Sealant

2) For the materials in the following items, a Materials Certificate will be required confirming their conformance to the requirements set forth in these plans or specifications or both.

Concrete Handhole Type II

SECTION 1.08 PROSECUTION AND PROGRESS

Article 1.08.03 – Prosecution of Work

Add the following:

GENERAL: Before starting any work under this Contract, the Contractor shall prepare, and submit to the Engineer for approval, a minimum of 30 days in advance, a plan illustrating the Typical Traffic Management Plan for the roadway during construction. The Contractor will also be required to submit, and obtain approval from the Engineer, specific plans detailing the proposed Staging/Maintenance and Protection of Traffic Plans for the roadway in this Contract.

The Contractor must obtain approval of the Typical Traffic Management Plans and Staging/Maintenance and Protection of Traffic Plans from the Engineer prior to commencing work on the roadway.

All appropriate Maintenance and Protection of Traffic devices are to be installed prior to commencing construction operations.

Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day.

Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

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

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

ALLOWABLE HOURS OF OPERATION (WORK PERIOD):
Allowable hours of operation for milling, paving, and pavement marking work, including driveway repair work, is limited to Sunday through Thursday, 10:00 PM to 6:00 AM.

Other operations including traffic signal improvements, catch basin repairs, granite curb installation or resetting, pavement patching, and installation of concrete sidewalk and sidewalk ramps shall be performed Monday through Friday between the hours of 7:00AM and 5:00PM using appropriate shoulder closures or lane closure as deemed necessary for the work by the Engineer.

Work on weekends or during time periods other than those described above will not be permitted. No work will be allowed on designated Town Holidays unless permission is granted by the Town.

TRAFFIC SIGNAL WORK:
The Contractor shall notify the Engineer when all traffic signal work is completed. This will include all work at signalized intersections including loop replacements, adjusting existing traffic signals or any relocation work including handholes. The Engineer will then coordinate a field inspection of all work. Refer to Section 10.00 – General Clauses For Highway Illumination And Traffic Signal Projects, Article 10.00.10 and corresponding special provision.

CONSTRUCTION PHASING: Roadway construction shall be completed in the following phases:

PHASE 1: Roadway Preparation Work – Project Limits

Rebuild catch basins and replace catch basin tops as noted on the plans, modify granite curb at intersections and install new sidewalk and sidewalk ramps where indicated, patch pave designated full depth areas and around new and reset granite curb, install new traffic signal equipment and video detection, install RRFB with associated wiring and auxiliary cabinets, and install all permanent signage. **Work shall be performed Monday through Friday during normal business hours** using appropriate shoulder closures, lane closures, and sidewalk closures/detours as deemed necessary for the work by the Engineer.

A minimum of one lane of traffic on a paved travelpath of not less than 11 feet shall be maintained in each direction at all times during the work period.

A continuous sidewalk path 5 feet side along one side of the roadway shall be maintained at all times using appropriate sidewalk closure and sidewalk detour signage.

All traffic signal equipment and video detection systems must be operational prior to proceeding to Phase 2.

PHASE 2: Milling and Paving – Eastbound Lanes

Perform fine milling, install pavement shim course and wearing surface within the eastbound lanes and driveway aprons as shown on the construction staging plans **Sunday night through Thursday night during the allowable overnight periods as outlined elsewhere in this specification.** The shim course shall be completed in its entirety prior to proceeding with installation of the wearing surface.

A minimum of one lane of traffic on a paved travel path of not less than 11 feet shall be maintained in each direction at all times during the work period. During the active overnight work period traffic may be detoured using the signed detour as shown on the Construction Staging Plans with the understanding that all detour signs shall be covered or removed at the end of each work period.

After completion of milling and during the next daytime work period, all manhole frame and covers and certain raised gate boxes as shown on the Construction Staging Plans shall be reset flush with the milled surface, and catch basins shimmed as shown in the details. The northerly eastbound travel lane shall also be closed to traffic within the limits shown on the Construction Staging Plans to protect traffic from the raised gate boxes. Where raised gate boxes are located within intersections, these structures shall be shimmed, painted with high visibility paint, and protected with traffic cones or drums.

PHASE 3: Milling and Paving – Westbound Lanes

Perform fine milling, install pavement shim course and wearing surface within the westbound lanes and driveway aprons as shown on the construction staging plans **Sunday night through Thursday night during the allowable overnight periods as outlined elsewhere in this specification**. The shim course shall be completed in its entirety prior to proceeding with installation of the wearing surface.

A minimum of one lane of traffic on a paved travel path of not less than 11 feet shall be maintained in each direction at all times during the work period. During the active overnight work period traffic may be detoured using the signed detour as shown on the Construction Staging Plans with the understanding that all detour signs shall be covered or removed at the end of each work period.

After completion of milling and during the next daytime work period, all manhole frame and covers shall be reset flush with the milled surface and catch basins shimmed as shown in the details.

PHASE 4:

Perform final restoration including topsoil and seed **during normal business hours**. A minimum of one lane of traffic on a paved travelpath of not less than 11 feet shall be maintained in each direction at all times during the work period.

Install final epoxy pavement markings 30 days after the paving of the wearing surface is completed **during the allowable overnight hours work periods Sunday through Thursday as outlined elsewhere in this specification**. A minimum of one lane of traffic on a paved travel path of not less than 11 feet shall be maintained in each direction at all times during the work period. During the active overnight work period traffic may be detoured using the signed detour as shown on the Construction Staging Plans with the understanding that all detour signs shall be covered or removed at the end of each work period.

SEQUENCE OF CONSTRUCTION OPERATIONS: Work shall be sequenced as follows:

Milling shall be completed across the full width of the road during the given work period. Limits of work for each work period shall be selected to ensure that adequate time is provided to install temporary transitions and temporary pavement markings prior to end of the allowable work period.

Temporary paved transitions shall be installed at locations of transverse drop-downs and temporary driveway ramps shall be installed as described in the Maintenance and Protection of Traffic Special Provision within the work area before the end of each allowable work period. Such work shall be included in the contract lump sum price for the Maintenance and Protection of Traffic.

Temporary pavement markings shall be installed on the milled surface and on any intermediate courses of pavement before the end of each work period as described in the Special Provision for Maintenance and Protection of Traffic.

Paving work shall be sequenced with ongoing milling operation as required in order to limit the time period that vehicles will travel on a milled surface. Within seven (7) days of the completion of milling operations for any particular work area, placement of at least the first course of bituminous concrete pavement within the same work area shall be completed.

Bituminous concrete driveway aprons removed during any given work period shall be replaced within that same work period unless otherwise approved by the Engineer. Curb replacement and topsoiling work behind the curb may take place during a separate work period as required.

Permanent epoxy resin pavement markings shall be installed 30 days after the placement of the final surface course of pavement to avoid bleeding of asphalt through the epoxy paint. Temporary pavement markings shall be installed where necessary on the surface course of pavement as indicated in the Maintenance and Protection of Traffic Special Provision.

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

The Contractor shall temporarily provide a 4H:1V traversable slope of suitable material in those areas where a longitudinal dropdown exists. The cost of furnishing, installing and removing this material shall be included in the contract lump sum for "Maintenance and Protection of Traffic."

The Contractor shall ensure that suitable temporary access is provided to all residential and commercial driveways at all times as described in the Special Provision for Maintenance and Protection of Traffic.

Article 1.08.04 - Limitation of Operations - Add the following:

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

On the following State observed Legal Holidays:
New Year's Day
Good Friday, Easter*
Memorial Day
Independence Day
Labor Day
Thanksgiving Day**
Christmas Day

The following restrictions also apply:
On the day before and the day after any of the above Legal Holidays.

On the Friday, Saturday, and Sunday immediately preceding any of the above Holidays celebrated on a Monday.

On the Saturday, Sunday, and Monday immediately following any of the above Holidays celebrated on a Friday.

* From 6:00 a.m. the Thursday before the Holiday to 8:00 p.m. the Monday after the Holiday.
** From 6:00 a.m. the Wednesday before the Holiday to 8:00 p.m. the Monday after the Holiday.

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
1. **Material Documentation**
2. **Transportation of Mixture**
3. **Paving Equipment**
4. **Test Section**
5. **Transitions for Roadway Surface**
6. **Spreading and Finishing of Mixture**
7. **Longitudinal Joint Construction Methods**
8. **Contractor Quality Control (QC) Requirements**
9. **Temperature and Seasonal Requirements**
10. **Field Density**
11. **Acceptance Sampling and Testing**
12. **Density Dispute Resolution Process**
13. **Corrective Work Procedure**
14. **Protection of the Work**
15. **Cut Bituminous Concrete Pavement**

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 a uniform textured, non-segregated, smooth bituminous concrete pavement to the grade and cross section shown on the plans.

The following terms 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 which are:
PWL density lots = When the project total estimated quantity per mixture is larger than 3,500 tons
Simple Average density lots = When the project total estimated quantity per mixture is 3,500 tons or less

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 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 CTDOT 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 meet 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, “-W”must be listed following the mixture designation.
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 of 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 and project 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 1 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 material 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%, 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 strictly 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 clear of areas paved or to be paved. Before any such equipment and tools are cleaned, they shall be moved off of areas paved or to be paved.

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 (minimum length 20 feet).

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Roller 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. 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 psi 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 are 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.

TABLE4.06-1: 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 25feet 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 minimum output of 50,000 lumens and emit light equally in all directions.

Material Transfer Vehicle (MTV): A MTV shall be used when placing bituminous concrete surface course (a lift or multiple lifts) as indicated in the Contract except as noted on the plans or as directed by the Engineer. In addition, continuous paving lengths of less than 500 feet may not require the use of a MTV as determined by the Engineer.

The MTV must be a vehicle specifically designed for the purpose of delivering the bituminous concrete mixture from the delivery vehicle to the paver. The MTV must continuously remix the bituminous concrete mixture throughout the placement process.

The use of a MTV will be subject to the requirements stated in Article 1.07.05 Load Restrictions. The Engineer may limit the use of the vehicle if it is determined that the use of the MTV may damage highway components, utilities, or bridges. The Contractor shall submit to the Engineer at time of pre-construction the following information:

1. The make and model of the MTV.
2. The individual axle weights and axle spacing for each piece of paving equipment (haul vehicle, MTV and paver).
3. A working drawing showing the axle spacing in combination with all pieces of equipment that will comprise the paving echelon.

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 meet 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 ends shall meet the following length requirements:

Posted Speed Limit	Permanent Transition Length Required
> 35 mph	30 feet per inch of elevation change
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: Defined as a transition that does not remain a permanent part of the work. All temporary transitions shall meet the following length requirements:

Posted Speed Limit	Temporary Transition Length Required
> 50 mph	Leading Transition: 15 feet per inch of vertical change (thickness) Trailing Transition: 6 feet per inch of vertical change (thickness)
40, 45 or 50 mph	Leading and Trailing: 4 feet per inch of vertical change (thickness)
35 mph or less	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 meet 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.

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 gal./s.y. for a non-milled surface and an application rate of 0.05 to 0.07 gal./s.y. 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 gal /s.y. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall be heated to 160°F ± 10°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 upper and lower surfaces 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 mixture temperature will be verified by means of a probe or infrared type of thermometer. The placement temperature range shall be listed in the quality control plan (QCP) for placement and meet the

requirements of Table M.04.03-4. Any HMA material that that falls outside the specified temperature range as measured by a probe thermometer may be rejected.
The Contractor shall inspect the newly placed pavement for defects in 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 impracticable 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	+/- 3/8 inch
S0.25, S0.375, S0.5	+/- 1/4 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 Section.

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 Article 4.06.04.
c) Delivered Weight of Mixture: When the delivery ticket shows that the truck 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 4.06.04 and eliminate all roller marks without displacement, shoving cracking, or aggregate breakage.

When placing a lift with a specified thickness less than 1 1/2 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.

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 1/4 inch from a Contractor-supplied 10 foot straightedge. For all other lifts of bituminous concrete, the tolerance shall be 3/8 inch. Such tolerance will apply to all paved areas.

Any surface that 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 1 ½ inches to 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 1 1/2 inches or greater than 3 inches. 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 1/4 inch at any location.

Method I - 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 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.

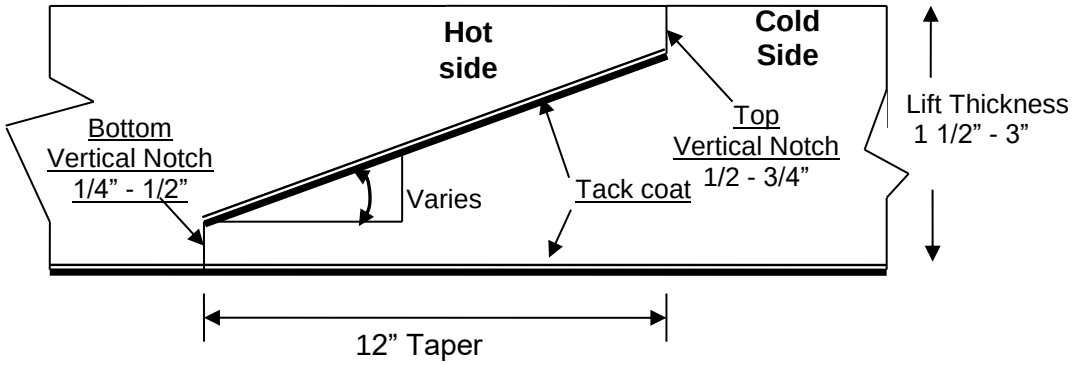
The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device. The compaction device shall be the same width as the taper and not reduce the angle of the wedge or ravel the top notch of the joint during compaction.

When placed on paved surfaces, the area below the sloped section of the joint shall be treated with tack coat.

The top surface of the sloped section of the joint shall be treated with tack coat prior to placing the completing pass.

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

Figure 4.06-1: Notched Wedge Joint (Not to Scale)



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.

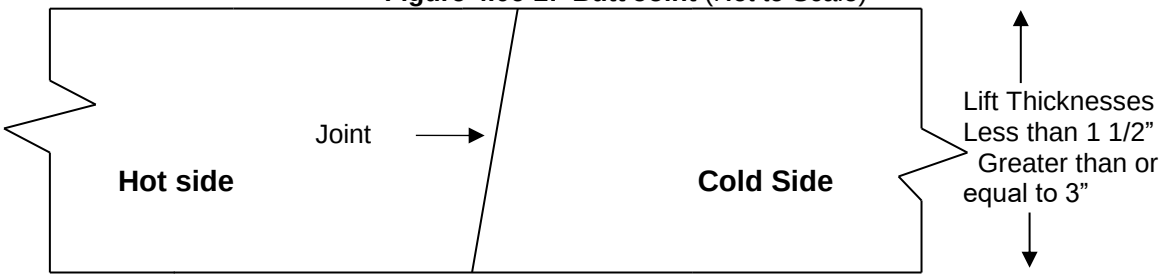
If Method I cannot be used on those lifts which are 1 ½ inches to 3 inches, Method III may be substituted according to the requirements below for "Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment."

Method II - Butt Joint:

When adjoining passes are placed, the Contractor shall use the end gate to create 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). During placement of multiple lifts, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inch from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. 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."

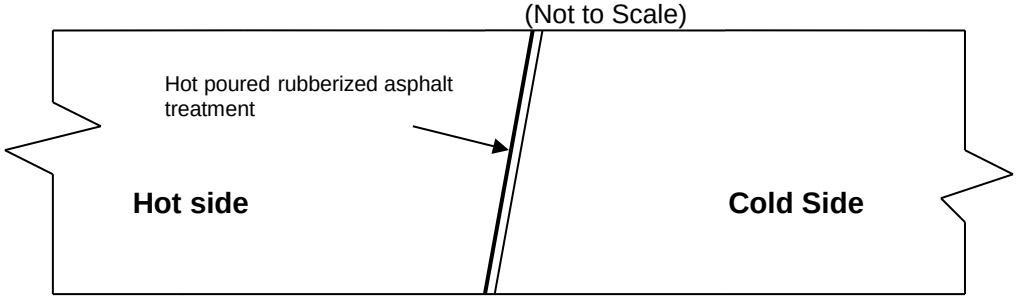
Figure 4.06-2: Butt Joint (Not to Scale)



Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment:

If Method I 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 use Method III as a substitution in those locations. There shall be no additional measurement or payment made when Method III is substituted for Method I. 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
(Not to Scale)



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 D6690, 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 (QCP) and must 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 3 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 4.06.03-9 "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.

The QCPs shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QC Technician performing in-place density testing shall be NETTCP certified as a paving inspector.

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 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 bituminous concrete 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 1 mat core and 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's 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 Subarticle 4.06.03-10.

9. Temperature and Seasonal Requirements: Paving, including placement of temporary pavements, shall be divided into 2 seasons, "In-Season" and "Extended-Season." In-Season paving occurs from May 1 to October 14, and Extended Season paving occurs from October 15 to April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

- Mixtures shall not be placed when the air or subbase 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. Field Density The Contractor shall obtain cores for the determination of mat and longitudinal joint density of bituminous concrete pavements. Within five calendar days of placement, mat and joint cores shall be extracted on each lift with a specified thickness of 1 1/2 inches or more. Joint cores shall not be extracted on HMA S1.0 lifts.

The Contractor shall extract cores from random locations determined by the Engineer in accordance with ASTM D3665. Four (4) or six (6) inch diameter cores shall be extracted for S0.25, S0.375 and S0.5 mixtures; 6 inch diameter cores shall be required for S1.0 mixtures. The Contractor shall coordinate with the Engineer to witness the extraction, labeling of cores, and filling of the core holes.
Each lift will be separated into lots as follows:

a) Simple Average Density Lots: For total estimated quantities below 2,000 tons, the lift will be evaluated in one lot which will include the total paved tonnage of the lift and all longitudinal joints between the curb lines. For total estimated quantities between 2,000 and 3,500 tons, the lift will be evaluated in two lots in which each lot will include approximately half of the total tonnage placed for the full paving width of a lift including all longitudinal joints between the curb lines.

b) PWL Density Lots: Mat density lots will include each 3,500 tons of mixture placed within 30 calendar days. Joint density lots will include 14,000 linear feet of constructed joints. Bridge density lots will always be analyzed using simple average lot methodology.

c) Partial Density Lot (For PWL only): A mat density lot with less than 3,500 tons or a joint density lot with less than 14,000 linear feet due to completion of the course; or a lot spanning 30 calendar days.

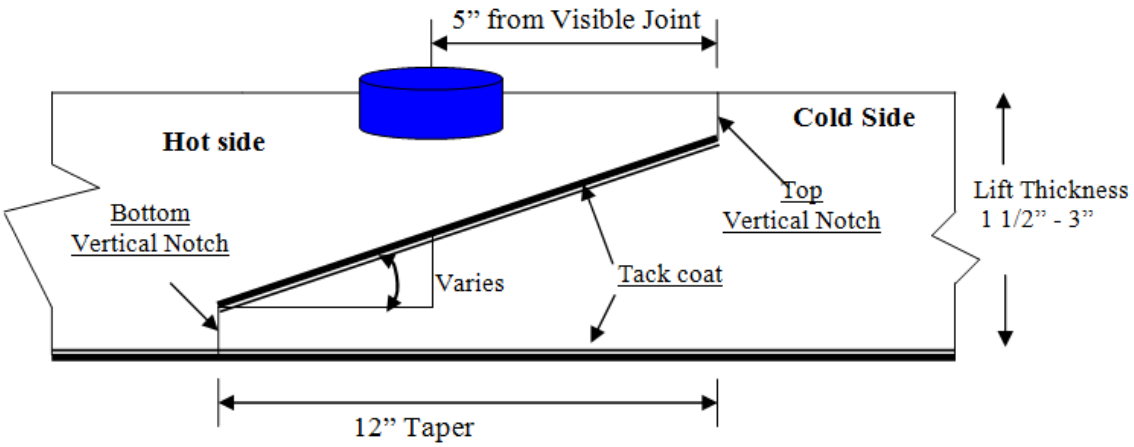
Prior to paving, the type and number of lot(s) will be determined by the Engineer. Noncontiguous areas such as highway ramps may be combined to create one lot.

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 shall 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 1 foot from the edge of a paver pass. If a random number locates a core less than 1 foot from any edge, the location will be adjusted by the Engineer so that the outer edge of the core is 1 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 4.06-4).

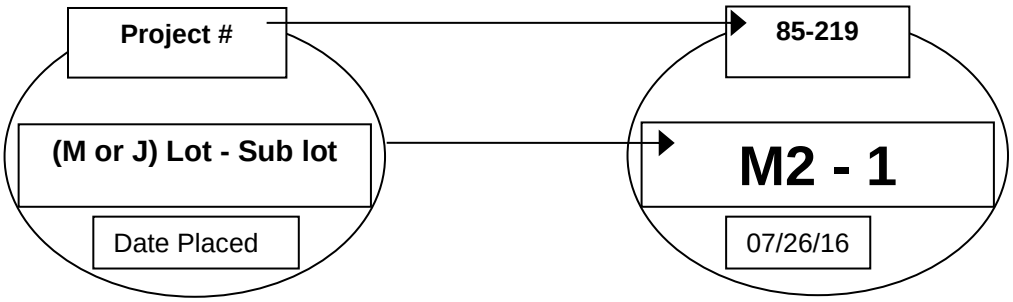
Figure 4.06-4: Notched Wedge Joint Cores (Not to Scale)



When Method II or Method III Butt Joint is used, 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. For example, a mat core from the first lot and the first sub-lot shall be labeled with "M1 – 1." A mat core from the second lot and first sub-lot shall be labeled "M2-1" (see Figure 4.06-5). 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 security seals at the removable hinges(s) and at the lid opening(s). The security seals' identification number must be documented on the MAT-109. All sealed containers shall be delivered to the Department's Central Lab within two working days from time of extraction. Central Lab personnel will break the security seal and take possession of the cores.

Figure 4.06-5: Labeling of Cores



Each core hole shall be filled within 4 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 240°F 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 1/8 inch above the finished pavement.

Simple Average Density Lots:

A standard simple average density lot is the quantity of material placed within the defined area excluding any bridge decks.

A combo simple average density lot is the quantity of material placed within the defined area including bridge decks less than or equal to 500 feet long.

A bridge simple average density lot is the quantity of material placed on a bridge deck longer than 500 feet.

The number of cores per lot shall be determined in accordance with Table 4.06-4. If a randomly selected mat or joint core location is on a bridge deck, the core is to be obtained on the bridge deck in addition to the core(s) required on the bridge deck.

The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

The longitudinal locations of mat cores within a standard, combo, or bridge lot containing multiple paving passes will be determined using the combined length of the paving passes within the lot.

TABLE 4.06-4: Number of Cores per Lot (Simple Average)

Lot Type	No. of Mat Cores		No. of Joint Cores	
Standard Lot < 500 Tons	3		3	
Standard Lot ≥ 500 Tons	4		4	
Combo Lot < 500 Tons	2 plus	1 per bridge (≤ 300')	2 plus	1 per bridge (≤ 300)
Combo Lot ≥ 500 Tons(1)	4 plus	2 per bridge (301' – 500')	4 plus	2 per bridge (301' – 500')

TABLE 4.06-5: Number of Core per Bridge Density Lot (Simple Average)

Length of Bridge(s) (Feet)	Minimum No. of Mat Cores	Minimum No. of Joint Cores
< 500	2	2
501 – 1,500	3	3
1,501 – 2,500	4	4
2,501 and greater	5	5

PWL Density Lots:

A PWL mat density lot is 3,500 tons of material placed within the defined area excluding any bridges. One mat core will be obtained per every 500 tons placed.

A PWL joint density lot is 14,000 linear feet of longitudinal joint excluding any joints on bridge decks. One joint core will be obtained per every 2,000 linear feet of joint.

Bridge density lots will always be analyzed as using the simple average lot methodology. The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

11. Acceptance Sampling and Testing: Sampling shall be performed in accordance with ASTM D3665 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 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's 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 five calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results from samples taken prior to and after finish rolling, and within the timeframe described in 4.06.03-8 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 core or set of core samples per disputed lot. The core samples must be extracted no later than seven calendar days from the date of the Engineer's authorization. All such core samples shall be extracted and the core hole filled using the procedure outlined in 4.06.03-10.

a) Simple Average Lots: The Contractor may only dispute any simple average lot that is adjusted at or below 95 percent payment. 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. The dispute resolution results shall be combined with the original results and averaged for determining the final in-place density value.

b) PWL Lots: The Contractor may dispute any PWL sublot when the PWL falls below 50% calculated in accordance with section 4.06.04.2.b. An additional random core in the sublot may be taken to validate the accuracy of the core in question. The Department will verify the additional core test result and may average the original test result with the additional core result for purpose of calculating adjustments.

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:

a) 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.

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

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 bituminous concrete 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*: Bituminous concrete will be measured for payment as the amount of material in tons placed as determined by the net weight on the delivered tickets and adjusted by area, thickness and weight as follows:

Quantity Adjustments: Adjustments may be applied to the placed bituminous concrete quantities that will be measured for payment using the following formulas:

Yield Factor for Adjustment Calculation = 0.0575 tons/SY/inch

Actual Area (SY) = [(Measured Length (ft)) x (Avg. of width measurements (ft))]÷9 s.f./SY

Actual Thickness (t) = Total tons delivered / [Actual Area (SY) x 0.0575 tons/SY/inch]

a) Area: If the average width exceeds the allowable tolerance, an adjustment will be made using the following formula. The tolerance for width is equal to the specified thickness (inch) of the lift being placed.

Quantity Adjusted for Area (T_A) = [(L x W_{adj})/9] x (t) x 0.0575 Tons/SY/inch = (-) tons

Where: L = Length (ft)
(t) = Actual thickness (inches)
W_{adj} = (Designed width (ft) + tolerance /12) - Measured Width)

b) Thickness: If the actual average thickness is less than the allowable tolerance, the Contractor shall submit a repair procedure to the Engineer for approval. If the actual thickness exceeds the allowable tolerance, an adjustment will be made using the following formula:

Quantity Adjusted for Thickness (T_T) = A x t_{adj} x 0.0575 = (-) tons

Where: A = Area = {[L x (Design width + tolerance (lift thickness)/12)] / 9}
t_{adj} = Adjusted thickness = [(Dt + tolerance) - Actual thickness]
Dt = Designed thickness (inches)

c) Weight: If the quantity of bituminous concrete representing the mixture delivered to the Project is in excess of the allowable gross vehicle weight (GVW) for each vehicle, an adjustment will be made using the following formula:

Quantity Adjusted for Weight (T_W) = GVW – DGW= (-) tons

Where: DGW = Delivered gross weight as shown on the delivery ticket or measured on a certified scale

2. Bituminous Concrete Adjustment Cost:

a) Production Lot Adjustment: An adjustment may be applied to each production lot as follows:

i. Non-PWL Production Lot (less than 3,500 tons):

The adjustment values in Tables 4.06-6 and 4.06-7 will be calculated for each sub lot based on the Air Void (AV) and Asphalt Binder Content (PB) test results for that sub lot. The total adjustment for each day's production (lot) will be computed as follows:

Tons Adjusted for Superpave Design (T_{SD}) = $[(AdjAV_t + AdjPB_t) / 100] \times Tons$

Where: $AdjAV_t$: Percent adjustment for air voids
$AdjPB_t$: Percent adjustment for asphalt binder
Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

Percent Adjustment for Air Voids = $AdjAV_t = [AdjAV_1 + AdjAV_2 + AdjAV_i + \ldots + AdjAV_n)] /n$

Where: $AdjAV_t$ = Total percent air void adjustment value for the lot
$AdjAV_i$ = Adjustment value from Table 4.06-6 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.
n = number of sub lots based on Table M.04.03-2

TABLE 4.06-6: Adjustment Values for Air Voids

Adjustment Value ($AdjAV_i$) (%)	**S0.25, S0.375, S0.5, S1 Air Voids (AV)**
+2.5	3.8 - 4.2
+3.125*(AV-3)	3.0 - 3.7
-3.125*(AV-5)	4.3 – 5.0
20*(AV-3)	2.3 – 2.9
-20*(AV-5)	5.1 – 5.7
-20.0	≤ 2.2 or ≥ 5.8

Percent Adjustment for Asphalt Binder = $AdjPB_t = [(AdjPB_1 + AdjPB_2 + AdjPB_i + \ldots + AdjPB_n)] /n$

Where: $AdjPB_t$= Total percent liquid binder adjustment value for the lot
$AdjPB_i$ = Adjustment value from Table 4.06-7 resulting from each sub lot
n = number of binder tests in a production lot

TABLE 4.06-7: Adjustment Values for Binder Content

Adjustment Value ($AdjAV_i$) (%)	**S0.25, S0.375, S0.5, S1 Pb**
0.0	JMF Pb ± 0.3
- 10.0	≤ JMF Pb - 0.4 or ≥ JMF Pb + 0.4

ii. PWL Production Lot (3500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on AV, VMA, and PB test results. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

Only one test result will be considered for each sub lot. The specification limits are listed in M.04.

For AV, PB, and voids in mineral aggregate (VMA), the individual material quantity characteristic adjustment (Adj) will be calculated as follows:

For PWL between 50 and 90%: Adj(AV_t or PB_t or VMA_t)= (55 + 0.5 PWL) - 100
For PWL at and above 90%: Adj(AV_t or PB_t or VMA_t)= (77.5 + 0.25 PWL) - 100

Where: $AdjAV_t$ = Total percent AV adjustment value for the lot
$AdjPB_t$= Total percent PB adjustment value for the lot
$AdjVMA_t$= Total percent VMA adjustment value for the lot

A lot with PWL less than 50% in any of the 3 individual material quality characteristics will be evaluated under 1.06.04.

The total adjustment for each production lot will be computed using the following formula:

Tons Adjusted for Superpave Design (T_{SD}) = $[(0.5AdjAV_t + 0.25AdjPB_t + 0.25\ AdjVMA_t) / 100]$ X Tons

Where Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

iii. Partial Lots:
Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material or if the last test result of the prior lot is over 30 calendar days old, the adjustment will be calculated as indicated in 4.06.04-2.a)i.
Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.a)ii.

Production Lot Adjustment: T_{SD} x Unit Price = Est. (Pi)

Where: Unit Price = Contract unit price per ton per type of mixture
Est. (Pi)= Pay Unit in dollars representing incentive or disincentive per lot

b) Density Lot Adjustment: An adjustment may be applied to each density lot as follows:

i. Simple Average Density Lot (less than 3500 tons) and Bridge Lots:
The final lot quantity shall be the difference between the total payable tons for the Project and the sum of the previous lots. If either the Mat or Joint adjustment value is “remove and replace,” the density lot shall be removed and replaced (curb to curb).

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

Tons Adjusted for Density (T_D) = $[\{(PA_M \times 0.50) + (PA_J \times 0.50)\} / 100]$ X Tons
Where: T_D = Total tons adjusted for density for each lot
PA_M = Mat density percent adjustment from Table 4.06-8
PA_J = Joint density percent adjustment from Table 4.06-9
Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

TABLE 4.06-8: Adjustment Values for Pavement Mat density

Average Core Result **Percent Mat Density**	**Percent Adjustment (Bridge and Non-Bridge) [(1)(2)]**
97.1 - 100	-1.667*(ACRPD-98.5)
94.5 – 97.0	+2.5
93.5 – 94.4	+2.5*(ACRPD-93.5)
92.0 – 93.4	0

90.0 – 91.9	-5*(92-ACRPD)
88.0 – 89.9	-10*(91-ACRPD)
87.0 – 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

Notes:
(1) ACRPD = Average Core Result Percent Density
(2) All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67.

TABLE 4.06-9: Adjustment Values for Pavement Joint Density

Average Core Result Percent Joint Density	**Percent Adjustment (Bridge and Non-Bridge) (1)(2)**
97.1 – 100	-1.667*(ACRPD-98.5)
93.5 – 97.0	+2.5
92.0 – 93.4	+1.667*(ACRPD-92)
91.0 – 91.9	0
89.0 – 90.9	-7.5*(91-ACRPD)
88.0 – 88.9	-15*(90-ACRPD)
87.0 – 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

Notes:
(1) ACRPD = Average Core Result Percent Density
(2) All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67

Additionally, any sublot with a density result below 87% will be evaluated under 1.06.04.

ii. PWL Density Lot (3,500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on mat and joint density test results. Only one result will be included for each sublot. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

The specification limits for the PWL determination are as follows:
Mat Density: 91.5-98%
Joint Density: 90-98%
For mat and joint density, the individual percent adjustment (PA) will be calculated as follows:
For PWL between 50 and 90%: PA ($_M$ or $_J$)= 0.25 * PWL – 22.50
For PWL at and above 90%: PA ($_M$ or $_J$)= 0.125 * PWL – 11.25
Where: PA_M = Total percent mat density adjustment value for the PWL mat density lot
PA_J= Total percent joint density adjustment value for the PWL joint density lot

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

A lot with PWL less than 50% will be evaluated under 1.06.04.
The total adjustment for each PWL mat density lot will be computed as follows:

Tons Adjusted for Mat Density (T_{MD}) = (PA_M / 100) X Tons

Where: Tons= Weight of material (tons) in the lot adjusted by 4.06.4-1.
The total adjustment for each PWL joint density lot will be computed as follows:

Tons Adjusted for Joint Density (T_{JD}) = (PA_J / 100) X J_Tons

Tons Adjusted for Joint Density will be calculated at the end of each project or project phase.

Where: $\text{J\_Tons} = \text{Tons in project or phase adjusted by } 4.06.4 - 1 \text{ x } \frac{\text{Lot joint length}}{\text{Joint length in project or phase}}$

All bridge density lot adjustments will be evaluated in accordance with 4.06.04-2.b)i.

Additionally, any sublot with a density result below 87% will be evaluated under 1.06.04.

iii. Partial Lots:
Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material and placement conditions or if the last test result of the prior lot is over 30 calendar days old, the mat and joint individual adjustments will be calculated in accordance to Tables 4.06-8 and 4.06-9. T_{MD} and T_{JD} will be calculated as indicated in 4.06.04-2.b)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.b)ii.

Density Lot Adjustment (Simple Average Lots): T_D x Unit Price = Est. (Di)
Density Lot Adjustment (PWL Lots): (T_{MD} or T_{JD}) x Unit Price = Est. (DMi or DJi)

Where: Unit Price = Contract unit price per ton per type of mixture
Est. (Di)= Pay Unit in dollars representing incentive or disincentive per simple average density lot
Est. (DMi)= Pay Unit in dollars representing incentive or disincentive per PWL mat lot
Est. (DJi)= Pay Unit in dollars representing incentive or disincentive per PWL joint lot

Additionally, any sublot with a density result below 87% will be evaluated under 1.06.04.

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

The quantity of material used for the installation of temporary transitions will 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 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 4.06.03.

a. **Container Method** – Material furnished in a container will be measured to the nearest 1/2 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 1/2 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:
   Tack Coat (gallons at 60°F) = Measured Weight (pounds) / Weight per gallon at 60°F
   Tack Coat (gallons at 60°F) = 0.996 x Measured Weight (pounds) / Weight per gallon at 77°F
   ii. Measured by automated metering system on the delivery vehicle:
   Tack Coat (gallons at 60°F) = 0.976 x Measured Volume (gallons).

6. Material Transfer Vehicle (MTV): The furnishing and use of a MTV will be measured separately for payment based on the actual number of surface course tons delivered to a paver using the MTV.

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

Production Lot: Σ Est (Pi) = Est. (P)
Density Lot (Simple Average Lots): Σ Est (Di) = Est. (D)
Density Lot (PWL): Σ Est (DMi) + Σ (DJi) = Est. (D)
Bituminous Concrete Adjustment Cost= Est. (P) + Est. (D)

Where: Est. ( )= Pay Unit in dollars representing incentive or disincentive in each production or density lot calculated in 4.06.04-2

The Bituminous Concrete Adjustment Cost item, if included in the bid proposal or estimate, is not to be altered in any manner by the Bidder. If the Bidder should alter the amount shown, the altered figure will be disregarded and the original estimated cost will be used for the Contract.

3. Transitions for Roadway Surface: The installation of permanent transitions will be paid under the appropriate item used in the formation of the transition. The quantity of material used for the installation of temporary transitions will 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 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."

6. The Material Transfer Vehicle (MTV) will be paid at the Contract unit price per ton for "Material Transfer Vehicle."

Item No.	Description	Unit
0406236A	MATERIAL FOR TACKCOAT	GAL.
0406442A	HMA S- 0.5” LEVEL 2	TON
0406999A	ASPHALT ADJUSTMENT COST	EST.

SECTION 10.00 GENERAL CLAUSES FOR HWY. ILLUM. AND TRAFFIC SIGNAL PROJECTS

Article 10.00.03 – Add the following: The Contractor shall advise the Engineer of any change of measurement or layout from the plans. The Contractor shall provide as-built plans to the Engineer and/or Town prior to inspection.

Article 10.00.10 Section 3. Functional Inspection, first paragraph after the 2nd sentence: Add the following:

The contractor shall have a bucket truck with crew on site during the Functional Inspection to make any necessary aerial signal adjustments as directed by the Engineer.

Article 10.00.12 - Negotiations with utility company: Add the following:

The contractor shall give notice to utility companies a minimum of 30 days prior to required work or services to the utility company. Refer to Section 1.07 – Legal Relations and Responsibilities for the list of utility companies and representatives the contractor shall use.

The Contractor shall perform all work in conformance with Rules and Regulations of Public Utility Regulatory Authority (PURA) concerning Traffic Signals attached to Public Service Company Poles. The Contractor is cautioned that there may be energized wires in the vicinity of the specified installations. In addition to ensuring compliance with NESC and OSHA regulations, the Contractor and/or its Sub-Contractors shall coordinate with the appropriate utility company for securing/protecting the site during the installation of traffic signal mast arms, span poles or illumination poles.

When a span is attached to a utility pole, the Contractor shall ensure the anchor is in line with the proposed traffic signal span wire. More than 5 degree deviation will lower the holding strength and is not allowed. The Contractor shall provide any necessary assistance required by the utility company, and ensure the anchor and guy have been installed and properly tensioned prior to attaching the span wire to the utility pole.

ITEM # 0202513A REMOVAL OF CONCRETE SIDEWALK

Description:

The work of this item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required for the removal of existing concrete sidewalk and concrete sidewalk ramp including excavation and disposal of excess material to the proposed sidewalk or sidewalk ramp subgrade and saw cutting in the locations shown on the plans and details, as specified herein, or as directed by the Engineer.

Construction Methods:

Saw cutting for the removal of existing concrete sidewalk or concrete sidewalk ramp for the installation of new concrete sidewalk or concrete sidewalk ramp shall be made at an existing joint utilizing a motor driven saw providing a clean vertical edge.

The Contractor is responsible for removal and disposal of the existing concrete sidewalk and concrete sidewalk ramp in the locations indicated on the plans and details or as directed by the Engineer.

The Contractor is responsible for saw cutting and removal of adjacent curbing and adjacent brick paver strip in the locations indicated on the plans and details or as directed by the Engineer.

The Contractor is responsible for excavation and disposal of excess material to the depth of the proposed subgrade to facilitate the installation of new concrete sidewalk or concrete sidewalk ramp to the lines and grades indicated on the plans and details or as directed by the Engineer.

As described in the Special Conditions Section 7.00, the Town's Bulky Waste Facility located on Tryon Street is available to the contractor for disposal of this material at no cost to the contractor.

Method of Measurement:

Removal of Concrete Sidewalk: This work will be measured by the actual number of square yards of existing concrete sidewalk or concrete sidewalk ramp removed and disposed of off-site of completed and accepted Removal of Concrete Sidewalk.

Earth excavation to the depth of the proposed subgrade and disposal of excess material will not be measured for payment, but the cost shall be included in the bid price for Removal of Concrete Sidewalk.

Saw cutting will not be measured for payment, but the cost shall be included in the bid price for Removal of Concrete Sidewalk.

Saw cutting and removal of adjacent curbing and adjacent brick paver strip will not be measured for payment, but the cost shall be included in the bid price for Removal of Concrete Sidewalk.

Basis of Payment:

Removal of Concrete Sidewalk will be paid for at the contract unit price per square yard for "Removal of Concrete Sidewalk" which price includes removal and disposal of existing concrete sidewalk or concrete sidewalk ramp, saw cutting, removal of adjacent curbing and brick paver strip, excavation and disposal of excess material, equipment, tools, materials and labor incidental thereto.

Item No.	Description	Unit
0202513A	REMOVAL OF CONCRETE SIDEWALK	S.Y.

ITEM # 0204503A TRENCH DEWATERING

Description:

To ensure proper conditions at all time during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdown) with which to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations. Such excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.

All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Suitable temporary pipes, flumes, or channels shall be provided for water that may flow along or across the site of the work.

All water removed from the excavation shall be adequately treated to remove siltation prior to discharge using measures described in Article 1.10.03-Water Pollution Control of the Form 817 and Section 5-13 of the 2002 CT Guidelines for Soil Erosion and Sediment Control.

Construction Methods:

Temporary Underdrains: Temporary Underdrains, if used, shall be laid in trenches beneath the grade of the structure. Trenches shall be of suitable dimensions to provide room for the chosen size of underdrain and its surrounding gravel. Underdrain pipe shall be acceptable PVC or ADS pipe of standard thickness. Sewer pipe of the quality known as “seconds” will be acceptable.

Underdrains, if used, shall be laid at an approved distance below the bottom of the normal excavation wrapped in geotextile (TC Mirafi 140N or equal) and entirely surrounded by graded gravel or crushed stone to prevent the admission of sand or other soil into the underdrains. The distance between the top of the bell of the underdrain pipe shall be at least three (3) inches unless otherwise permitted. The space between the underdrain and the pipe or structure shall be filled and crushed stone which shall be rammed, if necessary, and left with a surface suitable for laying the pipe or building the structure.

Drainage Wellpoint System: If required, the Contractor shall dewater the excavations by means of an efficient drainage system which will drain the soil and prevent saturated soil from flowing into the excavation. The wellpoints shall be designed especially for this type of service. The pumping unit shall be designed for use with the wellpoints and shall be capable of maintaining a high vacuum and of handling large volumes of air and water at the same time.

If required, the installation of the wellpoints and pump shall be done under the supervision of a competent representative of the manufacturer. The Contractor shall do all special work such as surrounding the wellpoints with sand or gravel or other work which is necessary for the wellpoint system to operate for the successful dewatering of the excavations.

Basis of Payment:

This item will not be paid for separately. Rather, payment for trench dewatering, including suitable pumps, underdrains, wellpoint system, or other methods and equipment necessary to dewater the excavation, as well as treatment of such water in a manner consistent with Article 1.10.03-Water Pollution Control of the Form 817 and Section 5-13 of the CT Guidelines for Soil Erosion and Sediment Control, shall be included in the unit price of the item associated therewith.

ITEM # 0205001A EARTH TRENCH EXCAVATION AND BACKFILL

Description:

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

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

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

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

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

Construction Methods:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MAXIMUM TRENCH WIDTHS FOR VARIOUS PIPE SIZES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Materials: The nature of the materials will govern both their acceptability for backfill and the methods best suited for their placement and compaction in the backfill. The materials and methods shall both be subject to the approval and direction of the Engineer. No stone or rock fragment larger than 12 inches in greatest dimension shall be placed in the backfill nor shall large masses of backfill material be dropped into the trench in such a manner as to endanger the pipeline. If necessary, a timber grillage shall be used to break the fall of material dropped from a height of more than five feet. Pieces of bituminous pavement shall be excluded from the backfill unless their use is expressly permitted, in which case they shall be broken up as directed.

b. Zone Around Pipe: The zone around the pipe shall be backfilled with the materials and to the limits indicated on the drawings. Selected earth, or screened gravel, if used, shall be thoroughly compacted by tamping.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

f. Tamping: If the material does not require jetting or puddling, compaction shall be accomplished by tamping or, under appropriate circumstances, rolling. The material shall be deposited and spread in uniform, parallel layers not exceeding 12 inches thick before compaction. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. If necessary, the

Contractor shall furnish and use an adequate number of power driven tampers, each weighing at least 20 lb for this purpose. Care shall be taken that the material close to the bank, as well as in all other portions of the trench, is thoroughly compacted. When the trench width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe, backfill may, on approval, by compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping (or rolling), the rate at which backfilling material is deposited in the trench shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

If necessary to ensure proper compaction by tamping (or rolling), the material shall first be wet by sprinkling. However, no compaction by tamping (or rolling) shall be done when the material is too wet either from rain or too great an application of water to be compacted properly. At such times, the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compacting, or such other precautions shall be taken as may be necessary to obtain proper compaction.
g. Ho Pac Trench Consolidation: Where the trench backfill is consolidated by the "Ho Pac" method and the depth of the trench from the road or ground surface to the top of the pipe exceeds eight feet, the trench backfill shall be placed and consolidated in two lifts of equal depth.

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

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

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

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

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

In general, such embankments may be made with materials excavated on the job and not used for backfill elsewhere. Should there not be sufficient surplus material for embankments, or should it be unsuitable or inconveniently located, the Contractor shall secure and provide sufficient suitable material. In any case, where the Town has provided borrow pits from which the Contractor may obtain filling material, the

Contractor must conform to the conditions for excavating and moving such material as established by acts of the Town in obtaining such rights, and by indications on drawings or in other contract documents.

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

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

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

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

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

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

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

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

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

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

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

Basis of Payment:

This item will not be paid for separately. Rather, payment for earth trench excavation, trench support (including sheeting, shoring or bracing as required by soil conditions), dewatering, backfilling, compacting, and disposal of surplus excavated material shall be included in the unit price or lump sum price of the item associated therewith.

ITEM # 0216012A CONTROLLED LOW STRENGTH MATERIAL

Description:

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

Materials:

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

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

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

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

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

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

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

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

Method of Measurement:

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

Basis of Payment:

This work will be paid at the contract unit price per cubic yard “Controlled Low Strength Material,” which price shall include all materials, equipment, tools and labor incidental thereto.

Item No.	Description	Unit
0216012A	CONTROLLED LOW STRENGTH MATERAL	C.Y.

ITEM # 0219011A SEDIMENT CONTROL SYSTEM AT CATCH BASIN

Description:

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

Materials:

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

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

Construction Methods:

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

When the restraint cord is no longer visible, the sediment control sack is full and should be emptied.

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

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

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

Basis of Payment:

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

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

ITEM # 0404100A BITUMINOUS CONCRETE PATCHING – FULL DEPTH

Description:

The Contractor shall furnish all labor, materials, tools, and equipment necessary and shall construct full depth pavement patches in areas as shown on the plans and as directed by the Engineer. Pavement shall be installed per the typical pavement repair detail shown on the plans. Prior to excavation in paved areas, the Contractor shall cut the surface of the existing pavement with a pneumatic cutter or it's equal. The pavement shall be cut in as straight a line as possible on both sides of the proposed patch for the entire length of the job.

Materials:

All materials for Bituminous Concrete Patching shall be as per Section M.04 Special Provision included in this contract.

Subbase: The material for this item shall conform to the requirements of Article M.02.02-Subbase Grading "C" Gravel, except that reclaimed miscellaneous aggregate shall not be used.

Construction Methods:

The following procedure shall be followed when making a full depth pavement patch:

The patch area shall be excavated to the proper subgrade elevation, and the subgrade formed and compacted as required to provide a firm base. A 10-inch depth of subbase material shall be installed in two 5-inch thick lifts and compacted to 95% density. The area immediately adjacent to the edges of the trench must be swept clean so that no loose sand, temporary patch, or other debris remains, and the exposed edges of the pavement cuts coated with a tack coat approved by the Engineer prior to installation of bituminous materials..

A 5-inch thick lift of HMA 1.0" bituminous base course of shall be placed and compacted. Two 2-inch thick lifts of HMA 0.5" bituminous binder course and wearing surface shall be placed and compacted to match the existing pavement surface elevation.

All depth measurements shall be considered to be compacted depths. Bituminous material shall be compacted to a minimum 90% density.

The Contractor shall remove and acceptably dispose of all excavated material before proceeding with the remainder of the work.

Method of Measurement:

Bituminous Concrete Patching-Full Depth will be measured by the accepted number of square yards complete in place. There will be no direct payment for removal of pavement, removal of curbing, excavation, formation of subgrade, fine grading,

Basis of Payment:

The construction of Bituminous Concrete Patching-Full Depth shall be paid for at the contract price per square yard. The unit price shall include removal of pavement, removal of curbing, excavation, formation of subgrade, subbase, fine grading, furnishing and placing bituminous concrete, saw cutting, compaction, tack coat, and all other labor, equipment, and materials incidentals necessary to complete the work described.

Item No.	Description	Unit
0404100A	BITUMINOUS CONCRETE PATCHING-FULL DEPTH	S.Y.

ITEM # 0406189A PRE-OVERLAY CRACK FILLING (0.5 TO 1.25 INCHES)

Description:

This work consists of treating cracks and joints in existing pavement by cleaning them and furnishing and applying one of two filler materials into cracks and joints – (a) A hot-applied mixture of Performance-Graded (PG) asphalt binder and polyester fibers, to be used on cracks and joints between 0.5 and 1.25 inches wide, or (b) An asphalt-aggregate filler, to be used on cracks and joints over 1.25 inches wide – prior to application of a hot-mix asphalt (HMA) overlay or other surface treatment. It shall be constructed in accordance with these specifications and in close conformity with the lines, grades, thickness, and typical cross section shown on the plans or established by the Engineer. If the Contract includes milling of the pavement surface, application of any filler material is to be conducted after the milling is completed and the milled surface has been cleaned as required in the Contract.

1.1 Definitions:

Longitudinal paving joints: Joints formed along the direction of travel (longitudinally) between adjacent paving passes on the surface lift of a bituminous-concrete pavement structure, where a crack has formed as measured at the pavement surface. These joints belong to a particular class of cracks and are to be treated as cracks as per this Special Provision.

Longitudinal joint-reflection cracks in composite pavement: Longitudinal cracks formed atop the longitudinal joint in a Portland-cement-concrete pavement underlying the bituminous-concrete surface. These joints belong to a particular class of cracks and are to be treated as cracks as per this Special Provision.

Longitudinal cracks: Cracks the endpoints of which are more distant in the direction of roadway travel than across the width of the pavement.

Transverse cracks: Cracks the endpoints of which are at least as distant across the width of the pavement as they are along the direction of travel.

Crack width measurement location: Crack width measurement is to be conducted flush with the pavement surface.

Hot-Applied Crack Filler, Hot-Applied Crack Filling Material: A blend of PG76-22 asphalt binder and polyester fiber.

Asphalt-Aggregate Filler: A hot-mix asphalt material with small maximum aggregate size suitable for use in filling cracks and joints greater than 1.25 inches.

Optional Filling Barrier Material: A material that may be used to prevent the intrusion of hot-applied PG asphalt binder with polyester fibers below a specified depth within the crack.

Flush Fill: Method of filling a joint or crack from the bottom up to the top, or just below the top, such that no crack filling material is allowed to overflow onto the adjacent pavement surface immediately around the crack or joint. This shall be accomplished using the appropriately sized and tipped application wand to place liquid crack filler, in a crack or joint, between 0.5 inches and 1.25 inches in width.

Materials:

Unless otherwise stated, all Material Certifications, Certified Test Reports, General Certifications, and Material Safety Data Sheets required prior to the start of the work, shall be submitted to the Engineer no later than 14 days prior to the start of the work. These minimum time submission requirements may be

shortened with approval from the Engineer. All submissions not conforming to this specification shall be reason for the Engineer to stop the work until such time that all proper submission requirements are met. All correspondence, with regard to material requirements, shall be performed in writing between the Engineer and the Contractor.

The hot-applied crack filling material shall be composed of a mixture of Performance Graded Asphalt Binder and polyester fibers blended to provide 4.5 to 5.5 percent polyester fibers by weight. No field mixing of the fibers is allowed. The crack filling material (with fibers) shall be prepackaged and arrive on site ready to be placed in the melter applicator. The materials shall meet the following requirements:

2.a Polyester Fibers.

A General Certification from the manufacturer is required for this material. The polyester fibers must meet the following requirements:

Length: 6.4 mm ± 0.05 mm (0.25 inches ± 2 mils)
Crimps: (ASTM D-3937) None
Tensile Strength, (ASTM D-2256)* 480 MPa (69,600 psi) minimum
Denier, (ASTM D-1577)* 3.0 to 6.0
Specific Gravity 1.32 to 1.40
Melting Temperature 245 ºC (473 ºF) minimum
Ignition Temperature 540 ºC (1000 ºF) minimum
* This data must be obtained prior to cutting the fibers.

2.b Performance Graded (PG) Asphalt binder

The Performance Graded (PG) Asphalt binder shall be Performance Grade 76-22 and shall meet the requirements of AASHTO M-320(M) and AASHTO R-29(M). 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 asphalt binder specific gravity at 77°F, rotational viscosity at 275°F and 329°F, and a mixing and compaction viscosity-temperature chart as if the asphalt binder were to be used as binder for the construction of hot-mix asphalt. The blending of PG asphalt binder from different Suppliers is strictly prohibited. Contractors who blend PG asphalt binders will be classified as a Supplier and will be required to certify the asphalt binder in accordance with AASHTO R-26(M).

The Contractor must submit to the Engineer all Material Safety Data Sheet documents from the material manufacturer(s) prior to the commencement of work. During work progress, the contractor must submit to the Engineer the manufacturer's certificate of testing for compliance to applicable specifications for each batch or lot of material utilized on the contract.

2.c Asphalt-Aggregate Filler

All Asphalt-Aggregate Filler used for filling cracks or joints shall be composed of hot-mix asphalt (HMA) conforming to the requirements of Section M.04 of the Standard Specifications. Furthermore, the selected HMA material shall be HMA S0.25 (Superpave Design Level 1 or 2), or Bituminous Concrete Class 2, 3, 5, 5A, 5B or 12.

2.d Optional Filling Barrier Material

Optional Filling Barrier Material shall be either of the following:

2.d.1 Clean, dry sand. Sand shall conform to the requirements of Standard Specifications Section M.03.01, Fine Aggregate, except that the gradation requirements shall be replaced with the following:

Square Mesh Sieve	Percent Passing By Weight:
No. 8	100
No. 50	10-40
No. 100	0-10
No. 200	0- 3

2.d.2 Backer Rod. The backer rod shall be a heat resistant material compatible with the joint filler and acceptable to the manufacturer of the filler. No bond or reaction shall occur between the sealant and the rod. It shall be of a non water absorbent material and shall not melt or shrink when hot sealant is poured on it.

The backer rod shall have a maximum of 5% absorption when immersed in water for 24 hours with the ends sealed. The backer rod shall be of such a size that compression is required for installation in the joint, so that it maintains its position during the sealing operation. Backer rod shall be dry.

Manufacturers seeking approved use of backer rod under this provision may submit minimum two foot long samples to the Engineer. Listed below are some products that have not been tested yet, but are expected to meet the requirements stated above.

Manufacturer	**Brand Name**
Industrial Thermal Polymers	Hot Rod XL
NMC, Inc (Nomaco, Inc.)	HBR-XL
W. R. Meadows	Cera Rod

Equipment: Unless otherwise specified, the Engineer reserves the right to inspect all equipment listed below to be used in performing the work at least 5 days prior to starting the work. As requested by the Engineer, the Contractor shall make the equipment available on site to the Engineer for inspection at least 5 days prior to starting the work. The Engineer may waive or shorten this requirement. Work shall not commence until the Engineer has inspected and approved all equipment for use. All correspondence, with regard to equipment requirements and inspection, shall be performed in writing between the Engineer and the Contractor.

The equipment used by the contractor shall include, but be not limited to, one or more of each of the following:

(1) Melter Applicator: The unit shall consist of a boiler kettle equipped with pressure pump, hose, and applicator wand; the boiler kettle may be a combination melter and pressurized applicator of a double-boiler type with space between the inner and outer shells filled with heat transfer oil. Heat transfer oil shall have a flash point of not less than 600°F. The kettle shall include a temperature control indicator and a mechanical agitator. The kettle shall be capable of maintaining the treatment material at the manufacturer's specified application temperature range. The kettle shall include an insulated applicator hose and application wand. The hose shall be equipped with a shutoff control. The kettle shall include a mechanical fullsweep agitator to provide continuous blending. The unit shall be equipped with thermometers to monitor the material temperature and the heating oil temperature. The unit shall be equipped with thermostatic controls that allow the operator to regulate material temperature up to at least 425 °F.

(2) Application Wand: The Performance Graded Asphalt Binder with fibers shall be applied with a wand tip designed for flush filling cracks. In addition, for correction and mitigation of overfills, the Contractor shall have at all times a squeegee of commercial/industrial quality designed with a "U" shaped configuration. It shall be of a size adequate to strike off, flush with the surrounding pavement surface and without overflow around the sides, any excess overflow of hot joint and crack filler placed to fill joints and cracks. This tool shall be its own long handled tool. It is not intended that the squeegee be used as a regular part of the work. Proper flush filling does not, and should not, require the use of a squeegee. The squeegee shall only be used to correct areas that are overfilled.

(3) Hot Air Lance: The unit shall be designed for cleaning and drying the pavement surface cracks. Minimum compressed air capacity shall be 100 psi. The compressed air emitted from the tip of the lance shall be flame free and be capable of achieving a temperature of at least 1500°F.

(4) Asphalt Storage Hot Box: The unit shall be heated and designed to store and maintain the "Asphalt Aggregate Filler" at a constant temperature between 275°F and 315°F. Alternate methods/devices that insure delivery of the mix to the temperatures required can be approved by the Engineer. The Contractor may submit a proposal to the Engineer for approval at least 5 days before beginning the work.

(5) Hand Tamper(s): Two types of hand tampers are required. 1) A hand operated tamping tool shall be made from 1 inch (± 0.25 inches) steel tubing, 1 inch (± 0.25 inch) solid steel stock, or a combination of the two. The tubing or stock can be round or square and should be cut and manufactured to create a 4 to 6 foot handle and 3 to 4 inch piece of tubing or stock attached perpendicular to the end of the handle. The 3 to 4 inch piece of tubing or solid stock shall be used to ram and compact the Asphalt Aggregate Filler into the crack. 2) The second hand operated tamping tool shall consist of a 4 to 6 foot handle fastened to a flat steel or iron plate measuring at least 4 inches wide by 4 inches long. It must weigh at least 2 pounds. This tamper is to be used to finish tamping the surface of the Asphalt Aggregate Filler so that it becomes flush with the surrounding pavement surface.

Construction Methods:

The crack filling operation shall proceed in accordance with the requirements of the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications.

(1) **Weather Requirements:** Work will not be performed unless the pavement is dry. No frost, snow, ice, standing water, or visible moisture or dampness may be present on the roadway surface or within the cracks. No work shall be done if the ambient temperature is below 40º F during the field application operations.

(2) **Crack and Joint Preparation:** Pavement surface cracks and joints to be filled shall be treated with a hot-air lance prior to application of the crack fill material. Two passes, minimum, shall be made with the hot-air lance. The hot air lance operation shall proceed at a rate no greater than 120 feet per minute. There shall be no more than 10 minutes time lapse between the second hot-air lance treatment and the material application. Should this time be exceeded the Contractor shall make an additional pass(es) with the hot air lance. The use of the hot air lance is not intended to heat the crack or joint. It is to be used to blow all debris from the crack or joint to a depth of at least 1.25 inches and to remove any latent moisture or dampness from inside the crack or joint until the inside of the crack or joint is completely dry in the opinion of the Engineer. "Moisture" does not include standing water. The hot air lance is not to be used

to “boil off” or blow standing water from the bottom of a crack or joint. If standing water is present in the bottom of any crack or joint, the filling operation shall be postponed until such time that the standing water evaporates naturally. The Contractor may be allowed to use compressed, oil-free, air (not heated) to blow standing water from a crack or joint to help accelerate the natural evaporation of any standing water. If this is done, the crack or joint must be allowed to dry naturally until all standing water is visibly gone. Then the hot air lance can be used. If a crack is already completely dry, in the opinion of the Engineer, the hot air lance should be operated at its lowest temperature possible. All pavement cracks and joints with a width of 0.5 inches or greater, or any portion of a joint or crack with a width of 0.5 inches or greater, shall be prepared in this manner. Joints and cracks with a width less than 0.5 inches, or portions of joints and cracks with a width of less than 0.5 inches shall be excluded from pre-overlay joint and crack filling.

In the event that cracks or joints are packed tightly with debris, dirt, vegetation, or other material except previously placed sealant or filler, the Contractor shall use a vertically mounted power driven wire brush to remove debris and vegetation and burnish the sides of the crack to a depth of at least 1.25 inches. Cracks or joints treated with the wire power brush shall subsequently be treated with a hot air lance as described in this section. The conjunction of the use of the wire power brush and the hot-air lance treatment shall result in the complete removal of all material in the crack or joint (except previously placed sealant or filler) to a depth of at least 1.25 inches such that the sides of the crack are completely free and clean of any debris and moisture as described in this section.

At the option of the Contractor, a filling barrier composed of Filling Barrier Material may be installed for cracks between 0.5 and 1.25 inches in width which are devoid of material below 2.0 inches below the elevation of the pavement surface. The barrier shall be placed so that the bottom of crack filling material is placed 1.25 inches (+/- 0.25 inches) below the elevation of the pavement surface. A filling barrier will not be allowed for cracks wider than 1.25 inches in width or for cracks less than 0.5 inches wide.

(3) Crack Filling:

(a) Cracks between 0.5 and 1.25 inches in width that have been prepared for treatment are to be flush filled with crack filler consisting of a blend of PG76-22 binder and polyester fiber (Materials items 2.a and 2.b). The prepackaged material shall be added to the melter applicator. It shall then be heated and mixed/circulated to the recommended application temperature. The crack fill material shall never exceed 400 °F. The cracks shall be flush filled to an elevation 1/8 inch below the surrounding surface, (+/- 1/8 inch) along the length between 0.5 and 1.25 inches in width. The treatment material shall be maintained at the manufacturer’s specified application temperature range at all times. The filling operation shall be suspended if the temperature of the crack filling material falls outside the specified/recommended temperature range and shall remain suspended until the crack filling material is brought with in the specified temperature range. Cracks and joints must not be overfilled as they may detrimentally affect the planned overlay treatment. If any portion of the crack is overfilled it shall be squeegeed immediately following application of the crack filling material, striking excess filler as flat to the adjacent pavement surface as possible. There shall be no build-up of treatment material above or adjacent to the crack at any time. If the Contractor has to perform corrective work with a squeegee on more than 5% of the total (linear feet) crack length filled in any one day, the Engineer shall stop the crack filling operation. The Contractor shall determine the cause of the overfilling, correct it, and then submit a letter to the Engineer explaining “cause and solution” to the problem. Upon written acceptance of that letter by the Engineer, the Contractor may resume crack filling operations. In cases where the initial application of crack filler material fails to fill the crack or shrinks upon cooling such that there is a depression formed of at least one quarter of an inch or

greater, a second application of sealant shall be placed over the first application to fill the crack adequately as described above.

(b) Cracks over 1.25 inches in width shall receive an application of tack coat meeting the requirements of Section 4.06 and M.04 of the Standard Specifications. They shall then be filled with Asphalt Aggregate Filler (Materials Item 2.c) and thoroughly compacted and tamped utilizing the hand tools described above. For any given length or section area of joint or crack, the Asphalt Aggregate Filler shall be rammed at least 3 times with the hand tamping tool manufactured from 1 inch steel tubing or stock. The area shall be finished with at least 3 tampings of the second hand tool weighing at least 2 pounds. The Asphalt Aggregate Filler shall be compacted to match the elevation of the pavement surface to the satisfaction of the Engineer.

(4) Protection of Filled Cracks and Joints: No traffic shall be permitted on the pavement until the crack fill material is set, whereas the crack seal material does not deform or track and is not subject to deformation or pull-out by traffic. A detackifier and/or blotting agent is not to be used.

(5) Surplus Treatment Material: Treatment material remaining in the contractor's kettle or hot box at the close of the daily work session shall be discarded. At no time shall treatment material be re-heated for use in subsequent crack filling applications unless permitted by the Engineer following a review of field operation circumstances.

(6) All debris generated from the operations described above shall be removed from the roadway by the Contractor and disposed in accordance with State of Connecticut law.

(7) If applicable, the Contractor shall replace any existing pavement markings obliterated by the crack and joint treatment work. Existing pavement markings obliterated by the crack and joint treatment work must be replaced with temporary pavement markings before the roadway is opened to traffic. The Contractor shall be responsible for maintaining any temporary pavement markings placed until the Contract is completed. All costs associated with the replacement of existing pavement markings with temporary pavement markings will be borne by the Contractor.

(8) Required Project Documentation: Provide the Engineer, on a daily basis, a report with the following information:

1. Control section, job number, and route number.
2. Date, air temperature (°F), a.m. and p.m. weather.
3. Beginning and ending locations for the day, including lane(s) and direction.
4. Quantity of materials used for the day (Pounds, if paid for by the pound. Square yards, if paid for by the square yard).
5. The "lot number" for the PG 76-22 filler material used.
6. Traffic control typically used, number of traffic control moves, and checks on the traffic control conducted.
7. Unique or different situations on the project.
8. Contractor's signature.

(9) Elapsed time required before placement of an overlay or surface treatment: All crack filling material placed must be in-place for a minimum of two (2) weeks prior to placing any type of overlay or surface treatment, except that when the first subsequent overlay is one (1) inch or greater in thickness, all crack filling material must be in-place for a minimum of 2 hours prior to placing the one (1) inch or thicker overlay.

Acceptance of Work: Prior to placement of a hot-mix overlay or other surface treatment, the Engineer will note all deficiencies including areas exhibiting adhesion failure, cohesion failure, tracking of sealant

material, missed cracks or joints, raveling or dislodgement of any Asphalt Aggregate Filler, over filling, and/or other factors that show the work is not acceptable. Work identified by the Engineer as not acceptable shall be re-done at the Contractor's expense. The Contractor shall notify the Engineer upon completion of required corrective work, or upon completion of work on the project location if corrective work is not required.

Method of Measurement:

Material used to fill cracks between 0.5 and 1.25 inches shall be measured by the linear foot. In addition to receiving daily reports from the Contractor the Engineer shall develop a method to track the number and weight of all prepackaged material melted and placed on the roadway on a daily basis. Material used to fill cracks greater than 1.25 inches shall be measured by the linear foot. On a daily basis the Engineer shall measure and record the number of linear feet of "Pre-Overlay Crack Filling (greater than 1.25 inches)" placed. All work shall be measured as indicated in the Contract plans and documents and as adjusted, verified, and accepted by the Engineer.

Basis of Payment:

The accepted quantity of Pre-Overlay Crack Filling (0.5 to 1.25 inches) and Pre-Overlay Crack Filling (greater than 1.25 inches) shall be paid for at the contract unit price per linear foot. The prices shall include all materials, equipment, tools, and labor incidental thereto. No payment will be issued to the contractor prior to document submittals required.

Item No.	Description	Unit
0406189A	PRE-OVERLAY CRACK FILLING (0.5 TO 1.25 INCHES)	L.F.

ITEM # 0406275A FINE MILLING OF BITUMINOUS CONCRETE (0 TO 4 INCHES)

Description:

This work shall consist of the milling, removal, and disposal of existing bituminous concrete pavement.

Construction Methods:

The Contractor shall remove the bituminous concrete material using means acceptable to the Engineer. The pavement surface shall be removed to the line, grade, and existing or typical cross-section shown on the plans or as directed by the Engineer.

The bituminous concrete material shall be disposed of offsite by the Contractor at an approved disposal facility unless otherwise stated in the Contract.

Any milled surface, or portion thereof, that is exposed to traffic shall be paved within five (5) calendar days unless otherwise stated in the plans or Contract.

The equipment for milling the pavement surface shall be designed and built for milling bituminous concrete pavements. It shall be self propelled with sufficient power, traction, and stability to maintain depth and slope and shall be capable of removing the existing bituminous concrete pavement.

The milling machine shall be equipped with a built-in automatic grade averaging control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, contact ski (30 feet minimum), non-contact ski (20 feet minimum), or mobile string line (30 feet minimum). The transverse controls shall have an automatic system for controlling cross-slope at a given rate. The Engineer may waive the requirement for automatic grade or slope controls where the situation warrants such action.

The machine shall be able to provide a 0 to 4 inch deep cut in one pass. The rotary drum of the machine shall use carbide or diamond tipped tools spaced not more than $^{5}/_{16}$ inch apart. The forward speed of the milling machine shall be limited to no more than 45 feet/minute. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture.

The machine shall be equipped with an integral pickup and conveying device to immediately remove material being milled from the surface of the roadway and discharge the millings into a truck, all in one operation. The machine shall also be equipped with a means of effectively limiting the amount of dust escaping from the milling and removal operation.

When milling smaller areas or areas where it is impractical to use the above described equipment, the use of a lesser equipped milling machine may be permitted when approved by the Engineer. Protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor's responsibility and shall be repaired at the Contractor's expense.

To prevent the infiltration of milled material into the storm drainage system, the Contractor shall take special care to prevent the milled material from falling into the inlet openings or inlet grates. Any milled material that has fallen into inlet openings or inlet grates shall be removed at the Contractor's expense.

Surface Tolerance: The milled surface shall provide a satisfactory riding surface with a uniform textured appearance. The milled surface shall be free from gouges, longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, or poor workmanship. The Contractor, under the direction of the Inspector, shall perform random spot-checks with

a Contractor supplied ten-foot straightedge to verify surface tolerances at a minimum of five (5) locations per day. The variation of the top of two ridges from the testing edge of the straightedge, between any two ridge contact points, shall not exceed ¼ inch. The variation of the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed ¼ inch. Any unsatisfactory surfaces produced are the responsibility of the Contractor and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

The depth of removal will be verified by taking measurements every 250 feet per each pass of the milling machine, or as directed by the Engineer. These depth measurements shall be used to monitor the average depth of removal.

Where a surface delamination between bituminous concrete layers or a surface delamination of bituminous concrete on Portland cement concrete causes a non-uniform texture to occur, the depth of milling shall be adjusted in small increments to a maximum of +/- ½ inch to eliminate the condition.

When removing bituminous concrete pavement entirely from an underlying Portland cement concrete pavement, all of the bituminous concrete pavement shall be removed leaving a uniform surface of Portland cement concrete, unless otherwise directed by the Engineer.

Any unsatisfactory surfaces produced by the milling operation are the Contractor's responsibility and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

No vertical faces, transverse or longitudinal, shall be left exposed to traffic unless the requirements below are met. This shall include roadway structures (catch basins, manholes, utility valve boxes, etc.). If any vertical face is formed in an area exposed to traffic, a temporary paved transition shall be established according to the requirements shown on the plans. If the milling machine is used to form a temporary transition, the length of the temporary transition shall conform to Special Provision Section 4.06 – Bituminous Concrete, "Transitions for Roadway Surface," the requirements shown on the plans, or as directed by the Engineer. At all permanent limits of removal, a clean vertical face shall be established by saw cutting prior to paving.
Roadway structures shall not have a vertical face of greater than one (1) inch exposed to traffic as a result of milling. All structures within the roadway that are exposed to traffic and greater than one (1) inch above the milled surface shall receive a transition meeting the following requirements:

For roadways with a posted speed limit of 35 mph or less*:

1. Round structures with a vertical face of greater than 1 inch to 2.5 inches shall be transitioned with a hard rubber tapered protection ring of the appropriate inside diameter designed specifically to protect roadway structures.
2. Round structures with a vertical face greater than 2.5 inches shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.
3. All rectangular structures with a vertical face greater than 1 inch shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.

*Bituminous concrete tapers at a minimum 24 to 1 (24:1) taper in all directions may be substituted for the protection rings if approved by the Engineer.

For roadways with a posted speed limit of 40, 45 or 50 mph:

1. All structures shall receive a transition of bituminous concrete formed at a minimum 36 to 1 (36:1) taper in the direction of travel. Direction of travel includes both the leading and trailing side of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

For roadways with a posted speed limit of greater than 50 mph:

1. All structures shall receive a transition of bituminous concrete formed at a minimum 60 to 1 (60:1) taper in the direction of travel. Direction of travel includes both the leading and trailing side of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

All roadway structure edges and bituminous concrete tapers shall be clearly marked with fluorescent paint. The paint shall be maintained throughout the exposure to traffic.

The milling operation shall proceed in accordance with the requirements of the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications, or other Contract requirements. The more stringent specification shall apply.

Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a sweeper truck. The sweeper truck shall be equipped with a water tank and be capable of removing the millings and loose debris from the surface. The sweeper truck shall operate at a forward speed that allows for the maximum pickup of millings from the roadway surface. Other sweeping equipment may be provided in lieu of the sweeper truck where acceptable by the Engineer.

Any milled area that will not be exposed to live traffic for a minimum of 48 hours prior to paving shall require a vacuum sweeper truck in addition to, or in lieu of, mechanical sweeping. The vacuum sweeper truck shall have sufficient power and capacity to completely remove all millings from the roadway surface including any fine particles within the texture of the milled surface. Vacuum sweeper truck hose attachments shall be used to clean around pavement structures or areas that cannot be reached effectively by the main vacuum. Compressed air may be used in lieu of vacuum attachments if approved by the Engineer.

Method of Measurement:

This work will be measured for payment by the number of square yards of area from which the milling of asphalt has been completed and the work accepted. No area deductions will be made for minor unmilled areas such as catch basin inlets, manholes, utility boxes and any similar structures.

Basis of Payment:

This work will be paid for at the Contract unit price per square yard for "Fine Milling of Bituminous Concrete (0 to 4 Inches)." This price shall include all equipment, tools, labor, and materials incidental thereto.

No additional payments will be made for multiple passes with the milling machine to remove the bituminous surface.

No separate payments will be made for cleaning the pavement prior to paving; providing protection and doing handwork removal of bituminous concrete around catch basin inlets, manholes, utility valve boxes and any similar structures; repairing surface defects as a result of the Contractors negligence; providing protection to underground utilities from the vibration of the milling operation; removal of any temporary milled or paved transition; removal and disposal of millings; furnishing a sweeper truck and sweeping after milling. The costs for these items shall be included in the Contract unit price.

Item No.	Description	Unit
0406275A	FINE MILLING OF BITUMINOUS CONCRETE (0 TO 4 INCHES)	S.Y.

ITEM # 0406999A ASPHALT ADJUSTMENT COST

The Asphalt Price is available on the Department of Transportation web site at:

http://www.ct.gov/dot/asphaltadjustment

The asphalt adjustment cost will be based on the variance in price for the performance-graded binder component of hot mix asphalt (HMA), Polymer Modified Asphalt (PMA), and Ultra-Thin Bonded Hot-Mix Asphalt mixtures completed and accepted in the contract.

An asphalt adjustment cost will be applied only if all of the following conditions are met:

1. For HMA and PMA mixtures:
    1. The HMA or PMA mixture in which the adjustment is being applied is listed as a contract item with a pay unit of tons or metric tons.
    2. The total quantity for all HMA and PMA mixtures in a contract or individual purchase order (Department of Administrative Service contract awards) exceeds 1000 tons or more.
    3. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than $5.00.
2. For Ultra-Thin Bonded HMA mixtures:
    1. The Ultra-Thin Bonded HMA mixture in which the adjustment is being applied is listed as a contract item.
    2. The total quantity for Ultra-Thin Bonded HMA mixture in a contract exceeds:
        1. 800 tons (727 metric tons) if Ultra-Thin Bonded HMA is listed as a contract item with a pay unit of tons or metric tons.
        2. 30,000 square yards (25,080 square meters) if Ultra-Thin Bonded HMA is listed as a contract item with a pay unit of square yards or square meters.

        Note: The quantity of Ultra-Thin Bonded HMA measured in tons shall be determined from the material documentation requirements set forth in the Ultra-Thin Bonded HMA Special Provision.
    3. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than $5.00.
    4. No Asphalt Adjustment Cost shall be applied to the liquid emulsion that is specified as part of the Ultra-Thin Bonded HMA mixture system.
3. Regardless of the binder used in all HMA and/or PMA mixtures, the Asphalt Adjustment Cost will be based on PG 64-22.

The Connecticut Department of Transportation (ConnDOT) shall post on its website, the average per ton selling price (asphalt price) of the performance-graded binder. The average is based on the high and low selling price published in the most recent available issue of the **Asphalt Weekly Monitor®** furnished by Poten & Partners, Inc. under the “East Coast Market – New England, New Haven, Connecticut area”, F.O.B. manufacturer’s terminal.

The selling price furnished from the Asphalt Weekly Monitor ® is based on a standard ton (US$/ST). The metric ton price is determined by applying a factor of 1.1023 (US$/ST x 1.1023 = US$/mton). Example: $150.00/ton x 1.1023 = $165.34/mton

Formula: HMA x PG% / 100 x [(*Period Price - Base Price*] = $ ____ , where

1. HMA:

1. For HMA, PMA, and Ultra-Thin Bonded HMA mixtures with pay units of mass: The quantity (tons or metric tons) of accepted HMA, PMA, or Ultra-Thin Bonded HMA mixture measured and accepted for payment.
2. For Ultra-Thin Bonded HMA mixtures with pay units of area:

The quantity of Ultra-Thin Bonded HMA mixture delivered, placed, and accepted for payment, calculated in tons or metric tons as documented according to the Material Documentation provision (section E) of the Ultra-Thin Bonded HMA Special Provision.

1. ***Asphalt Base Price***: The asphalt price that is posted on the ConnDOT website 28 days before the actual bid opening posted.

2. ***Asphalt Period Price***: The asphalt price that is posted on the ConnDOT website for the period in which the HMA, PMA mixture is placed.

3. Performance-Graded Binder percentage (**PG%**)

    1. For HMA or PMA mixes:
    PG% = 4.5
        1. For Superpave 1.5 inch (37.5mm), Superpave 1.0 inch (25.0mm), PMA S1, HMA S1, and Class 4

    PG % = 5.0
        2. For Superpave 0.50 inch (12.5mm), HMA S0.5, PMA S0.5, and Class 1

    PG % = 6.0
        3. For Superpave 0.375 inch (9.5mm), HMA S0.375, PMA S0.375, Superpave 0.25 inch (6.25mm), HMA S0.25, PMA S0.25, Superpave #4 (4.75mm) and Class 2

        4. For Ultra-Thin Bonded HMA mixes:

    PG% = Design % PGB (Performance Graded Binder) in the approved job mix formula, expressed as a percentage to one decimal point (e.g. 5.1%)

The adjustment shall not be considered as a changed condition in the contract because of this provision and because the Contractors are being notified before submission of bids.

Basis of Payment:

The "Asphalt Adjustment Cost" will be calculated using the formula indicated above. A payment will be made for an increase in costs. A deduction from monies due the Contractor will be made for a decrease in costs.

The sum of money shown on the estimate, and in the itemized proposal as "Estimated Cost", for this item will be considered the bid price although payment will be made as described above. The estimated cost figure is not to be altered in any manner by the bidder. If the bidder should alter the amount shown, the altered figure will be disregarded and the original cost figure will be used to determine the amount of the bid for the Contract.

ITEM # 0507003A REMOVE AND BUILD TYPE "C" CATCH BASIN
ITEM # 0507201A TYPE "C-L" CATCH BASIN

Work under this item shall conform to the applicable provisions of Section 5.07 of the Standard Specifications Form 817 amended as follows:

Construction Methods:

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

Method of Measurement:

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

Basis of Payment:

The work under these items shall be paid for at the unit contract price each for type of catch basins and drop inlets complete in place and shall include all materials, tools, equipment, and labor necessary to complete the excavation and installation of units in conformity with the plans, or as specified.

The work associated with removal and disposal of existing catch basins to allow for installation of a new catch basin where shown on the plans shall be measured and paid for each catch basin removed and replaced with a new catch basin under the item "Remove and Build Type "C" Catch Basin" as listed in the bid proposal.

When existing drainage pipes associated with a catch basin are also identified to be removed or modified on the plans, this work will not be measured and paid for separately, but rather shall be included in the cost of the removal or installation of the catch basin associated therewith. The payment for removal and disposal of existing catch basin shall include all materials, tools, equipment, and labor necessary to complete the excavation and removal of these units, including associated drainage pipes, in conformity with the plans, or as specified.

Item No.	Description	Unit
0507003A	REMOVE AND BUILD TYPE "C" CATCH BASIN	EA.
0507201A	TYPE "C-L" CATCH	EA.

ITEM # 0507028A REPLACE TYPE 'C' CATCH BASIN TOP
ITEM # 0507029A REPLACE TYPE 'C-L' CATCH BASIN TOP
ITEM # 0507030A REPLACE TYPE 'C' CATCH BASIN TOP DOUBLE GRATE TYPE II

Work under these items shall conform to the applicable provisions of Section 5.07 of the Standard Specifications Form 817 amended as follows:

Construction Methods:

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

Method of Measurement:

Replacement of catch basin tops will be paid for as a unit, **which shall include all work related to resetting the basin top as required as well as the cost for the new catch basin top**. When replacing catch basin tops, there will be no measurement for any work related to resetting the top, including excavation; saw cutting, removal and replacement of pavement and base course; or pervious material and backfill.

Basis of Payment:

This work shall be paid for at the contract unit price for as listed in the bid proposal for each replaced and reset catch basin top of the type indicated, replaced and reset complete in place, and shall include all materials, tools, equipment, and labor necessary to complete installation and resetting of the new top as required including excavation, removal and replacement of pavement structure to match existing pavement, saw cutting, and pervious backfill in conformity with the plans and as specified.

Item No.	Description	Unit
0507028A	REPLACE TYPE 'C' CATCH BASIN TOP	**EA.**
0507029A	REPLACE TYPE 'C-L' CATCH BASIN TOP	**EA.**
0507030A	REPLACE TYPE 'C' CATCH BASIN TOP DOUBLE GRATE TYPE II	**EA.**

ITEM # 0507781A RESET MANHOLE

Work under this item shall conform to the applicable provisions of Section 5.07 of the Standard Specifications Form 817 amended as follows

Description:

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

Construction Methods:

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

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

Method of Measurement:

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

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

Basis of Payment:

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

Item No.	Description	Unit
0507781A	RESET MANHOLE	EA.

ITEM # 0507791A REBUILD TYPE 'C' CATCH BASIN
ITEM # 0507792A REBUILD TYPE 'C' DOUBLE GRATE TYPE II CATCH BASIN

Description:

This item shall include rebuilding existing catch basins as shown on the plans to remove and replace deteriorated portions of the structure and replacement of the precast concrete top with a new top of the type required. Sawcutting, removal, and replacement of the existing pavement structure around each catch basin is also included with these items.

Materials:

Materials to be used shall be those indicated on the plans or ordered by the Engineer and shall conform to Section 5.07 and Article M.08.02 of the Form 817. Mortar shall conform to Article M.11.04 and shall contain no lime. Pervious Material shall conform to Article M.02.05.

Construction Methods:

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

The existing catch basin frame of the structure shall be removed and disposed of. Deteriorated courses of brick and block shall be removed down to sound material to the extent necessary as directed in the field by the Engineer. The existing structure shall be reconstructed using concrete bricks, blocks, and mortar as per Section 5.07 of the 817, applicable details, and as directed by the Engineer.

Rebuilding of the existing catch basin shall include replacement of the precast concrete top of the type indicated on the plans. Catch basin tops shall be set with two courses of brick as the final course to allow for future adjustments to the structure.

Method of Measurement:

This work shall be measured by the vertical foot of catch basin that is removed and rebuilt, This dimension shall be measured along the inside of the structure from the bottom of the lowest course removed and rebuilt to the top of the basin.

There will be no measurement for trench excavation for the work related to rebuilding of the existing catch basins, or for providing and installing the new precast concrete top of the type indicated. There will be no measurement for any work related to cutting, removal and replacement of existing pavement; or pervious material and backfill.

Basis of Payment:

The work under this item shall be paid for at the unit contract price per vertical foot for "Rebuild Catch Basin", regardless of the type of catch basin, complete in place and shall include all materials, tools, equipment, and labor necessary to complete the excavation and rebuilding of the catch basin units in conformity with the plans, including excavation and precast concrete top of the type required, removal and replacement of pavement and base courses, cutting pavement, bricks, block, mortar, and pervious backfill in conformity with the plans or as specified.

Item No.	Description	Unit
0507791A	REBUILD TYPE 'C' CATCH BASIN	V.F
0507792A	REBUILD TYPE 'C' DOUBLE GRATE TYPE II CATCH BASIN	V.F

ITEM # 0507831A CONVERT CATCH BASIN TO MANHOLE

Work under this item shall conform to the applicable provisions of Section 5.07 of the Standard Specifications Form 817 amended as follows

Description:

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

Construction Methods:

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

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

Method of Measurement:

Convert Catch Basin to Manhole will be measured as units completed and accepted.

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

Basis of Payment:

Convert Catch Basin to Manhole will be paid for at the contract unit price each for "Convert Catch Basin to Manhole" of the type specified complete in place including the removal and disposal of existing catch basin frame and installation of a manhole frame and cover which price shall include excavation, pervious material, backfill, cutting of pavement, removal and replacement of pavement structure, extensions, concrete masonry units, mortar, and all materials, equipment, tools and labor incidental thereto.

Item No.	Description	Unit
0507831A	CONVERT CATCH BASIN TO MANHOLE	EA.

ITEM # 0651011A 12" R.C. PIPE

This item shall conform to Section 6.51 CULVERTS of the Form 817, modified as follows:

Construction Methods:

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

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

Method of Measurement:

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

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

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

Basis for Payment:

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

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

Item No.	Description	Unit
0651011A	12" RC PIPE	LF.

ITEM # 0813041A 6" X 18" GRANITE STONE CURBING
ITEM # 0813051A 6" X 18" GRANITE CURVED STONE CURBING

Description:

This item shall include saw cutting and excavating for installation of granite stone curbing of the size and type indicated on a 6" thick base of processed stone, furnishing and setting to line and grade new granite stone curbing, new granite curved stone curb, installation of the concrete setting bed for granite curved stone curbing sections; furnishing and placing backfill and mortaring or caulking of curb joints as required and directed.

This item also includes transition lengths (curved or straight) when matching existing top of curb elevations at the beginning and ends of curbing limits or at sidewalk ramps. The transition length of curb shall be one continuous 3 foot or 6 foot length as directed by the Engineer.

This item shall include trimming damaged ends of existing curb stones and cutting existing curb stones to a shorter length, both trimming and cutting to produce a new end which is square with the planes of the top and face of the curb. This item shall also include cutting curb stones horizontally in locations where the depth of curb stones must be reduced to clear obstacles or utilities.

Full depth pavement repairs associated with installing or resetting granite curb **shall not be included** under this item. Rather, this work will be measured and paid for under Item # 0404100A Bituminous Concrete Patching- Full Depth.

Installation of topsoil and turf establishment associated with this work **shall not be included** under this item. Rather, this work will be measured and paid for under the items associated therewith.

Refer to typical curbing details for installation.

Required Submittals

Material Samples:

Submit material samples for granite curb in accordance with the contract general requirements.

Materials:

All new granite curb supplied for use shall be 6" x 18" and shall conform to the following:

General: Curbstones shall be hard and durable granite of light color and uniform texture neither stratified nor laminated. Curbstones shall be free from seams, cracks and evidence of weakening or disintegration and shall be of a good smooth splitting appearance. Granite shall come from a quarry previously approved by the Engineer.

Should the Contractor request use of granite from a quarry not previously approved, he shall submit samples sufficiently in advance of need to allow the Engineer opportunity to judge the stone both as to quality and appearance. All curbstones for a given project shall come from one quarry and be all of one type. Granite when tested shall have a French coefficient of wear of not more than 32. Test sample shall conform to the requirements of ASTM C-615-03.

Dimensions: Straight curb shall be 6 inches by 18 inches depth shall be nominal depth plus or minus 1 inch, minimum curb length to be 6 feet (except for closures to be not less than 4 feet) minimum width at bottom to be nominal width minus 1 inch for two thirds the length with an absolute minimum of minus 2 inches for the remaining one third.

All curbs to be set on radius 100 feet or less shall be 6 inches by 18 inches cut to arc with radian joints, depth shall be 18 inches plus or minus 1 inch, minimum length to be 4 feet, minimum width at bottom to be 6 inches for two thirds the length with an absolute minimum of 5 inches for the remaining one third.

Straight curb to be set on radius over 75 feet to 500 feet shall be 6 inches with ends trimmed so that face and top joint fit properly, depth to be 18 inches plus or minus 1 inch, minimum length to be 4 feet, maximum length to be 6 feet, minimum length at bottom to be 6 inches for two thirds the length with absolute minimum of 5 inches for the remaining one third.

Finish: The curbstone shall have a top surface free from wind and drill holes, it shall be sawed to an approximately true 1/8 inch. The front and back arris lines shall be straight and true with no variation from a straight line greater than 1/8 inch. On the back surface there shall be no projection for 3 inches down which would fall outside a batter of 4 inches in 12 inches from the back arris line. The front face shall be at right angles to the plane of the top or battered not more than one inch in twelve inches, and shall be quarry split or sawn, free from drill holes in the exposed face. The front face shall have no projections greater than 3/4 of an inch or depression greater than 1/2 inch measured from the vertical plane of the face through the top arris line for a distance of 8 inches down from the top.

For the remaining distance there shall be no projections or depressions greater than 1 inch measured in the same manner. The arris lines at the ends shall be pitched with no variation from the plane of the face greater than 1/8 inch. The ends of all stones shall be square with the planes of the top and face, and so finished that when the stones are placed end to end as closely as possible, no space more than 1/4 inch shall show in the joint for the full width of the top and down on the face for 8 inches. On curb stones having a length of 6 feet or more, the remainder of the end may break back not over 6 inches, on shorter curb stones, they shall not break back more than 4 inches. The bottom surface shall be sawn or quarry split to an approximately true plane. Half drill holes will not be permitted in the arris line of the back. Front arris line may be rounded to a radius not over 1/2 inch. If sawn, the curbstone shall be thoroughly cleaned of any iron rust or iron particles.

Granite curb returns shall be 17 inches deep and shall conform to the detail shown in the contract drawings and all material requirements in this specification.

Processed Stone Base: The material for this item shall be crushed trap rock conforming to the requirements of Article M.05.01 Processed Aggregate Base and Pavement of the Form 817, except that coarse aggregate shall be broken stone, and fine aggregate shall be stone sand, screenings, or a combination thereof. Gravel or reclaimed miscellaneous aggregate shall not be used.

Concrete: All materials for this work shall conform to the requirements of Section M.03 of the State of Connecticut Standard, Department of Transportation, Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817 for Class “C” concrete.

Caulk: Caulking compound shall be a material which complies with ASTM C-920, Type S, Grade NS, Class 25 sealing compound, polyurethane based elastomeric, single component, moisture cured sealant, capable of 25% joint movement. The color of the compound shall be cement mortar gray.

Construction Methods:

All curbing installations shall be laid out in the field and prior to placement of concrete footings, be approved by the Engineer. The contractor shall notify the Engineer at least two business days in advance of final curbing layout for approval prior to concrete placement.

The curbing shall be marked in the field by a licensed land surveyor at critical locations for the curb lines, radii’s and recessed curbing points.

Excavation: The Contractor shall excavate to a depth of 24" below the top of finished curb grade. The street pavement shall be removed to a width of at least 6" in front of the curb to facilitate proper setting and backfilling. Bituminous concrete and macadam pavement in front and back of the curb shall be cut to neat straight lines before excavation to minimize pavement damage.

Where there is good sod behind the curb, the sod shall be removed before excavation and saved for re-use.

Where there is a dummy joint 18" to 24" behind the curb, the Engineer may require the Contractor to saw the joint prior to excavating behind the curb. Saw cutting will be included in this item.

Where concrete base pavement is encountered excavation shall include removal of all existing concrete or other foundations. Saw cutting the concrete base shall also be included in this item.

Where the distance between the back of the curb and sidewalk is 12" or less, or where trees are encountered immediately behind the curb, the Engineer may order the Contractor to excavate by hand to avoid damage to the walk or trees.

Processed Stone Base: A 6" thick by 18" wide base of processed stone shall be installed as a foundation for the curb. This material may be installed in one lift and shall be thoroughly compacted with an approved vibratory compaction device to achieve 95% compaction.

Setting Curb: The curb shall be set to line and grade established by the Engineer. Maximum variation from established line and grade shall be 1/4". The finished curb shall present a neat appearance free from irregularities of line and grade.

For curved stone curb, masonry blocking used to hold the curb in place shall be allowed to remain when backfilling is completed.

Backfill: All foundation and backfill shall be placed in layers not over six inches thick and each layer shall be thoroughly compacted using motor driven powered vibratory compactor.

For granite stone curbing, all curb joints shall be set in concrete 6" from either edge as shown on the details.

For curved granite stone curb, the curb shall be set in concrete along its entire length. The Contractor shall use a very stiff mix and shall spade and tamp to eliminate all voids, especially under the curb.

Concrete setting bed for all granite stone curb shall not extend higher than 6" above the bottom of the curb.

Caulking: All curb joints shall be filled with caulking compound with either pneumatic or ratcheted hand gun or with other equipment as approved by the Engineer. At approximately 50-foot intervals, a 1/2-inch joint shall not be filled with caulking compound but left free for expansion.

Cutting or Trimming: The contractor shall employ appropriate cutting tools to produce a clean, square, and plumb cut for a neat appearance when reset. For vertical cuts, the ends shall be finished so that when stones are placed end to end as closely as possible, no space more than one half inch wide shall show in the joint for the full width of the top or down on the face for 9". The remainder of the joint may break back not more than 4" from the plane of the joint. The Engineer may require the cut to be made with the stone in place in the ground. Horizontal cuts shall be made in a manner that allows for a 2" vertical clearance of the object or utility interference with the bottom of the curb stone. Horizontal cuts which exceed 1/3 the depth of the stone to be cut require the engineers approval prior to cutting.

In the trimming and cutting of damaged curbstones, the portion cut off shall be kept to a minimum.

If in making a cut, the Contractor damages the curb so as to make it unusable, the Contractor shall furnish, at no cost to the Town a piece of suitable curb cut to proper length to replace the damaged curb.

Method of Measurement:

This work will be measured for payment by the actual number of linear feet of granite stone curbing or curved granite stone curbing, installed and accepted.

Measurement shall be made along the top arris line of face of curb. Curbing to be set on a radius of 100 feet or less will be measured for payment as curved stone curb.

Cutting or trimming existing or proposed curb will not be measured for payment.

Repair of bituminous pavement in front of the curb is **not included** with this item, rather this work will be measured and paid for under Item # 0404100A Bituminous Concrete Patching – Full Depth.

Repair of topsoil and turf establishment behind the curb is **not included** with this item, rather this work will be measured and paid for under the applicable pay items associated therewith.

Basis of Payment:

Payment for this work will be made at the contract unit price per linear foot for "6" x 18" Granite Stone Curbing" or "6" x 18" Granite Curved Stone Curbing", as the case may be, of the type and size specified, complete in place, which price shall include all materials, processed stone base, concrete setting bed, equipment, tools and labor incidental thereto, and all excavation, backfilling, disposal of surplus material and all drainage openings.

There will be no direct payment for furnishing, placing and compacting processed stone base, cutting or trimming existing or proposed curb, beveling or rounding the ends of the curbing, pointing the joints with mortar or caulk, concrete setting bed, repair of disturbed areas in front and back of curb and the 12" maximum grassed area in back of curb, but the cost of this work shall be considered as included in the general cost of the work.

Item No.	Description	Unit
0813041A	6" X 18" GRANITE STONE CURBING	L.F.
0813051A	6" X 18" GRANITE CURVED STONE CURBING	L.F.

ITEM # 0921001A CONCRETE SIDEWALK
ITEM # 0921002A CONCRETE SIDEWALK – 8" THICK
ITEM # 0921005A CONCRETE SIDEWALK RAMP
ITEM # 0921006A CONCRETE ICE STRIP

Description:

The Contractor is to construct sidewalks and ice strips to lines and grades as shown on the plans or at locations as directed by the Engineer.

Concrete sidewalks shall be five inches thick, except at industrial and commercial driveways where it shall be eight inches thick and reinforced with 6" x 6" 10/10 steel mesh. Sidewalk construction shall include the removal of existing and construction of new building lateral walks where new sidewalk grades make it necessary. The sidewalk shall pitch to the street at a slope of ¼-inch per foot or as directed by the Engineer.

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

Concrete ice strips shall be four inches thick and shall be constructed along the back of the granite curb as shown on the construction details and as required to match the existing concrete ice strips in areas where they are designated to be replaced.

Materials:

Processed Stone Base: The material for this item shall be **crushed trap rock** conforming to the requirements of Article M.05.01 Processed Aggregate Base and Pavement of the Form 817, except that coarse aggregate shall be broken stone, and fine aggregate shall be stone sand, screenings, or a combination thereof. Gravel or reclaimed miscellaneous aggregate shall not be used.

Forms: The forms used shall be five-inch steel or 2" x 6" wood firmly supported and staked to the line and grade described on the plans. **2"x4" wood forms shall not be used and shall be cause for immediate rejection of sidewalk.** The forms shall be free from warp and shall be of sufficient strength to resist springing out of shape. All forms shall be cleaned and oiled before use.

Reinforcing: Wire mesh reinforcing for 8"-thick concrete sidewalk shall be plain finish, 6 inches X 6 inches, No. 10 gauge welded steel wire mesh meeting ASTM specifications A-185-02 and the requirements of Article M.06.01-Reinfocing Steel –Section 3-Wire and Welded Steel Wire Fabric of the Form 817.

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

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

Detectable Warning Strips: The Detectable Warning Strip shall be a replaceable tactile warning surface tile as manufactured by ADA Solutions, Inc of P.O. Box 3, North Billerica MA 01862 Tel: 800.372.0519 Fax: 978.262.9125 www.adatile.com or approved equal. Tile shall be brick red in color (Federal Color # 20109) and all attachment hardware shall be stainless steel. The tile shall conform to the dimensions shown on the plans or as directed by the Engineer.

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

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

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

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

Construction Methods:

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

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

Suitable excavated material shall be re-used within the project limits as directed by the Engineer to form embankment for sidewalks where required. Embankment formation shall be completed as described in Article 2.02.03 of the Form 817, and shall meet the proposed subgrade elevations described on the plans or directed by the Engineer. Excess earth materials shall become the property of the Contractor and shall be disposed of at no additional cost to the Town.

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

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

shall conform to details of these specifications. Dowel sleeves shall be installed on the new concrete sidewalk end of the dowel.

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

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

Curing Compound / Sealer Application: The Contractor shall apply the approved curing compound / sealer using a 3/8" nap roller or low pressure sprayer at a rate of 200 to 300 square feet per gallon and according to
manufacturer installation instructions or as directed by the Engineer. Concrete surface shall be clean and free of any surface contaminants when applying sealer. When applying sealer to fresh concrete the bleed water must be off the surface as this water can inhibit proper function of the sealer. Any areas where the sealer puddles shall be immediately spread to other areas where absorption can occur to avoid undesirable appearance of finished surface. Sealer shall not be applied if rain is forecast within 24 hours, or if ambient temperature at the time of application is below 50 degrees or above 80 degrees Fahrenheit, or as directed by the Engineer.

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

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

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

Method of Measurement:

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

Concrete Sidewalk-8" Thick will be measured by the actual number of square feet of completed and accepted Concrete Sidewalk-8" Thick.

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

Concrete Ice Strip will be measured by the actual number of linear feet of completed and accepted Concrete Ice Strip.

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

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

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

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

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

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

Bond Breaker / Roofing Paper: This work will not be measured for payment but the cost shall be included in the price bid for Concrete Ice Strip.

Basis of Payment:

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

"Concrete Sidewalk–8-inch Thick" will be paid for at the contract unit price per square foot, complete in place, which price shall include all required excavation and disposal of surplus material, processed stone base, compaction, wire mesh reinforcing, expansion joint material, dowels, dowel sleeves, finishing, curing compound/sealer, backfill, equipment, tools, materials and labor incidental thereto.

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

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

Item No.	Description	Unit
0921001A	CONCRETE SIDEWALK	S.F.
0921002A	CONCRETE SIDEWALK-8" THICK	S.F.
0921005A	CONCRETE SIDEWALK RAMP	S.F
0921006A	CONCRETE ICE STRIP	L.F

ITEM # 0922500A BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)

This item shall conform to Section 9.22 BITUMINOUS CONCRETE SIDEWALK, BITUMINOUS CONCRETE DRIVEWAY, of the Form 817, amended as follows:

Description:

This item shall consist of bituminous concrete surfaced sidewalk or driveway constructed on a processed stone base course in the locations and to the dimensions and details shown on the plans or as directed by the Engineer and in accordance with these specifications. This item shall also include the sawcutting, removal and disposal of existing bituminous pavement necessary for driveway replacement work.

Materials: Materials for this work shall conform to the following requirements:

Processed Stone Base Course: The material for this item shall be **crushed trap rock** conforming to the requirements of Article M.05.01 Processed Aggregate Base and Pavement of the Form 817, except that coarse aggregate shall be broken stone, and fine aggregate shall be stone sand, screenings, or a combination thereof. Gravel or reclaimed miscellaneous aggregate shall not be used.

Bituminous Concrete Surface: Materials for this surface shall conform to the requirements of the Special Provision for Section M.04, HMA S0.375".

Construction Methods:

Sawcutting: Portions of the driveway or driveway aprons to be replaced shall be saw cut, and the existing pavement removed and disposed of by the Contractor.

Excavation: Excavation, including removal of any existing 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.

Forms: When the bituminous concrete is spread by hand, forms shall be used. Forms shall be of metal or wood, straight, free from warp and of sufficient strength to resist springing from the impact of the roller. If made of wood, they shall be of 2-inch (38-millimeter) surfaced plank except that at sharp curves thinner material may be used; if made of metal, they shall be of an approved section. All forms shall be of a depth equal to the depth of the sidewalks or driveways and shall be securely staked, braced, and held firmly to the required line and grade. All forms shall be cleaned and oiled each time they are used.

Processed Stone Base Course: Processed stone base course shall be uniformly spread to the required depth and thoroughly compacted with a roller with a mass of not less than 500 pounds (226 kilograms).

Bituminous Concrete Surface: The edges of existing pavement shall be painted with an asphalt emulsion prior to the placement of permanent pavement. Hot laid bituminous concrete shall be placed so as to give a three-inch compacted surface, or a surface that has a depth equal to the existing driveway surface, whichever is greater.

This surface shall be constructed in accordance with the requirements of the Special Provision for Section 4.06, except that the material may be spread by hand and thoroughly compacted by multiple passes of a power-driven roller weighing (with a mass) of not less than 500 pounds (226 kilograms). The finished surface shall be free from waves or depressions.

Backfilling and Removal of Surplus Material: The sides of the sidewalk or 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 base course, surface course and backfill shall be hand-tamped with tampers weighing not less than 12 pounds (with a mass of not less than 5.5 kilograms), the face of which shall not exceed 50 square inches (32,000 square millimeters) in area.

Method of Measurement: This work will be measured for payment as follows:

Bituminous Concrete Driveway (Commercial): This work will be measured by the actual number of square yards of completed and accepted Bituminous Concrete Driveway (Commercial).

Excavation: Excavation, including removal and disposal of existing bituminous concrete, backfilling, and disposal of all surplus materials will not be measured for payment; but the cost shall be included in the price bid for Bituminous Concrete Sidewalk, Bituminous Concrete Driveway (Commercial), and Bituminous Concrete Driveway.

Processed Stone Base Course: This work will not be measured for payment but the cost shall be included in the price bid for Bituminous Concrete Sidewalk, Bituminous Concrete Driveway (Commercial), and Bituminous Concrete Driveway.

Basis of Payment:

This work will be paid for at the contract unit price per square yard for " Bituminous Concrete Sidewalk", "Bituminous Concrete Driveway (Commercial)", and "Bituminous Concrete Driveway" complete in place, which price shall include all excavation as specified above, backfill, sawcutting, disposal of surplus material, processed stone base, and all equipment, tools, labor and materials incidental thereto.

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

ITEM # 0944000A FURNISHING AND PLACING TOPSOIL

Work under this item shall conform to the applicable provisions of Section 9.44 TOPSOIL of the Standard Specifications Form 817 amended as follows:

Basis of Payment:

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

The limits of payment shall be to the slope limits as shown on the plans. In the absence of slope limits, the maximum area of measurement shall be the area extending two feet behind the sidewalk and the area between the sidewalk and edge of pavement. No payment shall be made outside of these limits unless the disturbance was directed or approved by the Engineer. No payment shall be made for areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor.

This work will be paid for at the Contract unit price per square yard for “Furnishing and Placing Topsoil”, which price shall include all materials, equipment, tools, labor, and work incidental thereto.

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

ITEM # 0945060A PINE BARK MULCH

Description:

The work under this item shall consist of furnishing and installing pine bark mulch for restoration of existing planting beds adjacent to the project area.

Materials:

Pine Bark Mulch material shall be shall be a native shredded pine bark, 100 percent organic, having a moisture content not exceeding 40 percent, free of any disease or insects. The particles shall pass a 1 inch square mesh and be retained on a 1/8 inch square mesh.

Construction Methods:

Mulching -All areas designated by the Engineer to be mulched shall be covered with a 3" layer of pine bark mulch within two days of disturbance. This mulch shall entirely cover the area of the planting pit.

Any damage to lawn areas, sidewalks or pavement as the result of planting operations shall be repaired by the Contractor at no additional cost to the Town or State and to the satisfaction of the Engineer.

Method of Measurement:

This work will be measured for payment by the number of square yards surface measurement of the specified thickness for the area on which pine bark or gravel mulch has been completed and accepted.

Basis of Payment:

Payment for this work will be made at the contract unit price each for the kind and size of tree, shrub, and perennial completed and accepted in place. The unit price shall include all excavation and preparation, tree staples, planting soil to the depths indicated on the details, mulching, watering, and maintenance as well as any other materials, equipment, tools, labor, transportation, operations, and all work incidentals thereto.

Item No.	Description	Unit
0945060A	PINE BARK MULCH	SY

ITEM # 0945070A REMOVAL AND RE-ESTABLISHMENT OF EXISTING PLANTINGS

Description:

The Contractor shall furnish all labor, materials, tools, and equipment necessary and shall do all work necessary to remove, care for, and re-establish existing plantings located in the raised traffic island in front of #180-220 Glastonbury Boulevard (Office Park Driveway) as indicated on the drawings and as herein specified.

Removal and re-establishment of plants shall be performed by persons skilled in the care and installation of such plantings. Prior to beginning this work, the contractor shall submit a statement of qualifications for the persons or subcontractor responsible for this work for review and approval by the Engineer.

Construction Methods:

Protection, care and re-establishment of plantings shall be performed according to Article 3, SECTION 9.49 FURNISHING, PLANTING and MULCHING TREES, SHRUBS, VINES and GROUND COVER PLANTS of the Form 816, and as follows below.

Plants shall be re-established at the designated location as directed by the Engineer as soon as possible to minimize possible damage to the plant. The new planting area shall be prepared by removing existing grass within the planting bed and adding additional topsoil as may be necessary to support the proposed plantings.

Pine bark mulch shall be installed as required to cover the entire planting bed at a minimum thickness of 3 inches.

Cultivated hedges, shrubs, and other plants that are to be disturbed by the Contractor's operations shall be thoroughly watered on a daily basis for a minimum of 7 days prior to the proposed relocation work. Such plants shall then be carefully dug up for relocation in such a manner as to ensure that the root ball is of a sufficient size to contain the entire root mass of the plant.

If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work.

Method of Measurement:

Removal and Re-Establishment of Existing Plantings shall not be measured for payment since it is being paid for on a lump sum basis.

Installation of pine bark mulch for the new planting bed shall be paid for under the associated contract item.

Payment:

Except as provided otherwise in the Bid Proposal, this work shall be paid for at the Contract Lump Sum Price for "REMOVAL AND RE-ESTABLISHMENT OF EXISTING PLANTINGS", which price shall include and all labor, materials, tools, and equipment necessary thereto.

Item No.	Description	Unit
0945070A	REMOVAL AND RE-ESTABLISHMENT OF EXISTING PLANTINGS	L.S.

ITEM # 0950005A TURF ESTABLISHMENT

Description:

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

Materials:

The materials for this work shall conform to the requirements of Section M.13 of the Form 817, except as noted below.

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

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

Erosion Control Matting shall be a product approved by the Connecticut Department of Transportation for the intended application as described in the “Qualified Products List” publication, latest edition.

Hydroseeding, when required by the Engineer, shall be performed using a homogenous slurry consisting of wood fiber mulch, fertilizer, live seed, and organic tackifiers conforming to Section M.13 of the Form 817.

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

Construction Methods:

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

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

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

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

2. Seeding Season: The calendar dates for seeding shall be:
Spring—March 15 to June 15
Fall—August 15 to October 15

All disturbed soil areas shall be treated during the seeding seasons as follows:
(a) Areas at final grade: Seeding will be accomplished.
(b) "Out-of-season" seedings shall be performed in the same manner as "in-season" seedings. Since acceptable turf establishment is less likely, the Contractor shall be responsible for "in-season" reseeding until the turf stand conforms to this specification.

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

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

When hydroseeding is required by the Engineer, it shall be performed by a qualified Contractor who has a minimum of three year experience in the successful performance of this work and has been approved by the Engineer. Hydroseed mix shall be applied in a slurry consisting of wood fiber mulch, fertilizer, live seed, and organic tackifiers with each component applied at the rate described above. The slurry shall be hydraulically sprayed on the soil surface as required to form a blotter-like ground cover with a uniform coating. Contractor shall exercise special care as required to prevent slurry from being sprayed onto adjacent paved areas, sidewalks, buildings, or signs. All slurry sprayed onto adjacent surfaces shall be cleaned at the Contractor's expense.

When the grass seeding growth has attained a height of 6 inches, the specified areas designated herein shall be mowed to a height of 3 inches. Following mowing, all seeding grass areas (mowed and un-mowed) shall receive a uniform application of fertilizer hydraulically placed at the rate of 320 pounds per acre.

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

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

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

7. Erosion Control Matting: Erosion control matting shall be installed following seeding where called for on the plans or as directed by the Engineer. Staples shall be installed as per Manufacturer's recommendations. Where two lengths of matting are joined, the end of the up-grade strip shall overlap the down-grade strip. The Contractor shall maintain and protect the areas with erosion control matting until such time as the turf grass is established. The Contractor shall replace or repair at his own expense any and all erosion control matting areas damaged by fire, water or other causes including the operation of construction equipment. No mowing will be required in the locations where erosion control matting is installed.

Method of Measurement:

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

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

Erosion control matting will be measured by the number of square yards of surface area of erosion control matting installed and accepted.

Basis of Payment:

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

Erosion control matting will be paid for at the contract unit price per square yard for "Erosion Control Matting" complete in place and accepted, which price shall include the hay mulch, netting, staples, maintenance, equipment, tools, labor, and work incidental thereto.

Item No.	Description	Unit
0950005A	TURF ESTABLISHMENT	S.Y.

ITEM # 0952001A SELECTIVE CLEARING AND THINNING

Description:

This work shall consist of trimming of trees and other vegetation, and the removal of brush, rubbish and other objectionable material as shown on the plans and as directed by the Engineer and Town of Glastonbury as required for the proper construction of the work and to provide required sight lines to all proposed traffic control signal equipment and RRFBs. **No tree removals are anticipated under this contract.**

This work also includes the installation or orange construction fence at the drip line of all existing trees that are within 10 feet of the contractors designated work area.

This work also includes excavation of a tree protection trench adjacent to proposed sidewalk, conduit, traffic signal control equipment, and foundations by means of a chain-driven trenching machine with additional pruning of roots using hand methods as required. This is performed adjacent to the proposed sidewalk, conduit, traffic signal control equipment, and foundation excavation when within the drip line of an existing tree to cleanly sever roots prior to excavation.

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

Construction Methods:

All work pertaining to the cutting, and trimming of trees, stumps, and removal of brush, rubbish and other objectionable material shall be done in a neat and orderly manner so as not to cause damage to adjacent vegetation. Branches of trees shall be trimmed as directed.

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

The Engineer will inspect the identified trees and verify the limits of clearing and thinning prior to the Contractor proceeding with his cutting operation. Where directed by the Engineer, materials to be cut, trimmed or removed shall be those items that restrict visibility to a traffic signal or RRFB to less than 400 ft. All traffic signal indications and RRFBs will be visible for 400 ft measured from the center of the right-travel lane approaching the intersection, as viewed from a 3.5 ft height above the roadway.

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

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

Method of Measurement:

Selective clearing and thinning, 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 “Selective Clearing and Thinning” which price shall include all material, tools, equipment and labor incidental thereto.

Item No.	Description	Unit
0952001A	SELECTIVE CLEARING AND THINNNING	L.S.

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

Work under this item shall conform to the applicable provisions of Section 9.70 of the Standard Specifications Form 817 supplemented as follows:

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

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

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

Basis of Payment: Replace Section 9.70.05 with the following:

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

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

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

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

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

ITEM # 0971001A MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description is supplemented by the following:

The Contractor shall maintain and protect traffic as described by the following and as limited in the Special Provision "Prosecution and Progress":

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

The Contractor is advised to review the Construction Staging Plans in the Construction Documents for the suggested construction staging and phasing.

Glastonbury Boulevard

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction with 11 foot turn lanes at intersections, each lane on a paved travel path not less than 11 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working on milling and paving operations, at which time the Contractor shall be allowed to close portions of the Glastonbury Boulevard over a distance not to exceed 500 feet or as directed by the Engineer or LTA. The closure shall be with permission from the Glastonbury Police Department with their acceptance of a detour plan.

All Other Roadways

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a travel path not less than 11 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 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 on Other Roadways 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 shall coordinate with the owner to determine the time period of the closure.

Article 9.71.03 - Construction Method is supplemented as follows:

General

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

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

The Contractor, during the course of active construction work on overhead signs and structures, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken. At no time shall an overhead sign be left partially removed or installed.

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

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

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

Existing Signing

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

Signing Patterns

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

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

Requirements for Winter

The Contractor shall schedule a meeting with representatives from the Town of Glastonbury to determine what interim traffic control measures the Contractor shall accomplish for the winter to provide safety to the motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

Pavement Markings

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

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

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

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

Dust Control

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

Pavement Markings -Non-Limited Access Multilane Roadways
Secondary and Local Roadways
During construction, the Contractor shall maintain all pavement markings on paved surfaces on all roadways throughout the limits of the project.

Interim Pavement Markings

The Contractor shall install painted pavement markings, which shall include centerlines, shoulder edge lines, lane lines (broken lines), lane-use arrows, and stop bars, on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work day/night. If the next course of bituminous concrete pavement will be placed within seven days, shoulder edge lines are not required. The painted pavement markings will be paid under the appropriate items.

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

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

Final Pavement Markings

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

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

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

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.

Typical traffic control plans may be used for moving operations such as line striping, pot hole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

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

1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. Any issues that can't be resolved at these meetings will be brought to the attention of the Engineer. 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 Engineer for resolution immediately or, in the case of work after regular business hours, on the next business day.

SECTION 3. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

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

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

3.c) Stopping traffic may be allowed:

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

3.d) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advanced warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic. If required, traffic slowing techniques may be used and shall include the use of Truck Mounted Impact Attenuators (TMAs) as appropriate, for a minimum of one mile in advance of the pattern starting point. Once the advanced warning signs and the first ten traffic cones/drums are installed/removed, the TMAs and sign crew shall continue to install/remove the pattern as described in Section 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 travelpath 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 6. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

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

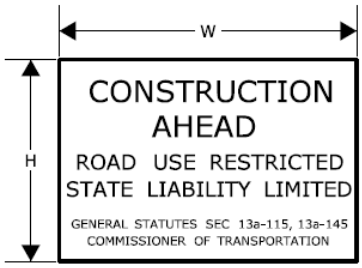
6.b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.

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

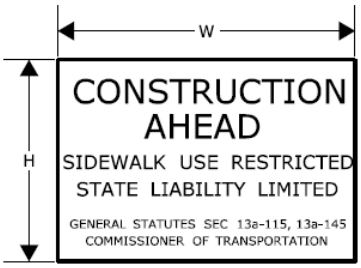
6.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

Portable Changeable Message Signs shall be deployed on Glastonbury Boulevard near the intersections of Main Street and Naubuc Avenue and Rte. 3, per plans in advance of construction and shall be modified as directed by the Town during construction to address required traffic patterns.

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.

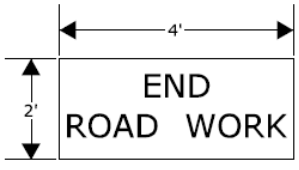
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

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.

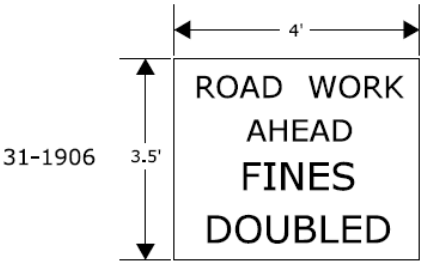
THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"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

NOTES FOR TRAFFIC CONTROL PLANS

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

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

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

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

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

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

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

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

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

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

TABLE 1 - MINIMUM TAPER LENGTHS

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

METRIC CONVERSION CHART (1" = 25mm)

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

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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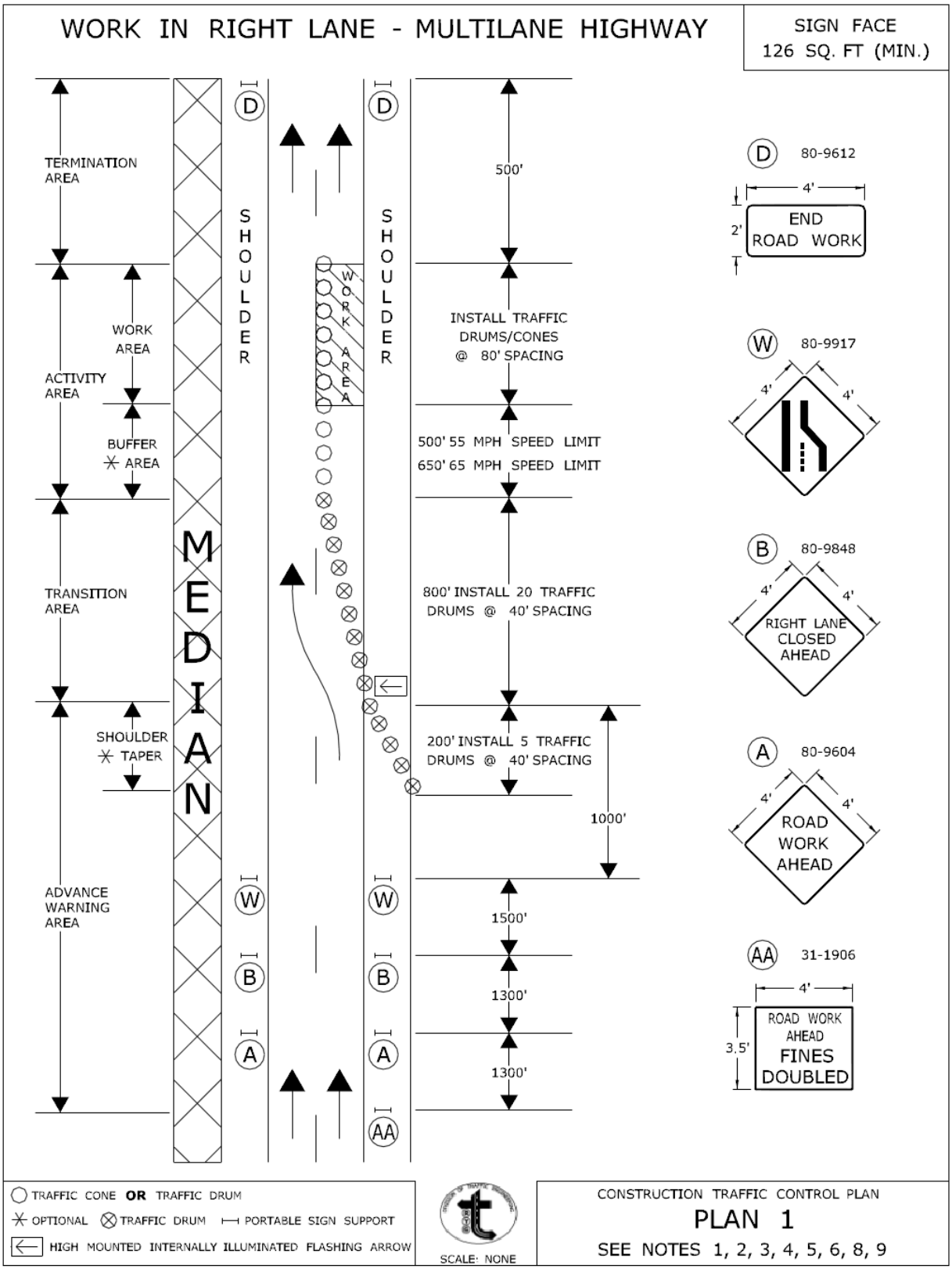
PRINCIPAL ENGINEER



CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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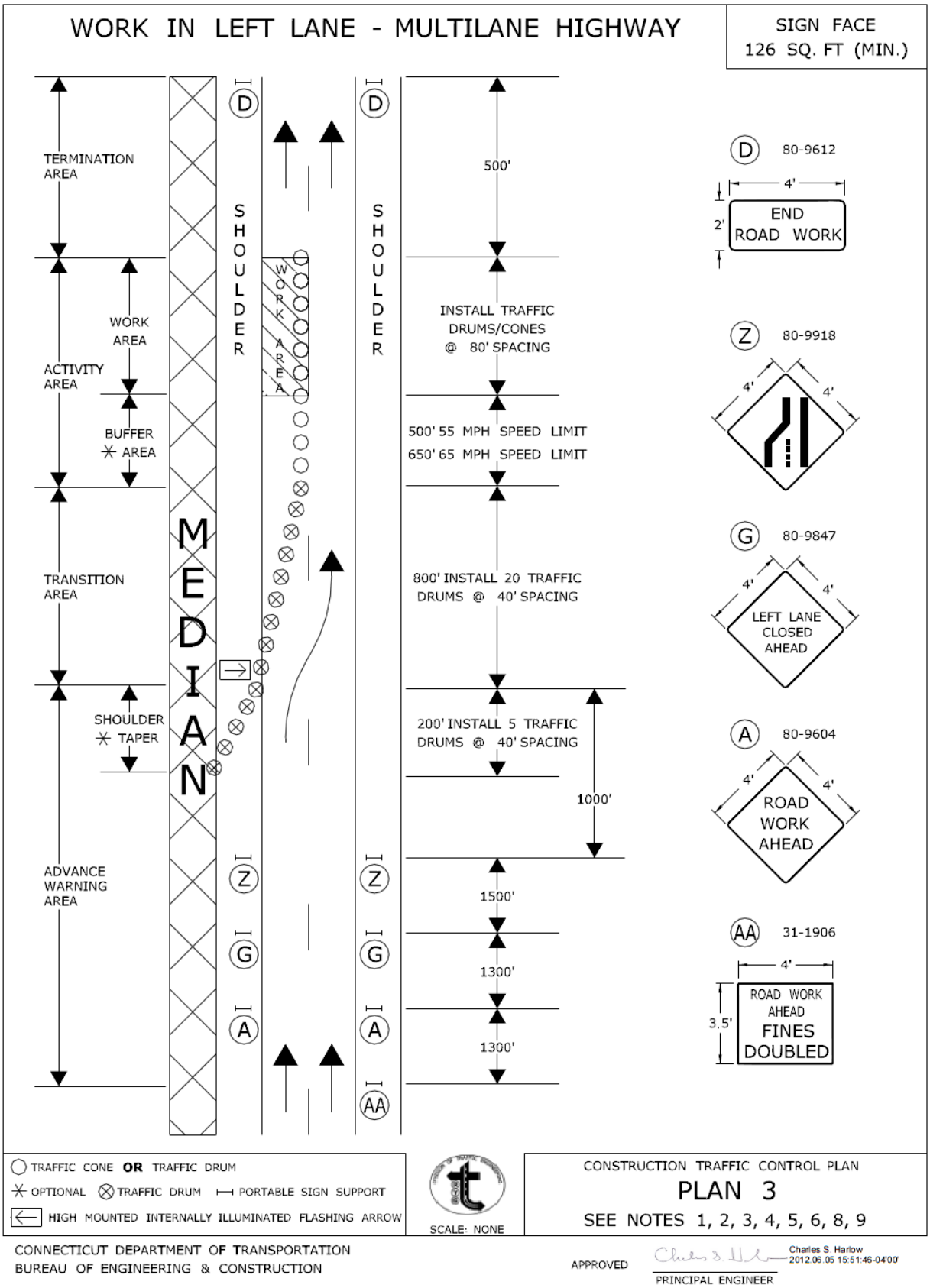

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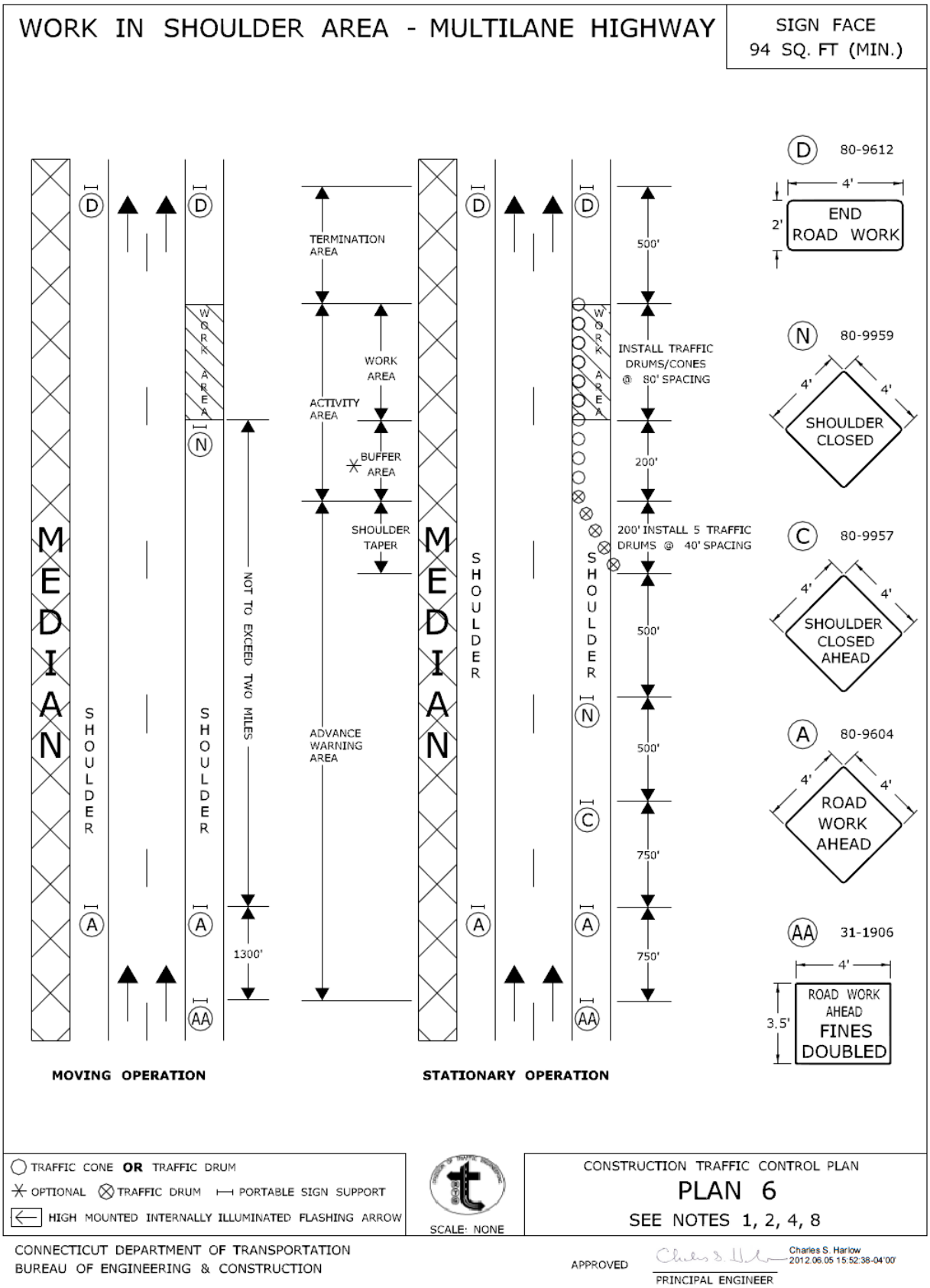

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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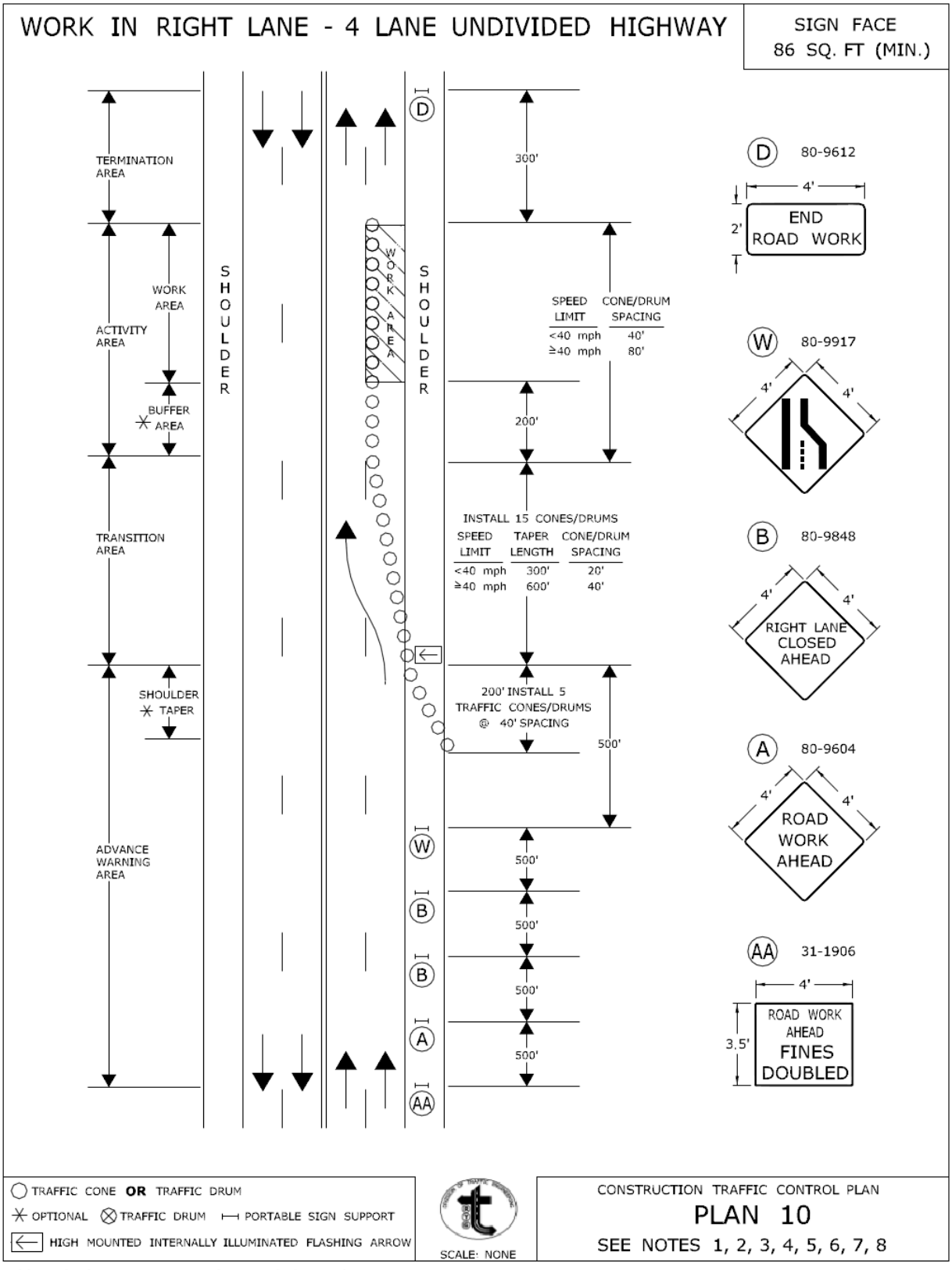
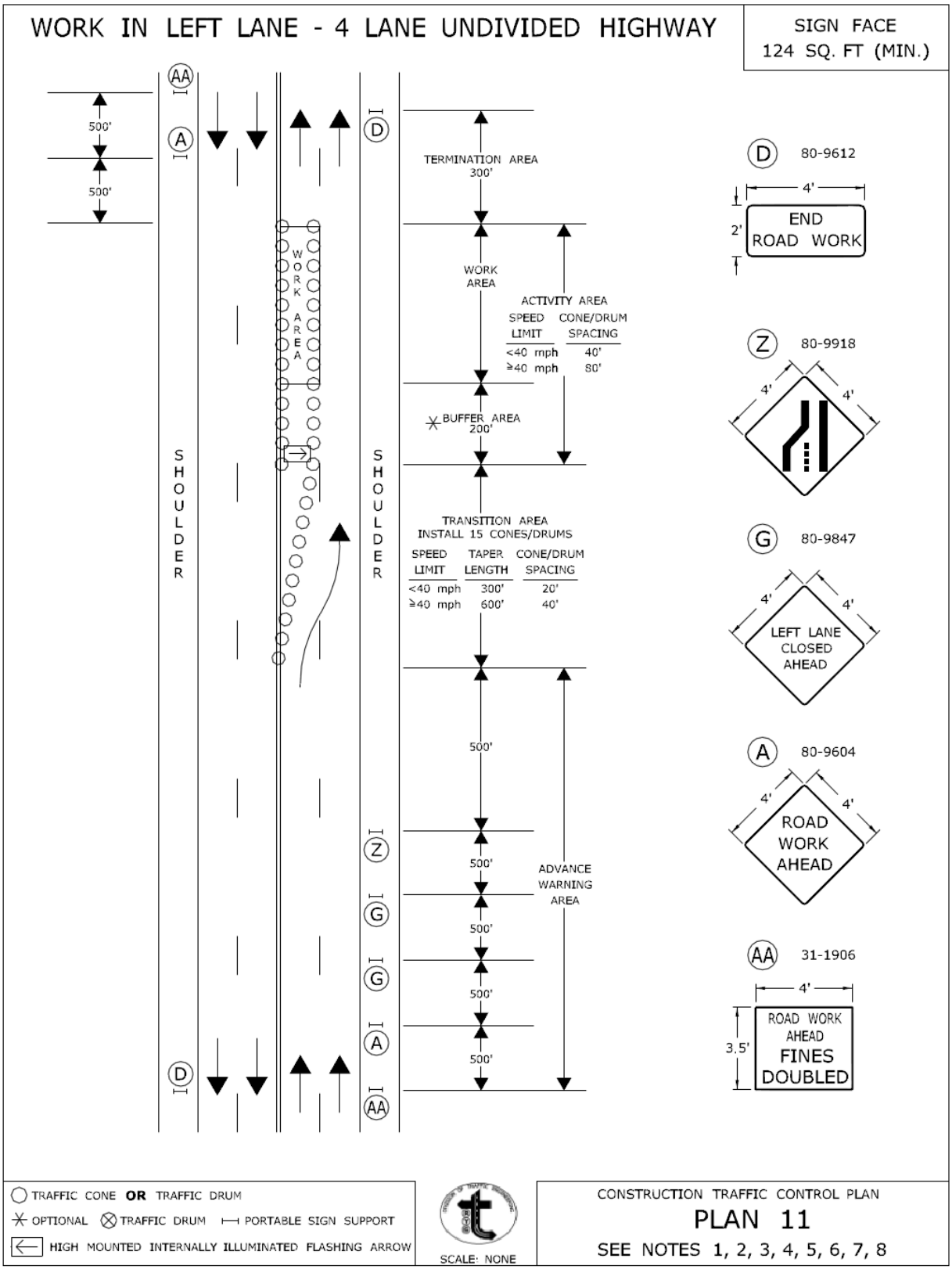

WORK IN RIGHT LANE - 4 LANE UNDIVIDED HIGHWAY
SIGN FACE
86 SQ. FT (MIN.)
TERMINATION AREA
ACTIVITY AREA
WORK AREA
BUFFER AREA
TRANSITION AREA
SHOULDER TAPER
ADVANCE WARNING AREA
SHOULDER
WORK AREA
SHOULDER
D
W
B
B
A
AA
300'
SPEED LIMIT
CONE/DRUM SPACING
<40 mph 40'
≥40 mph 80'
200'
INSTALL 15 CONES/DRUMS
SPEED LIMIT
TAPER LENGTH
CONE/DRUM SPACING
<40 mph 300' 20'
≥40 mph 600' 40'
200' INSTALL 5 TRAFFIC CONES/DRUMS @ 40' SPACING
500'
500'
500'
500'
500'
D 80-9612
4'
2'
END ROAD WORK
W 80-9917
4'
4'
B 80-9848
4'
4'
RIGHT LANE CLOSED AHEAD
A 80-9604
4'
4'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 10
SEE NOTES 1, 2, 3, 4, 5, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
Charles S. Harlow
2012.06.05 15:54:15-04'00'
PRINCIPAL ENGINEER


WORK IN LEFT LANE - 4 LANE UNDIVIDED HIGHWAY
SIGN FACE
124 SQ. FT (MIN.)
500'
500'
TERMINATION AREA
300'
WORK AREA
ACTIVITY AREA
SPEED LIMIT
CONE/DRUM SPACING
<40 mph 40'
≥40 mph 80'
BUFFER AREA
200'
TRANSITION AREA
INSTALL 15 CONES/DRUMS
SPEED LIMIT
TAPER LENGTH
CONE/DRUM SPACING
<40 mph 300' 20'
≥40 mph 600' 40'
ADVANCE WARNING AREA
500'
500'
500'
500'
500'
SHOULDER
SHOULDER
WORK AREA
D 80-9612
4'
2'
END ROAD WORK
Z 80-9918
4'
4'
G 80-9847
LEFT LANE CLOSED AHEAD
A 80-9604
ROAD WORK AHEAD
AA 31-1906
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 11
SEE NOTES 1, 2, 3, 4, 5, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
Charles S. Harlow
2012.06.05 15:54:36-04'00'
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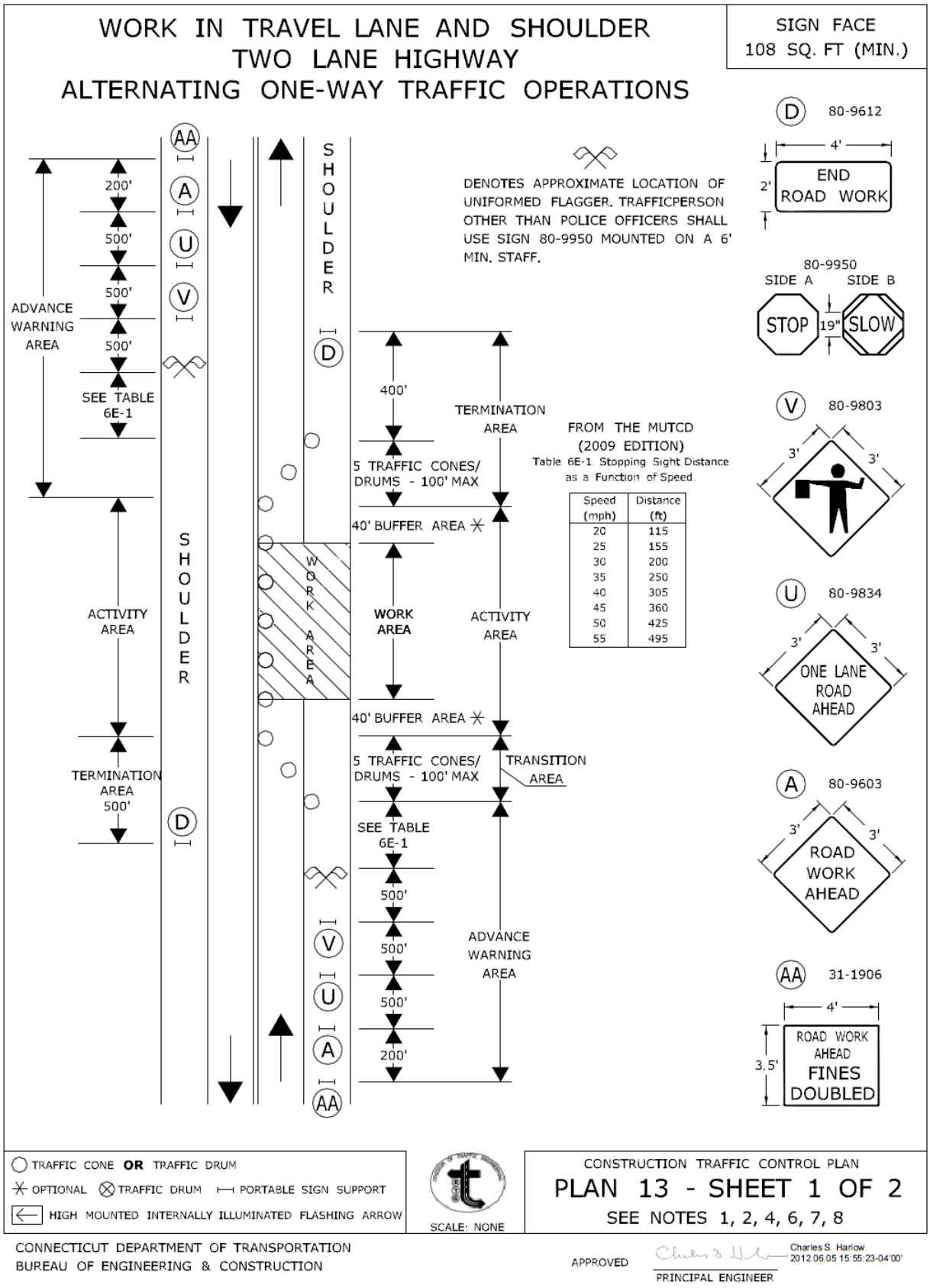
WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS
SIGN FACE
108 SQ. FT (MIN.)
DENOTES APPROXIMATE LOCATION OF UNIFORMED FLAGGER. TRAFFICPERSON OTHER THAN POLICE OFFICERS SHALL USE SIGN 80-9950 MOUNTED ON A 6' MIN. STAFF.
ADVANCE WARNING AREA
200'
500'
500'
500'
SEE TABLE 6E-1
ACTIVITY AREA
TERMINATION AREA 500'
SHOULDER
WORK AREA
400'
TERMINATION AREA
5 TRAFFIC CONES/ DRUMS - 100' MAX
40' BUFFER AREA
WORK AREA
ACTIVITY AREA
40' BUFFER AREA
5 TRAFFIC CONES/ DRUMS - 100' MAX
TRANSITION AREA
SEE TABLE 6E-1
500'
500'
500'
200'
ADVANCE WARNING AREA
FROM THE MUTCD (2009 EDITION)
Table 6E-1. Stopping Sight Distance as a Function of Speed
Speed (mph) | Distance (ft)
20 | 115
25 | 155
30 | 200
35 | 250
40 | 305
45 | 360
50 | 425
55 | 495
D 80-9612
4'
2'
END ROAD WORK
80-9950
SIDE A SIDE B
STOP 19" SLOW
V 80-9803
3' 3'
U 80-9834
3' 3'
ONE LANE ROAD AHEAD
A 80-9603
3' 3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 1 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
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

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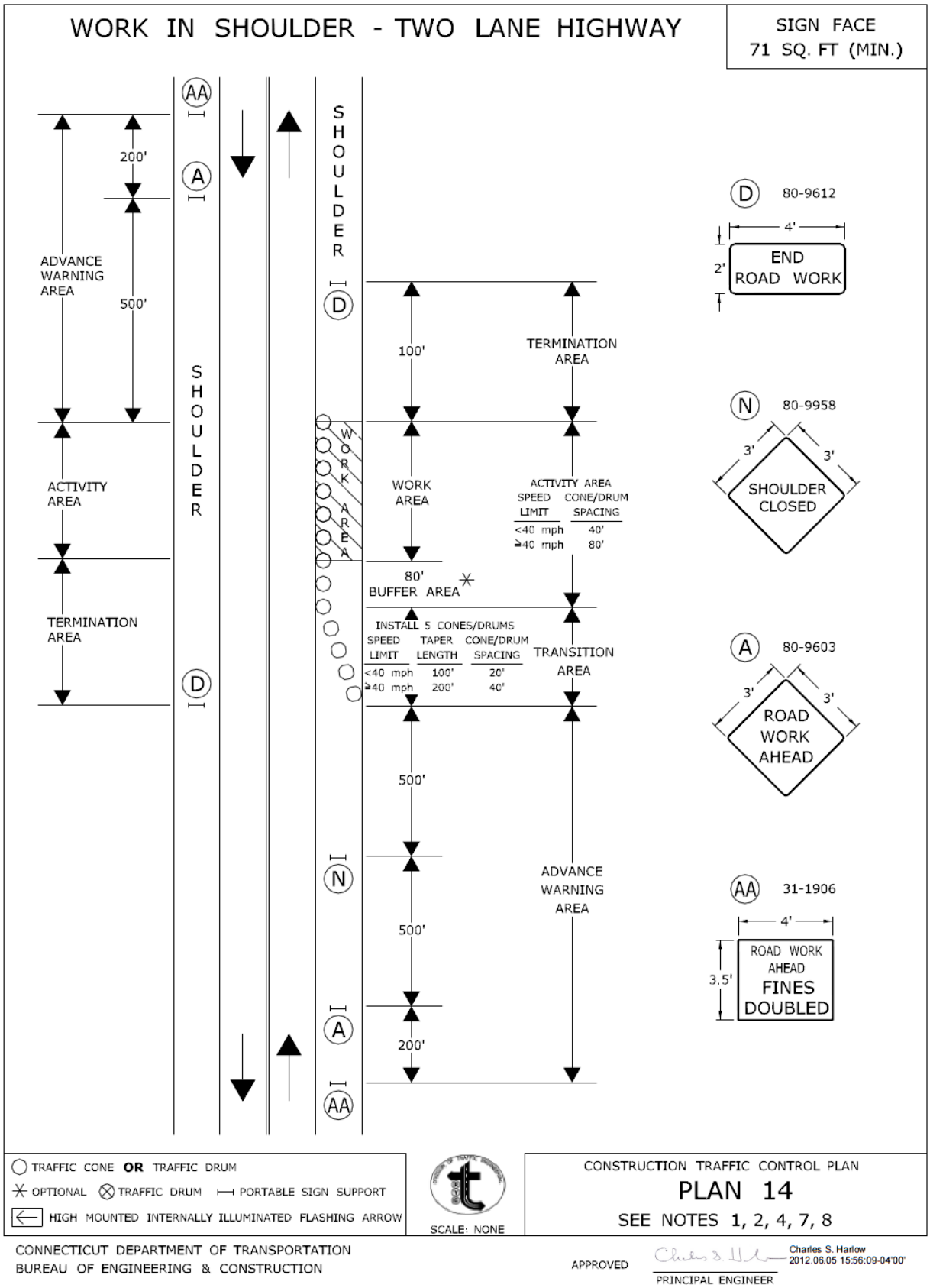
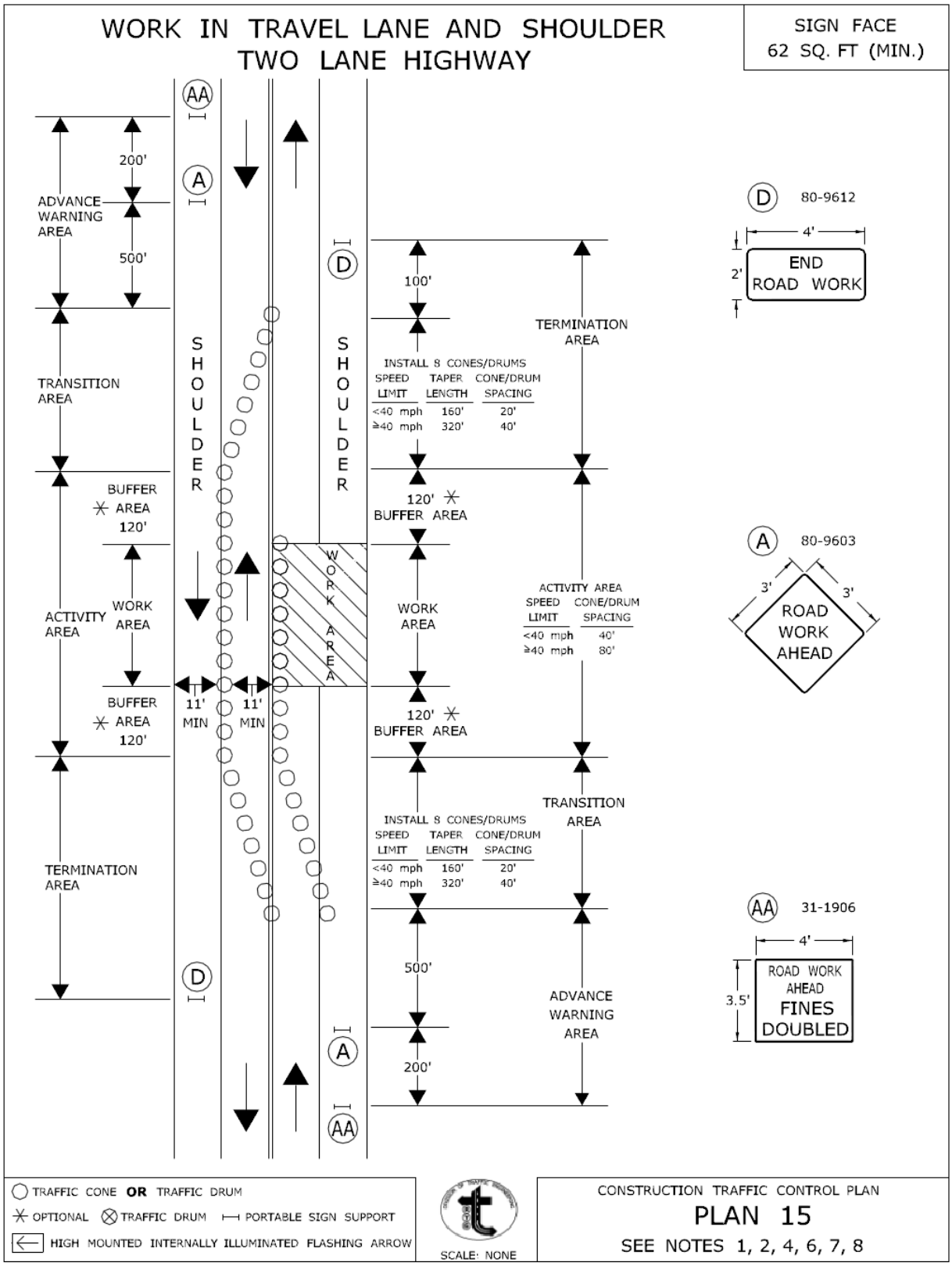
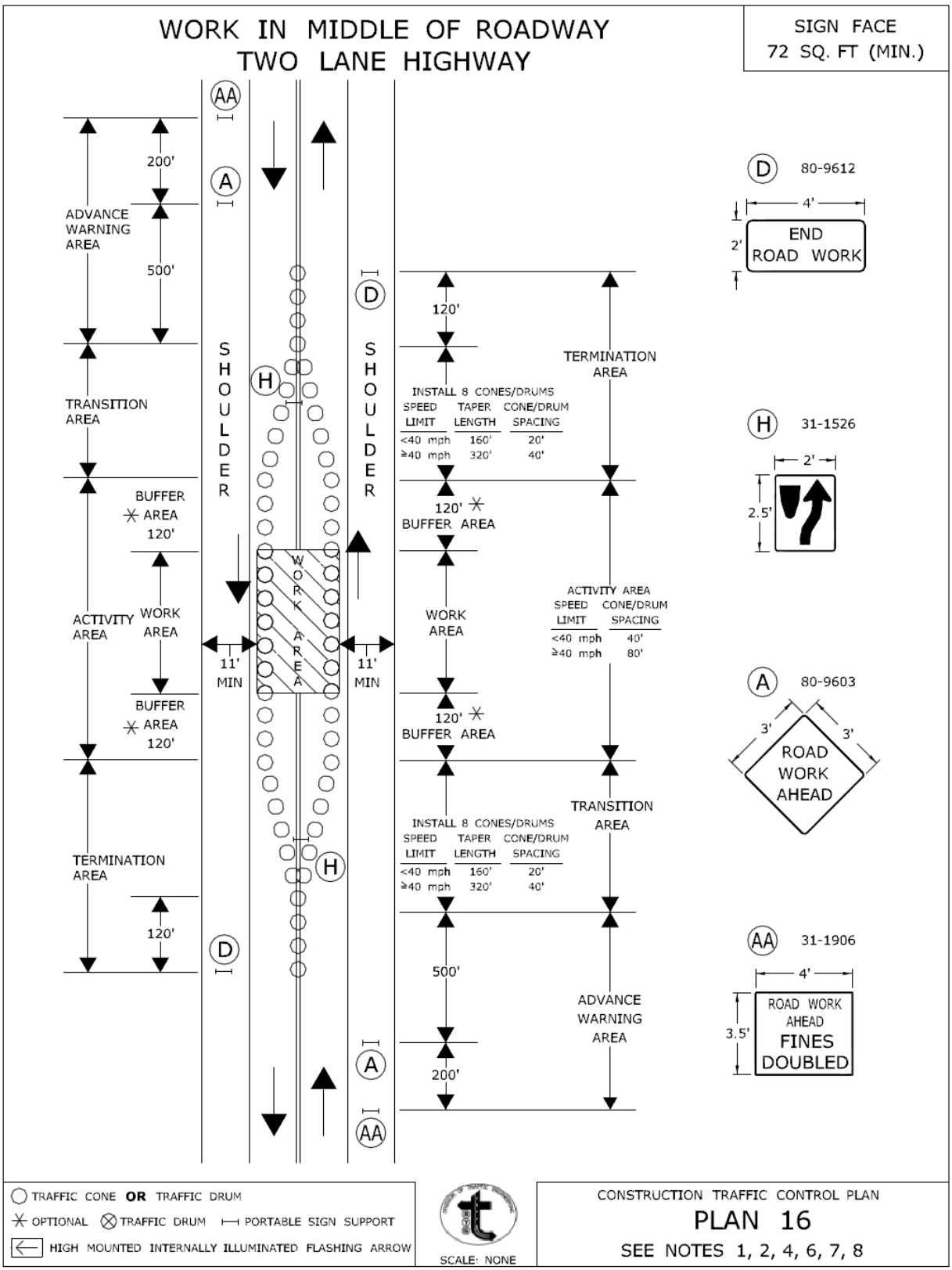

WORK IN SHOULDER - TWO LANE HIGHWAY
SIGN FACE
71 SQ. FT (MIN.)
AA
A
D
N
200'
500'
ADVANCE WARNING AREA
ACTIVITY AREA
TERMINATION AREA
SHOULDER
SHOULDER
WORK AREA
100'
TERMINATION AREA
WORK AREA
ACTIVITY AREA
SPEED LIMIT
CONE/DRUM SPACING
<40 mph 40'
≥40 mph 80'
80' BUFFER AREA
INSTALL 5 CONES/DRUMS
SPEED LIMIT
TAPER LENGTH
CONE/DRUM SPACING
<40 mph 100' 20'
≥40 mph 200' 40'
TRANSITION AREA
500'
500'
200'
ADVANCE WARNING AREA
D 80-9612
4'
2'
END ROAD WORK
N 80-9958
3'
3'
SHOULDER CLOSED
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 14
SEE NOTES 1, 2, 4, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
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.)
AA
A
D
200'
ADVANCE WARNING AREA
500'
TRANSITION AREA
BUFFER AREA 120'
ACTIVITY AREA
WORK AREA
BUFFER AREA 120'
TERMINATION AREA
SHOULDER
SHOULDER
WORK AREA
11' MIN
11' MIN
100'
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
120' BUFFER AREA
WORK AREA
120' BUFFER AREA
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
500'
200'
TERMINATION AREA
ACTIVITY AREA
SPEED LIMIT | CONE/DRUM SPACING
<40 mph | 40'
≥40 mph | 80'
TRANSITION AREA
ADVANCE WARNING AREA
D 80-9612
4'
2'
END ROAD WORK
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
Charles S. Harlow
2012.06.05 15:56:29-04'00'
PRINCIPAL ENGINEER



CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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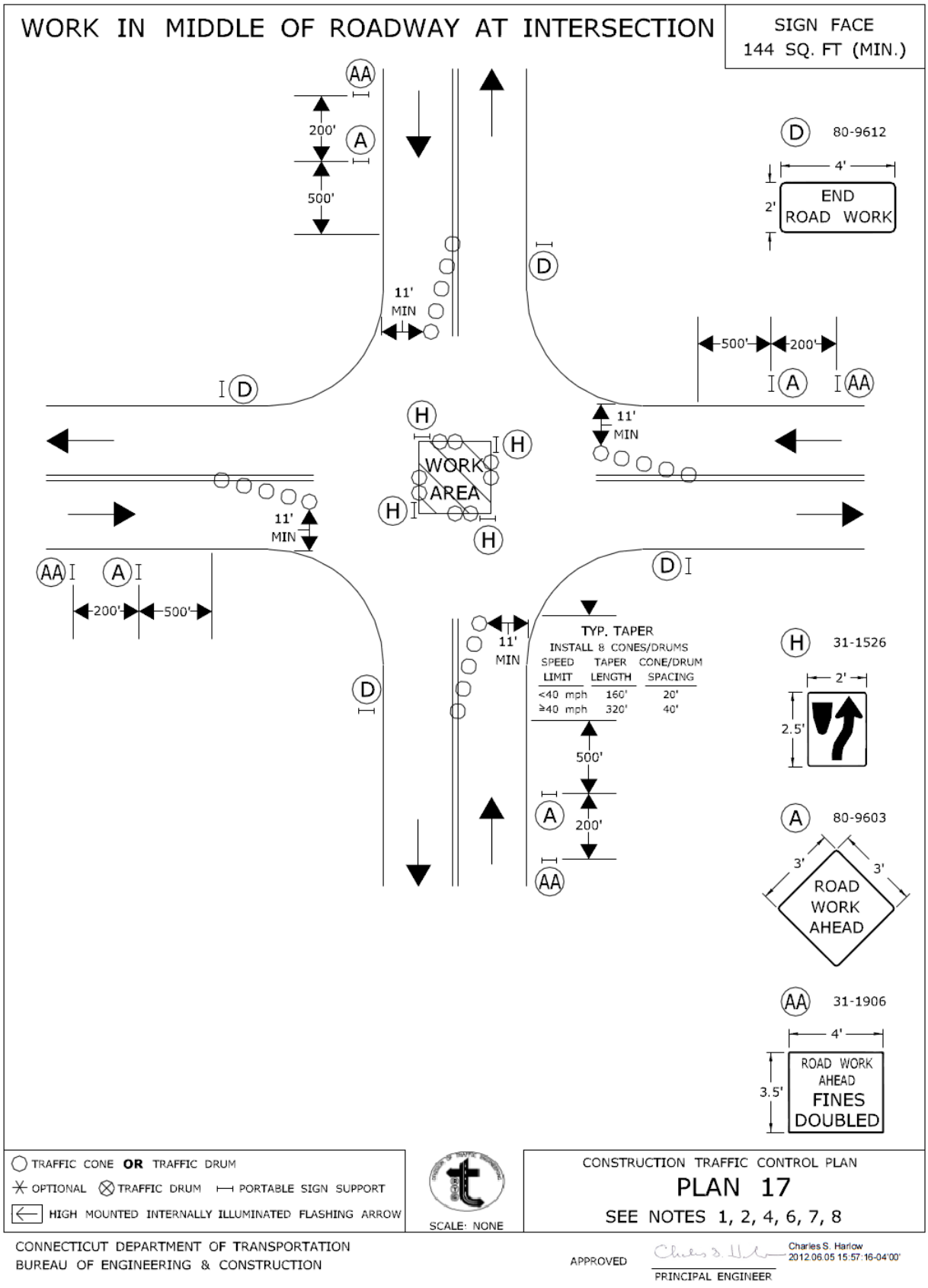
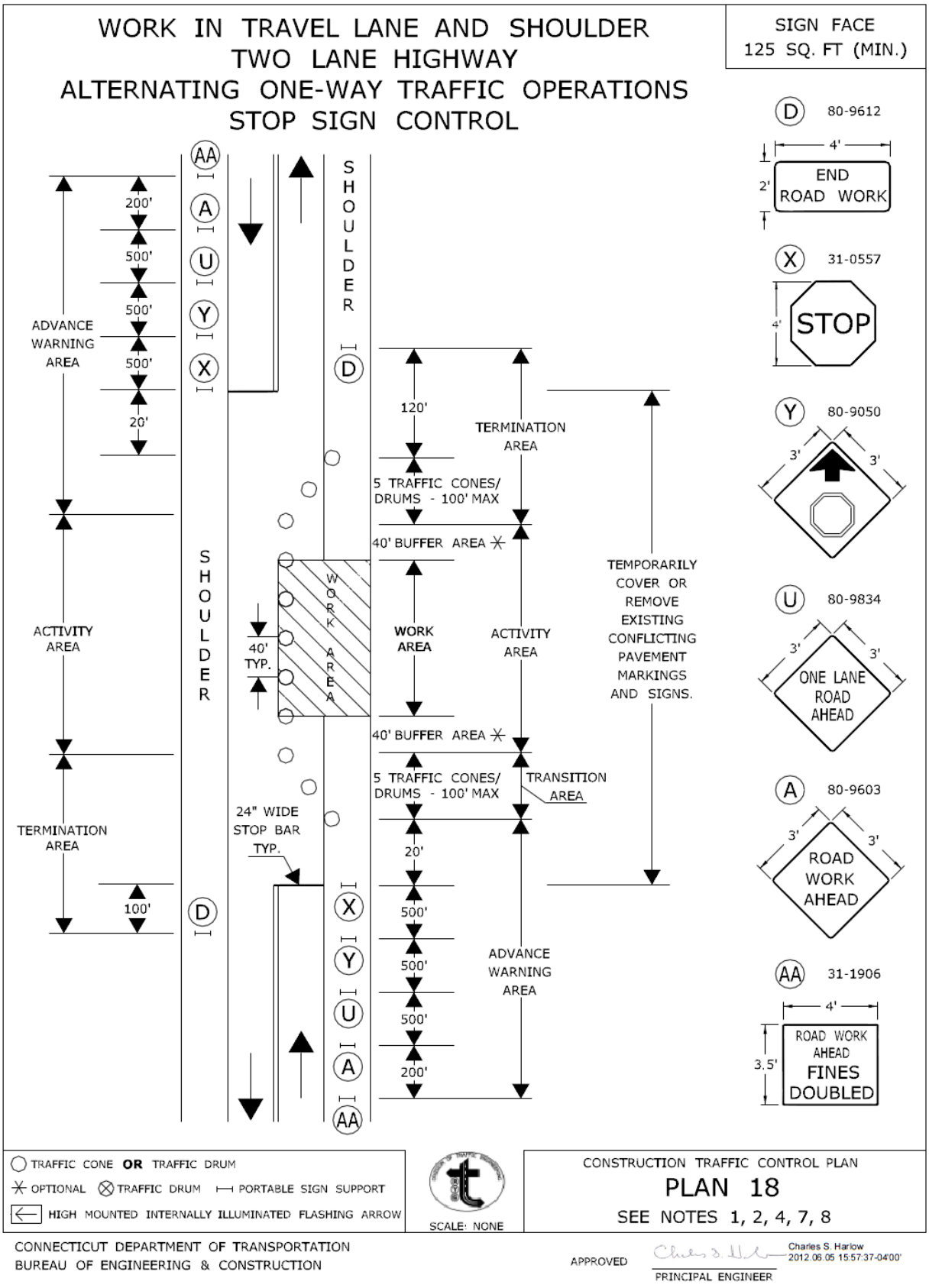
PRINCIPAL ENGINEER


WORK IN MIDDLE OF ROADWAY AT INTERSECTION
SIGN FACE
144 SQ. FT (MIN.)
AA
200'
A
500'
11'
MIN
D
80-9612
4'
2'
END
ROAD WORK
500'
200'
H
WORK
AREA
TYP. TAPER
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
31-1526
2'
2.5'
80-9603
3'
3'
ROAD
WORK
AHEAD
31-1906
ROAD WORK
AHEAD
FINES
DOUBLED
3.5'
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



CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED _____ PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:57:37-04'00'

Article 9.71.05 – Basis of Payment

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

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

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

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include the cost of all materials, tools, equipment and labor incidental thereto. No separate payments will be made for materials, excavation and disposal of materials, furnishing, placing, compacting the subbase, preparing the subgrade, or removal and disposal of the temporary bituminous curb and temporary walking paths and restoration of the disturbed areas.

ITEM # 1008908A CLEAN EXISTING CONDUIT

Description:

Clean existing conduit as required, as shown on the plans or as directed by the Engineer to remove dirt and debris to facilitate the installation of new cable.

Construction Methods:

Where cable is to be installed in existing conduit the conduit may have to be cleared prior to the installation. Cleaning will only be necessary if the new cable cannot be easily installed in the existing conduit. By field inspection, and with the concurrence of the Engineer, determine the sections of conduit that require cleaning.

Remove all existing cable from conduit. Install temporary cable elsewhere, as necessary, to maintain normal signalization complete with vehicle & pedestrian detection, EVPS, and coordination. Clean the conduit by one of the following methods:

1) Rodding.
2) A high pressure jet spray, or air pressure.
3) By pulling a mandrel or ball through the conduit.

Submit in writing the anticipated method of cleaning the conduit to the Engineer for approval prior to cleaning any conduit.

If the conduit is found damaged to any extent that the cleaning process will not clear the obstruction, it will be the judgment of the Engineer whether to replace the entire conduit run or excavate and replace only the damaged section.

If the existing conduit is found to be missing hardware such as bonding bushings and bond wire, the missing material shall be provided and installed under this item prior to installation of the cable.

Method of Measurement:

This work shall be measured from termination point to termination point. This work shall be measured for payment on actual number of linear feet.

Basis of Payment:

The work under the Item “Clean Existing Conduit” shall be paid for at the contract unit price per linear foot (meters), which price shall include all material, tools, equipment, labor, and work incidental thereto. Replacement of any damaged conduit shall be paid for under the applicable conduit item.

Item No.	Description	Unit
1008908A	CLEAN EXISTING CONDUIT	L.F.

ITEM # 1010060A CLEAN EXISTING CONCRETE HANDHOLE

Description:

Under this item the Contractor shall clean all debris from an existing concrete handhole where shown on the plans or as directed.

Construction Methods:

The Contractor shall remove all sand, silt and other debris from within an existing concrete handhole where shown on the plans or as directed. Debris shall be removed to a level of 12” below the incoming electrical conduit. Removed debris shall be properly disposed of by the Contractor. Where new conductors are to be installed in existing rigid metal conduit entering the handhole, the Contractor shall remove the old insulated bonding bushing from the end of each conduit and install a new insulated bounding bushing.

Method of Measurement:

This work will be measured for payment by the number of concrete handholes cleaned, complete and accepted.

Basis of Payment:

This work will be paid for at the contract unit price each for "Clean Existing Concrete Handhole", which price shall include the removal and disposal of debris from handhole, removal of existing bonding bushings, furnishing and installing new insulated bonding bushings, and all equipment and work incidental thereto.

Item No.	Description	Unit
1010060A	CLEAN EXISTING CONCRETE HANDHOLE	EA.

ITEM # 1102002A 8’ ALUMINUM PEDESTAL
ITEM # 1102008A 4’-4” ALUMINUM PEDESTAL

Section 11.02 of the Standard Specifications shall be supplemented as follows:

Add the following:

All pedestal assemblies shall be powder coated black.

The color of the finish coat for the complete aluminum pedestal assembly and all hardware shall be BLACK, No. 17038, Federal Standard No. 595. The Contractor shall submit color samples to the Engineer for approval prior to fabrication.

ITEM # 1105104A 1 WAY, 4 SECTION MAST ARM TRAFFIC SIGNAL

Section 11.05 of the Standard Specifications shall be amended as follows:

Article 11.05.03 – Construction Methods:

In the second paragraph, delete the last sentence ("A balance adjuster shall…").

Add the following paragraphs:

Circular indications that have an identification mark (such as an arrow) on the top of the lens shall be installed with that mark at the 12 o-clock position.

Article 11.05.05 – Basis of Payment:

In the first sentence of the first paragraph, delete "balance adjuster,".

Article M.16.06 - Traffic Signals

Sub Article 3 - Housing:

In the last sentence, between the words "housing" and "shall" add "and all internal hardware".

Add the following after the last paragraph.

Each section of the housing shall be provided with a removable visor. The visor shall be the cap type, unless otherwise noted on the plan. The visor shall be a minimum .05 inch (.13 mm) thick. The visor shall be the twist on type and secured to the signal by four equidistant flat tabs screwed to the signal head.

Sub Article 4 - Brackets:

Add the following at the end of the last paragraph:

Backplates shall be 5" wide and louvered.

Install a 2" wide fluorescent yellow retroreflective strip (Type XI sheeting) along the perimeter of the face of the backplate.

Replace the last paragraph with the following:

When indicated on the plans, a backplate of dimensions, as shown on the plans, constructed of 5052-H32 aluminum alloy sheet between 0.050-in to 0.065-in thickness meeting the requirements of ASTM B209 shall be attached to the signal head housing. The front surface of backplate per MUTCD shall have a dull black finish to minimize light reflection and to increase contrast between the signal indication and its background.

Delete Sub Article 5 - Optical Unit and **Sub Article 6** – Lamp Socket and replace with the following:

Optical Unit, Light Emitting Diode:

(a) General:

Only Optical Units that meet the requirements contained herein supplied by the below manufacturers that have been tested by the Department's Signal Lab will be accepted. Final approval for model numbers will be done at the time of the catalog cut submittals.

Duralight
Trastar, Inc.
860 N. Dorothy Dr., Suite 600
Richardson, TX 75081

GE Lighting Solutions
Corporate Headquarters
1975 Noble Road Building 338E
East Cleveland, OH 44112-6300

Dialight
1501 Foute 34 South
Farmingdale, NJ 07727

Leotek
726 South Hillview Drive
Milpitas, CA 95035

The materials for Light Emitting Diode (LED), Optical Unit, circular and arrow, shall conform to the following:

- The ITE Performance Specification for Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement for circular indications dated June 27, 2005.
- The ITE Performance Specification for Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement for arrow indications dated July 1, 2007.

Section 4, Adjustable Traffic Signals and General Housing sections of the **Department of Transportation Functional Specifications for Traffic Control Equipment, current edition governs.** Where the Department of Transportation Functional Specifications conflict with this Special Provision or the 2005/2007 ITE Performance Specifications, this Special Provision and the 2005/2007 ITE Performance Specifications shall govern.

The Optical Unit shall have an Incandescent look and be made up of a smooth surfaced outer shell, multiple LED light sources, a filtered power supply and a back cover, assembled into a sealed unit. The Optical Unit shall be certified as meeting the 2005/2007 ITE Specifications by Intertek Testing Services, Inc. (ITSNA, formerly ETL) or another organization currently recognized by the Occupational Safety and Health Administration (OSHA) as a Nationally Recognized Testing Laboratory (NRTL.) The Optical Unit shall perform to the requirements of the ITE Specification for a minimum of 60 months.

A "Swing Test" will be performed by the Department to ensure no significant dimming or blanking occurs, until the lamp is obscured by the visor. All L.E.D Lamps will be subjected to further field testing for reliable operation.

The Arrow Optical Unit shall be "Omni-Directional" so that it may be oriented in a right, left or straight configuration without degradation of performance.

(b) Electrical Requirement:

Operating voltage:

80 to 135 Volts AC with cutoff voltage (no visible indication) below 35Volts AC.

Power requirements:

Circular Indications: 12", (300 mm) – no more than 16 Watts
Circular Indications: 8", (200mm) - no more than 16 Watts
Arrows Indications: 12", (300mm) - no more than 16 Watts

Power Supply:

Fused and filtered to provide excess current protection and over voltage protection from electrical surges and transient voltages.

(c) Photometric Requirement:

Beam Color:

Meet 2005/2007 ITE Specifications

(d) Mechanical Requirements:

Diameter:

The Circular Optical Unit shall fit into standard 12" (300mm) or 8" (200mm) housing.
The Arrow Optical Unit shall fit 12" (300mm) housings only.

Enclosure:

UV (Ultraviolet) stabilized polycarbonate back cover.
Clear lens cover for all Red, Yellow and Green Circular Optical Units.
For Arrow Optical Units the arrow indication segment of the lens shall be clear.
Enclosure sealed and waterproofed to eliminate dirt contamination and be suitable for installation in all weather conditions.

Clearly mark on the housing the following information:

- Manufacturer & model number
- Date of manufacture (must be within one year of installation)

The model number shall end with the number of LEDs used to comprise the unit as the last digits of the model number. Example, if the unit comprised of 3 LEDs and the model is x12y, then the new model number shall read x12y3.

Operating temperature:

Meet 2005/2007 ITE Specification

Wiring: L.E.D. lamps shall have **color coded 16 AWG wires** for identification of heads as follows:

RED L.E.D. Lamps	RED with WHITE neutral
YELLOW L.E.D. Lamps	YELLOW with WHITE neutral
GREEN L.E.D. Lamps	GREEN or Brown with WHITE neutral
RED L.E.D. ARROWS	RED/WHITE with WHITE neutral
YELLOW L.E.D. ARROWS	YELLOW/WHITE with WHITE neutral
GREEN L.E.D. ARROWS	GREEN/WHITE or BROWN/WHITE with WHITE neutral
GREEN/YELLOW LE.D ARROWS	GREEN/WHITE or BROWN/WHITE, YELLOW/WHITE, with WHITE neutral

Wires shall be terminated with a Block Spade, 6-8 stud/ 16-14 wire size.

All Circular Optical Units shall be supplied with a minimum 40" pigtail and all Arrow Optical Units Supplied with a minimum 60" pigtail.

Sub Article 9 **- Painting:**

Third coat:

Replace with the following:

The housing, housing door, the back surface of the backplate, and all brackets and hardware shall be painted black by the manufacturer. The color shall be No. 17038, Federal Standard No. 595.

The outside of the visors shall have a dull black finish that meets Federal Specification TT-E-527.

The inside of the visors per MUTCD shall have a dull black finish to minimize light reflection and to increase contrast between the signal indication and its background. The dull black finish shall meet Federal Specification TT-E-527.

ITEM # 1106001A 1 WAY PEDESTRIAN SIGNAL POLE MOUNTED
ITEM # 1106003A 1 WAY PEDESTRIAN SIGNAL PEDESTAL MOUNTED

Section 11.06 of the Standard Specifications shall be supplemented as follows:

Description:

Pedestrian signals and all supporting equipment, brackets and clamps shall be powder coated black by the manufacturer.

Section 11.06.02 Pedestrian Signal, Materials

Section M.16.07 C. Optical Unit

Delete 2. LED: and replace with the following:

General

- Meet requirements of current MUTCD Section 4E.
- Meet current ITE specifications for Pedestrian Traffic Control Signal Indications - (PTCSI) Part 2: Light Emitting Diode (LED).
- Meet CT DOT, 2016-2019 Functional Specifications for Traffic Control Equipment; Section 5D, LED Pedestrian Signal with Countdown Timer.
- Meet EPA Energy Star® requirements for LED Pedestrian Signal Modules.

Operational

- Countdown display only during the flashing Pedestrian Clearance (Ped Clr) Interval. Timer goes blank at end of flashing ped clr even if countdown has not reached zero.

Physical

- Sealed optical module to prevent entrance of moisture and dust.
- Self-contained optical module, including necessary power supplies.
- Designed to securely fit into standard housing without the use of special tools or modifications to the housing.
- Identification information on module: manufacturer's name, model number, serial number, and date code.

Optical

- Multiple LED sources; capable of partial loss of LED's without loss of symbol or countdown message.
- Two complete self contained optical systems. One to display the walking person symbol (walk) and the hand symbol (don't walk). One to display the countdown timer digits.
- Visual Image similar to incandescent display; smooth, non-pixilated.
- Symbol and countdown digit size as shown on the plan.
- Solid hand/person symbol; outline display not allowed.
- Overlaid hand/person symbols and countdown digits arranged side by side.
- Countdown digit display color: Portland Orange in accordance with ITE requirements.
- Countdown digits comprised of two seven segments, each in a figure 8 pattern.
- Photometric Requirements: Luminance, Uniformity, and Distribution in accordance with ITE requirements.
- Color Uniformity in accordance with ITE requirements.
- Blank–Out design; symbols and digits illegible even in direct sunlight when not illuminated.

Electrical

- Operating voltage: 89 VAC to 135 VAC.
- Low Voltage Turn-Off: 35 VAC.
- Turn-On and Turn-Off times in accordance with ITE specifications.
- Combined Hand – Countdown Digits wattage: ≥ 20 Watts.
- Input impedance at 60 Hertz sufficient to satisfy Malfunction Management Unit (MMU) requirements.
- Two separate power supplies. One to power the walking person symbol. One to power the hand symbol and the countdown digits.
- Meet Federal Communication Commission (FCC) regulations concerning electronic noise.
- Filtered and protected against electrical transients and surges.

Warrantee

- Five years from date ownership is accepted.

Section M.16.07 F. Painting:

Remove the 2nd and 3rd sentences referring to the color.

Third coat: Replace with the following:

The housing and all brackets and hardware shall be painted black by the manufacturer. The color shall be No. 17038, Federal Standard No. 595.

The inside and outside of the visors shall be flat black No. 37038, Federal Standard No. 595.

ITEM # 1107011A ACCESSIBLE PEDESTRIAN SIGNAL AND DETECTOR (TYPE A)

Description:

Furnish and install an Accessible Pedestrian Signal and Detector (APS&D). The APS&D provides audio and tactile information to augment the visual pedestrian signal.

Type A provides a low frequency percussive tone during the walk interval and is used where there is an exclusive pedestrian phase or ≥ 10 foot separation between APS&Ds.

The pedestrian pushbuttons and sign frame shall be painted black by the manufacturer.

Material:

A. General:

- Conform to applicable sections of the current MUTCD Chapter 4E, Pedestrian Control Features as specified herein.
- All features fully operational when the traffic signal is in colors mode.
- All features non-operational when the traffic signal is in flash mode.
- Interchangeable with a non-accessible type pedestrian pushbutton with no modifications to the Controller Assembly (CA) or Controller Unit.
- Audible transducer integral with the APS&D housing, adjacent to the pushbutton.
- Operation programming method: Either or combination of:
  - Mechanically by dip switches or circuit board jumpers
  - Infrared remote-control hand-held device

B. Electrical:

- Metallic components either grounded or insulated to preclude an electrical hazard to pedestrians under all weather conditions.
- All features powered by the 110VAC Walk signal and the 110VAC Don't Walk signal so that additional conductors from the CA are not needed.

C. Audible Pushbutton Locator Tone

- Frequency: repeating tone at one (1) second intervals
- Tone duration: ≤ 0.15 seconds
- Volume:
  - Minimum setting of zero
  - Manually adjustable initial setting
  - Automatically adjusted after initial setting. Volume increased in response to a temporary increase in ambient noise and subsequently decreased with a decrease in ambient noise.
  - Maximum volume: 100 dBA which is the approximate sound pressure of a gasoline powered lawn mower nearby.
  - Automatic volume adjustment independent of other APS&Ds at the intersection.
  - May be disabled without affecting operation of other features.
- Silent only during walk interval. Active all other times.

D. Vibrotactile Arrow Pushbutton

- Pushbutton contained in a circular assembly which fits inside the housing and is attached to the housing with 4 screws.
- ADA compliant: Size: ≥ 2.0" (50) diameter, Actuation force: ≤ 5 ft-lb (22.2 N)
- Shape: Circular, raised slightly above housing so that it may be actuated with the back of a hand
- Tamper-proof, vandal-proof, weatherproof, freeze-proof, impact-resistant design and construction.
- Operation: Vibrates only during the walk interval (when the walk indication is displayed).

- Tactile Arrow:
  - Attached to surface of the button assembly by a tamperproof method.
  - Raised slightly above surface of pushbutton, minimum 0.125" (0.3)
  - Size: Length ≥ 1.5" (38), Height ≥ 1.0" (25)
  - Color: Sharp contrast to background color of pushbutton and housing

E. Audible Walk Interval

1. General:
   - Operation independent of other APS&Ds at intersection.
   - Active only during the walk interval (when the walk indication is displayed).
   - Volume:
     - Minimum setting of zero
     - Manually adjustable initial setting
     - Automatically adjusted after initial setting. Volume increased in response to a temporary increase in ambient noise and subsequently decreased with a decrease in ambient noise.
     - Automatic volume adjustment independent of other APS&Ds at the intersection.
     - Maximum volume: 100 dBA which is the approximate sound pressure of a gasoline powered lawn mower nearby.
   - Duration:
     - Default method: Automatically set by the duration of the visual walk signal display.
     - When selected: Manually set when rest-in-walk is used for a concurrent pedestrian movement.
   - Audible sounds that mimic any bird call are not allowed.

2. Type A, Percussive Tone:
   - Repeating tone at eight (8) to ten (10) ticks per second.
   - Tone frequency: Multiple frequencies with a dominant component at 880 Hz which creates a "tick - tick - tick…" sound.

F. Pushbutton Housing/Sign Frame/Sign

- One piece die cast aluminum meeting requirements of ASTM B85.
- Sign frame designed to accept 9" x 15" (230 x 380) four-hole advisory sign.
- Flat back to facilitate surface mount.
- Available brackets to either pedestal top-mount or pole side-mount on pole diameter range of 3½" (89) to 15" (380).
- Available brackets to allow mounting two (2) APS&Ds to the same 3½" (89) pole, facing ≥ 60 degrees apart, at the same height.
- Available extension bracket of a size indicated on the plan – 18" maximum
- Wire entrance through the rear.
- Stainless steel mounting hardware.
- Color: The color shall be black No. 17038, Federal Standard No. 595.
- Finish: Housing/Frame and all mounting brackets either:
  1. Painted with 3 coats of infrared oven-baked paint before assembly.
     - Primer: Baked iron oxide which meets or exceeds FS TT-P-636.
     - Second coat: Exterior-baking enamel, light gray, which meets or exceeds FS TT-E-527.
     - Third coat: Exterior-baking enamel, which meets or exceeds FS TT-E-489.
  2. Electrostatic powder coated after chemically cleaned.
- Sign: CT DOT Sign No. 31-0856

Construction Methods:

Install the APS&D according to the manufacturer's instructions. Position the APS&D so the plane of the sign face is parallel to the crossing (sign is facing perpendicular) and the arrow is pointing in the same direction as the crossing, not necessarily at the ramp. Notify the Engineer if there is any discrepancy or ambiguity between the plans and field conditions that prevent placement of the APS&D as shown on the plan. Set the minimum sound levels of the locator tone and the audible walk indication when there is little or no ambient noise as in night time operation. Set the volume of audible walk indications and pushbutton locator tones to a maximum of 5dBA louder than ambient sound. The locator tone should be audible 6' to 12' (1.8 m to 3.6 m) from the pushbutton or to the building line, whichever is less. Confirm the volume of both audible walk indication and the locator tone increases with an increase in ambient sound and subsequently decreases when the ambient noise decreases.

If programming method is remote, by an infrared hand-held device, provide one device and operation manual for each intersection where APS&D is installed.

Method of Measurement:

This work is measured by the number of APS&Ds of the type specified, installed, tested, fully operational, and accepted.

Basis of Payment:

Payment for this work is based on the installation, inspection, successful completion of the 30 day test period, and final acceptance of the Accessible Pedestrian Signal and Detector of the type specified. Payment includes the sign, mounting brackets for adjacent buttons on the same structure, extension brackets, all necessary cable, all incidental materials, labor, tools, and equipment necessary to complete the installation. Payment also includes the warrantee, installation manual, and operation manual.

If programming method is remote by an infrared hand-held device, the total bid price of all APS&Ds includes one remote programming device and accompanying operation manual for each intersection where APS&D is installed.

Item No.	Description	Unit
1107011A	ACCESSABLE PEDESTRIAN SIGNAL AND DETECTOR (TYPE A)	EA.

ITEM # 1108163A MODIFY EXISTING CONTROLLER

Description:

This item shall consist of modifying the existing traffic controller assembly to provide the revised operation as shown on the plans or as directed by the Engineer. The modification shall include, but not be limited to, revisions to the timing and sequence, cabinet wiring, coordination, detection, pre-emption, field wiring and cabinet wiring diagrams.

Materials:

The material for this work shall conform to the requirements of the current edition of the Connecticut Department of Transportation Functional Specifications for Traffic Control Equipment. The material shall be compatible with the existing equipment. Any material in question shall be approved prior to installation by the Engineer.

Construction Methods:

All revisions to the cabinet wiring shall be neat and orderly. All additional wiring shall be from terminal to terminal. Splices will not be allowed. All changes, additions and deletions shall be documented, dated and drawn on the reproducible original or a reproducible copy of the original cabinet wiring diagram. Four paper copies shall be furnished to the Engineer upon completion of the revision.

Method of Measurement:

This item will be measured for payment as an "Each" item.

Basis of Payment:

This item will be paid for at the contract price each, for "Modify Existing Controller" which price shall include all necessary load switches, relays, components, hardware, tools, equipment, engineering and labor required to modify the existing controllers as shown on the plans. This price shall also include four updated cabinet wiring diagrams.

Item No.	Description	Unit
1108163A	MODIFY EXISTING CONTROLLER	EA.

ITEM # 1111600A EXTENSION BRACKET
ITEM # 1112286A 360 DEGREE CAMERA ASSEMBLY
ITEM # 1112287A 360 DEGREE VIDEO DETECTION PROCESSOR
ITEM # 1113725A 23 AWG 4 TWISTED PAIR CATEGORY 6 CABLE

Description:

Furnish and install a 360 Degree Video Image Detection System (360VIDS) as shown on the plans or as directed by the Engineer. The 360VIDS consists of a 360 Degree Camera Assembly (360CA), 360 Degree Video Detection Processor (360VDP) and 23 AWG 4 Twisted Pair Category 6 Cable. The Extension Bracket will be included on a case-by-case basis.

Materials:

All hardware shall be new, corrosion resistant. All equipment shall be current production.

360 Degree Camera Assembly:

Camera:

- No-aim, no-focus camera
- Downward facing lens and camera shroud
- Single Power Over Ethernet (POE) connection for power and data collection.
- Color image camera with 360 degree point of view (POV)
- Active picture elements (pixels): 2560 (H) x 1920 (V), minimum.
- Signal to noise ratio : 55dB
- Heated camera
- IP addressable

Camera Enclosure:

- Tamper proof constructed of painted or powder coated aluminum of at least 0.25 inch (6.35-mm) thickness.
- IP66-rated camera housing.

Camera Mounting Hardware:

- Swivel bracket for dual plane adjustment for leveling
- Quick connect junction box
- Hybrid terminal junction box with surge.
- Astro-Brac banded bracket
- 34 inch to 78 inch 90 degree mounting arm pole.

Extension Bracket:

- Single arm [10’ (3.0m) or less], or Truss type [10’ (3.0m) or greater].
- Length shown on plan.
- Clamp-on attachment to pole shaft 1’ (300mm) from top of pole.
- Designed to support minimum 30 lbs. (13.6 Kg), 2 sq. ft. (.2 sq. M) end load with minimal movement from wind.
- Schedule 40, 2” IPS galvanized pipe.
- Heavy duty galvanized finish
- Refer to detail drawing contained herein.

360 Degree Video Detection Processor:

Functional:

- Connectivity: Local Area Network (LAN), Wide Area Network (WAN), Camera interfaces.
- NEMA TS1/ TS2, Type 170 and 2070 ATC compatible
- Four (4) USB 3.0 expansion ports.
- Front panel LED indicators displays calls and light states.
- Twenty-four (24) optically isolated I/O interface.
- Two (2) camera ports – Up to two (2) 360 Degree Camera Assembly; or one (1) 360 Degree Camera Assembly and four (4) IP video detection camera assembly or thermal cameras; or eight (8) traditional or thermal cameras.
- Phase and detection display.
- Wi-Fi capable
- Power – 110/220 VAC 50/60 Hz
- Point and click zone drawing feature
- Digital flattening of image
- Omni-directional vehicle tracking
- Virtual pan-tilt-zoom
- Zone level visibility monitoring.
- Monitor phases and loops, generates calls to controllers.
- Software required to support collection of data.
- Environmental : -29F to +165F (-34C to +74C), 0-95% non-condensing
- Fail-safe in the event of loss of video from 360CA or loss of power to 360VDP.

Detection Zone Programming:

- Point and click zone drawing
- Digital flattening of image
- Virtual pan-tilt-zoom
- Configure and adjust the detection zone with the cabinet mounted Vehicle Detection Monitor (VDM).
- Detection zone data stored in non-volatile memory so that after recovery from power interruption, all parameters are returned to latest settings.
- Ability to upload and download program database to notebook PC or remote desktop PC.
- Superimpose detection zone on real time video image from selected camera with time stamping capabilities.
- Ability to monitor real time video and adjust zones while 360VDP is actuating the traffic controller.
- Visual confirmation of detection by highlighting detection zone symbols.

Physical:

- Either shelf mounted, stand alone design or modular card rack design.
- Aluminum card rack frame capable of accepting four (4) 360VDP modules.
- TS1 harness cable.
- Standard Ethernet and USB connectors for video input and video output.
- Female metal shell connector with latching clamp for NEMA TS 1 detector outputs and inputs.
- LED indications to monitor all detector outputs.
- Side or rear mounted connectors and controls are not allowed on stand alone units.
- NEMA FR-4 glassepoxy or equivalent circuit boards.

Ethernet Repeater:

- Utilize Ethernet repeater if CAT6 cable distance is over 328’.

Ethernet Switch:

- Power Over Ethernet (POE) switch
- Ports for up-to four (4) traditional or thermal cameras.
- Powder coated aluminum.
- Dual purpose LED port lights.
- RJ-45 CAT6 connectivity.
- Environmental: -29F to +165F (-34C to +74C).
- NEMA TS2 compliant.

Video Encoder:

- Power Over Ethernet (POE)
- Video: H.264 (MPEG-4 Part 10/AVC) Baseline and Main Profile
- Compression: Motion JPEG
- Resolutions: 176x120 to 720x576, 176x120 to 1536x1152 for quad view.
- Frame rate:
    - H.264: 25/30 (50/60 Hz) fps,
    - 15fps in quad view in full resolution,
    - Motion JPEG: 25/30 (50/60 Hz) fps,
    - 15fps in quad view in full resolution.
- Video Streaming: Multi-stream H.264 and Motion JPEG: One H.264 and one JPEG stream on each channel (8 streams in total) in full frame rate individually configured streams in max. resolution at 25/30 fps; more streams if identical or limited in frame rate/ resolution. Controllable frame rate and bandwidth; VBR/CBR H.264.
- Environmental: -40F to +167F (-40C to +75C), 10-95% non-condensing.
- NEMA TS2 compliant.

Ethernet Protection Module:

- Either shelf mounted or stand alone design.
- Protect 360CA, IP video detection camera assembly, thermal cameras and 360VDP in the event of a surge or lightning.

Environmental:

- Comply with NEMA TS 2, Section 2 requirements for Controller Assembly.
- Pass following NEMA TS 2 tests and applicable test procedures.
    - Vibration: Section 3.13.3, Section 3.13.8.
    - Shock: Section 3.13.4, Section 3.13.9.
    - Transients, Temperature, Voltage and Humidity: Section 3.13.7.
    - Power Interruption: Section 3.13.10.

Peripherals:

- Separable Keypad & Joystick or Computer Mouse including all necessary cables for connectivity to VDP.

23 AWG 4 Twisted Pair Category 6 Cable

- Supply the 360CA power and return the video signal to the VDP.
- Outdoor Aerial CAT6 cable with UV insulation.
- Rated for 48VDC
- 250MHZ, shielded, gel-filled (flooded core) direct burial grade.
- Shall be equipped with a drain wire.
- Terminate with compatible connector.
- Polyethylene insulation.
- Shall be installed continuous between the 360CA and 360VDP.

- Cable shall be installed according to TIA/EIA-568-B.
- Other type cable may be substituted at the request of the 360VDP manufacturer.

Documentation: (360VDP, VDM and 360CA)

Provide to the **Engineer** three (3) copies of equipment manuals furnished by the manufacturer, which includes the following:

- Installation and operation procedures.
- Performance specifications (functions, electrical, mechanical and environmental) of the unit.
- Schematic diagrams (point to point wiring).
- Pictorial of component layout on circuit board.
- List of replaceable parts including names of vendors for parts not identified by universal part numbers such as JEDEC/RETMA or EIA.
- Troubleshooting, diagnostic and maintenance procedures.
- Testing results of grounding, voltage, and cable length measurements as indicated on the installation best practice verification at the end of this document.

Site Survey:

Perform a site survey with the 360VDP manufacturer representative at all 360VIDS locations prior to installation. The purpose of the survey is to optimize the performance from the 360VIDS equipment when it is installed and insure that it will meet the accuracy requirements specified previously. Prior to installation, submit the results of this survey to the Engineer in a report, which lists all 360VIDS locations with any recommended changes to camera locations, mounting adjustments, camera lens adjustments, and desired detection zone locations.

Warranties and Guarantees: (360VDP and CA)

Provide warranties and guarantees to the **Engineer** in accordance with Article 1.06.08 of the Standard Specifications. Warranties for all equipment furnished as part of this Contract are to cover a period of 36 months following successful completion of the entire intersection acceptance test.

Construction Methods:

Install 360VIDS equipment in accordance with the manufacturer instructions and recommendations to achieve the detection zones as shown in the plans and accuracy as described in these specifications. Refer to the “Installation Best Practices Guide” attached below to this specification. Note that all references to “Cat5e cable” in the attached “Installation Best Practices Guide” shall refer to “23 AWG 4 Twisted Pair Category 6 Cable” as specified above in this specification. The location of the 360CA shown on the plan may be revised as a result of the Site Survey. Peripherals are to be furnished and fully installed in an easily accessible position within the controller cabinet. Leave proper clearance(s) surrounding video monitor to allow for accessible connections and space to utilize surrounding equipment.

Method of Measurement:

The 360 degree Camera Assembly will be measured for payment as the number of 360 degree cameras furnished, installed operational and accepted.

The Extension Bracket will be measured for payment as the number of brackets furnished, installed and accepted.

The 360 degree Video Detection Processor will be measured for payment as the number of units including all additional work and materials listed in Basis of Payment, furnished, installed, operational and accepted.

23 AWG 4 Twisted Pair Category 6 Cable will be measured for payment as linear feet (meters), furnished, installed and accepted.

Basis of Payment:

The unit bid price for 360 degree Camera Assembly includes the 360 degree camera, enclosure, brackets used to attach the 360CA to a support structure or extension bracket, documentation, warrantee, labor, tools and equipment necessary to provide the specified video signal to the 360VDP.

The unit bid price for Extension Bracket includes all labor, tools and equipment necessary to attach the bracket to a pole shaft.

The unit bid price for 360 degree Video Detection Processor includes the manufacturers' site survey, unlimited number of any necessary 360VIDS configuration software and license, card rack frame, power supply, all miscellaneous hardware such as PC interface cable with connectors, necessary peripherals such as Ethernet repeater, Ethernet switch, video encoder, Ethernet protection module, documentation, warrantee, labor, tools and equipment necessary to make the 360VIDS fully operational.

The unit bid price for 23 AWG 4 Twisted Pair Category 6 Cable includes all connectors, labor, tools and equipment necessary to install the cable between the 360CA and the 360VDP.

Item No.	Description	Unit
1111600A	EXTENSION BRACKET	EA.
1112286A	360 DEGREE CAMERA ASSEMBLY	EA.
1112287A	360 DEGREE VIDEO DETECTION PROCESSOR	EA.
1113725A	23 AWG 4 TWISTED PAIR CATEGORY 6 CABLE	L.F.

ITEM # 1114201A AUXILIARY EQUIPMENT CABINET

Description:

Furnish and install an Auxiliary Equipment Cabinet (AEC) on the Main Street / Glastonbury Boulevard intersection traffic control cabinet as required to support the additional 40 AMP service to the RRFB Auxiliary Cabinet and in accordance with the conditions set forth.

Materials:

Conform to NEMA 3R enclosure specifications
Type 5052 H32, 3.175mm (0.125") sheet aluminum
Finish painted in accordance with the current D.O.T. specifications of Traffic Control Cabinets
Seams continuously welded and ground smooth
Dimensions as shown on D.O.T. Standard Sheets
Door secured with Corbin lock Ct. # 2.
Continuous door hinge, 2.4mm (0.093") thick aluminum with
0.64mm (0.025") stainless steel hinge pin
Door sealed with oil resistant gasket
Back panel approximately 330mmH X 229mmW (13"H X 9"W)
Rust and corrosion resistant mounting hardware
Screened Vent

The color of the finish coat for the auxiliary equipment cabinet shall be BLACK, No. 17038, Federal Standard No. 595. The Contractor shall submit color samples to the Engineer for approval prior to fabrication.

Construction Methods:

Mount the AEC on the left side of the controller cabinet, when facing the door. Confirm that the inside of the cabinet wall is clear, so that the installation of the AEC will not damage any equipment inside the controller cabinet. Drill a 25mm (1") hole in the back of the AEC and through the side of the controller cabinet. Install a close nipple through the 25mm (1") hole. Apply clear silicon caulk to both ends of the close nipple. Tighten lock-nuts and fiber bushings. Apply additional caulk if necessary to prevent moisture from entering controller cabinet and auxiliary equipment cabinet.

Method of Measurement:

This item shall be measured for payment by the actual number of Auxiliary Equipment Cabinets installed and accepted on traffic control cabinets.

Basis of Payment:

This item shall be paid for at the contract unit price each for "Auxiliary Equipment Cabinet" which price shall include mounting hardware, close nipple, insulated bushings, tools, and incidentals.

Item No.	Description	Unit
1114201A	AUXILLARY EQUIPMENT CABINET	EA.

ITEM # 1117001A RRFB AUXILIARY CABINET

Description:

This item shall consist of furnishing and installing a pedestal mounted auxiliary equipment cabinet with disconnect and circuit breakers to provide electric service for the two (2) rectangular rapid flashing beacon systems at the location shown on the plans and in conformity with specifications.

Materials:

Each cabinet shall be made of rigid metal with a suitable finish. The cabinet shall be of clean cut design and appearance and shall be substantially constructed of aluminum. The pedestal mounted cabinets shall be approximately 12 ¾" (325mm) x 16" (406mm) x 25" (635mm) in size or the equivalent in volume. The cabinet shall have a main door which shall be equipped with a special CONN 1 lock and key. Door hinge pins shall be of stainless steel material. Two keys shall be furnished for each lock. When closed, doors shall fit tightly to neoprene gasket material. The cabinet shall contain a suitably designed vent for the purpose of releasing any explosive gases which may enter the cabinet.

All panel wiring shall be neat and firm, and the panel which shall be mounted in the rear of the cabinet shall mount the following:

1. Neutral Bus Bar, for neutral side of power supply line. This Bus Bar shall be rated for 40 amperes.

2. Terminals for conductors of cable, including one for each circuit and one or more terminals for the common conductors. This terminal bus shall be rated for 40 amperes. No pressure type terminal blocks will be accepted.

3. A one piece 120 volt convenience outlet and lamp receptacle.

4. Two heavy duty 15 ampere circuit breakers shall be mounted on the left side of the cabinet to service each of the RRFB control units.

The cabinet shall have a hole for cable entrance into the bottom of the cabinet of at least 2" (50mm) in diameter. There shall be an adapter for mounting the cabinet on a 4" (100mm) pipe.

All conductors shall be provided with lugs for attachment to binding posts. Combining of conductors to one lug will not be allowed. Non hygroscopic materials, having good insulating qualities, shall be used for all insulating purposes. All internal wiring shall be #14 AWG stranded copper. Wiring shall be cabled.

The color of the finish coat for the RRFB auxiliary equipment cabinet shall be BLACK, No. 17038, Federal Standard No. 595. The Contractor shall submit color samples to the Engineer for approval prior to fabrication.

Construction Methods:

The cabinet shall be mounted at the location shown on the plans or as directed by the Engineer.

Method of Measurement:

This item shall be measured for payment by the actual number of "RRFB Auxiliary Cabinet" installed and accepted.

Basis of Payment:

This item shall be paid for at the contract unit price each for "RRFB Auxiliary Cabinet" which price shall include mounting hardware, tools, labor and incidentals.

ITEM # 1117110A RECTANGULAR RAPID FLASHING BEACON (RRFB) - TYPE A
ITEM # 1117111A RECTANGULAR RAPID FLASHING BEACON (RRFB) – TYPE B

Description:

Furnish and install a rectangular rapid flashing beacon (RRFB) at the location indicated on the plan or where directed by the Engineer.

Each RRFB indication will be activated by an ADA compliant pedestrian Pushbutton and operation will cease after a predetermined time limit (based on MUTCD procedures).

Each RRFB will be a complete assembly consisting of but not limited to the following:

- RRFB unit with two rapidly flashed rectangular-shaped yellow LED indications
- Controller cabinet (circuit breaker, timer or solid-state circuit boards etc.) or any electrical component hardware
- Pedestal
- Pedestal Foundation
- Pushbutton
- Push button Signs
- Mounting hardware
- If Solar, all solar equipment

Type A: Single sided RRFB will contain two rapidly flashed rectangular-shaped yellow LED indications (two indications on one side facing traffic)

Type B: Double sided RRFB will contain four rapidly flashed rectangular-shaped yellow LED indications (two indications on each side facing traffic)

Materials: The materials for the work shall be specified in the following:

Article M.16.03 - Pedestals
Special Provision for Pedestrian Push Button
Article M.16.10 – Cabinet

Foundation shall be a precast concrete unit that conforms with the Connecticut Department of Transportation standard for Traffic Control Foundation Pedestal Type 1 Precast

Construction Method:

Each RRFB indication will be mounted on a standard aluminum pedestal and in accordance with dimensions and details shown on the plan.

Each RRFB shall initiate operation only upon pedestrian actuation with an ADA compliant Pushbutton and shall cease operation after a programed time as shown on the plan or determined by the Engineer (based on MUTCD procedures).

All RRFBs associated with a given crosswalk (including those with an advance crossing sign, if used) shall, when activated, simultaneously commence operation of their rapid-flashing indications and shall cease operation simultaneously.

12' Pole with 4 1/2" Diameter Tubing, included ground mounted pole; 18"x18" ornamental base; all equipment powder coated black.

Mechanical and Electrical Requirements:

a) Dimensions:
- Each indication shall be at least 5" wide by 2" high.
- The indications shall be aligned horizontally, with the longer dimension horizontal and with a minimum space of 7" between the two indications
- The outside edges of the indications, including any housing, shall not project beyond the outside edges of the sign that it supplements.

b) Power:
- Hardwired:
  - AC input, 100-240 VAC, 50/60Hz
  - DC output, 12 VDC, +/- 1%
- Solar:
  - DC input, 12 VDC, 55W
  - DC output, 12 VDC, +/- 1%

c) Temperature & Humidity:
- All components will be capable of continuous operation in accordance with NEMA Standards

d) Indications:
- Flash Pattern:
  - When actuated, the two yellow indications in each RRFB unit shall flash in a rapidly flashing sequence and shall provide 75 flashing sequences per minute.
  - Shall comply with MUTCD https://mutcd.fhwa.dot.gov/resources/interim_approval/ia21/ia21.pdf
- Optics:
  - ITE LED
- Light Intensity:
  - During daytime conditions: shall meet the minimum specifications for Class 1 yellow peak luminous intensity in the Society of Automotive Engineers (SAE) Standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005.
  - During nighttime conditions: an automatic signal dimming device shall be used to reduce the brilliance of the indications.
- Housing Color:
  - Federal Black

e) Control Cabinet:
- Shall be NEMA 3R type

Method of Measurements:

This work will be measured as the number of RRFB furnished, installed and accepted in place.

Basis of Payment:

This work will be paid for at the contract unit price of each "Rectangular Rapid Flashing Beacon (RRFB)" of the type specified which will include the cost of RRFB unit, hardware, controller cabinet complete with all necessary equipment, pedestal, push button, push button sign, ground rod, ground cable, paint and all materials, equipment, tools and labor included thereto.

The following items will be paid for separately:

- Pedestal Foundation Type 1
- Sign Face – Sheet Aluminum for the warning signs
- (No.) Conductor #()
- (Size) (Kind) Conduit
- Trenching and Backfilling

Item No.	Description	Unit
1117110A	RECTANGULAR RAPID FLASHING BEACON (RRFB) TYPE A	EA.
1117111A	RECTANGULAR RAPID FLASHING BEACON (RRFB) TYPE B	EA.

ITEM # 1118012A REMOVAL AND/OR RELOCATION OF TRAFFIC SIGNAL EQUIPMENT

Section 11.18: Replace the entire section with the following:

Description:

Remove all abandoned traffic signal equipment, including a traffic signal head, pedestrian push buttons, pedestrian signals, and associated foundations. Restore the affected area. Where indicated on the plans remove and reinstall existing traffic signal equipment to the location(s) shown.

Materials:

The related sections of the following specifications apply to all incidental and additional material required for the proper relocation of existing equipment and the restoration of any area affected by this work.

- Division III, "Materials Section" of the Standard Specifications.
- Current Supplemental Specifications to the Standard Specifications.
- Applicable Special Provisions to the Standard Specifications.
- Current Department of Transportation, Functional Specifications for Traffic Control Equipment.

Construction Methods:

Schedule/coordinate the removal and/or relocation of existing traffic signal equipment with the installation of new or temporary equipment to maintain uninterrupted traffic signal control. This includes but is not limited to vehicle signals and detectors, pedestrian signals and pushbuttons, coordination, and pre-emption.

Abandoned Equipment

The contract traffic signal plan usually does not show existing equipment that will be abandoned. Consult the existing traffic signal plan for the location of abandoned material especially messenger strand, conduit risers, and handholes that are a distance from the intersection. A copy of the existing plan is usually in the existing controller cabinet. If not, a plan is available from the Engineer upon request.

Unless shown on the plans it is not necessary to remove abandoned conduit in-trench and conduit under-roadway

When a traffic signal support strand, rigid metal conduit, down guy, or other traffic signal equipment is attached to a utility pole, secure from the pole custodian permission to work on the pole. All applicable Public Utility Regulatory Authority (PURA) regulations and utility company requirements govern. Keep utility company apprised of the schedule and the nature of the work. Remove all abandoned hardware, conduit risers, and down guys, Remove anchor rods, to 6" (150mm) below grade.

When underground material is removed, backfill the excavation with clean fill material. Compact the fill to eliminate settling. Remove entirely the following material: pedestal foundation; controller foundation; handhole; pressure sensitive vehicle detector complete with concrete base. Unless otherwise shown on the plan, remove steel pole and mast arm foundation to a depth of 2 feet (600mm) below grade. Restore the excavated area to a grade and condition compatible with the surrounding area.

- If in an unpaved area apply topsoil and establish turf in accordance with Section 9.44 and

Section 9.50 of the Standard Specifications.

- If in pavement or sidewalk, restore the excavated area in compliance with the applicable Sections of the Standard Specifications.

Relocated Equipment

In the presence of the Engineer, verify the condition of all material that will be relocated and reused at the site. Carefully remove all material, fittings, and attachments in a manner to safeguard parts from damage or loss. Replace at no additional cost, all material which becomes damaged or lost during removal, storage, or reinstallation.

Method of Measurement:

This work will be measured as a Lump Sum.

Basis of Payment:

This work will be paid for at the contract lump sum price for "Removal and/or Relocation of Traffic Signal Equipment" which price shall include relocating signal equipment and associated hardware, all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of signal equipment/materials designated for salvage and all equipment, material, tools and labor incidental thereto. This price shall also include removing and disposing of traffic signal equipment not to be salvaged and all equipment, material, tools and labor incidental thereto.

Payment is at the contract lump sum price for "Removal and/or Relocation of Traffic Signal Equipment" inclusive of all labor, vehicle usage, storage, and incidental material necessary for the complete removal of abandoned equipment/material and/or relocation of existing traffic signal equipment/material. Payment will also include the necessary labor, equipment, and material for the complete restoration of all affected areas.

Item No.	Description	Unit
1118012A	REMOVAL AND/OR RELOCATION OF TRAFFIC SIGNAL EQUIPMENT	L.S.

ITEM # 1131030A CHANGEABLE MESSAGE SIGN FULL MATRIX (6' WIDE)
ITEM # 1131032A CHANGEABLE MESSAGE SIGN FULL MATRIX (10' WIDE)

Description:

Work under this item shall include furnishing and maintaining trailer-mounted, "Changeable Message Signs Full Matrix" of the size and type and at the locations indicated on the plans or as directed by the Engineer.

Materials:

The full matrix, internally illuminated variable message signs shall consist of a LED, fiber optic, lamp matrix, or hybrid magnetically operated matrix – LED message board; with an on-board computer operated interface, all mounted on a towable, heavy duty trailer.

CHANGEABLE MESSAGE SIGN FULL MATRIX (6' WIDE) shall have a panel width of approximately 72 inches and panel height of approximately 36 inches.

CHANGEABLE MESSAGE SIGN FULL MATRIX (10' WIDE) shall have a panel width of approximately 120 inches and panel height of approximately 66 inches.

The minimum letter height shall be 12 inches. Standard messages shall be displayed in a three-line message format with 8 characters per line.

In the raised position, the bottom of the signs shall be at least 7 feet above the roadway. The lighting system shall be controlled both manually and by a photocell for automatic sign dimming during nighttime use.

The signs shall be capable of storing a minimum of 20 preprogrammed messages and be able to display any one of those messages upon call from the trailer mounted terminal and/or through the cellular telephone hookup for the remote controlled sign.

The sign shall be controlled by an on-board computer. The sign shall automatically change to a preselected default message upon failure. That default message shall remain on display until the problem is corrected.

The sign shall include all necessary controls, including, but not limited to, personal computer, keyboard or alphanumeric hand-held keyboard, and software. The sign shall interface with PCs, cellular phones, and radar speed detection devices as required.

Controls shall be furnished for raising and lowering the message board, aligning the message board and, for solar powered units, a read-out of the battery bank charge.

Power shall be provided by a self-contained solar maintained power source or a diesel engine driven generator. Hardware for connection to a 110-volt power source shall also be provided.

Solar powered signs shall display programmed messages with the solar panel disconnected, in full night conditions, for a minimum of 30 consecutive days.

The signs shall be a full matrix sign that is able to display messages composed of any combination of alphanumeric text, punctuation symbols, and graphic images (notwithstanding NTCIP limitations). The display shall be capable of producing arrow functions. Full- matrix displays shall allow the use of graphics, traffic safety symbols and various character heights.

The sign shall utilize yellow green or amber for the display with a black background. Each matrix shall have a minimum size of 6 x 9 pixels. Each pixel shall utilize a minimum of four high output yellow green or amber

LEDs or equivalent light source. The LEDs or light source shall have a minimum 1.4 candela luminance intensity, 22 degrees viewing angle, and wavelength of 590 (+/- 3) nanometers.

For hybrid magnetically operated matrix – LED matrix, each pixel shall have one single shutter faced with yellow green or amber retro-reflective sheeting with a minimum of four high output yellow green or amber LEDs or equivalent light source. The hybrid magnetically operated matrix – LED matrix sign shall be capable of operating in three display modes; shutter only, LED only, and both LED and shutter. These modes shall be automatically controlled by a photocell for day and night conditions and also capable of being manually controlled through the software.

Construction Methods:

The Contractor shall furnish, place, operate, maintain and relocate the sign as required. When the sign is no longer required, it shall be removed and become the property of the Contractor. The cellular telephone required for the Remote Controlled Changeable Message Sign shall be provided to the Engineer for his use, and subsequently returned to the Contractor.

When the sign is not in use, it shall either be turned off with a blank display or turned from view.

Any signs that are missing, damaged, defaced or improperly functioning so that they are not effective, as determined by the Engineer and in accordance with the ATSSA guidelines contained in "Quality Standards for Work Zone Traffic Control Devices," shall be replaced by the Contractor at no cost to the Town of Glastonbury.

Method of Measurement:

This work will be measured for payment for each "Changeable Message Sign Full Matrix (Width)" furnished and installed, for the number of calendar days that the sign is in place and in operation, measured to the nearest day. When a sign is in operation for less than a day, such a period of time shall be considered to be a full day regardless of actual time in operation.

Basis of Payment:

This work will be paid for at the Contract unit price per day for each "Changeable Message Sign Full Matrix (Width)" which price shall include placing, maintaining, relocating and removing the sign and its appurtenances and all material, labor, tools and equipment incidental thereto.

Item No.	Description	Unit
ITEM # 1131030A	CHANGEABLE MESSAGE SIGN FULL MATRIX (6' WIDE)	DAY
ITEM # 1131032A	CHANGEABLE MESSAGE SIGN FULL MATRIX (10' WIDE)	DAY

REMOTE CONTROL CHANGEABLE
MESSAGE SIGN

Description: Work under this item shall include furnishing and maintaining a trailer-mounted, changeable message sign (CMS) at the locations indicated on the plans or as directed by the Engineer.

Materials: A Materials Certificate for the CMS shall be submitted to the Engineer. The CMS shall meet the requirements of MUTCD Chapters 2L and 6F and the following:
1. Physical Characteristics of the CMS
a. Sign display Dimensions - Minimum width 10 feet, minimum height 5.5 feet
b. Height off Roadway - Minimum 7 feet from the roadway to the bottom of the display
c. Sign Rotation - Mounting post shall be capable of 180 degree rotation
d. Power Source - Batter or solar power, including backup
e. Protection - CMS shall have a secure, lockable controller cabinet and remote, and panel controller password protection
2. Visual Characteristics of the CMS Display
a. Sign Type - CMS shall have LED display
b. Display - CMS shall be character, line or full matrix
c. Color - Black background with orange, yellow or amber legend
d. Line - CMS shall be capable of displaying 3 lines and 8 upper-case characters per line
e. Characters - Letter height shall be 18 inches and letter width shall be 12 inches; Single stroke
f. Font - 5 × 7 pixels per character
g. Dimming - CMS shall be equipped with a photocell for automatic sign dimming based on lighting conditions
h. Memory - CMS shall be capable of storing a minimum of 50 messages
i. Communication - CMS shall be capable of remote offsite programming
j. Visibility and Legibility - CMS brightness must provide for visibility at ½ mile and be legible within 900 feet

Construction Methods: The Contractor shall furnish, place, operate, maintain and relocate the sign as required on the plans or as directed by the Engineer, in accordance with Chapter 6F of the MUTCD. The message content and timing shall be in accordance with the CTDOT Remote Control Changeable Message Sign Operations Guide. The Engineer must approve the message and location prior to sign operation. When the sign is not displaying a message, it shall be relocated beyond the clear zone or shielded behind a traffic barrier and turned away from traffic.

The Contractor shall maintain the changeable message sign in accordance with ATSSA “Quality Standards for Temporary Traffic Control Devices and Features.” Any sign that does not meet these guidelines shall be removed and replaced. When the sign is no longer required, it shall be removed from the Site.

Method of Measurement: This work will be measured for payment by the number of calendar days that the changeable message sign is in place and in operation. When a sign is in operation for less than a day, such a period of time shall be considered to be a full day regardless of actual time in operation.

Basis of Payment: This work will be paid for at the Contract unit price per day for “Remote Control Changeable Message Sign,” which price shall include furnishing, maintaining, relocating, removing the sign and its appurtenances, the remote controller, and all material, labor, tools and equipment incidental thereto.

Pay Item	Pay Unit
Remote Control Changeable Message Sign	day

ITEM # 1206023A REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Article 12.06.01 – Description is supplemented with the following:

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

Article 12.06.03 – Construction Methods is supplemented with the following:

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

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

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

Article 12.06.04 – Method of Measurement is supplemented with the following:

Payment under Removal and Relocation of Existing Signs shall be at the contract lump sum price which shall include all sheet aluminum signs designated for relocation, all new sign posts and associated hardware for signs designated for relocation, all sheet aluminum signs, sign posts and sign supports designated for scrap, and foundations and other materials designated for removal and disposal, and all work and equipment required.

Article 12.06.05 – Basis of Payment is supplemented with the following:

This work will be paid for at the contract lump sum price for “Removal and Relocation of Existing Signs” which price shall include relocating designated sheet aluminum signs, providing new posts and associated hardware for relocated signs, removing and disposing of foundations and other materials, and all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading sheet aluminum signs, sign posts, and sign supports designated for scrap and all equipment, material, tools and labor incidental thereto.

Item No.	Description	Unit
1206023A	REMOVAL AND RELOCATION OF EXISTING SIGNS	L.S.

ITEM # 1208931A SIGN FACE - ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)

Section 12.08 is supplemented and amended as follows:

Description: *Add the following:*

This item shall also include field testing of metal sign base posts as directed by the Engineer.

Construction Methods: *Delete the last sentence and add the following:*

Metal sign base posts shall be whole and uncut. Sign base post embedment and reveal lengths shall be as shown on the plans. The Contractor shall drive the metal sign base posts by hand tools, by mechanical means or by auguring holes. If an obstruction is encountered while driving or placing the metal sign base post, the Contractor shall notify the Engineer who will determine whether the obstruction shall be removed, the sign base post or posts relocated, or the base post installation in ledge detail shall apply. Backfill shall be thoroughly tamped after the posts have been set level and plumb.

Field Testing of Metal Sign Posts: When the sign installations are complete, the Contractor shall notify the Engineer the Project is ready for field testing. Based on the number of posts in the Project, the Engineer will select random sign base posts which shall be removed by the Contractor for inspection and measurement by the Engineer. After such inspection is completed at each base post location, the Contractor shall restore or replace such portions of the work to the condition required by the Contract. Refer to the table in 12.08.05 for the number of posts to be field tested.

Method of Measurement: *Add the following:*

The work required to expose and measure sign base post length and embedment depth using field testing methods, and restoration of such work, will not be measured for payment and shall be included in the general cost of the work.

Basis of Payment: *Replace the entire Article with the following:*

This work will be paid for at the Contract unit price per square foot for "Sign Face - Sheet Aluminum" of the type specified complete in place, adjusted by multiplying by the applicable Pay Factor listed in the table below. The price for this work shall include the completed sign, metal sign post(s), span-mounted sign brackets and mast arm-mounted brackets, mounting hardware, including reinforcing plates, field testing, restoration and replacement of defective base post(s), and all materials, equipment, and work incidental thereto.

Pay Factor Scale: Work shall be considered defective whenever the base post length or base post embedment depth is less than the specified length by more than 2 inches. If the number of defects results in rejection, the Contractor shall remove and replace all metal sign base posts on the Project, at no cost to the Department.

Number of Posts to be Tested and Pay Factors (Based on Number of Defects)

Number of Posts in Project =>	**51-100**	**101-250**	**251-1000**	**>1000**
Sample Size=>	**5 Posts**	**10 Posts**	**40 Posts**	**60 Posts**
0 Defects	1.0	1.0	1.025	1.025
1 Defect	0.9	0.95	0.975	0.983
2 Defects	Rejection	0.9	0.95	0.967
3 Defects	Rejection	Rejection	0.925	0.95
4 Defects	Rejection	Rejection	0.9	0.933

5 Defects	Rejection	Rejection	Rejection	0.917
6 Defects	Rejection	Rejection	Rejection	0.9
7 or more Defects	Rejection	Rejection	Rejection	Rejection

Note: Projects with 50 or fewer posts will not include field testing.

ITEM # 1302061A ADJUST GATE BOX (WATER)

Description: Reference to the "District" in this item refers to "The Metropolitan District".

The Contractor shall adjust to final grade, the gate boxes and covers appurtenant to the water mains as required and furnish and install extension rings, extension stems, air valve extensions, covers, and additional top or bottom sections if necessary, as shown on the Contract Drawings or as directed by the Engineer in accordance with these specifications.

The District shall be contacted a minimum of 48 hours prior to initiating the adjustment of any water gate boxes so that an inspector can be provided for this work. The Contractor shall contact Mr. Rich Norris at (860) 278-7850 extension 3450 to arrange an inspector for this work.

Materials:

The Contractor shall furnish standard District cast iron Dwyer type gate box sections as required and extension stems if necessary.

All additional materials, including any resurfacing materials and any additional fill required, shall be furnished and placed by the Contractor. Gravel shall conform to Article M.02.01.

Construction Methods:

The Contractor shall carefully excavate around the gate boxes, remove the boxes, install extension stems and air valve extensions, if necessary, reinstall the present gate box if reusable, adjust the box to final grade using extension rings if applicable, and refill the excavation. Care shall be taken to prevent material from filling the inside of the gate box.

Extension stems will be required if the gate box is raised 24-inches or more. Extension stems shall be fabricated according to the detail shown on sheet WS-25 of the District's "Developers Manual."

Any damage done to District facilities by the Contractor shall be repaired or replaced by the Contractor at his expense.

Method of Measurement:

The number of adjust gate boxes, complete with extension stems, air valve extensions, gate box extension rings, covers, and additional top or bottom sections, if necessary, measured for payment shall be the actual number of each box reset.

Basis of Payment:

This work will be paid for at the contract unit price listed in the bid proposal for "Adjust Gate Box (Water)" complete in place, which price shall include the cost of furnishing material, including labor and equipment to incorporate them into the work. It shall also include the clearing, trenching and disposal of excavated materials, refilling trenches, furnishing the additional material for refilling, grading, sheeting, bracing, and pumping.

Item No.	Description	Unit
1302061A	ADJUST GATE BOX (WATER)	EA.

ITEM # 1302062A ADJUST GATE BOX (GAS)

Description:

This work consists of adjusting existing gas gate boxes to new grades indicated on the Plans or as directed by the Engineer, all in accordance with these Specifications. Adjustment of gas gate boxes shall be performed under the direct supervision of Connecticut Natural Gas (CNG) personnel. The contractor shall contact John Bonville of CNG at 860-982-3815 a minimum of 48 hours prior to his anticipated date that this work is to be performed.

Materials:

Any materials required for the adjustment of boxes shall conform to the applicable section of the Form 817 or the specification of CNG located within the Special Provisions section of this document.

Construction Methods:

Gas gate boxes shall be carefully loosened from the surrounding material and adjusted to the designated new grades. The Contractor shall then carefully place approved granular material around the gate boxes and hand tamp this material until it is well compacted.

The Contractor must maintain access to the gate boxes at all times. If a gas gate box is damaged due to improper construction methods, the Contractor shall replace the damaged unit with the corresponding new unit at no additional cost to the Town.

Method of Measurement:

"Adjust Gate Box (Gas)" will be measured by the number of such units actually adjusted in accordance with the Plans and/or as directed by the Engineer.

Basis of Payment:

The accepted quantities of "Adjust Gate Box (Gas)" will be paid for at the contract unit price per each as listed in the Proposal. Each and every adjustment authorized by the Engineer will be paid for. The price shall constitute full and complete compensation for all labor, materials, and equipment including excavation, backfill, compaction, adapter collar and for all other incidentals required to finish the work, complete and accepted by both the Engineer and the representative of the particular utility company involved.

Item No.	Description	Unit
1302062A	ADJUST GATE BOX (GAS)	EA.

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.

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

b. 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.

c. Standard Performance Grade (PG) Binder:

i. 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.

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

d. 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.

e. Warm Mix Additive or Technology:

i. 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.

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

iii. 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:

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

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

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

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b. Basis of Approval

i. 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.

ii. 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.

iii. 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.

iv. 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:

i. 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.

ii. 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:
1. A 50-pound sample of the RAP to be incorporated into the recycled mixture.
2. 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	

*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.

d. 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.

e. 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.

f. RAP: RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).

g. Asphalt Binder: A binder log shall be submitted to the Department's Central Lab on a monthly basis.

h. 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.

i. 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

Notes: (a) Compaction Parameter 50gyration N_{des}. (b) The percent passing the #200 sieve shall not exceed the percentage of bituminous asphalt binder.		
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)	

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:
- Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
- Average asphalt content of the RAP or RAS by AASHTO T 164.
- Source of RAP or RAS, and percentage to be used.
- Warm mix Technology, manufacturer's recommended additive rate and tolerances and manufacturer recommended mixing and compaction temperatures.
- TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
- Mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.

- 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;
6. 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

Notes: (1) For all mixtures using a WMA technology, the mix temperature shall meet PG binder and WMA manufacturer's recommendations.

	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							

TABLE M.04.02–3: Superpave Consensus Properties Requirements For Combined Aggregate

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.

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

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:

i. 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.

ii. 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

a. Determination of Off-Test Status:

i. 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.

ii. 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.

iii. 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.

b. JMF revisions

i. 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.

ii. 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.

iii. Superpave Mix Acceptance:

a. 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.

b. 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.

ii. 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.

c. 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.

d. 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

Notes: (1) 300°F 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

	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		

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.

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.

SECTION M.16.08

Article M16.08 - Pedestrian Push Button:

Delete the entire section and replace with the following:

A. General

- Size and force compliant with ADA, Section 14.2.5, Crossing Controls.
- Tamper-proof, and Vandal-proof, Weatherproof, Freeze-proof, Impact-resistant design and construction.
- Completely insulated to preclude electrical shock under any weather conditions.
- Wire entrance through the rear.
- Stainless steel mounting hardware.

B. Actuation

1. Mechanical:
    - Single momentary contact switch with tactile feedback.
    - Rated at 10 amps, 125 volts.
    - Normally open, closed when actuated.
2. Piezo:
    - Either non-movable or minimal movement (< 1/16” (1.6)) pressure activation.
    - Audible confirmation beep to correspond with circuit closure.
    - Minimum 100,000,000 actuations.

C. Housing

- Die cast aluminum meeting requirements of ASTM B85.
- Designed to attach 9" x 12" (230 x 300) four-hole advisory sign.
- Flat back to facilitate surface mount.
- Available hardware to either pedestal top-mount or pole side-mount on diameter range of 3½" (89) to 15" (380).
- Available extension bracket of a size indicated on the plan – 18” maximum.

D. Finish

- Method: Either

1. Painted with 3 coats of infrared oven-baked paint before assembly.
    - Primer: Baked iron oxide which meets or exceeds FS TT-P-636.
    - Second coat: Exterior-baking enamel, light gray, which meets or exceeds FS TT-E-527.
    - Third coat: Exterior-baking enamel, which meets or exceeds FS TT-E-489.
2. Electrostatic powder coated after chemically cleaned.

Article M.16.08 Painting:

Third coat: Replace with the following:

All brackets and hardware shall be painted black by the manufacturer. The color shall be black No. 17038, Federal Standard No. 595.

ATTACHMENT A:
REQUIRED STATE CONTRACT PROVISIONS

STATE OF CONNECTICUT

Certificate of Compliance with Connecticut General Statute Section 31 - 57b

I hereby certify that all of the statements herein contained below have been examined by me, and to the best of my knowledge and belief are true and correct.

The _____ **HAS / HAS NOT**
Company Name (Cross out Non-applicable)

been cited for three (3) or more willful or serious or serious violations of any Occupational Safety and Health Act (OSHA) or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act of 1970, and not abated within the time fixed by the citation and such citation has not been set aside following appeal to the appropriate agency of court having jurisdiction or **HAS / HAS NOT** (Cross out Non-applicable) received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the bid.

The list of violations (if applicable) is attached.

_____
(Name of Firm, Organization or Corporation)

Signed: _____
Written Signature:

_____
Name Typed: *(Corporation Seal)*

Title: _____
(Title of Above Person, typed)

Dated: _____

State of)
County of) ***ss:*** ***A.D., 20_____***
)

Sworn to and personally appeared before me for the above, _____,
(Name of Firm, Organization, Corporation)

Signer and Sealer of the foregoing instrument of and acknowledged the same to be the free act and deed of

_____, and his/her free act and deed as
(Name of Person appearing in front of Notary or Clerk)

_____.
(Title of Person appearing in front of Notary or Clerk)

My Commission Expires: _____
(Notary Public) *(Seal)*

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

Index

18. Tangible Personal Property

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

20. Consulting Agreement Affidavit

Index of Exhibits

1. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit A, all of which are hereby made a part of this Contract.

2. Contractor Work Force Utilization / Equal Employment Opportunity

(a) The Contractor shall comply with the Contractor Work Force Utilization / Equal Employment Opportunity requirements attached at Exhibit B and hereby made part of this Contract, whenever a contractor or subcontractor at any tier performs construction work in excess of $10,000. These goals shall be included in each contract and subcontract. Goal achievement is calculated for each trade using the hours worked under each trade.

(b) Companies with contracts, agreements or purchase orders valued at $10,000 or more will develop and implement an Affirmative Action Plan utilizing the ConnDOT Affirmative Action Plan Guideline. This Plan shall be designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuation program. Plans shall be updated as required by ConnDOT.

3. Contract Wage Rates

The Contractor shall comply with:

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

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

As required by section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 816), as may be revised, every Contractor or subcontractor performing project work on a federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

4. Americans with Disabilities Act of 1990, as Amended

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

5. Connecticut Statutory Labor Requirements

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

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

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

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

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

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

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

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

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

Forms and instructions are available anytime by:

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

7. Executive Orders

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order No. 14 and/or Executive Order No. 49 are applicable, they are deemed to be incorporated into and are made a part of the contract as if they had been fully set forth in it. At the Contractor's request, the Department shall provide a copy of these orders to the Contractor.

8. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised): References to "minority business enterprises" in this Section are not applicable to Federal-aid projects/contracts. Federal-aid projects/contracts are instead subject to the Federal Disadvantaged Business Enterprise Program.

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

(1) "Commission" means the Commission on Human Rights and Opportunities;
(2) "Contract" and "contract" include any extension or modification of the Contract or contract;
(3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
(4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
(5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;

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

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

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

(9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and

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

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the State of Connecticut, including, but not limited to municipalities, unless the contract is a municipal public works contract or quasi-public agency project contract, (2) any other state of the United States, including but not limited to, the District of Columbia, Puerto Rico, U.S. territories and possessions, and federally recognized Indian tribal governments, as defined in Connecticut General Statutes § 1-267, (3) the federal government, (4) a foreign government, or (5) an agency of a subdivision, state or government described in subdivision (1), (2), (3), or (4) of this subsection.

(b) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut; and the Contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor

agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes §§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

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

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

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

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

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

(h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such

provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

Please be aware the Nondiscrimination Certifications can be found at the Office of Policy and Management website:

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

9. Whistleblower Provision

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

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

10. Connecticut Freedom of Information Act

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

(b) Confidential Information. The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must

accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as "CONFIDENTIAL," DOT will first review the Contractor's claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.*, Conn. Gen. Stat. §1-210(b)(5)(A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

11. Service of Process

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

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

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

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

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

14. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be

transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

15. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

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

(a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
(b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
(c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
(d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
(e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
(f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

17. Campaign Contribution Restriction

For all State contracts, defined in Conn. Gen. Stat. §9-612(f)(1) as having a value in a calendar year of $50,000 or more, or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this contract, attached as Exhibit D.

18. Tangible Personal Property

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

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

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

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

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

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

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

20. Consulting Agreement Affidavit

The Contractor shall comply with Connecticut General Statutes Section 4a-81(a) and 4a-81(b), as revised. Pursuant to Public Act 11-229, after the initial submission of the form, if there is a change in

the information contained in the form, a contractor shall submit the updated form, as applicable, either (i) not later than thirty (30) days after the effective date of such change or (ii) prior to execution of any new contract, whichever is earlier.

The Affidavit/Form may be submitted in written format or electronic format through the Department of Administrative Services (DAS) website.

EXHIBIT A

TITLE VI CONTRACTOR ASSURANCES

During the performance of this Contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. **Compliance with Regulations:** The Contractor shall comply with the regulations relative to nondiscrimination in federally assisted programs of the United States Department of Transportation (hereinafter, "USDOT"), Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the Contract, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Subsection 5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:**
In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.

4. **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Connecticut Department of Transportation (ConnDOT) or the Funding Agency (FHWA, FTA and FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to ConnDOT or the Funding Agency, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the ConnDOT shall impose such sanctions as it or the Funding Agency may determine to be appropriate, including, but not limited to:

A. Withholding contract payments until the Contractor is in-compliance; and/or
B. Cancellation, termination, or suspension of the Contract, in whole or in part.

6. **Incorporation of Provisions:** The Contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the ConnDOT or the Funding Agency may -direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the ConnDOT to enter into such litigation to protect the interests of the Funding Agency, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States

EXHIBIT B

CONTRACTOR WORKFORCE UTILIZATION / EQUAL EMPLOYMENT OPPORTUNITY

1. **Project Workforce Utilization Goals:**
These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted or funded) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

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

The goals for minority and female utilization are expressed in percentage terms for the contractor's aggregate work-force in each trade on all construction work in the covered area, are referenced in the Appendix A below.

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

LABOR MARKET AREA GOAL			***Minority***
Female			
Bridgeport			**22.7%**
1.4%			
Ansonia	Beacon Falls	Bridgeport	Derby
Easton	Fairfield	Milford	Monroe
Oxford	Seymour	Shelton	Stratford
Trumbull			
Danbury			**10.7%**
3.8%			
Bethel	Bridgewater	Brookfield	Danbury
Kent	New Fairfield	New Milford	Newtown
Redding	Ridgefield	Roxbury	Sherman
Washington			
Danielson			**4.3%**
1.8%			
Brooklyn	Eastford	Hampton	Killingly
Pomfret	Putnam	Scotland	Sterling
Thompson	Voluntown	Union	Woodstock
Hartford			**13.7%**
2.1%			
Andover	Ashford	Avon	Barkhamsted

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

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

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

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

New London 3.1%				**7.4%**
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 2.1%				**33.2%**
Darien	Greenwich	New Canaan	Norwalk	
Stamford	Weston	Westport	Wilton	

Torrington 1.8%				**4.3%**
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			

Rev. 4/24/2019

EXHIBIT C

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

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

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

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

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

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

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

(g) Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(h) Obligations and Activities of Business Associates.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(16) Obligations in the Event of a Breach

A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
    1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.

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

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

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

    5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to

individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

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

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

(i) Permitted Uses and Disclosure by Business Associate.

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

(2) Specific Use and Disclosure Provisions

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

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

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

(j) Obligations of Covered Entity.

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

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

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

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

(l) Term and Termination.

(1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.

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

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

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

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

(3) Effect of Termination

(A) Except as provided in (l)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity

within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

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

(m) Miscellaneous Provisions.

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

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

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

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

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

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

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the

HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly** *solicit* contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to $2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to $2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than $5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may resulting the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.
Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to “Lobbyist/Contractor Limitations.”

DEFINITIONS

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization**,** (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

"Subcontractor" means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. "Subcontractor" does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a subcontractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

EXHIBIT E

(state wages will be inserted here)

ATTACHMENT B:
PREVAILING WAGE RATES

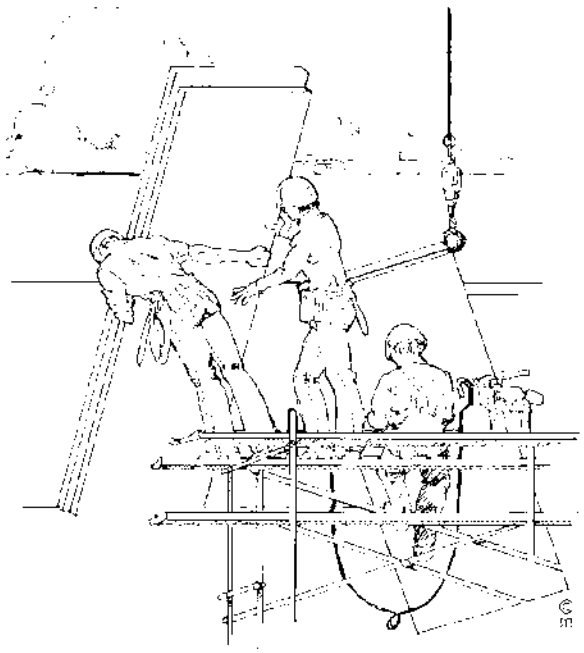
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

✎ Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative title

for _____, located at _____,
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number address

shall be $_____, which includes all work, regardless of whether such project

consists of one or more contracts.

CONTRACTOR INFORMATION

Name:_____

Address:_____
Authorized Representative:_____
Approximate Starting Date: _____

Approximate Completion Date:_____

_____ _____
Signature Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

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

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

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

_____
Signed

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

_____
Notary Public

Return to:

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

Rate Schedule Issued (Date): _____

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

November 29, 2006

Notice

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

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

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

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

Forklift Operator:

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

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

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

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

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

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

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

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

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

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

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

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

12/9/2013
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

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

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

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

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

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

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

Section A:

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

a) The records submitted are true and accurate;

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

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

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

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

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

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

_____ _____ _____

(Signature) (Title) Submitted on (Date)

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

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

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

*IF REQUIRED

12/9/2013
WWS-CP2

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

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

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

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

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

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

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

STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions,Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

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

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the ***contractor's*** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.

- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

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

Minimum Rates and Classifications for
Heavy/Highway Construction

ID# 20-10323

Connecticut Department of Labor
Wage and Workplace Standards

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

Project Number: #GL-2020-13
Project Town: Glastonbury
State#: LOTCHIP L053-
FAP#: #GL-2020-13
Project: Pavement Rehabilitation

CLASSIFICATION	Hourly	Benefits
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	35.72	33.16
2) Carpenters, Piledrivermen	33.53	25.66
2a) Diver Tenders	33.53	25.66
3) Divers	41.99	25.66
03a) Millwrights	34.94	26.19
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	51.0	21.80
4a) Painters: Brush and Roller	34.62	21.80
4b) Painters: Spray Only	36.62	21.80
4c) Painters: Steel Only	35.62	21.80
4d) Painters: Blast and Spray	37.62	21.80
4e) Painters: Tanks, Tower and Swing	36.62	21.80

As of: February 21, 2020

5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	40.0	27.67+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	36.67	35.77 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	43.62	32.06
----LABORERS---- -		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	30.75	20.84
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	31.0	20.84
10) Group 3: Pipelayers	31.25	20.84
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	31.25	20.84
12) Group 5: Toxic waste removal (non-mechanical systems)	32.75	20.84
13) Group 6: Blasters	32.5	20.84
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	31.75	20.84
Group 8: Traffic control signalmen	18.0	20.84
Group 9: Hydraulic Drills	29.3	18.90
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	32.98	20.84 + a
13b) Brakemen, Trackmen	32.01	20.84 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		

14) Concrete Workers, Form Movers, and Strippers	32.01	20.84 + a
15) Form Erectors	32.34	20.84 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	32.01	20.84 + a
17) Laborers Topside, Cage Tenders, Bellman	31.9	20.84 + a
18) Miners	32.98	20.84 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	39.47	20.84 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	39.27	20.84 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	37.29	20.84 + a
21) Mucking Machine Operator	40.06	20.84 + a
----TRUCK DRIVERS----(*see note below)		
Two axle trucks	29.51	24.52 + a
Three axle trucks; two axle ready mix	29.62	24.52 + a
Three axle ready mix	29.67	24.52 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	29.72	24.52 + a
Four axle ready-mix	29.77	24.52 + a
Heavy duty trailer (40 tons and over)	29.98	24.52 + a

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.77	24.52 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	40.97	24.80 + a
Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	40.64	24.80 + a
Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	39.88	24.80 + a
Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	39.48	24.80 + 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	38.87	24.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	38.87	24.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	38.55	24.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24	38.2	24.80 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	37.79	24.80 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	37.34	24.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	35.24	24.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	35.24	24.80 + a

As of: February 21, 2020

Group 12: Wellpoint Operator.	35.18	24.80 + a
Group 13: Compressor Battery Operator.	34.58	24.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	33.41	24.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	32.99	24.80 + a
Group 16: Maintenance Engineer/Oiler	32.32	24.80 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	36.76	24.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	34.26	24.80 + a
**NOTE: SEE BELOW		
----LINE CONSTRUCTION----(Railroad Construction and Maintenance)--- -		
20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76
----LINE CONSTRUCTION----		
24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.1	6.5% + 10.70

27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

As of: February 21, 2020

Welders: Rate for craft to which welding is incidental.

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

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra $4.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

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

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

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

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

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

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

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

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

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

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

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

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

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

As of: February 21, 2020

Project: Pavement Rehabilitation

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

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

As of: February 21, 2020

ATTACHMENT C:
CHRO CONTRACT COMPLIANCE
REGULATIONS NOTIFICATION TO BIDDERS

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS
(Revised 09/3/15)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4)Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

(a) the bidder's success in implementing an affirmative action plan;
(b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
(c) the bidder's promise to develop and implement a successful affirmative action plan;
(d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
(e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving o f written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

White (not of Hispanic Origin)-All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black (not of Hispanic Origin)-All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART 1 – Bidder Information

Company Name: Street Address: City & State: Chief Executive:	Bidder Federal Employer Identification Number: Or Social Security Number:
Major Business Activity: (brief description)	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor? Yes ☐ No ☐ -Bidder is a minority business enterprise? Yes ☐ No ☐ (If yes, check ownership category) Black ☐ Hispanic ☐ Asian American ☐ American Indian/Alaskan Native ☐ Iberian Peninsula ☐ Individual(s) with a Physical Disability ☐ Female ☐ -Bidder is certified as above by State of CT? Yes ☐ No ☐
Bidder Parent Company: (If any)	
Other Locations in CT: (If any)	

PART II - Bidder Nondiscrimination Policies and Procedures

1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes ☐ No ☐	7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes ☐ No ☐
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes ☐ No ☐	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes ☐ No ☐
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes ☐ No ☐	9. Does your company have a mandatory retirement age for all employees? Yes ☐ No ☐
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes ☐ No ☐	10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes ☐ No ☐ N/A ☐
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes ☐ No ☐	11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes ☐ No ☐ N/A ☐
6. Does your company have a collective bargaining agreement with workers? Yes ☐ No ☐ 6a. If yes, do the collective bargaining agreements contain non-discrimination clauses covering all workers? Yes ☐ No ☐ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of CT? Yes ☐ No ☐	12. Does your company have a written affirmative action Plan? Yes ☐ No ☐ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes ☐ No ☐ If yes, give name and phone number:

1. Will the work of this contract include subcontractors or suppliers? Yes ☐ No ☐

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? Yes ☐ No ☐

PART IV - Bidder Employment Information Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Management											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service	☐	☐			Work Experience	
Private Employment Agencies	☐	☐			Ability to Speak or Write English	
Schools and Colleges	☐	☐			Written Tests	
Newspaper Advertisement	☐	☐			High School Diploma	
Walk Ins	☐	☐			College Degree	
Present Employees	☐	☐			Union Membership	
Labor Organizations	☐	☐			Personal Recommendation	
Minority/Community Organizations	☐	☐			Height or Weight	
Others (please identify)	☐	☐			Car Ownership	
	☐	☐			Arrest Record	
	☐	☐			Wage Garnishments	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)

ATTACHMENT D:
GEOTECHNICAL REPORT

Memorandum

To: Mr. Richard J. Johnson
Town Manager
Town of Glastonbury
2155 Main Street
PO Box 6523
Glastonbury, CT 06033-6523

Date: November 15, 2018

Project #: 46286.00

From: Jose Otero
VHB/Project Manager

Re: Pavement Rehabilitation Recommendations for Glastonbury Blvd

Following are the recommendations for the design and construction of Glastonbury Boulevard from Naubuc Avenue to Main Street.

Pavement designs were conducted utilizing American Association of State Highway and Transportation Officials, "AASHTO Guide for Design of Pavement Structures, 1993", design criteria using the "Layered Analysis Thickness Design" method of component thickness of the pavement structure, traffic loadings, magnitude and frequency of loadings, material relationships, environmental considerations, soil support and the AASHTO design assumptions.

Basic design assumptions incorporated into the structural analysis were:

1. The initial serviceability will have a Road Manager Index of 96, or an AASHTO (P_0) = 4.8;
2. The terminal serviceability will be a Road Manager Index of 65, or an AASHTO (P_t) = 2.5;
3. The October 19, 2018 distress level investigation results indicate there is severe transverse/longitudinal cracking and raveling/delamination. Moderate potholes/patching, alligator cracking, and weather/block cracking were noted. There is evidence of minor rutting at a few of the intersections, resulting in a Road Manager Pavement Condition Index (PCI) of 47.
4. A PCI of 0 indicates nearly impassible extremely poor pavement condition index, while a newly paved, perfect pavement would exhibit a condition of 100.
5. The reliability levels used for the pavement design will be 85%.
6. Roadbed soils are AASHTO A-1-b and A-2-4 which are classified as poorly graded silty sands and silty sands by the Unified Classification system. The subgrades are fair to good foundations when not subject to frost action, having a moderate frost potential and exhibiting fair drainage characteristics. The roadbed soils will provide some level of structural support.
7. The Average Daily Traffic (ADT) used for this design was based on vehicle classification counts completed in July 2018. The traffic counts indicated an estimated to be 14,500 vehicles per day utilize the boulevard with trucks and buses accounting for under 2% of the ADT. The percentage of trucks and buses seems low for a major arterial type roadway with with numerous retail establishments, a major grocery chain, and additional restaurants along the corridor. Due to these factors and the proposed development of a 155-unit apartment building and a 94,000-sf retail development VHB utilized 3% of the ADT for the percentage of trucks and buses.

Naubuc Avenue to Main Street:

- The existing pavement structure cross-section consisted of 9.0" to 11.75" (average 9.85") of hot mix asphalt (HMA). Poor bond was located in 42% of the pavement cores ranging in depth from 2.17" to 6.39" (average

100 Great Meadow Road
Suite 200
Wethersfield, CT 06109
P 860.807.4300

3.8″). The granular base consisted of 13.25″ to 15.5″ (average 14.75″) of poorly graded silty sand bases which is founded on silty sand and poorly graded silty sand subgrades.

- Based on the materials evaluation and traffic, this section was found to be structurally inadequate, requiring a 1.5″ overlay to meet the Elastic Layer Design, which is NOT recommended.

Alternative	Service Life	Recommendations
#1	15 year	RESURFACE by milling the existing pavement to a 3.0″ depth. Repair any base failures, seal major cracks and apply an emulsified asphalt tack coat prior to placing 0.75″ of Superpave S-0.375″ Level 2 as the leveling course and 2.25″ of Superpave S-0.5″ Level 2 as the surface course, with a tack coat between lifts
#2	15-20-years	RESURFACE by milling the existing pavement to a 4″ depth. Repair any base failures, seal major cracks and apply an emulsified asphalt tack coat prior to placing 2.0″ of Superpave S-0.5″ Level 2 as the intermediate course and 2.0″ of Superpave S-0.5″ Level 2 as the surface course, with a tack coat between lifts.

If you have any questions or require any additional information, please do not hesitate to call.

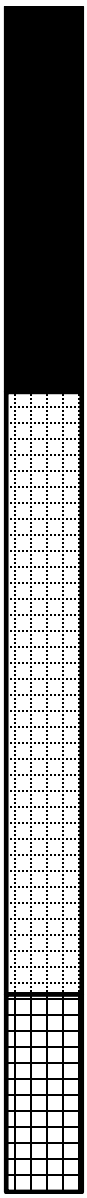
100 Great Meadow Road
Wethersfield, Connecticut 06109
860.807.4300

STREET: Glastonbury Boulevard (Naubuc Road - Main Street)

PROJECT #: 46286.00

CITY, STATE: Glastonbury, CT

TP# / LOCATION: TP1 - 750' E of Naubuc Road, 7.5" off Right EBLC



9.75" Hot Mix Asphalt
(HMA)

15.25" well-graded sand
with silt and gravel A-1-b

5" poorly graded sand
with silt and gravel A-2-4

Frost Potential: moderate

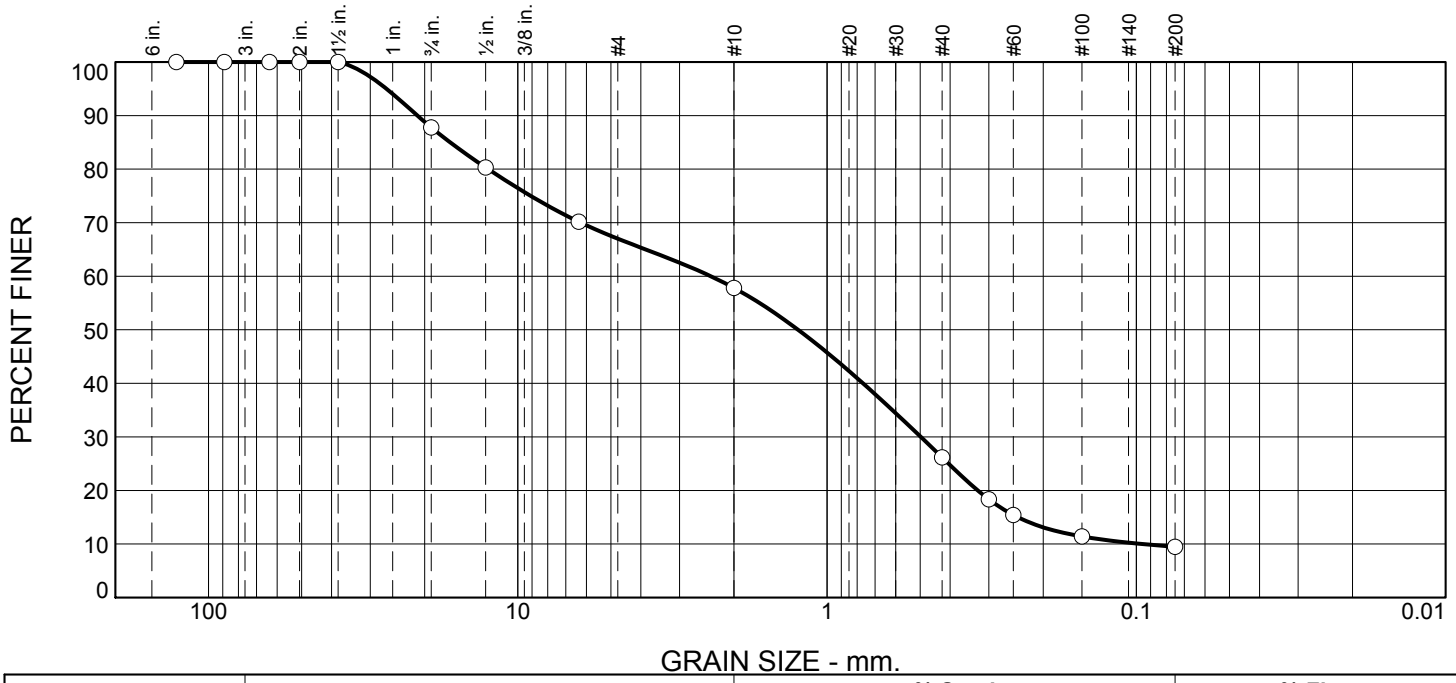
Description: This poorly graded silty sand is a fair to good foundation when not subject to frost action, having a moderate frost potential and exhibiting fair drainage characteristics.

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP1 - 750' E of Naubuc Road, 7.5" off Right EBLC **Depth:** 15.25
Sample Number: BASE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	42	32	17	9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	100		
1-1/2"	100	55 - 100	
3/4"	88		
1/2"	80		
1/4"	70	25 - 60	X
#10	58	15 - 45	X
#40	26	5 - 25	X
#50	18		
#60	15		
#100	11	0 - 10	X
#200	9.5	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

well-graded sand with silt and gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 16.5699 D_{60}= 2.3771 D_{50}= 1.2416
D_{30}= 0.4979 D_{15}= 0.2418 D_{10}= 0.0956
C_u= 24.86 C_c= 1.09

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Figure

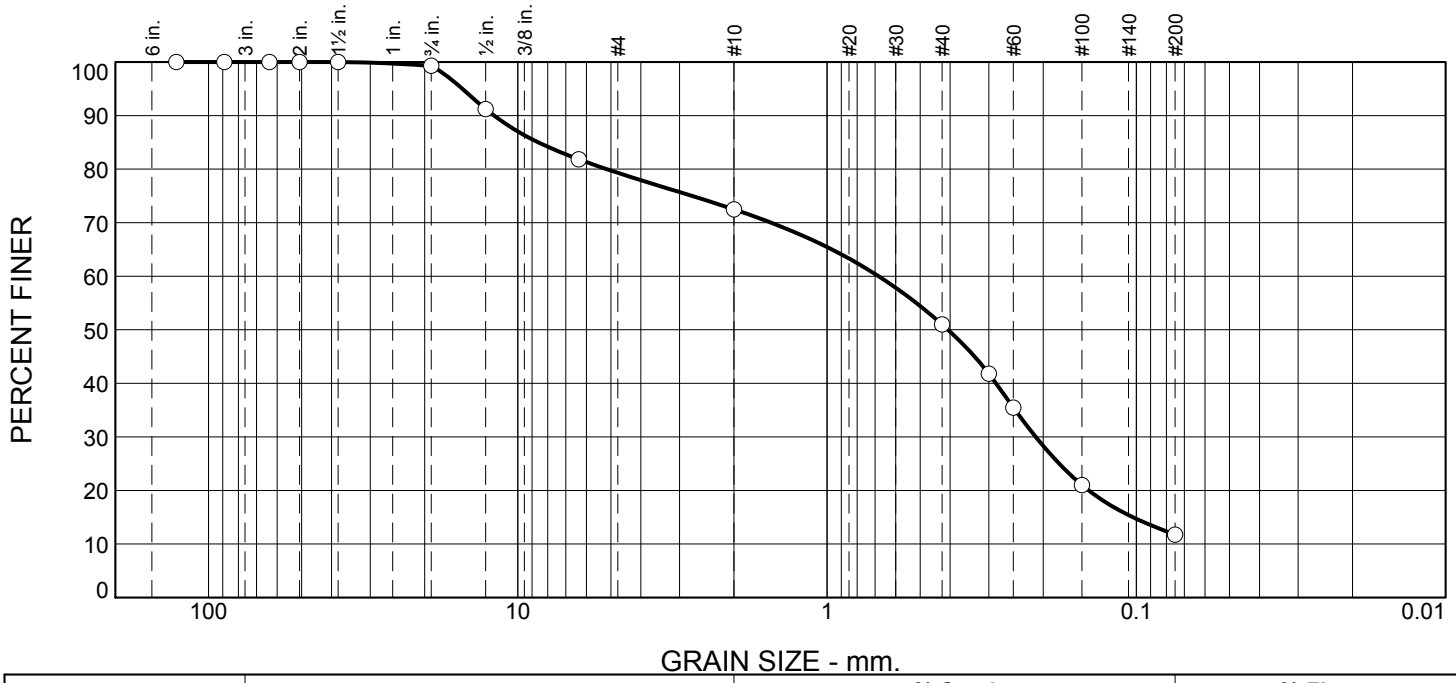
Tested By: ES/DT **Checked By:** VHB

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP1 - 750' E of Naubuc Road, 7.5" off Right EBLC **Depth:** 5
Sample Number: SUGRADE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	28	21	39	12

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	100		
1-1/2"	100	55 - 100	
3/4"	99		
1/2"	91		
1/4"	82	25 - 60	X
#10	72	15 - 45	X
#40	51	5 - 25	X
#50	42		
#60	35		
#100	21	0 - 10	X
#200	12	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

poorly graded sand with silt and gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 8.5877 D_{60}= 0.6818 D_{50}= 0.4064
D_{30}= 0.2116 D_{15}= 0.1027 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO= A-2-4

Remarks

DCP = 3" at 5 Blows

Figure

Tested By: ES/DT **Checked By:** VHB

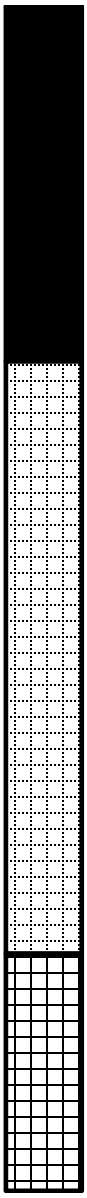
100 Great Meadow Road
Wethersfield, Connecticut 06109
860.807.4300

STREET: Glastonbury Boulevard (Naubuc Road - Main Street)

PROJECT #: 46286.00

CITY, STATE: Glastonbury, CT

TP# / LOCATION: TP2 - 1800' E of Naubuc Road, 19" off Left EBLC



9" Hot Mix Asphalt
(HMA)

15" poorly graded sand
with silt and gravel A-1-a

6" silty sand with gravel
A-1-b

Frost Potential: moderate to high

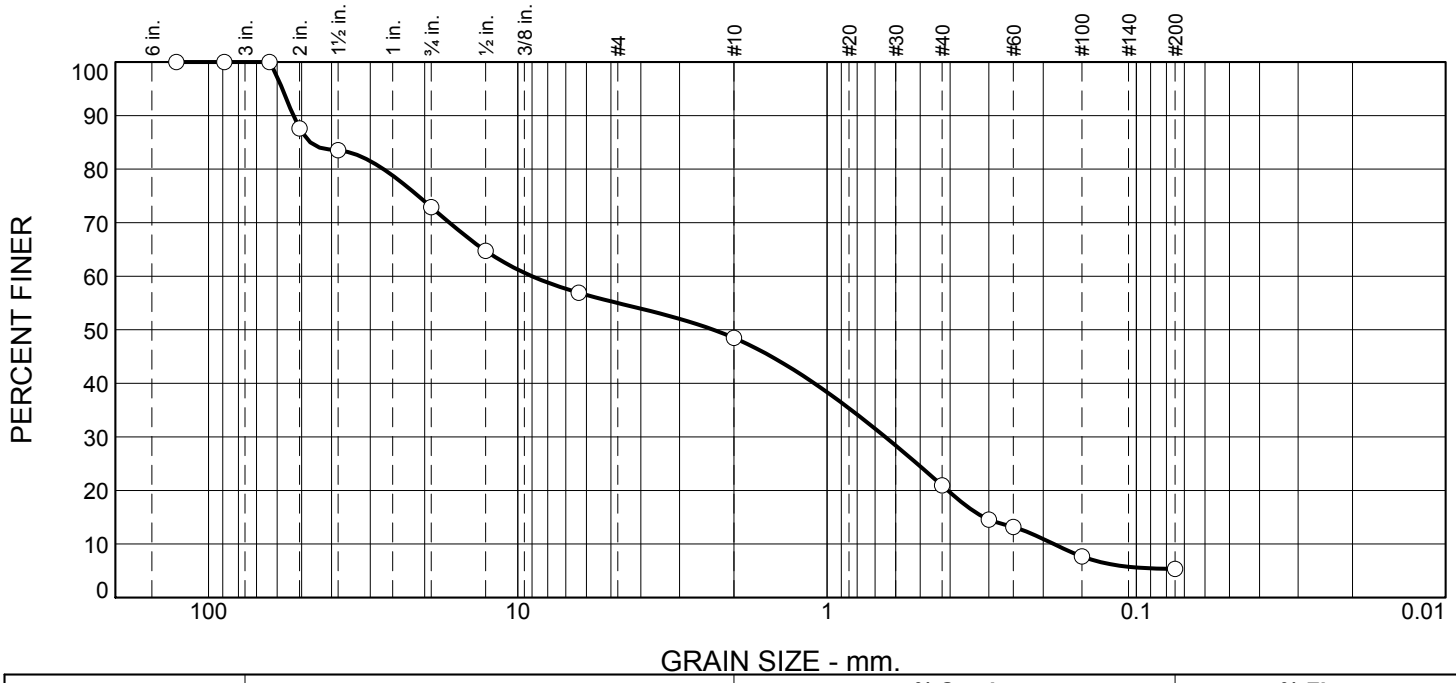
Description: This silty sand is a fair to good foundation when not subject to frost action, having a moderate to high frost potential and exhibiting fair to poor drainage characteristics.

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP2 - 1800' E of Naubuc Road, 19" off Left EBLC **Depth:** 15
Sample Number: BASE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	52	27	16	5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	88		
1-1/2"	84	55 - 100	
3/4"	73		
1/2"	65		
1/4"	57	25 - 60	
#10	48	15 - 45	X
#40	21	5 - 25	
#50	15		
#60	13		
#100	8	0 - 10	
#200	5.3	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

poorly graded sand with silt and gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 46.8680 D_{60}= 8.9907 D_{50}= 2.3273
D_{30}= 0.6493 D_{15}= 0.3113 D_{10}= 0.1850
C_u= 48.60 C_c= 0.25

Classification

USCS= SP-SM AASHTO= A-1-a

Remarks

Figure

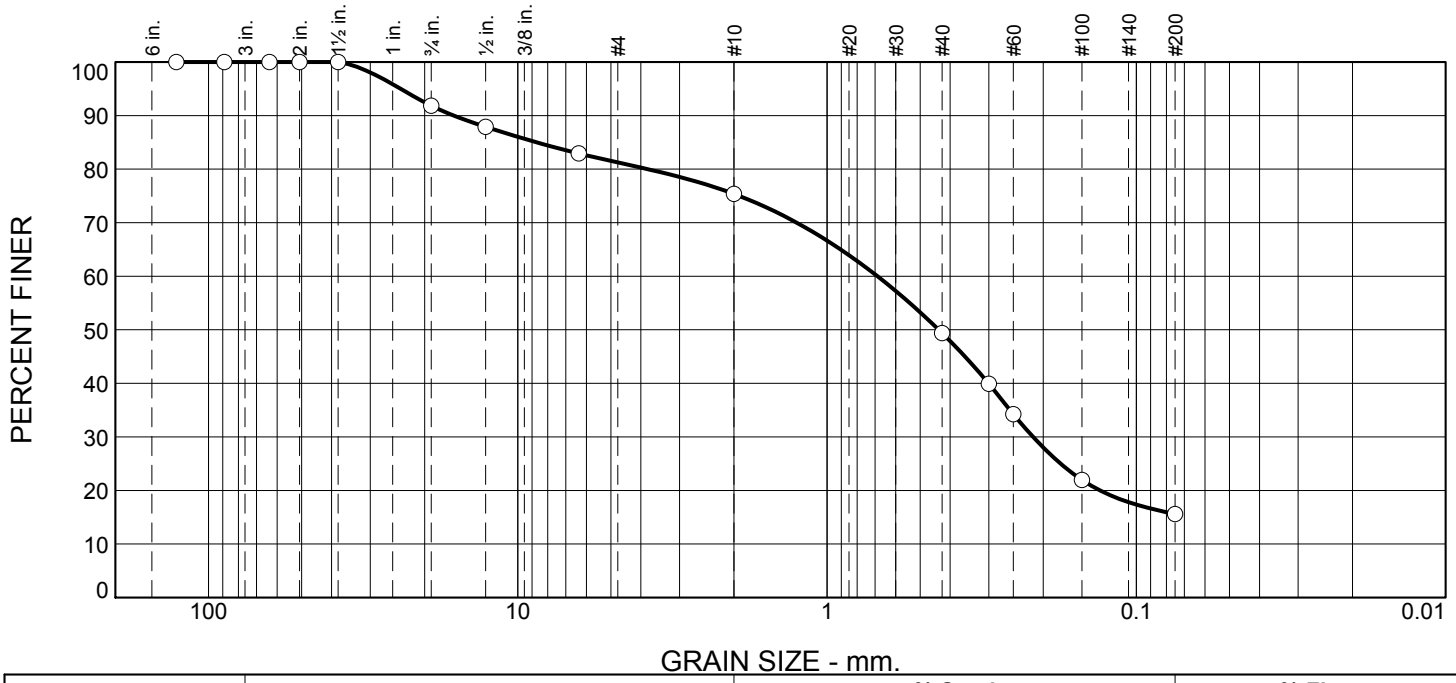
Tested By: ES/DT **Checked By:** VHB

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP2 - 1800' E of Naubuc Road, 19" off Left EBLC **Depth:** 6
Sample Number: SUBGRADE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	25	26	33	16

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	100		
1-1/2"	100	55 - 100	
3/4"	92		
1/2"	88		
1/4"	83	25 - 60	X
#10	75	15 - 45	X
#40	49	5 - 25	X
#50	40		
#60	34		
#100	22	0 - 10	X
#200	16	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

silty sand with gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 8.6874 D_{60}= 0.6876 D_{50}= 0.4359
D_{30}= 0.2158 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

DCP = 2" @ 5 Blows

Figure

Tested By: ES/DT **Checked By:** VHB

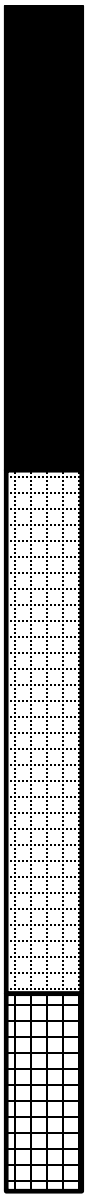
100 Great Meadow Road
Wethersfield, Connecticut 06109
860.807.4300

STREET: Glastonbury Boulevard (Naubuc Road - Main Street)

PROJECT #: 46286.00

CITY, STATE: Glastonbury, CT

TP# / LOCATION: TP3 - 525' W of Main Sreet, 7.5" off right WBLC



11.75" Hot Mix Asphalt (HMA)

13.25" poorly graded sand with silt and gravel A-1-b

5" silty sand A-2-4

Frost Potential: moderate to high

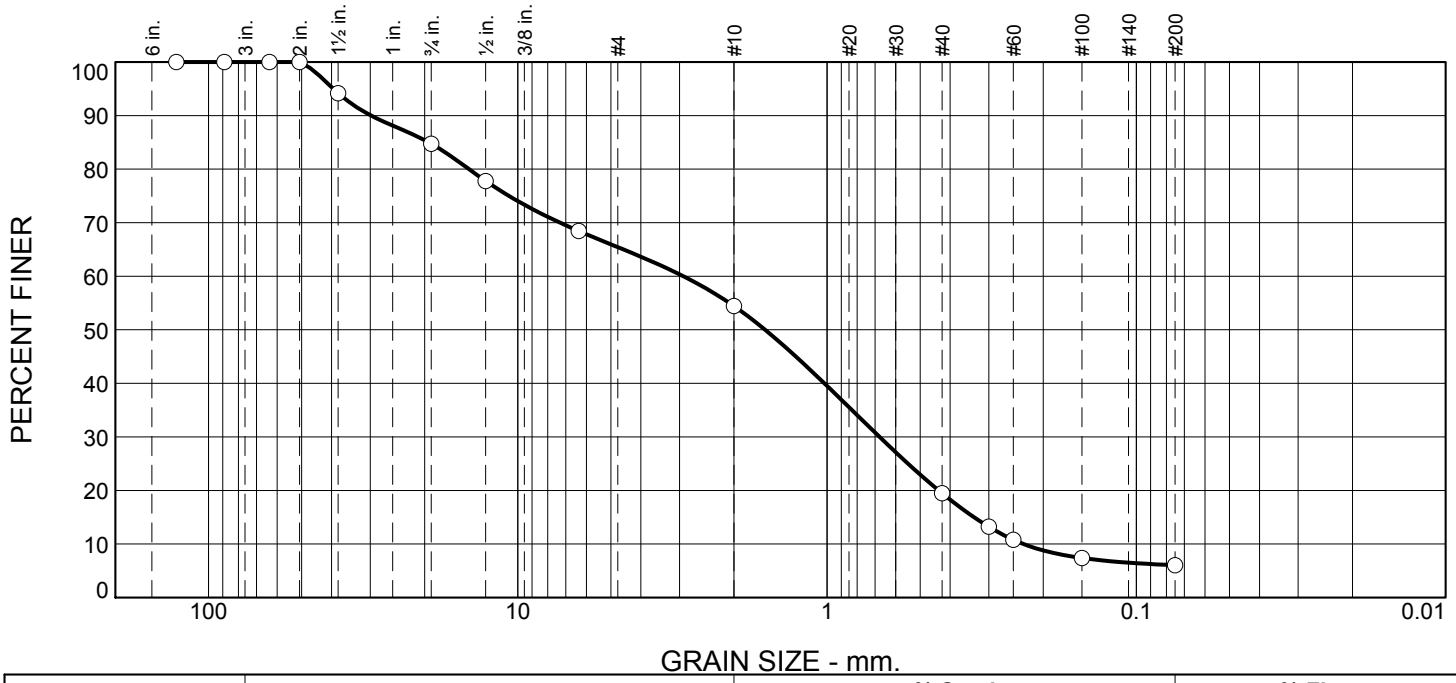
Description: This silty sand is a fair to good foundation when not subject to frost action, having a moderate to high frost potential and exhibiting fair to poor drainage characteristics.

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP3 - 525' W of Main Sreet, 7.5" off right WBLC **Depth:** 13.25
Sample Number: BASE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	46	35	13	6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	100		
1-1/2"	94	55 - 100	
3/4"	85		
1/2"	78		
1/4"	68	25 - 60	X
#10	54	15 - 45	X
#40	19	5 - 25	
#50	13		
#60	11		
#100	7	0 - 10	
#200	6.0	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

poorly graded sand with silt and gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 19.4198 D_{60}= 2.9127 D_{50}= 1.5870
D_{30}= 0.6770 D_{15}= 0.3348 D_{10}= 0.2318
C_u= 12.56 C_c= 0.68

Classification

USCS= SP-SM AASHTO= A-1-b

Remarks

Figure

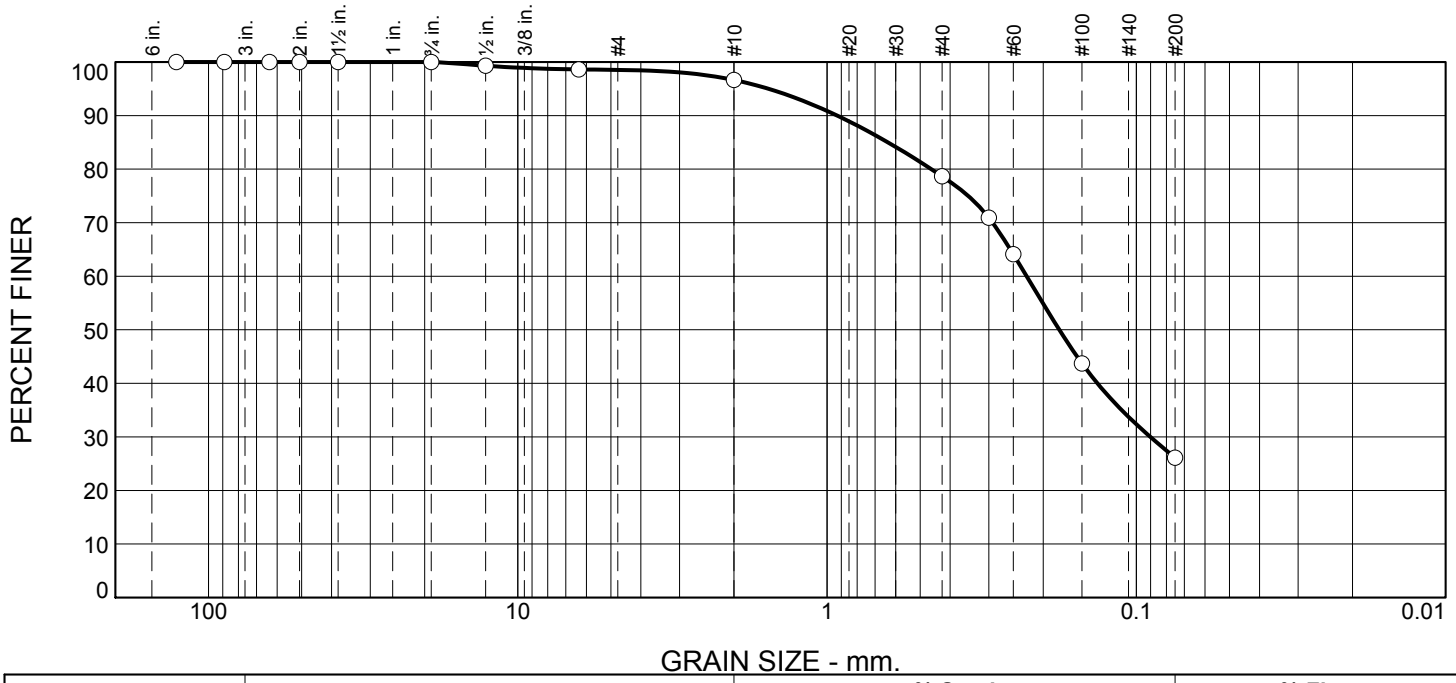
Tested By: ES/DT **Checked By:** VHB

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP3 - 525' W of Main Sreet, 7.5" off right WBLC **Depth:** 5
Sample Number: SUBGRADE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	3	18	53	26

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	100		
1-1/2"	100	55 - 100	
3/4"	100		
1/2"	99		
1/4"	99	25 - 60	X
#10	97	15 - 45	X
#40	79	5 - 25	X
#50	71		
#60	64		
#100	44	0 - 10	X
#200	26	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 0.6363 D_{60}= 0.2264 D_{50}= 0.1775
D_{30}= 0.0901 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4

Remarks

DCP = 3.5" @ 5 Blows

Figure

Tested By: ES/DT **Checked By:** VHB

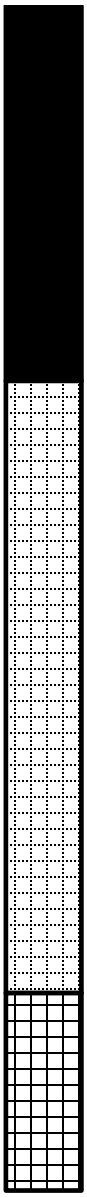
100 Great Meadow Road
Wethersfield, Connecticut 06109
860.807.4300

STREET: Glastonbury Boulevard (Naubuc Road - Main Street)

PROJECT #: 46286.00

CITY, STATE: Glastonbury, CT

TP# / LOCATION: TP4 - 1935' W of Main Street, 20" off Left WBLC



9.5" Hot Mix Asphalt
(HMA)

15.5" poorly graded sand
with silt and gravel A-1-b

5" silty sand A-2-4

Frost Potential: moderate to high

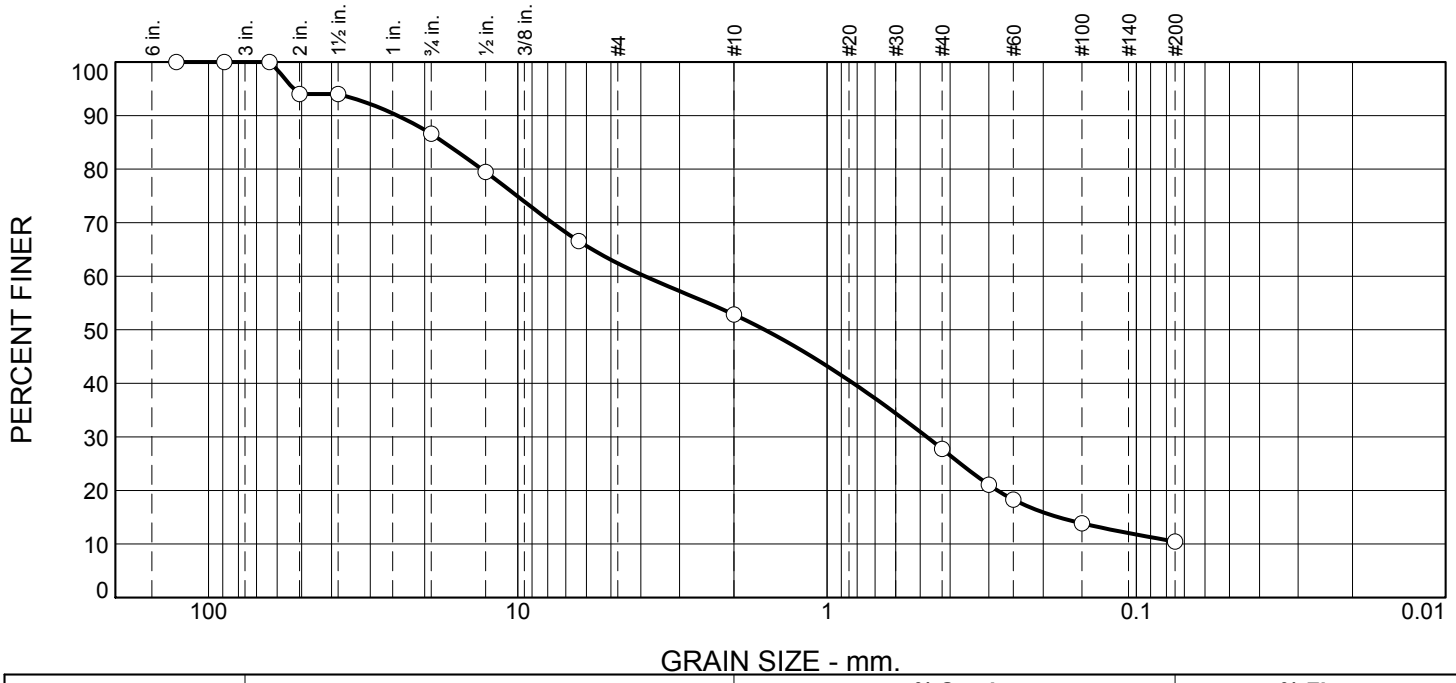
Description: This silty sand is a fair to good foundation when not subject to frost action, having a moderate to high frost potential and exhibiting fair to poor drainage characteristics.

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP4 - 1935' W of Main Street, 20" off Left WBLC **Depth:** 15.5
Sample Number: BASE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	47	25	18	10

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	94		
1-1/2"	94	55 - 100	
3/4"	87		
1/2"	79		
1/4"	67	25 - 60	X
#10	53	15 - 45	X
#40	28	5 - 25	X
#50	21		
#60	18		
#100	14	0 - 10	X
#200	10	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

poorly graded sand with silt and gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 17.3640 D_{60}= 3.8830 D_{50}= 1.5918
D_{30}= 0.4763 D_{15}= 0.1786 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO= A-1-b

Remarks

Figure

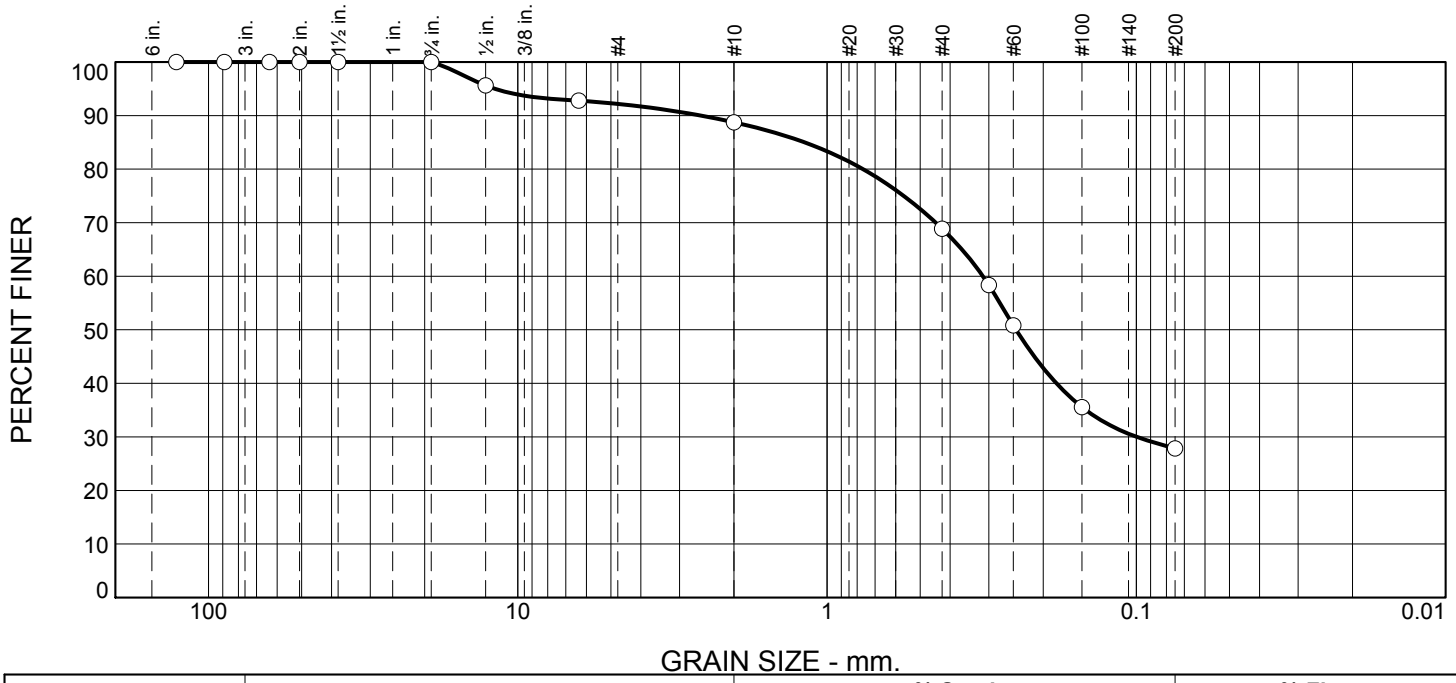
Tested By: ES/DT **Checked By:** VHB

Vanasse Hangen Brustlin, Inc.

Project: Glastonbury Boulevard (Naubuc Road - Main Street) **Project No.:** 46286.00

Client: Glastonbury, CT

Source of Sample: TP4 - 1935' W of Main Street, 20" off Left WBLC **Depth:** 5
Sample Number: SUBGRADE **Date:** 10/19/2018



% +3"	% Gravel	% Sand		% Fines
		Coarse	Fine	Silt
0	11	20	41	28

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
5"	100		
3-1/2"	100	100	
2-1/2"	100		
2"	100		
1-1/2"	100	55 - 100	
3/4"	100		
1/2"	96		
1/4"	93	25 - 60	X
#10	89	15 - 45	X
#40	69	5 - 25	X
#50	58		
#60	51		
#100	36	0 - 10	X
#200	28	0.0 - 5.0	X

* CT - M.02.06 Gravels "A"

Material Description

silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 1.1840 D_{60}= 0.3135 D_{50}= 0.2450
D_{30}= 0.0997 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4

Remarks

DCP = 1.5" @ 5 Blows

Figure

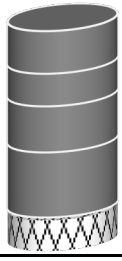
Tested By: ES/DT **Checked By:** VHB

CORE PROFILE

www.vhb.com

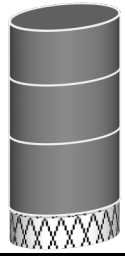
PROJECT NUMBER: 46286.00
LOCATION: Glastonbury Boulevard, Glastonbury, CT FROM: Naubuc Road
DATE SAMPLED: Friday, October 19, 2018 TO: Main Street

CORE#: 1 **Area:** *360' E of Naubuc Rd., EB right lane 4' off curb;*



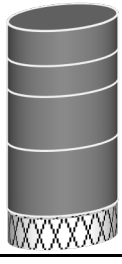
DEPTH Layer	DEPTH Total	CLASSIFICATION	
2.43''	**10.67''**	Class 1 Hot Mix Asphalt (HMA)	
1.86''		Class 1 HMA	
2.63''		Class 4 HMA	*Poor bond at 4.29"*
3.75''		Class 4 HMA	
		Sandy Gravel	

CORE#: 2 **Area:** *850' E of Naubuc Rd., EB left turn lane 32' off curb;*



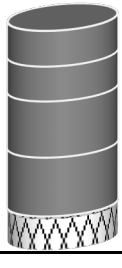
DEPTH Layer	DEPTH Total	CLASSIFICATION
2.67''	**9.04''**	Class 1 Hot Mix Asphalt (HMA)
2.87''		Class 4 HMA
3.50''		Class 4 HMA
		Sandy Gravel

CORE#: 3 **Area:** *1300' E of Naubuc Rd., EB left lane 20' off curb;*



DEPTH Layer	DEPTH Total	CLASSIFICATION	
1.85''	**9.81''**	Class 1 Hot Mix Asphalt (HMA)	
1.62''		Class 1 HMA	
2.84''		Class 4 HMA	*Poor bond at 3.47"*
3.50''		Class 4 HMA	
		Sandy Gravel	

CORE#: 4 **Area:** *1760' E of Naubuc Rd., EB right lane 6' off curb;*



DEPTH Layer	DEPTH Total	CLASSIFICATION
1.84''	**9.59''**	Class 1 Hot Mix Asphalt (HMA)
1.80''		Class 1 HMA
2.90''		Class 4 HMA
3.05''		Class 4 HMA
		Sandy Gravel

Jose R Otero J.

Jose R. Otero Jr., Project Manager

100 Great Meadow Road
Suite 200
Wethersfield, Connecticut 06109
P 860.807.4300
F 860.372.4570

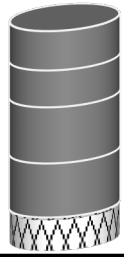
Engineers | Scientists | Planners | Designers

CORE PROFILE

page 2

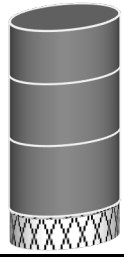
LOCATION: Glastonbury Boulevard, Glastonbury, CT FROM: Naubuc Road
DATE SAMPLED: October 19, 2018 TO: Main Street

CORE#: ***5*** ***Area:*** *2110' E of Naubuc Rd., EB left lane 19' off curb;*



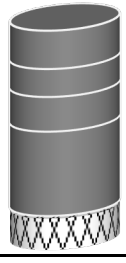
DEPTH Layer	DEPTH Total	CLASSIFICATION
2.14''	**10.19''**	Class 1 Hot Mix Asphalt (HMA)
2.01''		Class 1 HMA
3.06''		Class 4 HMA
2.98''		Class 4 HMA
		Sandy Gravel

CORE#: ***6*** ***Area:*** *2600' E of Naubuc Rd., EB left turn lane 30' off curb;*



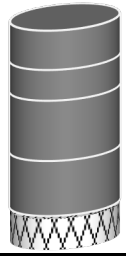
DEPTH Layer	DEPTH Total	CLASSIFICATION
2.61''	**9.15''**	Class 1 Hot Mix Asphalt (HMA)
3.04''		Class 4 HMA
3.50''		Class 4 HMA
		Sandy Gravel

CORE#: ***7*** ***Area:*** *400' W of Main St., WB left turn lane 30' off curb;*



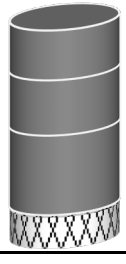
DEPTH Layer	DEPTH Total	CLASSIFICATION
2.11''	**10.19''**	Class 1 Hot Mix Asphalt (HMA)
1.54''		Class 1 HMA
1.91''		Class 4 HMA
4.63''		Class 4 HMA
		Sandy Gravel

CORE#: ***8*** ***Area:*** *900' W of Main St., WB left lane 20' off curb;*



DEPTH Layer	DEPTH Total	CLASSIFICATION	
2.17''	**10.22''**	Class 1 Hot Mix Asphalt (HMA)	
1.70''		Class 1 HMA	
3.33''		Class 4 HMA	*Poor bond at 2.17"*
3.02''		Class 4 HMA	
		Sandy Gravel	

CORE#: ***9*** ***Area:*** *1360' W of Main St., WB right turn lane 3' off curb;*



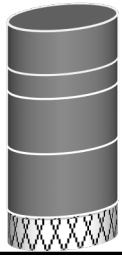
DEPTH Layer	DEPTH Total	CLASSIFICATION	
2.75''	**10.17''**	Class 1 Hot Mix Asphalt (HMA)	
3.05''		Class 1 HMA	
4.37''		Class 4 HMA	*Poor bond at 2.75"*
		Sandy Gravel	

CORE PROFILE

page 3

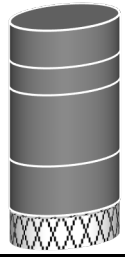
LOCATION: Glastonbury Boulevard, Glastonbury, CT FROM: Naubuc Road
DATE SAMPLED: October 19, 2018 TO: Main Street

CORE#: ***10*** ***Area:*** *1855' W of Main St., WB right lane 5' off curb;*



DEPTH Layer	DEPTH Total	CLASSIFICATION	
2.28''	**9.71''**	Class 1 Hot Mix Asphalt (HMA)	
1.24''		Class 1 HMA	
2.87''		Class 4 HMA	*Poor bond 6.39"*
3.32''		Class 4 HMA	
		Sandy Gravel	

CORE#: ***11*** ***Area:*** *2120' W of Main St., WB left turn lane 33' off curb;*



DEPTH Layer	DEPTH Total	CLASSIFICATION
1.86''	**9.17''**	Class 1 Hot Mix Asphalt (HMA)
1.34''		Class 1 HMA
3.53''		Class 4 HMA
2.44''		Class 4 HMA
		Sandy Gravel

CORE#: ***12*** ***Area:*** *2470' W of Main St., WB left lane 19' off curb;*

DEPTH Layer	DEPTH Total	CLASSIFICATION
2.22''	**9.74''**	Class 1 Hot Mix Asphalt (HMA)
1.30''		Class 1 HMA
3.37''		Class 4 HMA
2.85''		Class 4 HMA
		Sandy Gravel

ATTACHMENT E:
SCHEDULE OF MINIMUM TESTING
FOR LOTCIP PROJECTS

Local Transportation Capital Improvement Program (LOTCIP) **4/2/2019**

ONLY Applies to Municipal Adminstered LOTCIP Projects ***not*** *on National Highway System*

Material Name	Unit	Test/Documentation	Frequency 1 per	Notes
Anchor Bolts	ea.	MC	project	1 per size
Asphalt Emulsions (CSS-1, RS-1 or SS-1)	gal	MC	10k	
Bituminous Concrete (HMA)	ton	D 2950 FLDT	day	See Note 3
Cement - Portland Type I/II	bag	FLDT	project	empty bag
Chemcial Anchor	lb.	QPL MC	project	
Concrete-Ready Mixed	c.y.	T22 FLDL	75	4 cylinders
Construction Signing	ea.	MC	project	
Geotextile	s.y.	QPL MC	project	
Gravel (Bank Run or Crushed)	c.y.	T27 LABT	5k	
Grout, Non-shrink	bag	MC	project	
Masonry Brick & Block (Solid)	ea.	FLDT	project	See Note 1
Pipe - Reinforced Concrete	l.f.	PC-1	project	See Note 1
Pipe (Metal & Plastic) All types	lf	MC	project	See Note 1
Pipe Arch - Aluminum	lf	MC	project	See Note 1
Precast Concrete Items (not pipe)	ea.	PC-1	Item type	
Prestressed Concrete Members	ea.	LABT	1	See Note 2 & 3
Reclaimed Misc. Aggregate	c.y.	T27/Chem Analysis	2500	See Note 5
Reclaimed Waste	c.y.	T180 LABT	50k	See Note 5
Sand (Masonry /Trenching & Backfilling)	c.y.	T27 LABT	2500	
Sheet Piling	l.f.	MC	project	See Note 4
Sign Post	ea	MC	project	See Note 1
Span Pole - Steel or Wood	ea.	MC	project	See Note 3
Steel Reinforcing Bars (Plain or Epoxy)	lb.	T244 MC	200t	
Stone (Broken/Crushed)	c.y.	T27 LABT	20k	
Structural Steel	cw	Shop Drawings	project	Notes 2, 3 & 4
Traffic Signal Equipment	ea.	MC	project	NA

Notes

1	Material should be inspected on the project site prior to use. Suspect material should be physically tested to determine conformance.
2	QC Inspection should be provided and documented during fabrication.
3	Contact the Department of Transportation Division of Materials Testing to determine vendor qualifications and QA inspection availablity.
4	Documentation should be provided to determine conformance to Buy America requirements.
5	FORM MAT-212 should be completed and provided by the Contractor prior to use of material.

Test Method/Test Type

LABT	Laboratory Test
FLDT	Test performed in the field
QPL	ConnDOT Qualified Products List (http://www.ct.gov/dot/lib/dot/documents/dresearch/conndot_qpl.pdf)
PC-1	MAT-308 Required from producer with shipment
MC*	Materials Certificate

*Should comply with ConnDOT Standard Specification Section 1.06.07

Legend

Item: Standard Specification Section and the first four digits of the Contract Item number.
Title: Generally the overall subject of the Standard Specification Section and the Contract Item numbers.
Item Unit: Generally the pay unit of the Contract Item.
Material #: Code used in SiteManager and by the Division of Materials Testing to identify component materials used in Contract Items.
Material Name: Definition of the Material #.
Material Unit: Unit of Material that defines a quantity represented by a sample. Example: A sample of concrete represents 50 CY of material regardless of what the item unit is.
MAT 100: Indicates wether a Request for Test (MAT-100) is required to be submitted to the Division of Materials Testing (See Note 11. for ALT)
Sample Type: Acceptance (Prod) or Information requires a MAT-100 to be submitted. Accept (Field) does not require a MAT-100 to be submitted.
Test Method: AASHTO or ASTM test method. See below. "Chem" requires
Test Type: Describes the test, where the test is performed, or what is required to be submitted with the MAT-100.
Responsibility: Person who performs the test.
Frequency: Number of tests required per quantity of material using the material units: (E) English (M) Metric.

1 per "quantity" indicates that **all** the quantity of each type (size/shape/composition) of material, per item, from a single vendor and manufacturer **must be represented** on a single or multiple Request for Test(s) (MAT-100). MAT-100(s) total represented quantity must match total quantity installed.

Sample Size: Size of Sample.

Test Type:

FLDT	**Test performed in the field**
LABT	**Laboratory Test**
FLABT	**Field and Laboratory Testing**
LMCT*	**Lab Test, Mat Cert and Cert Test Report (Originals Required)**
MC*	**Materials Certificate (Original Required)**
MCCTR*	**Materials Certificate and Certified Test Report (Originals Required)**
PC1	**Self Certification from producer supplied per shipment**
QPL	**Qualified Product List**
Visual	**Project Inspector must visually inspect upon delivery/installation. Visual inspection by DMT staff denotes witnessing fabrication of material where it is being fabricated. Documentation of visual inspection on the project by project staff is in accordance with District/Office of Construction policies.**

***Materials Certificates and Certified Test Reports must comply with Standard Specification Section 1.06.07. Note: Materials Certificates for items composed of, or containing, steel or cast iron must also indicate where the steel and cast iron was produced and fabricated.**

ATTACHMENT F1:
CONSTRUCTION PLANS

ATTACHMENT F2:
CONNDOT HIGHWAY STANDARD DETAILS

ATTACHMENT F3:
CONNDOT TRAFFIC STANDARD DETAILS

ALL UNDER SEPARATE COVER